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Doctoral Students' Relational Communication with their Advisors: A Dyadic Examination using Chickering's Theory of Psychosocial Development

Zachary W. Goldman

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Doctoral Students' Relational Communication with their Advisors: A Dyadic
Examination using Chickering's Theory of Psychosocial Development

Zachary W. Goldman

Dissertation submitted
to the Eberly College of Arts and Sciences
at West Virginia University

in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in
Communication Studies

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Morgantown, West Virginia
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maintenance, conflict strategies, satisfaction, attrition, student success

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ABSTRACT

Doctoral Students' Relational Communication with their Advisors: A Dyadic Examination using Chickering's Theory of Psychosocial Development

Zachary W. Goldman

The purpose of this dissertation was to explore how psychosocial development affects doctoral students' relationships with their advisor and their success in graduate school. Toward this goal, three objectives were identified. The first objective was to integrate Chickering and Reisser's (1993) vectors of psychosocial development into the doctoral education context to understand how mature students maintain their relationships and address conflict with their advisor. The second objective was to investigate the extent to which doctoral students' psychosocial development and communication behaviors affected satisfaction in the student-advisor relationship. The third objective was to examine the effect of psychosocial development on doctoral students' attrition and indicators of academic success. Self-report surveys were completed by both doctoral students and graduate faculty advisors. The results revealed that students who were further progressed along the vectors of psychosocial development were more likely to use relational maintenance behaviors and handle their conflict with integrative strategies, whereas students who were not as psychosocially developed were more inclined to use distributive and avoidance strategies to handle conflict in the student-advisor relationship. Psychosocial development also positively affected doctoral students' persistence, perceived time to degree, and their general success in graduate school (i.e., academic preparedness, quality of work, research self-efficacy, research productivity). The results also indicated that students' relational maintenance behaviors and conflict strategies played an essential role in explaining the positive effects of psychosocial development on student-advisor relational and communication satisfaction. Taken together, the findings support the importance of psychosocial development in graduate school and provide valuable information that may be used to improve the quality of doctoral programs.

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CHAPTER I

Introduction

In the summer of 1998, Jason Altom, a doctoral candidate who studied chemistry at Harvard University, committed suicide by drinking potassium cyanide (Golde & Gallagher, 1999). His death sparked a national conversation regarding the conditions of doctoral education in the United States. Jason left behind suicide notes addressed to his department chair and dissertation advisor that began with the phrase “This event could have been avoided” (Hall, 1998, p. 1). His letters explained a negative working relationship with his advisor, a culture that encouraged bullying and verbal abuse, and a lack of social support as factors that influenced his decision to end his life. Although the extremity and unfortunate conclusion of Jason’s situation is rare, the problems in which he encountered have become characteristic of graduate education (Golde & Gallagher, 1999). Individuals who pursue a doctoral degree are typically regarded as highly gifted, extremely successful, and tremendously dedicated (Gardner, 2009); yet, somehow, the same individuals yield the highest attrition rates in all of formalized education. As Golde (2000) noted, “Paradoxically, the most academically capable, most academically successful, most stringently evaluated, and most carefully selected students in the entire higher education system – doctoral students – are the least likely to complete their chosen academic goals” (p. 199). While problems such as attrition are troubling for a host of reasons, including wasted money, time, and resources, cases such as Jason Altom’s suggest that “the most important reason to be concerned about graduate student attrition is that it can ruin individuals’ lives” (Lovitts, 2001, p. 6).

Along with student attrition, additional criticisms have been waged against

doctoral education programs in the United States. Most notably, many doctoral students who are persistent until graduation appear to leave their respective programs without the necessary skills and training needed to sustain a life in academia (Lovitts, 2008). By the time of degree completion, students “should have acquired the knowledge and skills expected of a scholar who has made an original contribution to the field and has attained the necessary expertise to continue to do so” (Council of Graduate Schools, 1990, p. 1). Unfortunately, Golde and Dore (2001) discovered that nearly 35% of doctoral candidates believe that their graduate coursework failed to prepare them with such skills and feel unable to conduct independent research within their field. Moreover, students who are fortunate enough to acquire these skills often become overspecialized as a result of their doctoral education, which can create difficulties for working with future colleagues, becoming socialized into departments and universities, conducting interdisciplinary research, and possibly earning tenure and promotion (Golde & Gallagher, 1999). These issues, along with elevated stress levels and generally poor psychological well-being, can make the pursuit of a doctoral degree and the subsequent career to follow a demanding and problematic journey (Hodgson & Simoni, 1995).

One way that scholars and practitioners have attempted to address the quality of doctoral education and issues of student attrition is by studying the interpersonal relationship that students have with their advisor (e.g., Adrian-Taylor, Noels, & Tischler, 2007; Bargar & Mayo-Chamberlain, 1983; Barnes & Austin, 2009; Hockey, 1996; Lunsford, 2012). Student-advisor relationships are an important component of nearly all doctoral programs as most students are dependent on their advisor for critical resources including opportunities to co-author scholarly papers, assistance and approval conducting

dissertation research, and even financial support (Wade-Benzoni, Rousseau, & Li, 2006). It is unfortunate, then, but perhaps unsurprising, that a negative student-advisor relationship (i.e., one that is characterized by inefficiency or an inability to collaborate) serves as the biggest reason for doctoral student attrition (Golde, 2005). Consequently, millions of dollars are spent each year by agencies such as the National Science Foundation and the US Department of Education to help foster productive faculty-student relationships that deter students from leaving their program prematurely and help them to receive a quality education (Walker, Golde, Jones, Bueschel, & Hutchings, 2008).

Additional solutions to these issues may also be found in the college student development literature (Chickering & Reisser, 1993; Pascarella & Terenzini, 1991; Schuh, 1989). One consistent finding from this research is that higher education affords numerous opportunities for students to mature and develop (Renn & Reason, 2012). Students who take advantage of their developmental opportunities typically maximize their education, are more satisfied with their experiences, and are more likely to persist until graduation (Evans, Forney, Guido, Patton, & Renn, 2010); conversely, students who are unable or unwilling to mature from their educational experiences, tend to struggle in school and are more likely to drop out (Pascarella & Terenzini, 2005). Although these findings are primarily drawn from undergraduate students, similar conclusions are likely true for students in graduate programs (Tessmer, 2012). The problem, however, is that “graduate students and their specific developmental issues and needs are noticeably absent in contemporary discussions of student development in higher education today” (Gardner, 2009, p. 4). The incorporation of this literature could result in substantial benefits for doctoral programs; most notably, the effective reduction of attrition rates, and

quite possibly, a better understanding of the doctoral student-advisor relationship.

The purpose of this dissertation is threefold. First, this dissertation will apply student development research to the doctoral education context by exploring how psychosocial development influences students' communication with their advisor. Second, this dissertation will examine the combined effects of student development and communication on student-advisor relational and communication satisfaction. Third, this dissertation will explore the extent to which students' perceptions of development and relational variables can be used to explain students' and advisors' perceptions of doctoral student attrition and other important graduate education outcomes. To accomplish these goals, the student development literature will be integrated as a theoretical framework.

Theoretical Framework: College Student Development

Over the last several decades, researchers from across disciplines (e.g., education, psychology, sociology) have collectively formulated theories of college student development in order to examine "the ways that a student grows, progresses, or increases his or her developmental capabilities as a result of enrollment in an institution of higher education" (Rodgers, 1990, p. 27). Knepfelkamp, Widick, and Parker (1978) are credited with outlining the original purpose of this research; they noted, "From its inception, the college student personnel field adopted a developmental orientation emphasizing the importance of responding to the whole person, attending to individual differences, and working with the student at his or her developmental level" (p. viii). This focus toward understanding students as unique individuals remains instrumental for many researchers who study the effects of higher education and/or the interrelated processes of learning, growth, and maturation during college (King & Baxter Magolda, 1996; Renn & Reason,

2012). In a summary of this research, Pascarella and Terenzini (2005) synthesized dozens of student development theories and over fifty years of empirical research in order to address a straightforward, yet remarkably complex question: How does college affect students? One conclusion from this extensive review is that college affects students by altering, confirming, and reinforcing their personal identities, which in turn influences how they view themselves within the world (Pascarella & Terenzini, 2005). In other words, college “act(s) as a filter for dictating how an individual will perceive, organize and evaluate events in the environment and, though less directly, how he/she will behave in response to those events” (Widick, 1977, p. 35). This holistic growth and maturation is most commonly referred to as psychosocial development (Renn & Reason, 2012).

Psychosocial development theories view student maturation as a sequence of developmental tasks or stages that change not only how individuals think, but also how they feel, behave, value, and relate to themselves and others (Pascarella & Terenzini, 1991). Psychosocial development is a process that occurs as individuals interact and mature with others in their surrounding environment to create and confirm their personal identity (Miller & Winston, 1990). Erikson (1964) referred to identity development as “the ability to experience one’s self as something that has continuity and sameness and to act accordingly” (p. 42). The process of psychosocial development is typically experienced over a long period of time (i.e., several years) and is generally cumulative in nature (Lien, 2002). In comparison to other theoretical perspectives of student development (e.g., cognitive, moral), psychosocial development theories encapsulate a more holistic and comprehensive understanding of the changes that students undergo as a result of their educational experiences (Chickering & Reisser, 1993).

According to Pascarella and Terenzini (2005), the foundation of psychosocial development research is rooted in the work of Erik Erikson (1959, 1963) and his original identity development theory. Erikson (1959) asserted that individuals experience multiple “crises” throughout their life which serve as critical turning points in the formation of their identity. Erikson (1963) argued that the creation and solidification of an internally congruent identity was the dominant psychosocial crisis that individuals encounter in their lifespan. Although this crisis may be experienced on multiple occasions, Erikson noted that most individuals face it during young adulthood, or around the time of attending college. This idea prompted Erikson’s colleague, Arthur Chickering (1969), to study the ways that college students develop their identity and mature psychosocially.

Chickering’s Seven Vectors of Identity Development

Chickering (1969) proposed seven explicit “vectors” of psychosocial development which he believed were critical for the effective formation of college students’ self-identity. He specifically focused on college because students during this time explore different aspects of themselves (e.g., interests, autonomy, career decisions) while deciding the type of person they will eventually become (Chickering, 1981). Chickering preferred the term “vectors” over “stages” because he argued that no definitively specified timeline existed for students to develop certain areas of their character and personality (Thomas & Chickering, 1984). Unlike stage theories that are often used to describe students’ cognitive development (e.g., Perry, 1970, 1981), Chickering (1969) suggested that movement along the vectors may vary in quantity and quality; thus, progression does not necessarily occur in a linear stage-like fashion (Lien, 2002). Instead, students’ development across the seven vectors may appear sporadic as they can work on

more than one area of their identity at any given time (Schuh, 1989). As Chickering and Reisser (1993) noted, college “students are notorious for not proceeding through the institution according to schedule, they rarely fit into oversimplified paths or pigeonholes” (p. 34). That being said, the sequence in which the vectors are typically presented suggest that some tasks are likely to be experienced in the earlier stages of higher education and are better served as building blocks for students’ identity development (Reisser, 1995).

Chickering’s original vectors were based on undergraduate students who attended Goddard College, a small institution located in rural Vermont, where Chickering also worked as a psychology professor and coordinator of evaluation from 1959 to 1965 (Jones & Abes, 2013). It was during this time that Chickering conducted achievement assessments, in-depth interviews, focus groups, personality inventories, and diary studies that would eventually be published in his seminal text *Education and Identity* (1969). Like the majority of college students in the early 1960’s, Chickering’s participants were primarily a homogenous group of middle- to upper-class Caucasian males who ranged in age from 18 to 25 (Pascarella & Terenzini, 1991). The initial purpose of Chickering’s research was to evaluate the impact of Goddard’s experimental curriculum on student performance (Thomas & Chickering, 1984); however, his results and subsequent theory ended up being far more comprehensive and meaningful. As Pascarella and Terenzini (2005) noted, Chickering’s findings introduced the notion of psychosocial development to teachers, administrators, researchers and practitioners for arguably the very first time.

Since the formation of Chickering’s (1969) theory, research on students’ psychosocial development has become highly regarded for its applicability in student affairs, a notion made easier by the specific terms and observable student behaviors

associated with each vector (Pascarella & Terenzini, 1991; Schuh, 1989). However, as colleges and universities became increasingly more diverse in the late 20th century, many researchers began to question whether Chickering's vectors, and the original sample of college students from which the theory was based (Lien, 2002), could accurately describe the psychosocial development of students from diverse backgrounds (see Chickering, 1981, for review of these demographic changes and related criticisms against homogenous college student research). Thus, Chickering and Reisser (1993) revised the theory to make the original vectors more applicable to college students of all ages, ethnicities, and races as they "tried to use language that is gender free and appropriate for persons of diverse backgrounds" (p. 44). Chickering and Reisser's seven revised vectors included: (a) achieving competence, (b) managing emotions, (c) moving through autonomy toward interdependence, (d) developing mature interpersonal relationships, (e) establishing identity, (f) developing purpose, and (g) developing integrity. Taken together, progression on these seven vectors represents "the discovery and refinement of one's unique way of being – also toward communion with other individuals and groups including the larger national and global society" (Chickering & Reisser, 1993, p. 35).

Vector one: Achieving competence. Competence stems from the confidence and ability to achieve one's goals while overcoming any challenges or obstacles that may present themselves (Chickering & Reisser, 1993). Three specific types of competence are important in Chickering and Reisser's first vector: (a) intellectual competence, (b) physical and manual competence, and (c) interpersonal competence. *Intellectual competence* refers to the skills that are needed to acquire knowledge and use one's mind (Thomas & Chickering, 1984). It can include understanding content, developing and

articulating intellectual sophistication, and building a basic set of skills needed to comprehend, analyze, and synthesize information (Chickering & Reisser, 1993). *Physical and manual competence* refers to performance related skills that include “athletic and artistic achievement, designing and making tangible products, and gaining strength, fitness, and self-discipline” (Chickering & Reisser, 1993, p. 46). *Interpersonal competence* is communicative in nature as it refers to the skills needed to listen, cooperate, and respond to others appropriately, while also achieving personal and/or group goals in an effective manner (Thomas & Chickering, 1984). Chickering (1969) suggested that as college students develop their sense of intellectual, physical, and interpersonal competence they learn to trust their own abilities and become capable of integrating skills they learn during college into a new self-assured identity. Additionally, maturation along this first vector is demonstrated by the ability to identify and articulate future developmental changes (Chickering & Reisser, 1993), thus making the development of competence a cornerstone of students’ psychosocial development.

Vector two: Managing emotions. As part of the college experience, students are forced to manage a host of negative emotions including anger, sadness, fear, hurt, boredom, tension, anxiety, guilt, and shame (Chickering, 1981). Chickering and Reisser (1993) argued that in order to develop a healthy and resilient identity in college, students must effectively navigate these emotions by learning “appropriate channels for releasing irritations before they explode, dealing with fears before they immobilize, and healing emotional wounds before they infect other relationships” (p. 46). Development of this second vector is thought to occur when students acquire the ability to control their emotional impulses while also developing appropriate responses to handle intense

feelings (Pascarella & Terenzini, 2005). In other words, progression along the second vector includes increasing awareness and acceptance of one's own emotional states, particularly negative emotions which can serve as vital sources of information and self-reflection (Reisser, 1995). Of course, emotional experiences can likewise be positive; thus, true movement and development along this vector also includes an increased capacity to experience and understand constructive feelings such as relief, caring, sympathy, optimism, and wonder (Chickering & Reisser, 1993).

Vector three: Moving through autonomy toward interdependence. College affords students with multiple opportunities to demonstrate responsibility and self-reliance (Taub, 1997); thus, a “key developmental step for students is learning to function with relative self-sufficiency, to take responsibility for pursuing self-chosen goals, and to be less bound by others’ opinions” (Chickering & Reisser, 1993, p. 47). Originally labeled as “developing autonomy” (Chickering, 1969), the redefinition of this third vector maintains an emphasis on developing self-sufficiency, while simultaneously stressing the importance of interdependence (i.e., becoming mutually reliant and responsible in relationships with peers, friends, and family members), which is instrumental for the process of identity development (Thomas & Chickering, 1984). In this vector, Chickering describes both instrumental and emotional independence as part of students’ maturation and growth. *Instrumental independence* refers to the freedom and confidence needed to be mobile and self-sufficient so that one can solve problems in an autonomous manner (Pahl, 2011). *Emotional independence* refers to the freedom that one experiences from no longer requiring continuous reassurance and approval from others (Reisser, 1995). In the educational context, instrumental and emotional independence equally contribute to

academic autonomy (Taub, 1997). *Academic autonomy* refers to a student's "capacity to deal with ambiguity and to monitor and control behavior in ways that allow [one] to... fulfill responsibilities" related to both personal and educational goals (Winston & Miller, 1987, p. 10). Overall, development along the third vector is characterized by the acknowledgement and achievement of a healthy balance between the need to be independent and autonomous with the need to belong and fit in with others (Chickering & Reisser, 1993). As Pascarella and Terenzini (2005) noted, growth along this vector is most often identified by "interpersonal relations that rest on equality and reciprocity and that occur in a broader theater involving community and society" (p. 22).

Vector four: Developing mature interpersonal relationships. Students discover a collection of new friends and acquaintances from various backgrounds while they are in college and many of these individuals have a profound impact on students' lives (Chickering & Reisser, 1993). As Reisser (1995) noted, the relationships that students cultivate during college "provide powerful learning experiences about feelings, communication, sexuality, self-esteem, values, and others aspects of identity" (p. 508). Originally conceived as Chickering's (1969) fifth vector, the revised placement and conceptualization of this fourth vector recognizes students' interactions with peers as communicative influences and learning opportunities that help shape an emerging sense of identity (Pascarella & Terenzini, 2005). Based on Erikson's (1963) contention that healthy and reciprocal relationships are instrumental in the psychosocial development process, Chickering posited that mature interpersonal relationships are characterized by two components: (a) tolerance and appreciation of differences and (b) capacity for intimacy (Chickering, 1969). Progression along this fourth vector is represented by

individuals participating willingly in relationships that embody friendliness, warmth, and respectfulness. In other words, maturing relationships reflect an increased level of openness toward different people, backgrounds, and ideas (Pascarella & Terenzini, 2005), which “at its heart [gives individuals] the ability to respond to people in their own right” (Chickering & Reisser, 1993, p. 48). Development in this vector also includes an increased capacity for relational commitment as it requires mutual trust and interdependence with others (Reisser, 1995).

Vector five: Establishing identity. The combination of classes, organizations, relationships with peers and instructors, and reflective moments and revelations that students experience during college culminate in a discovery and/or confirmation of personal identity (Chickering, 1969). Josselson (1987) defined an identity as “a dynamic fitting together of parts of the personality with the realities of the social world so that a person has a sense both of internal coherence and meaningful relatedness to the real world” (pp. 12-13). Chickering and Reisser’s fifth vector is the focal point of psychosocial development and is shaped by students’ progression in previous vectors and influences their future development in vectors yet to come (Pascarella & Terenzini, 2005). Based on growing experiences and awareness, development in this vector is characterized by students accruing what Josselson (1987) called “an amalgamation of anchor points” (p. 178), which help to define students as individuals (Reisser, 1995). These points represent students’ acceptance of their own identity and related characteristics including biological sex (i.e., male or female), gender (i.e., masculine, feminine, androgynous), sexual orientation (e.g., gay, straight, bisexual), race, and ethnicity (Thomas & Chickering, 1984). Moreover, identity development includes

accepting additional characteristics such as physical appearance and body shape, sexuality and lifestyle decisions, and religious beliefs/affiliations (Jones & Abes, 2013). In other words, students who have progressed in the fifth vector are able to articulate “who they are” and “who they are not” as they solidify their sense of self and gain appreciation of their strengths, weaknesses, and upbringings (Reisser, 1995). As Chickering and Reisser (1993) illustrated, when individuals successfully establish their identity, “A solid sense of self emerges, and it becomes more apparent that there is an *I* who coordinates the facets of personality, who ‘owns’ the house of self and is comfortable in all of its rooms” (p. 49).

Vector six: Developing purpose. Development along the first five vectors generates multiple answers to the question, “Who am I?” (Chickering & Reisser, 1993); but, as students near the end of their educational experiences, they are forced to consider an even more complex question, “Who am I going to be?” Chickering’s sixth vector is characterized by increased intentionality and the formation of priorities which help to dictate future goals and behavior (Chickering & Braskamp, 2009). After establishing their identity as individuals, students develop an encompassing purpose for their existence, which in turn allows them to unify many different goals within the scope of one larger resolution (Longwell-Grice, 2003). Pascarella and Terenzini (2005) noted, “Growth [in the sixth vector] requires increasing intentionality – developing plans that integrate priorities in vocational goals and aspirations, interpersonal interests, and family...to help guide decision making” (p. 22). In essence, maturation on this vector is recognized by both inward and outward characteristics. Inwardly, the development of purpose provides a sense of calling and significance to one’s life, which gives meaning to

individuals and their recently formed identity (Chickering & Braskamp, 2009). Outwardly, a valid purpose has many observable consequences; most notably, it motivates behavior and provides individuals with an internal drive needed to sustain activities that are related to personal, interpersonal, family, and career interests (Chickering & Reisser, 1993). In other words, progression along this vector occurs on multiple levels, but is primarily evident through students' enhanced focus and clearly directed decision-making (Reisser, 1995).

Vector seven: Developing integrity. Before formally concluding higher education, many students will develop a personally valid and internally consistent set of beliefs that dictate, in part, their future decision making (Lien, 2002). The revision of this seventh and final vector builds on the cognitive and moral development research of Kohlberg (1972) and Perry (1970, 1981) as it focuses on how students develop and solidify their enduring values and sense of social responsibility to their peers and community (Chickering & Reisser, 1993). When students enter college, they bring with them an array of beliefs that influence their perceptions of right and wrong, good and bad, true and false (Chickering, 1969); the majority of these beliefs are personally unfounded and are often rooted in the opinions of others (e.g., parents, friends, media). However, as students develop along Chickering's final vector and move toward greater integrity, they begin to define their own values and align their behaviors around their newly established identity (Reisser, 1995). Advancing toward integrity is also characterized by individuals' movement toward greater responsibility, which is evident by students' ability to carefully apply ethical principles to morally difficult situations and decisions (Chickering & Reisser, 1993). As Chickering (1969) noted, not all students will develop along each

vector, particularly the seventh vector, but those who do tend to become better citizens, decision-makers, and leaders in their homes, workplaces, and communities.

Chickering (1969) also identified seven strategies (six in his original work) that universities and administrators could incorporate at an institutional level to encourage student development along each of the seven vectors (Chickering & Reisser, 1993). Specifically, Chickering suggested that college and universities should (a) develop clear institutional objectives with consistent policies and practices in place to achieve them; (b) restrict their institutional size to encourage opportunities for participation and collaboration; (c) promote frequent student-faculty relationships among all students in various settings; (d) orient curricula to encourage student integration in both content and processes; (e) adopt flexible teaching methods that vary instructional styles to foster an active student learning environment; (f) cultivate meaningful student communities that offer students significant interpersonal exchanges with their peers; and (g) incorporate student development programs and personnel to work collaboratively with faculty.

Moreover, Chickering and Gamson (1987) suggested that instructors could help foster individual growth along the seven vectors by utilizing effective teaching practices inside the classroom. Specifically, they suggested that instructors should encourage frequent contact between themselves and students, develop reciprocity and cooperation among students themselves, and communicate high expectations to students in order to encourage development across the vectors (Chickering & Gamson, 1987). Thus, unlike processes such as cognitive development in which students are primarily responsible for their own intellectual progression (i.e., with the exception of the occasional nudge by an instructor; Kloss, 1994), psychosocial development is heavily influenced by outside

sources including instructors, advisors, classmates, counselors, administrators, friends, and family who interact with students and the college learning environment (e.g., in the classroom, on campus, in residential halls) to play an active role in the identity development process (Chickering, 1974; Chickering & Reisser, 1993).

It would be negligent to review Chickering's theory and the applications associated with the vectors without also acknowledging the greatest criticism of the framework and of identity development theories in general. As Torres, Howard-Hamilton, and Cooper (2011) noted, "the belief that students' sense of identity is developed during the college years is widely accepted; what has not received as much attention is the influence of race, ethnicity, other social categories, or the interrelationship of multiple identities on that development during the college years" (p. 14). For decades, sociocultural issues such as race were largely overlooked within the student development literature as many researchers and practitioners focused on the overwhelming proportion of college students at the time: middle-class Caucasians. As Pope (1998) explained, "the evolution of student development theories of the 1960's and 1970's essentially ignored the development of students of color" (p. 273). This time period, also referred to as the era of "racelessness in student development theory" (Patton, McEwen, Rendon, & Howard-Hamilton, 2007, p. 41), slowly came to an end during the 1980's as researchers and practitioners began to refine their approaches to address the dramatically changing demographics of the college student body (Pope, 1998). This shift toward greater inclusion was heavily influential in the revision of Chickering and Reisser's (1993) vectors, yet, criticisms still remain that the theory and its treatment of social identity largely overlooks the importance of race, sex, gender, ethnicity, and socio-economic

status as the unintentional consequence of preserving the original foundations of the framework which were derived from Caucasian students (Torres, Jones, & Renn, 2009).

Although Chickering and Reisser state that “reflecting on one’s family of origin and ethnic heritage” (p. 49) is part of the identity development process and references are made to Atkinson, Morten, and Sue’s (1983) minority identity model and Cross’s (1991) Black racial identity model, Patton et al. (2007) argued that “Chickering and Reisser do not directly discuss race and racism and how they may influence identity development. Furthermore, they offer no discussion of how race and racism may intersect with the seven vectors, even though racial identity theory, research on racial identities, and research about...racism were available when their revised model was published” (p. 41). Other critics of the theory have argued that the vectors may not accurately or sufficiently explain the development of women (e.g., Greeley & Tinsley, 1988; Taub, 1997; Taub & McEwen, 1992), students of color (e.g., Barker, 2010; Jordan-Cox, 1987; McEwen, Roper, Bryant, & Langa, 1990; Pope, 1998), or LGBTQ students (e.g., Fassinger, 1998) because of Chickering’s original sample. Kodama, McEwen, Liang, and Lee (2001) observed that these criticisms can be summarized into two concerns: (a) the foundations of the model have remained largely intact despite their origins from a homogenous group of White middle-class male students, and (b) the vectors fail to take into account the “nature and effects of an oppressive society” (p. 415). Although Chickering and Reisser attempted to address these concerns in 1993 by using data and research from a broader sample, questions still remain as to the applicability of the theory to non-White or minority students (Patton et al., 2007; Pope, 1998; Torres et al., 2011).

Despite these criticisms, Chickering has maintained his belief that colleges and

universities have a moral and ethical responsibility to offer a conducive, cooperative, and creative learning environment in order to foster developmental opportunities for students of all races, ethnicities, and backgrounds. Specifically, he argued that the primary function of higher education is to promote student development and “provide opportunities for close and sustained relationships between students and faculty members, engage students actively in planning and carrying out their own education, and involve a solid mix of experiential learning” (Thomas & Chickering, 1984, p. 392). From students’ first year in college until their formal graduation, the process of identity development is ongoing and susceptible to a host of institutional and interpersonal influences ranging from university groups and organizations to one-on-one interactions with staff and faculty members (Chickering & Reisser, 1993). Chickering’s early work (1969, 1974) emphasized the importance of targeting students’ initial years in college, as these years were considered particularly influential in the identity development process (Lien, 2002). However, since the revision of the seven vectors (Chickering & Reisser, 1993), developmental researchers have begun to acknowledge that psychosocial growth occurs throughout all stages of higher education and greater scholarly attention is needed to understand how development occurs beyond the undergraduate degree (e.g., Gardner, 2009; Gardner & Mendoza, 2010; Tessmer, 2012). One area that is severely understudied is graduate student psychosocial development, specifically in doctoral education.

Research on doctoral students’ psychosocial development is needed for three reasons. First, undergraduate and graduate students are separated by a host of personal, social, and educational differences that make generalizing findings from one context to the other problematic (Austin, 2002); thus, despite the overwhelming amount of research

conducted on undergraduates, it is difficult to speculate how doctoral students develop along each of Chickering's vectors and how this growth is perceived in graduate school (Gardner, 2009). For example, undergraduate and graduate students are burdened with different social, financial, and academic responsibilities; they relate differently to their peers, family members and coworkers; and they experience different types of stress and emotional problems (Hodgson & Simoni, 1995). Moreover, unlike undergraduates, doctoral students are often elevated to a colleague status as they assume research or teaching assistant roles, which alters how they are perceived by faculty members (Austin, 2002). Second, the lack of research on doctoral student development inhibits institutions from providing empirically supported programs and policies that are needed to address the unique problems associated with the graduate student population (Gardner & Mendoza, 2010). As previously noted, high attrition rates continue to be an issue for graduate programs across the country (Lovitts & Nelson, 2000); the application of student development research has previously been found to increase undergraduate student retention (Schuh, 1989), and it is likely that such research would also benefit graduate programs in a similar fashion. Third, the nature of doctoral education promotes multiple opportunities for advanced psychosocial development that may otherwise be unobservable in other educational contexts (Tessmer, 2012). As Gardner and Mendoza (2010) noted, "In doctoral education, in particular, students are not just learning how to think differently but they are also learning to see themselves differently" (p. 211). These changes in perception likely influence current psychosocial vectors of development (e.g., establishing identity, developing integrity, establishing purpose) and may even extend Chickering and Reisser's theory into undiscovered areas of growth and maturation.

Three possible reasons exist to explain the current lack of doctoral student development research (Tessmer, 2012). First, despite decades of contrary evidence (e.g., Erikson, 1959, 1963), many researchers adhere to the assumption that development culminates with the completion of an undergraduate degree, leaving students fully developed by the time they enter graduate school, and especially a doctoral program (Walker et al., 2008). This assumption is incorrect (Gardner, 2009); many doctoral students are not psychosocially mature when they begin their graduate program and initial evidence suggest that students experience significant growth along Chickering's vectors as a result of completing their graduate degree (Tessmer, 2012). Second, by elevating doctoral students to the status of a colleague, researchers ignore the processes (e.g., development) that are associated with being a graduate student (Katz & Hartnett, 1976). Put differently, scholars have overlooked the personal maturation of doctoral students because they are frequently regarded as agents of change for undergraduate student development (i.e., through their responsibilities as a teaching/research assistant); thus, the actual growth that occurs within a graduate program becomes overshadowed by the role that doctoral students play in the classroom (Austin, 2002). Third, a lack of uniformity stemming from the interdisciplinary nature of doctoral education scholarship and a data gathering process that is significantly more time-consuming than traditional undergraduate research often coincide to discourage researchers from investigating an extensive topic such as students' psychosocial development (Gardner, 2007; Golde & Walker, 2006; Nettles & Millett, 2006).

At the time of this writing, only one investigation has applied Chickering's vectors to explore doctoral students' psychosocial development in graduate school.

Tessmer (2012) conducted a qualitative study in which she examined the critical narratives and accounts that recently graduated doctoral students could recall from their educational experiences. Specifically, Tessmer explored instances in which four doctoral students from the field of education felt challenged and supported in their graduate programs in order to determine *if* and *how* psychosocial development occurred during these critical moments. In short, her findings revealed that psychosocial development is an important aspect of earning a doctoral degree and is likely present throughout the entire graduate education process. The small group of doctoral students specifically reported experiencing growth in the vectors of autonomy, managing emotions, and developing mature interpersonal relationships (Tessmer, 2012). Although Tessmer acknowledged that her research remains preliminary and underdeveloped, she concluded that “the unique nature and structure of the doctoral degree provides students with opportunities for increased psychosocial development that may not have been encountered during previous academic experiences” (p. 276). Therefore, in order to explore doctoral students’ psychosocial development and the resulting effects of such maturation with greater precision, a brief understanding of the unique contextual factors found in doctoral education is needed.

Doctoral Education Research

The Carnegie Initiative on the Doctorate described doctoral education as “a complex process of formation,” that includes “not only the development of intellectual expertise but [also] the growth of the personality, character, habits of heart and mind, and the role that the given discipline is capable of and meant to play in academe and society at large” (Walker et al., 2008, p. 8). The first doctoral degree was awarded in the United

States in 1861 at Yale University (Noble, 1994; Rudolph, 1962). Since this time, doctoral education has grown exponentially in the United States as the country has become the global leader with over 400 universities that award doctorate degrees (Zhao, Golde, & McCormick, 2007). With nearly 48,000 degrees awarded annually (National Science Foundation, 2010), the United States produces more doctorate degrees than any other country in the world (Walker et al., 2008). Doctoral students represent nearly 18 percent of the graduate student population in the U.S., which is equivalent to nearly 500,000 currently enrolled doctoral students (Walker et al., 2008). These students spend an average of seven years enrolled in their respective programs, with certain variations occurring by disciplines and types of degrees (Hoffer et al., 2006).

Doctoral students pursue one of three degree types: professional doctorate, research doctorate, or professional research doctorate (Gardner, 2009). *Professional doctorate* degrees are granted in fields such as pharmacology, dentistry, psychology and medicine. Training and education for these degrees often include clinical experiences and/or internships and residencies, but do not typically require a research dissertation (Nettles & Millett, 2006). A *research doctorate* is an academic degree that is generally awarded in a specific discipline or area of expertise such as chemistry, history, or communication studies. The most commonly awarded research doctorate is the doctorate of philosophy (Ph.D.) which is earned when candidates create original knowledge and defend their ideas in a dissertation (Golde & Walker, 2006). The *professional research doctorate* also tends to include a research component, but most often it is designed primarily for application in a professional field (e.g., physical therapy, social work, public administration), rather than a research field. The most frequently earned

professional research degrees include the doctorate of education (Ed.D.) and the executive degree (Tessmer, 2012).

Although certain differences exist amongst these various degree types, a doctorate degree remains the most prestigious indicator of intellect and accomplishment in formalized education (Lovitts & Nelson, 2000). As Noble (1994) observed, “A doctorate provides a measure... of an individual’s intellectual weight and academic experience. This measurement, and the resultant reciprocity it allows, is possible because almost all doctoral degrees have a similar acquisition process” (p. 3). Thus, despite the fact that many graduate students have varying experiences that are based upon their discipline and institution, the majority of doctoral students share several commonalities in regards to how they acquire their degree (Hoffer et al., 2006). For instance, doctoral students in the arts, sciences, and humanities spend approximately one to three years engaged in relevant coursework, up to a year taking comprehensive examinations, and their remaining time (i.e., one to three years) working on their dissertation research (Zhao et al., 2007). It is during the latter portion of these experiences that most doctoral students begin to work closely with a single faculty member, who typically assumes the role of an official advisor (Gardner, 2009). This individualized collaboration between students and advisors represents the pinnacle of graduate education and is rooted in the underlying notion of an apprenticeship model, in which the student is largely dependent upon their advisor for information, skill development, and guidance (Zhao et al., 2007). The majority of doctoral students recognize the importance of this relationship toward their future success; many describe it as the single most important aspect of their educational experiences (Heiss, 1970; Schlosser, Knox, Moskowitz, & Hill, 2003).

Doctoral Student-Advisor Relationship: Student Behaviors and Related Outcomes

The student-advisor relationship is critical to the doctoral education process (Golde, 2005; Lovitts, 2005; Zhao et al., 2007). A successful relationship with an advisor can help students become socialized into their respective department and discipline (Myers, 1995; Weiss, 1981), which in turn, helps students to complete their degree in a timely fashion and allows them to become an active contributor in their academic field (Lovitts, 2001). Conversely, an unsuccessful student-advisor relationship is a primary cause of doctoral student attrition (Golde, 2005) and has been shown to negatively predict the completion and quality of the dissertation (Golde, 2000; McAlpine & Norton, 2006). Put differently, the quality of the student-advisor relationship not only affects students' short-term success in graduate school, but it can also have a long-term influence that extends over an entire academic career (Lunsford, 2012).

The relationship that doctoral students have with their advisor is most often studied from one of two perspectives (Mansson & Myers, 2012). On one hand, scholars (e.g., Mansson & Myers, 2013; Tenenbaum, Crosby, & Gliner, 2001; Wrench & Punyanunt, 2004) have argued that the student-advisor relationship embodies the qualities of a *mentoring relationship*, or a "communication relationship in which a senior person supports, tutors, guides, and facilitates a junior person's career development" (Kogler Hill, Bahniuk, & Dobos, 1989, p. 15). On the other hand, researchers (e.g., Barker, 2010; Waldeck, Orrego, Plax, & Kearney, 1997; Zhao et al. 2007) have also suggested that a distinction can be made between the functions of a mentor and that of an advisor, whose primary responsibility is to provide degree-specific advice such as course information and graduation requirements. Thus, as Mansson and Myers (2012) noted,

“The presence of these two competing conceptualizations of the advisor-advisee relationship [suggest] it is possible that some graduate advisors are not mentors” (p. 310). That being said, Waldeck et al. (1997) discovered that the most commonly reported mentor for graduate students was indeed their academic advisor; and more recently, Lunsford (2012) found that over 60% of doctoral students considered their advisor to be a mentor. Thus, research on mentoring relationships may be a useful framework for understanding the complexities of the doctoral student-advisor relationship.

According to Kram (1985), mentoring relationships serve two functions: first, mentors serve a vocational purpose as they encourage their protégé’s professional development by sharing career-relevant information; and second, mentors serve a psychosocial purpose as they promote their protégé’s personal growth by offering guidance and emotional support (Chao, 1998). Vocational or career mentoring includes behaviors such as coaching, advice giving, and sponsorship, whereas psychosocial mentoring focuses on behaviors such as counseling, role modeling, and providing friendship (Lunsford, 2012). In the educational context, advisors fulfill similar responsibilities for their doctoral students. Like mentors, advisors contribute to students’ academic and psychosocial development by helping them to learn their respective content area and understand the professional codes associated with their discipline (Erdem & Omuris, 2014). Moreover, many advisors assume a mentor-like role in the socialization process of doctoral students as they help to integrate their less experienced protégés into the academy (Erdem & Ozen, 2003; Myers, 1995). As Bair, Haworth, and Sandfort (2004) noted, advisors are “the key advocates for doctoral students because they act on behalf of their institutions, departments, and programs and often have responsibility for

the development of the whole student” (p. 710).

Bair and colleagues (2004) conducted interviews with 148 individuals that included graduate faculty members, administrators, graduate alumni, and current doctoral students in order to understand how advisors influence doctoral students’ personal and career development. Their findings revealed that faculty members are perceived as fulfilling four general responsibilities that directly and indirectly contribute to doctoral students’ development: (a) *scholarly activity and research productivity* (i.e., sharing expertise and knowledge in ways that help students understand the benefit of scholarship), (b) *advising and mentoring* (i.e., promoting students’ professional development while encouraging their timely progression through their doctoral program), (c) *student selection and retention* (i.e., choosing to work only with students who share similar research and professional interests in order to help see students through to graduation), and (d) *defining and shaping the culture of the program* (i.e., perpetuating a culture that motivates students to succeed and that offers multiple opportunities for personal and professional growth). These findings demonstrate that advisors serve both vocational and psychosocial roles; however, Waldeck et al. (1997) found that graduate students primarily derive psychosocial outcomes (e.g., social support), more than vocational outcomes (e.g., skill development) from their advisor relationship.

Regardless, the student-advisor relationship generates a host benefits for doctoral students (Golde, 2005). At the same time, the relationship can be time-demanding and costly for an advisor (Knox, Schlosser, Pruitt, & Hill, 2006). Due to these one-sided benefits and the hierarchical differences found within the relationship, the responsibility of initiating and preserving the relationship falls almost exclusively on the students

(Hawkins, 1991). Specifically, many doctoral students are expected to engage in certain behaviors in order to maintain the desired status of the relationship (Mansson, 2011).

Relational Maintenance

For decades, communication scholars (e.g., Ayres, 1983; Canary & Stafford, 1994; Stafford, Dainton, & Haas, 2000) have explored the various ways in which individuals preserve their interpersonal relationships through what has become known as relational maintenance. According to Dindia and Canary (1993), *relational maintenance* can be defined in four ways: (a) behaviors used to keep a relationship in existence (i.e., avoiding relational termination), (b) behaviors used to keep a relationship in a specified condition (i.e., preserving the nature of the relationship itself), (c) behaviors used to keep a relationship in a satisfactory state (i.e., maintaining a positive relationship), and (d) behaviors used to keep a relationship in repair (i.e., negotiating through relational turbulence). In essence, then, relational maintenance behaviors are the communicative messages used to achieve these goals and the related processes of “defining an interpersonal relationship, establishing its parameters, managing its tensions, and dealing with threats to its integrity and endurance” (Burlinson, Metts, & Kirch, 2000, p. 245).

The behaviors that individuals use to maintain their interpersonal relationships can be strategic or routine (Duck, 1988). *Strategic relational maintenance* refers to “conscious and intentional behavior enacted by partners to maintain a relationship” (Dindia, 2003, p. 16). *Routine relational maintenance* refers to behavior that is “not used intentionally for maintenance purposes (i.e., not performed with the express goal of maintaining the relationship, but, rather, for some other purpose)” and that “takes place at a lower level of consciousness” (Dainton & Aylor, 2002, p. 53). Strategic behaviors are

enacted with a mindful intent of improving or preserving a relationship, whereas routine behaviors often serve mundane day-to-day purposes, but still manage to foster relational maintenance “in the manner of a by-product” (Stafford et al., 2000, p. 307). It should be noted, however, that in the maintenance literature, strategic and routine behaviors are not necessarily viewed as mutually exclusive. Dindia (2000) noted that three possible relationships exist between strategic and routine relational maintenance. First, certain behaviors may be used strategically and routinely by the same individual depending on the occasion; second, certain behaviors may be primarily enacted strategically by some individuals, and routinely by others; and third, certain behaviors may be used strategically at the beginning of relationships, but are routinized over time.

Previous researchers have developed numerous typologies to identify the wide range of strategic and routine maintenance behaviors that individuals incorporate into their interpersonal relationships (e.g., Ayres, 1983; Canary, Stafford, Hause, & Wallace, 1993; Dindia & Baxter, 1987). For instance, Stafford and Canary (1991) identified five behaviors that individuals use to preserve their romantic relationships: positivity, openness, assurances, networks, and tasks. *Positivity* refers to communicating in a cheerful and optimistic manner. *Openness* involves discussing the nature of the relationship in a direct and overt fashion. *Assurances* refer to demonstrating faithfulness, expressing commitment, and showing a willingness to remain in the relationship. *Networks* involve spending time with common friends and familial groups. *Tasks* refer to sharing everyday responsibilities such as household chores. Although these five behaviors (i.e., positivity, openness, assurances, networks, tasks) were originally discovered in the romantic context, they are also used in family relationships (e.g.,

Serewicz, Dickson, Morrison, & Poole, 2007) and long-distance friendships (e.g., Johnson, 2001). Additional behaviors such as social support (i.e., providing comfort, instrumental advice, and emotional care) and spending time together (i.e., mutually participating in shared activities) have also been shown to maintain relationships such as cross-sex and same-sex friendships (Dainton, Zelle & Langan, 2003; Guerrero & Chavez, 2005; Messman, Canary & Hause, 2000). Moreover, in regard to maintaining platonic friendships, Canary et al. (1993) found that humor, social networks, and letters/cards/phone calls were all important behaviors.

Individuals also use negative behaviors to maintain their interpersonal relationships (Dainton & Gross, 2008). For example, *avoidance* (i.e., evading certain people or conversational topics), *indirectness* (i.e., communicating in a roundabout manner), and *spying* (i.e., seeking information about a partner) have previously been identified as antisocial forms of relational maintenance (Dainton & Stafford, 1993; Dindia & Baxter, 1987; Messman et al., 2000). Burleson and Samter (1994) also observed that conflict, and the way in which individuals' manage it within their romantic and platonic relationships, serves as a vital maintenance behavior in both romantic and platonic relationships. Although negative relational maintenance behaviors are used less frequently than prosocial behaviors, Goodboy, Myers, and Members of Investigating Communication (2010) noted, "The use of negative relational maintenance behaviors may be one way in which relational partners are able to keep a relationship in existence...albeit through questionable interpersonal behavior (p. 67). Thus, individuals have a host of prosocial and antisocial maintenance behaviors to choose from across their various interpersonal relationships; however, the behaviors that individuals actually select

and use are largely dependent upon the type of relationship being maintained and the context through which it occurs (Dainton, 2003).

One context in which relational maintenance strategies are inherently complex is the organizational setting (Ayres, 1983). Similar to the context of graduate education programs, Waldron (2003) summarized the unique constraints that influence individuals' relational maintenance behaviors in the workplace. Specifically, he noted, "At work, relational maintenance efforts must take into account differences in power, the blending of work and personal relationships, task and role requirements, potential career implications, and third-party perceptions" (p. 163). For these reasons, the supervisor-subordinate relationship has been a particular subject of interest for relational maintenance and organizational scholarship (Ayres, 1983; Tepper, 1995; Waldron, 1991).

Three conclusions can be drawn from previous research on relational maintenance in supervisor-subordinate relationships (Waldron, 2003). The first conclusion is that organizational subordinates assume the primary role of maintaining the relationship they have with their supervisor. For instance, Waldron and Hunt (1992) noted that due to their position within the organizational hierarchy, subordinates are expected to initiate, cultivate, and maintain an effective working relationship with their supervisor, even if the supervisor is unable or unwilling to reciprocate such efforts. The second conclusion is that subordinates use a host of maintenance behaviors based on their own personal characteristics (e.g., self-efficacy) and the relationship status they have with their supervisor (Lee & Jablin, 1995). For example, using a leader-member exchange perspective, Waldron (1991) found that subordinates in high quality supervisor relationships were more likely to use upward maintenance behaviors (e.g., accepting

criticisms, following organizational rules, offering personal compliments) that preserved relational stability and increased the capacity for relational growth than subordinates who were in low quality supervisor relationships. The third conclusion is that subordinates' maintenance behaviors are associated positively with various organizational and relational outcomes, including supervisor-subordinate relational satisfaction (Waldron, 2003). As Lee (1998) summarized, relationship qualities such as satisfaction "affect the kinds of feedback (i.e., communication strategies) subordinates employ when attempting to maintain the steady state of their work relationships with their superiors (pp. 184-185).

Similar to the supervisor-subordinate relationship, the doctoral student-advisor relationship has unique characteristics that affect how individuals utilize relational maintenance behaviors. Most notably, the student-advisor dynamic is also characterized by an obvious power difference that is uncommon in most interpersonal relationships (Mason, 2002). This power difference implies that students, more so than advisors, assume responsibility for maintaining the relationship (Foss & Foss, 2008). Kalbfleisch (2002) suggested that this assumed responsibility is because protégés (i.e., students) have significantly more to lose than mentors (i.e., advisors) have to gain from the relationship. Having also noted this, Mansson (2011) explored the relational maintenance behaviors that doctoral advisees use to preserve their relationship with their academic advisor. His findings revealed that advisees engage in six types of relational maintenance behaviors: (a) *appreciation* (i.e., expressions of gratitude about the relationships), (b) *tasks* (i.e., efforts to complete requests and responsibilities in a timely manner), (c) *protection* (i.e., attempts to maintain a positive image of the advisor), (d) *courtesy* (i.e., efforts to be polite and respectful), (e) *humor* (i.e., expressions of laughter or humor with the advisor),

and (f) *goals* (i.e., attempts to consult the advisor about future career plans). Mansson also discovered that advisees' use of maintenance behaviors was correlated positively with their perceptions and their advisor's perceptions of mentoring support. However, advisees' relational maintenance behaviors were not related to students' biological sex or the duration of the student-advisor relationship (Mansson & Myers, 2012).

In a similar study, Cavendish (2007) used the Mentoring Relational Process Model to examine relational maintenance behaviors and perceptions of career and psychosocial support in the doctoral student-advisor relationship. Her findings revealed that students' use of relational maintenance behaviors positively predicted the amount of support that was given from advisors. Specifically, Cavendish found that doctoral students' assurances (i.e., affirming their advisors and expressing their continued willingness to work with them) and advice-seeking behaviors (i.e., eliciting counsel and seeking suggestions from their advisors) were related to an increase in advisors' psychosocial support. Moreover, students' maintenance behaviors and perceptions of advisor support predicted important outcomes such as research self-efficacy and relational satisfaction. These findings, in conjunction with Mansson and Myers (2012), suggest that students' maintenance behaviors are a critical component of a successful student-advisor relationship. However, not all student-advisor relationships are positive, and even the successful ones experience negative moments in the relationship (Adrian-Taylor et al., 2007). Similarly, while the majority of relational maintenance behaviors are considered to have a positive valence (Dainton, 2003), the extent to which individuals manage their conflict with others is considered a unique maintenance strategy that is found in most functional relationships (Stafford et al., 2000).

Conflict

Conflict is a prevalent phenomenon in the student-advisor relationship (Adrian-Taylor et al. 2007; Holligan, 2005; Knox et al., 2006). Although numerous conceptualizations exist (see Roloff & Soule, 2002, for review), Putnam and Poole (1987) defined conflict as “the interaction of interdependent people who perceive opposition of goals, aims, and values, and who see the other party as potentially interfering with the realization of these goals” (p. 552). There are multiple reasons why doctoral students and advisors engage in conflict. One reason is because the relationship itself serves multiple functions in which the advisor assumes the responsibility of a mentor, while simultaneously taking on the responsibility of an evaluator, whose primary purpose is to critically assess the student’s work in order to ensure its quality (Mainhard, van der Rijst, van Tartwijk, & Wubbels, 2009). White and Nonnamaker (2011) identified additional roles of an advisor that included manager, teacher, supervisor, and friend, which they argued were inevitably incompatible at times. As Hockey (1996) observed, “the significance of the relationship stems from its duality; the co-existence of intimacy, care and personal commitment on the one hand, and commitment to specific academic goals on the other” (p. 363). This duality creates a noticeable tension that is caused by competing demands, which in turn, fosters conflict between the student and advisor as both individuals negotiate the unique dynamics associated with the relationship (Holligan, 2005).

Student-advisor conflict is also attributable to the substantial power difference that is found in the relationship as well as personality concerns that are exuberated by the graduate education environment (Knox et al., 2006). As previously noted, graduate

students are characterized as being powerless in the academic system, specifically when it comes to negotiating relationships with faculty members (Mason, 2002). Although this power differential is rooted in the transmission of knowledge and resources from mentor to protégé, it does create certain complications in the relationship that are manifested in conflict negotiation. As social psychologists have noted, “High-power individuals are less outcome dependent on others... and, therefore, less motivated to attend to the actions and attitudes of others than are less powerful individuals, who must carefully attend to others to negotiate relations within a more precarious social environment” (Keltner & Robinson, 1997, p. 1067). Thus, the power difference between students and advisors is often a source of interpersonal conflict as well as a factor that influences how it is managed.

Similarly, the nature of the student-advisor relationship fosters opportunities for personality differences to become problematic and conflictual (Mainhard et al., 2009). For instance, Mason (2002) noted that relationships in graduate education foster opportunities for incivilities, or instances in which advisors and students are disrespectful or rude toward each other, which naturally increases the opportunity for conflict. When exposed to stressful stimuli (e.g., preparing for comprehensive examinations), a graduate student may demonstrate uncivil behaviors toward their advisor that include not respecting their advisor’s time, not maintaining personal responsibilities, and potentially even violence toward or around the advisor (c.f., Hall, 1998). Advisors themselves may also promote conflict by engaging in incivilities such as demonstrating arrogance, abusing their power, engaging in controlling behavior, or violating academic publication traditions (Mason, 2002). Additional factors such as an absence of feedback, perceived lack of time or resources, and excessive control on the faculty member’s behalf can also

serve as potential sources of conflict in the student-advisor relationship (Chiste, 1997).

Conflict is especially high between students and advisors during the dissertation process (Brause, 2012). Green and Kluever (1997) noted that student-advisor conflict serves as a primary barrier to finishing the dissertation and completing the doctoral degree; relatedly, Tinto (1993) noted that “persistence at this stage [i.e., through the dissertation] may be highly idiosyncratic in that it may hinge largely if not entirely upon the behavior of a specific faculty member” (p. 237). Specifically, advisors are expected to assist students in selecting a manageable and worthwhile topic, establishing a realistic time line for completion, and completing their expected responsibilities in the reasonable amount of time that was allotted (Katz, 1997). Conflict, however, arises when advisors and students disagree about the formation, construction, implementation, and/or interpretation of these behaviors, evaluation standards, or the specific direction of the dissertation (Brause, 2012). If left unmanaged, this conflict may leave students feeling “lost, surrounded in ambiguity, and directionless” (Gardner, 2009, p. 100)

It should be noted, however, that “the presence of conflict itself does not distinguish between good and difficult advising relationships; rather, the negotiation of conflict or power between advisors and advisees appear to be a more salient differentiating feature between these types of relationships” (Knox et al., 2006, p. 15). In other words, the mere existence of conflict does not discriminate unsuccessful and successful relationships in graduate school; instead, the manner in which conflict is dealt with appears to determine the quality of the student-advisor partnership (Adrian-Taylor et al., 2007). Interpersonal communication scholars have an extensive history of examining the various ways that individuals approach and manage conflict in their relationships

(e.g., Canary & Spitzberg, 1987; Lakey & Canary, 2002; Sillars, 1980). One conclusion from this rather elaborate body of research is that communication plays a central role in the conflict management process (Putnam, 2006).

Conflicts are formed, structured, and enacted through communication (Cupach, Canary, & Spitzberg, 2010). The most commonly studied communicative behaviors in conflict research are tactics, which are the specific actions that individuals use to approach and manage conflict in their interpersonal relationships (Canary & Spitzberg, 1989). Although a broad range of conflict tactics are thought to exist, numerous attempts have been made to synthesize this research and examine how individual tactics group together to form coherent game plans, or strategies for managing conflict (e.g., Canary & Cupach, 1988; Putnam & Wilson, 1982; Sillars, Coletti, Parry, & Rogers, 1982). *Conflict strategies*, then, refer to groups of specific tactics which function together to represent an individual's general orientation and approach toward conflict (Cupach et al., 2010). Three strategies have historically been used to embody the majority of tactics that individuals employ during conflict: integrative, distributive, and avoidance (Sillars, 1980).

Integrative strategies are comprised of cooperative conflict tactics that promote shared relational objectives by working with relational partners, rather than against them (Lakey & Canary, 2002). In other words, individuals who adopt integrative strategies take an active approach to resolving conflict, and do so by seeking creative and mutually acceptable solutions that are beneficial to both parties (Sillars, 1980). Specific tactics that are included within integrative strategies include active listening, social support, and seeking and disclosing honest information (Cupach et al., 2010). In most situations, researchers have concluded that integrative strategies are the most appropriate and

effective approaches to conflict as they are related positively to relational outcomes such as communication satisfaction (Canary & Spitzberg, 1987; Spitzberg, Canary, & Cupach, 1994).

Distributive strategies include competitive conflict tactics that focus on personal, rather than relational, goals and are rooted in the belief “that one can gain or win only at the expense of another person” (Cupach et al., 2010, p. 51). Individuals who use distributive strategies are often perceived as contemptuous and uncaring as they tend to use adverse, and often hurtful, messages to emphasize a high concern for self and a low concern for others (Bevan, 2013). Specific tactics that are associated with distributive strategies include personal criticisms, put-downs, hostility, ridicule, threats, and coercion (Sillars et al., 1982). It is unsurprising, then, that distributive conflict strategies are most often perceived as inappropriate and ineffective (Canary & Spitzberg, 1990).

Avoidance strategies are comprised of tactics that individuals use to avoid discussion of conflict, primarily to evade or minimize negative reactions from a relational partner (Sillars, 1980). Individuals who use avoidance strategies discard the presence of conflict altogether by using behaviors that shift the focus of an interaction away from a conflict inducing topic (Sillars et al., 1982). Unlike integrative and distributive strategies, avoidance strategies are not inherently positive or negative, nor can they necessarily be classified as cooperative or competitive; instead, the perceptions of avoidant approaches are largely dependent on the manner and context in which they are performed (Cupach et al., 2010). Specific conflict tactics that are associated with avoidance strategies include denying that a conflict exists, intentionally changing the subject, and withholding complaints or reservations about a potentially conflictual topic (Sillars, 1980).

Together, the use of integrative, distributive, and avoidance strategies has been associated with numerous proximal (i.e., short-term) and distal (i.e., long-term) consequences in interpersonal relationships (e.g., Canary & Spitzberg, 1990; Lakey & Canary, 2002; Spitzberg et al., 1994). Cupach et al. (2010) identified numerous proximal outcomes of conflict that included attributions, emotions, perceived competence, communication satisfaction, face threat, and physical health; additionally, the authors identified multiple distal outcomes that included relational satisfaction, relational stability, and relational termination. After reviewing the extensive body of research on these various consequences, two conclusions can be made about the outcomes associated with conflict strategies. The first conclusion is that conflict strategies and many of the aforementioned consequences are reciprocal in nature; in other words, the conflict strategies that individuals use with a relational partner influence their own proximal and distal outcomes, as well as their partner's proximal and distal outcomes, which in turn influences future use of integrative, distributive, and avoidance strategies (Lakey & Canary, 2002). As Bevan (2013) noted, the unique nature of these outcomes "places a premium on examining dyadic perceptions of goals and conflict messages" (p. 774).

The second conclusion is that integrative conflict strategies are consistently related to positive consequences, whereas distributive and avoidance strategies are typically related to negative consequences (Cupach et al., 2010). For example, integrative strategies are associated positively with perceived communication competence (Canary & Spitzberg, 1987), communication satisfaction (Canary & Cupach, 1988), and perceived conflict resolvability (Bevan, 2013). Conversely, distributive and to a lesser extent avoidance strategies are associated negatively with internal conflict attributions (Sillars,

1980), relational satisfaction (Canary & Spitzberg, 1989), and health outcomes such as blood pressure and heart rate (Kiecolt-Glaser et al., 1993). These effects are typically stable across contexts (see Putnam, 2006); thus, it is likely that similar findings exist within various types of relationships including the doctoral student-advisor relationship.

To date, researchers have not yet examined the extent to which doctoral students specifically use integrative, distributive, or avoidance strategies to handle conflict with their advisor. Nonetheless, similar to other interpersonal relationships, evidence has emerged to suggest that integrative strategies are the most effective approach for dealing with conflict in the student-advisor relationship (Adrian-Taylor et al., 2007). Schlosser et al. (2003) found that advisees were more likely to be satisfied when they openly and honestly addressed conflict with their advisor. Moreover, Knox and colleagues (2006) found similar findings from advisors' perspectives, prompting them to conclude that "openly addressing conflict... appears to be an important variable for both advisees and advisors, and avoidance of such conflict may be associated with poorer advising relationships" (p. 19). Thus, along with relational maintenance behaviors that are used to preserve the student-advisor relationship, the conflict strategies that students use appear to be important predictors of both relational and personal outcomes.

Relational and Communication Satisfaction

One of the most frequently studied relational outcome variables across social contexts is satisfaction (Stafford, 2003). Two types of satisfaction are important in the student-advisor dyad: relational satisfaction and communication satisfaction. *Relational satisfaction* refers to the extent to which individuals are pleased or displeased with their interpersonal relationships (Vangelisti, 2002). *Communication satisfaction* refers to the

extent to which individuals accomplish their communication goals and expectations through conversations and other interpersonal interactions (Hecht, 1978). For decades, scholars have shown that communication behaviors, relational satisfaction, and communication satisfaction are related strongly with each other (e.g., Cupach, 1982; Guerrero, 1994; Meeks, Hendrick, & Hendrick, 1998; Stafford et al., 2000). Notably, researchers have found that relational satisfaction is predicted by both conflict strategies (e.g., Stafford & Canary, 1991) and relational maintenance behaviors (e.g., Dainton, 2003). More specifically, integrative conflict strategies, along with the maintenance behaviors of positivity and openness tend to generate positive perceptions of relationships and the communication that occurs within them (Canary & Cupach, 1988; Dainton, Stafford, & Canary, 1994). In addition to conflict strategies and maintenance behaviors, individuals' perceptions of relational and communication satisfaction also appear to be influenced by their partners' attitudes, values, and beliefs (e.g., Burleson, Kunkel, & Birch, 1994).

Research on relational satisfaction has primarily been conducted on heterosexual romantic relationships (e.g., Burleson & Denton, 1997; Kelley & Burgoon, 1991; Meeks et al., 1998). As Vangelisti (2002) noted, "the underlying assumption [of this research] has been that if partners are happy, their relationship is likely to remain intact, and if they are unhappy, their relationship may come apart" (p. 667). In essence, then, satisfaction not only serves as the primary outcome variable of interpersonal communication research (Knapp, Daly, Albada, & Miller, 2002), it has also become an important predictor variable of additional outcomes such as relational dissolution and divorce (Bradbury, Fincham, & Beach, 2000). Similarly, relational satisfaction serves as a strong indicator of

relationship length and perceived success (Anderson & Emmers-Sommer, 2006).

Whether as an independent or criterion variable, Guerrero (1994) noted that relational satisfaction can be examined as both an individual and dyadic construct.

Research on communication satisfaction originated when scholars began exploring the outcomes of specific interactions between relational partners (e.g., Cupach, 1982; Hecht, 1978; Hecht & Sereno, 1985). Specifically, communication satisfaction has primarily been examined as a criterion variable that is positively affected by communication competence, conversational effectiveness, and conversational appropriateness (Spitzberg, 1991). Studied throughout a variety of social and professional contexts (c.f., Goodboy, Martin, & Bolkan, 2009, Lamude, Daniels, & Graham, 1988; Ley, 1988), communication satisfaction been labeled as the primary indicator of effective communication and is essential for healthy interpersonal relationships (Spitzberg & Hecht, 1984). In fact, communication satisfaction and relational satisfaction are strongly interrelated constructs, as “relational satisfaction is essentially the outcome of experiences of satisfaction with communication in a relationship” (Hecht & Sereno, 1985, p. 141).

It is unsurprising, then, that communication and relational satisfaction are commonly studied variables in the student-advisor relationship (e.g., Mansson, 2011; Waldeck et al., 1997; Zhao et al., 2007). Waldeck et al. (1997) found that perceived mentoring was related positively to graduate students’ relational satisfaction. Cavendish (2007) extended these findings as she discovered that receiving both career and psychosocial support uniquely predicted students’ satisfaction with their advisor. Mansson (2011) found that doctoral students also play an active role in determining the

perceived satisfaction of the student-advisor relationship through their own relational maintenance behaviors (i.e., by engaging in courtesy and appreciation). From their qualitative data, Knox et al. (2006) concluded that the ways in which students handle conflict (i.e., strategies) appear to influence advisors' communication and relational satisfaction. Two conclusions can be drawn from these findings and related research on student-advisor satisfaction. First, like other interpersonal relationships, these results demonstrate that both students and advisors actively contribute to the perceived satisfaction of each other through specific communication behaviors (Mansson, 2011). Second, and perhaps more importantly, doctoral student-advisor communication satisfaction and relational satisfaction extend beyond that of single outcome variables, as they are capable of influencing a variety of other constructs in the graduate education environment (Golde, 2005). As Cavendish (2007) noted, "satisfaction is an especially salient outcome of a successful mentoring process because it may influence both overall satisfaction with graduate school, as well as [student] attrition and persistence" (p. 27).

Student Attrition

Student attrition refers to the premature departure of students prior to acquiring their targeted degree (Pascarella & Terenzini, 1991). As noted in the introduction, attrition remains one of the most significant problems facing graduate education (Bowen & Rudenstine, 1992). Nearly 50% of students who enter traditional doctoral programs do not graduate with their degree (Gardner, 2009; Smallwood, 2004; Terrell, Snyder, & Dringus, 2009). Similarly, an additional concern has been the time it takes doctoral students to complete their degree requirements, with many students taking up to seven or eight years to finish (Noble, 1994). To understand these attrition-related issues,

educational researchers have often examined two specific variables: student persistence and perceived time to degree (Renn & Reason, 2012). *Student persistence* refers to the progressive reenrollment in higher education, whether continuous from one term to the next or interrupted and then resumed (Pascarella & Terenzini, 2005). *Perceived time to degree* refers to “the perception of a graduate student as to the progress that he or she is making toward a degree” (Cavendish, 2007, p. 47). Put differently, persistence includes students’ willingness to continue their education, whereas perceived time to degree includes students’ efficiency in school and their projected graduation status.

Researchers have uncovered numerous reasons why doctoral students do not complete their degree. Lovitts (2001) found that the majority of students who leave their doctoral program do so for reasons related to academic failure, social isolation, loss of interest and/or satisfaction, and interpersonal disputes with faculty and colleagues. Specifically, many students fail to overcome the significant milestones associated with earning a doctoral degree (Cavendish, 2007); these challenges include completing rigorous coursework, passing comprehensive exams, and defending original dissertation research (Gardner, 2009). Financial problems and relationship concerns outside of academia (e.g., family, friends, romantic others) have also been identified as reasons for doctoral student withdrawal (Golde, 2000; Lunsford, 2012; Lovitts & Nelson, 2000). Most importantly, though, many students’ decide to leave their doctoral program because of an unsatisfactory relationship with their advisor (Golde, 2005). As Bair and Haworth (2005) concluded from their meta-synthesis of doctoral student attrition research, “The single most frequently occurring finding...[is] that successful degree completion is

related to the degree and quality of contact between a doctoral student and her or his advisor(s)” (p. 495).

Regardless of the reason, attrition in graduate school is problematic for both students and universities. From a student perspective, attrition can have “immeasurable” effects on individuals as it is often internalized as a personal and career failure (Gardner, 2007, p. 724). Along with the decision to leave behind their work, colleagues, and friends, students who quit their doctoral program are also forced to abandon a deeply held professional image of themselves that was built over several years of previous academic success and progression (Vekkaila, Pyhältö, & Lonka, 2013). Doctoral students who leave without a degree also face severe employment constraints, as they are often perceived as overqualified for blue-collar jobs in the labor market, but underqualified for permanent positions in higher education (Lovitts & Nelson, 2000). Thus, the effects of departing a graduate program early can influence individuals for a considerable period of time (Golde, 2000).

From a university/department perspective, student attrition is extremely expensive (Gardner, 2009). For example, the University of Notre Dame found that it could save over a million dollars a year if their doctoral student attrition rates were to decline merely 10 percent (Smallwood, 2004). Relatedly, Berelson (1960) noted, “If graduate schools of the country would solve this problem of attrition...we could raise substantially the output of the graduate schools without increasing enrollment or additional expenditures for faculty and facilities” (p. 160). That being said, attrition is not the only problem facing doctoral programs as persistence alone is not fully indicative of success in graduate school (Gardner, 2009).

Doctoral Student Success Variables

A variety of criteria and indices exist to evaluate the effectiveness of doctoral programs and the graduates in which they produce (Barnett, Danowski, Feeley, & Stalker, 2010). According to the Council of Graduate Schools (1990), by the time of degree completion, successful students should be (a) prepared for a career in academia, (b) equipped with the self-efficacy to conduct research, and (c) capable of maintaining a productive line of scholarship in their respective content area. Put differently, the quality of graduate students' work and their success at the doctoral level is represented by students' academic preparedness and their research self-efficacy and productivity.

Academic Preparedness and Quality of Work

One of the primary responsibilities of doctoral programs is to prepare future faculty members and socialize them into a life of academia (Gaff, 2002). By the time of graduation, successful doctoral students are expected to demonstrate a set of core competencies and skills that reflect a level of academic preparedness. *Academic preparedness* generally refers to the extent to which doctoral students are ready to assume the multiple responsibilities expected of faculty members including teaching, research, and service (Golde, 2004). In the doctoral education literature, the concept of academic preparedness has also been discussed using terms such as future faculty preparation, professionalization, career preparation, and professional development (e.g., Antony, 2002; Austin, 2003; Austin & McDaniels, 2006; Jones, Davis, & Price, 2004). However, for the sake of clarity, this dissertation will rely on the term "academic preparedness" to refer to doctoral students' readiness to undertake an academic career.

Academic preparedness is an important construct for three reasons. First,

academic preparedness encapsulates a series of criteria for evaluating doctoral students' ability to join the society of academia and contribute to its ongoing search of original knowledge for the betterment of humanity (O'Meara & Jaeger, 2006). As Walker et al. (2008) noted, doctoral students who are prepared for a life in academia should be "capable of generating and critically evaluating new knowledge; of conserving the most important ideas and findings that are a legacy of past and current work; and of understanding how knowledge is transforming the world in which we live" (Walker et al., 2008, p. 12). Second, academic preparedness has historically been one of the most significant outcome variables for doctoral students and is critical for assessing the successfulness of graduate education programs (Golde, 2004). Many doctoral students are expected to be ready for an academic career by the time they acquire their degree (even if they pursue a profession outside of academia), or else failure is often presumed on the part of the student, the program, or both. Third, academic preparedness is also one way in which graduate faculty members, and more specifically advisors, are appraised and held accountable for their own professional responsibilities. As Austin (2002) explained, "one of the long-lasting contributions of most current faculty members lies in preparing highly capable, innovative new colleagues for the challenges they will face" (p. 118).

Doctoral students who are academically prepared are knowledgeable "about the nature of the academic career as well as the language, research, and teaching skills associated within a particular domain or discipline" (Baker & Pifer, 2011, p. 5). More specifically, Austin and McDaniels (2006) explained that being prepared for an academic career entails (a) developing an understanding of the higher education mission, (b) solidifying a professional identity as a researcher, teacher, and academic, and (c)

cultivating an appreciation for learning and scholarship in its many forms and facets. These characteristics are also reflective of the day-to-day responsibilities that new faculty members are expected to undertake such as teaching undergraduate students and conducting original research both independently and collaboratively with colleagues (Golde, 2004). Moreover, doctoral students and/or new faculty members who are academically prepared are equipped to handle other professional responsibilities such as serving on various committees, advising undergraduate students, developing curriculum, and engaging in public service and outreach (Austin, 2002).

From a slightly different perspective, Daresh and Playko (1995) suggested that doctoral students are prepared for a career in academia when they are able to answer three questions: (a) What do I do with the skills that I have developed?; (b) What is my professional image and how am I supposed to behave in my academic field?; and (c) What do I look like to other professionals as I perform my new responsibilities? These questions are based on the assumption that faculty members learn as much about themselves, as they do their about their academic field, during their doctoral student years of study (Austin & McDaniels, 2006). Put differently, many doctoral students are perceived to be academically prepared when their professional image merges with their personal image to form one coherent identity. As Antony (2002) noted, it is during their time in graduate school that many future faculty members “explore aspects of themselves and ideas about the[ir] career...that go beyond their own original conceptions” and although these new viewpoints may be uncomfortable at times, “it is clear that through a reconciliation of these newer ideas and, eventually, an adoption or integration of these ideas, that an individual becomes socialized into a field” (p. 366).

Of course, any discussion of doctoral students' academic preparation should acknowledge the importance of disciplinary differences (Kuh & Whitt, 1988). Each academic discipline cultivates and reinforces unique research questions and methodologies, relationships between teaching and research, and levels of collaboration between scholars. As Austin (2002) noted, "these disciplinary variations can make significant differences in the lives of faculty members" (p. 97). For instance, scholars in philosophy are more likely to conduct research alone, whereas scholars in biology and chemistry are more likely to have a team of colleagues, graduate students, and undergraduate students with whom they collaborate (Morse, Nielsen-Pincus, Force, & Wulfhorst, 2007). Moreover, doctoral students are socialized to publish in distinct outlets based on their academic discipline; notably, scholars in the humanities often prefer to write books and monographs, while natural, physical, and social scientists often favor peer-reviewed articles (Kuh & Whitt, 1988). Clearly, such differences play a significant role in terms of how doctoral students are socialized for their respective careers and the extent to which they are prepared for a life in academia.

Unfortunately, one recent trend that spans across disciplines is that many doctoral students are not prepared for the academic life that awaits them after graduation. Based on data from nearly 10,000 graduate students at 25 major research universities, Golde and Dore (2000) found that "what students are trained for is not what they want, nor does it prepare them for the jobs they take" (p. 6). More specifically, results from their data revealed that graduating students and future faculty members alike had interest in teaching, advising, service, and research; however, their training primarily focused on research and publishing. While the latter is certainly important in predicting the success

of many academic careers, such findings infer that other critical elements of being a faculty member (e.g., teaching) often go overlooked. As Austin (2002) observed, teaching preparation in graduate school is often limited to lecturing and developing basic pedagogy skills. Findings from Golde (1997) seemingly supports this contention as she discovered that 90% of doctoral students felt sufficiently prepared to conduct research, whereas only 63% felt sufficiently prepared to instruct undergraduate students.

One explanation for doctoral students' deficiency in skills is likely found throughout their educational experiences, as academic preparedness is predicated, in part, on the quality of work in which students produce while in graduate school. *Doctoral students' quality of work* generally refers to the overall value assigned to their scholarly efforts (Morrison, Rudd, Zumeta, & Nerad, 2011); specifically, this may include evaluations of coursework, scholarship, teaching, and other responsibilities completed while in graduate school. Of course, any discussion of "quality" and "value" inevitably evokes subjectivity as to what distinguishes *good* work from *bad* work. Often times doctoral students are evaluated (both formally and informally) through a comparison with their peers, thus fueling the competitive climate found within doctoral programs (Golde, 2005). Referent comparison methods of assessment are clearly problematic; however, viable alternatives are often lacking as faculty members, scholars, and practitioners continue to struggle with standardized evaluations of doctoral students' work and their career readiness. Austin (2002) explained that evaluating the quality of work and eventual careers of doctoral students has been historically difficult because "many PhDs will work outside of academia instead of becoming professors... and much of the structure of graduate programs serves to make the institutions work effectively [rather

than] to prepare graduate students for future professional roles” (p. 95). In other words, universal assessments of doctoral students’ work are generally nonexistent and are complicated further by the fact that not all doctoral students pursue comparable careers or engage in similar types of evaluations (e.g., comprehensive exams). That being said, one metric that is used to evaluate most doctoral students’ academic preparedness and their quality of work is the ability to conduct original research. As Cavendish (2007) noted, “learning to be a researcher is a key component to the socialization of doctoral students...and life as a scholar” (p. 29).

Research Self-Efficacy and Productivity

Although the process of becoming a “successful” researcher varies across disciplines, self-efficacy and confidence in one’s aptitudes appears to be a universal prerequisite for conducting academic scholarship (Forester, Kahn, & Hesson-McInnis, 2004). In general, Bandura (1982) referred to self-efficacy as an individual’s perception of his or her own ability to be effective in a certain domain or task. Similarly, *research self-efficacy* refers to the confidence needed to design, conduct, analyze, and interpret original scholarship (Hollingsworth & Fassinger, 2002). Cavendish (2007) noted that research self-efficacy encapsulates the confidence to apply “research related skills such as research design, practical research skills, quantitative and computer skills, writing skills, discipline and intrinsic motivation, analytic skills, ethics, and contribution and utilization of resources” (p. 29).

Doctoral students’ research self-efficacy is important for a variety of reasons. From a student perspective, cultivating the belief in one’s ability to conduct research represents significant progress in the transition from a consumer to a creator of knowledge (Austin, 2002). As Lovitts (2005) observed, being a “good course-taker” is

simply not enough at the doctoral level; instead, success at this level is depicted by acquiring the efficacy needed for “doing independent research and making an original contribution to the discipline” (p. 138). Moreover, multiple studies have found that research self-efficacy is critical, if not necessary, for completing a dissertation and acquiring a doctoral degree (Geisler, 1995; Faghihi, Rakow, & Ethington, 1999). Thus, research self-efficacy has both long-term and short-term implications for doctoral students. From a department/university perspective, promoting students’ efficacy is also extremely important. Particularly at research-intensive universities, an explicit goal of doctoral programs is to equip students with the necessary skills needed to conduct original research, produce new knowledge, and become active contributors in their respective disciplines (Cavendish, 2007). In other words, departments and universities seek to develop and encourage doctoral students’ research self-efficacy because it is a “significant construct relating to the preparation of future researchers and scholars” (Lambie & Vaccaro, 2011, p. 245).

Of course, the importance of doctoral students’ research self-efficacy is best understood in conjunction with their actual research productivity. *Research productivity* refers to the extent to which doctoral students successfully accomplish their scholarly goals such as publishing in peer-reviewed journals and presenting at professional conferences (Kahn & Scott, 1997). Unsurprisingly, research self-efficacy is correlated highly with productivity in graduate school (Szumanski, Ozegovic, Phillips, & Briggs-Phillips, 2007). Moreover, Hollingsworth and Fassinger (2002) discovered that self-efficacy mediates the relationship between graduate students’ training experiences and their successfulness in completing scholarly products (e.g., publications). Thus, similar to

Bandura's (1982) contention that self-efficacy directly and indirectly drives human performance, research on doctoral students continues to support the strong positive relationship that exist between research self-efficacy and research productivity.

Unfortunately, many doctoral students lack the self-efficacy needed to conduct research, and thus their productivity in graduate school is hindered (Coran-Hillix, Genshiemer, & Coran-Hillix, & Davidson, 1986). One reason for this deficiency is the relationship (or lack thereof) that doctoral students have with their advisor. Although some differences occur between academic disciplines (Lunsford, 2012), doctoral students who receive little to no mentoring (i.e., either career or psychosocial) from their advisor are significantly less likely to publish peer-reviewed articles or present at professional conferences than doctoral students who receive high quality mentoring experiences (Nettles & Millett, 2006). Schlosser and Gelso (2001) argued that this relationship exists because doctoral students experience greater research self-efficacy when they work closely with their advisor. Based on Bandura's (1989) social cognitive theory, Paglis et al. (2006) contended that advisors play a critical role in promoting students' self-efficacy through direct and indirect learning experiences, personal encouragement and individual mastery opportunities; specifically, they noted, "through vicariously observing advisers as they model research skills and overcome obstacles, students can gain confidence that they can perform these behaviors as well" (p. 460).

In a related study, Austin and McDaniels (2006) observed that doctoral students develop research self-efficacy and the skills associated with conducting scholarship in one of four ways: (a) modeling (i.e., observing and replicating advisors' or other faculty members' behaviors), (b) informal and formal conversations (i.e., discussing their work

with their advisor or faculty members), (c) professional seminars (i.e., taking classes or seeking out training opportunities), and (d) internships (e.g., becoming a research assistant). Clearly, each of these methods entail a working relationship with an advisor/mentor, indicating that the responsibility for developing self-efficacy in graduate school is shared by both students and faculty members (Austin, 2002). Put differently, one of the many responsibilities that faculty members assume when advising doctoral students is to develop their competency, efficacy, and ability to conduct original scholarship (Bair et al., 2004). Hollingsworth and Fassinger (2002) provided several suggestions for how advisors can promote doctoral students' research self-efficacy and their productivity; specifically, they noted that advisors should "offer interpersonal reinforcement for research activity, express enthusiasm for science and research, acknowledge the inevitability of flaws in research, [and] expose students to a variety of research methods" (p. 325).

Rationale and Statement of Problem

After reviewing the relevant literature, the purpose of this dissertation was to determine how psychosocial development influences doctoral students' relationship with their advisor and related outcomes in graduate school. Toward this purpose, three specific objectives were identified. The first objective was to examine how Chickering and Reisser's (1993) vectors of psychosocial development influence students' communication behaviors (i.e., relational maintenance behaviors and conflict strategies) with their advisor. For this dissertation, vectors four through seven (i.e., developing mature interpersonal relationships, establishing identity, developing purpose, and developing integrity) were chosen for inclusion, while vectors one through three were excluded from

the study. Although this decision limited the scope through which psychosocial development was explored, it was based on the assumption that the majority of doctoral students have already (a) demonstrated competence in a variety of capacities, (b) acquired the ability to manage their own emotions, and (c) established a certain degree of autonomy in their professional and personal lives prior to entering their respective programs (Tessmer, 2012). In other words, many doctoral students are assumed to have already navigated the first three vectors of psychosocial development prior to entering graduate school because the skills associated with these vectors are foundational toward success at the undergraduate level. Conversely, many students fail to achieve success in the latter vectors of development (i.e., four through seven) during their early educational experiences and thus may be more inclined to grow in these vectors as a doctoral student.

Tessmer (2012) noted that the rigorous expectations associated with doctoral programs create a unique context through which to examine psychosocial development and related student behaviors/outcomes. Reisser (1995) argued that maturity along each of the vectors is associated with the acquirement of certain skills, abilities, and/or behaviors that are otherwise unavailable prior to development. These behaviors are often observable and quantifiable to individuals who are experiencing the psychosocial growth (e.g., students), as well as others who interact with the individuals in a meaningful capacity (e.g., advisors; White & Hood, 1989). To date, however, researchers have not yet examined communicative behaviors associated with psychosocial development in the educational context, let alone in doctoral programs. Thus, two types of communication behaviors thought to be related to doctoral students' psychosocial development were selected for this dissertation: relational maintenance behaviors and conflict strategies.

Relational maintenance behaviors and conflict strategies were chosen for three reasons. First, the process involved in considering, selecting, and using both relational maintenance behaviors and conflict strategies requires a certain degree of communication competence (Lakey & Canary, 2002; Stafford et al., 2000), or the ability to communicate in an appropriate and effective fashion. This notion is similar to psychosocial maturation in that it requires individuals to actively monitor their own personal image, while simultaneously considering how their image is recognized and perceived by others through communication (Chickering & Reisser, 1993). Canary and Spitzberg (1989) noted that appropriate communication “avoids violation of relationally or situationally sanctioned rules” while effective communication “achieves valued objectives of the interactant” (p. 630). In other words, psychosocial development, relational maintenance behaviors, and conflict strategies theoretically coincide with each other as they all include a degree of competence and skill development that is primarily demonstrated through appropriate and effective interpersonal communication.

Second, relational maintenance behaviors and conflict strategies were chosen for this study because they are both critically important to the functionality and sustainability of interpersonal relationships (Canary, Cupach, & Serpe, 2001; Dindia, 2003; Sillars, 1980). Stafford (2011) noted that maintenance behaviors uphold the very nature of interpersonal relationships, and although certain differences exist across contexts, few concepts are as important for successful human interaction. Congruently, conflict has been labeled a natural and inevitable feature of the human condition (Canary & Spitzberg, 1990); thus, the way in which individuals manage conflict within their relationships can substantially influence their overall satisfaction in life (Putnam, 2006).

Therefore, like other interpersonal relationships, the presence and quality of both relational maintenance behaviors and conflict strategies are critical in determining the success, longevity, and effectiveness of the doctoral student-advisor relationship (Barnes, Williams, & Archer, 2010).

Third, relational maintenance behaviors and conflict strategies were chosen for this study because they are both salient communication behaviors that affect students and advisors (e.g., Knox et al., 2006; Mansson, 2011; Schlosser et al., 2003). In her review of mentoring-related research, Chao (1998) urged scholars to “move beyond collecting data from only one mentoring partner and to examine the relationship from both sides” (p. 337). The incorporation of maintenance behaviors and conflict strategies allows for both students’ and advisors’ relational outcomes (e.g., satisfaction) to be examined, which in turn, generates a more holistic understanding of the relationship between students’ psychosocial development and their communication behaviors. Moreover, Gelso (2006) argued that advisors’ perceptions of students both directly (e.g., by openly validating previous accomplishments) and indirectly (e.g., by encouraging future collaboration opportunities) influence how students perceive themselves (Emke-Francis, 2010). Accordingly, both perspectives are important and will be examined throughout many of this study’s hypotheses. The first three hypotheses will examine the relationships between psychosocial development, relational maintenance behaviors, and conflict strategies.

The first hypothesis will determine if doctoral students’ psychosocial development (i.e., developing mature interpersonal relationships, establishing identity, developing purpose, developing integrity) relates positively to the use of relational maintenance behaviors with an advisor. Recall that Mansson’s (2011) findings suggested

that graduate students use six specific relational maintenance strategies (i.e., appreciation, tasks, protection, courtesy, humor, and goals), each of which requires various degrees of competence and communication skills. These skills are likely derived, in part, from students' psychosocial development and their growth along Chickering and Reisser's (1993) vectors. For instance, students who have developed the ability to cultivate mature interpersonal relationships (i.e., vector four) are able to sustain their connections with others by offering trust, open and honest communication, and unconditional positive regard (Thomas & Chickering, 1984). Moreover, individuals who successfully mature into a stable personal identity (i.e., vector five) experience greater self-assurance which allots them the ability to maximize their personal strengths (e.g., humor, empathy, listening) around various social contexts (Chickering, 1969). In short, then, students who are psychosocially developed should have a greater repertoire of interpersonal skills and the self-confidence needed to use them for purposes such as maintaining their interpersonal relationships with others. Therefore, the following hypothesis is offered:

- H1: Doctoral students' perceived psychosocial development will positively relate to their own reports of relational maintenance behaviors (i.e., appreciation, tasks, protection, courtesy, humor, goals) with their advisor.

The second and third hypotheses will examine if doctoral students' psychosocial development relate to students' use of integrative, distributive, and avoidance conflict strategies. As noted above, scholars have adopted a competence-based approach toward studying interpersonal conflict (e.g., Spitzberg et al., 1994). One conclusion from this research is that skills, knowledge, and motivation toward conflict are all influenced by distal contexts, or factors that are "removed from any specific conflict interaction... [such

as] background characteristics ” (Cupach et al., 2010, p. 33).

A distal factor that likely contributes to doctoral students handling of conflict is their own psychosocial development. For example, the establishment and solidification of one’s personal identity (i.e., vector five) is associated with effective conflict management skills and satisfactory resolutions (Hicks, 2001). Moreover, individuals who have a strong sense of integrity (i.e., vector seven) tend to have greater persistence and resolve in the presence of difficult situations, such as moments of interpersonal conflict (Tessmer, 2012). Related research has found that within dyads such as workplace relationships, individuals who use strategies to control (e.g., distributive) or circumvent conflict (e.g., avoidance) are perceived as incompetent and ineffective (Gross, Guerrero & Alberts, 2004). Conversely, individuals who address conflict using an open, honest, and fair approach are perceived more positively and mature (Knox et al, 2006; Schlosser et al., 2006). It is likely that due to their increased interpersonal skills and psychosocial maturity, doctoral students who are further developed on Chickering and Reisser’s (1993) vectors will seek out mutually beneficial and collaborative solutions to conflict, whereas students who are less psychosocially developed will employ self-centered resolutions or avoid conflict altogether. Therefore, the following hypotheses are offered:

- H2: Doctoral students’ perceived psychosocial development will positively relate to their own use of integrative conflict strategies with their advisor.
- H3: Doctoral students’ perceived psychosocial development will negatively relate to their own use of distributive and avoidance conflict strategies with their advisor.

The second objective of this dissertation is to determine the extent to which

doctoral students' psychosocial development and their communication behaviors (i.e., relational maintenance, conflict strategies) influence satisfaction in the student-advisor relationship. Specifically, the fourth and fifth hypotheses will examine the relationship between doctoral students' psychosocial development and students' and advisors' (a) relational and (b) communication satisfaction. From the student perspective, successful progression through the vectors is associated with an increased ability to develop satisfying relationships with others (Chickering & Reisser, 1993). In part, this relationship is attributable to social growth that is evident through numerous psychosocial vectors including cultivating mature interpersonal relationships (i.e., vector four), developing a solidified personal identity (i.e., vector five), and embodying a clearly defined purpose for one's behaviors (i.e., vector six; Chickering, 1969). From an advisor perspective, students who are psychosocially developed are often more productive and tend to perform better in school (e.g., Gardner, 2009; Hood, 1984; Tessmer, 2012). Such students would theoretically require less day-to-day attention and would more likely be perceived as an ideal protégé because of their ability to collaborate in the relationship, rather than being overly dependent on the advisor (Knox et al., 2006). Additionally, mature doctoral students recognize that success in graduate school is heavily influenced by advisors' support; thus, these students tend to be more appreciative, which increases the likelihood that both students and advisor will be satisfied with the relationship and the communication that occurs within it (Lunsford, 2012). In short, individuals who are psychosocially developed experience a host of satisfying outcomes in their interpersonal relationships (Chickering, 1969), and similar effects are expected between doctoral students and advisors. Therefore, the following hypotheses are offered:

H4: Doctoral students' perceived psychosocial development will positively relate to (a) students' and (b) advisors' relational satisfaction.

H5: Doctoral students' perceived psychosocial development will positively relate to (a) students' and (b) advisors' communication satisfaction.

The sixth and seventh hypotheses will examine the relationship between doctoral students' relational maintenance behaviors and students' and advisors' relational and communication satisfaction. Previous communication research has shown that relational maintenance behaviors promote trust (Myers & Weber, 2004), increase liking (Stafford & Canary, 1991), and reduce uncertainty among relational partners (Dainton & Aylor, 2001). It is unsurprising, then, that relational maintenance behaviors are also associated with increased satisfaction in relationships (Stafford et al., 2000). Although these findings are taken from contexts outside of education (e.g., interpersonal, family), initial evidence offered by Cavendish (2007) and Mansson (2011) suggest that such findings translate into the student-advisor relationship; however, additional support is needed to confirm the relationship between doctoral students' maintenance behaviors and student-advisor relational and communication satisfaction. Thus, the following hypotheses are offered:

H6: Doctoral students' relational maintenance behaviors will positively relate to (a) students' and (b) advisors' relational satisfaction.

H7: Doctoral students' relational maintenance behaviors will positively relate to (a) students' and (b) advisors' communication satisfaction.

The eighth, ninth, tenth and eleventh hypotheses will examine the relationships between doctoral students' integrative, distributive, and avoidance conflict strategies and students' and advisors' relational and communication satisfaction. As noted earlier, it is

not the presence of conflict itself that distinguishes effective and ineffective doctoral student-advisor relationships; but rather, the way in which such conflict is handled within the relationship, particularly by the student, ultimately determines important outcomes such as relational satisfaction (Adrian-Taylor et al., 2007). As Cupach et al. (2010) noted, “Perhaps the most robust generalization in the conflict literature is that frequent negativity in conflicts destroys relationships” (p. 130). This negativity is typically in reference to distributive, and to a lesser extent, avoidant conflict strategies (Sillars, 1980). Conversely, integrative strategies are consistently associated with positive relational consequences, including satisfaction (Canary & Spitzberg, 1989). Such trends are also likely found in student-advisor relationships; thus, the following hypotheses are offered:

- H8: Doctoral students’ integrative conflict strategies will positively relate to (a) students’ and (b) advisors’ relational satisfaction.
- H9: Doctoral students’ integrative conflict strategies will positively relate to (a) students’ and (b) advisors’ communication satisfaction.
- H10: Doctoral students’ distributive and avoidance conflict strategies will negatively relate to (a) students’ and (b) advisors’ relational satisfaction.
- H11: Doctoral students’ distributive and avoidance conflict strategies will negatively relate to (a) students’ and (b) advisors’ communication satisfaction.

Although the above hypotheses posit that relational satisfaction will be predicted positively by students’ psychosocial development, relational maintenance behaviors, and integrative conflict strategies, and predicted negatively by distributive and avoidance strategies, it is likely that a more coherent interpretation of these relationships exists.

Specifically, the twelfth hypothesis will examine if doctoral students' communication behaviors (i.e., relational maintenance, conflict strategies) mediate the relationship between psychosocial development (Chickering & Reisser, 1993) and student-advisor satisfaction (i.e., relational and communication). Developmental researchers (e.g., Martin, 2000; Reisser, 1995; Thomas & Chickering, 1984) have argued that behaviors and skills associated with Chickering and Reisser's psychosocial vectors are critically important because they are the observable manifestations of maturity and help to predict related psychosocial outcomes such as self-esteem, confidence, and cognitive functioning. Relatedly, a separate body of research has shown that maintenance behaviors and conflict strategies are consistent predictors of individuals' relational and communication satisfaction (e.g., Canary & Spitzberg, 1990; Dainton, 2003; Spitzberg et al., 1994). Although it is possible that satisfaction plays a reciprocal role in predicting future interpersonal behaviors, Poole, McPhee, Canary and Morr (2002) noted that satisfaction is most frequently, and most appropriately, used as an outcome variable to represent the predominate relational consequence of individuals' communication behaviors. Taken together, then, these distinct bodies of research suggest two conclusions. First, psychosocial development influences individuals' interpersonal skills, including the ability to maintain relationships and negotiate conflict (Chickering & Reisser, 1993); and second, relational maintenance behaviors and conflict strategies are critically important in predicting satisfaction in relationships (Fincham & Beach, 2006). Based upon this evidence, it would appear that the effects of psychosocial development on relational satisfaction are likely transmitted through a process that is mediated by the communication that occurs between doctoral students and advisors. Therefore, the

following hypothesis is offered:

H12: Doctoral students' communication behaviors (i.e., relational maintenance, conflict strategies) will mediate the relationship between students' psychosocial development and their (a) relational satisfaction and (b) communication satisfaction.

The third and final objective of this dissertation is to address the prevalent issue of student attrition and student success in doctoral school. Terrell et al. (2009) noted that due to the severe consequences of doctoral student attrition, "it is imperative that researchers...identify student characteristics predictive of attrition...[as] these factors will lead to a better understanding of student attrition and serve as the impetus for the development of tools and processes that will positively affect doctoral student persistence" (p. 112). Two important aspects of attrition are often studied by educational researchers and thus were selected for this study: student persistence and perceived time to degree. Lovitts (2005) identified three factors that contribute to graduate students' persistence and their perceived time to degree: (a) individual resources (e.g., motivation, work-ethic, intelligence), (b) microenvironment (e.g., relationship with advisor, department policies, interactions with peers), and (c) macroenvironment (e.g., culture of the discipline and graduate education). Although the third factor (i.e., macroenvironment) is outside the scope of this dissertation, this study will examine the influence of the microenvironment (i.e., student-advisor relational satisfaction) and individual differences (i.e., psychosocial development) on doctoral students' attrition and success in school.

Specifically, the thirteenth hypothesis will examine whether perceptions of student-advisor satisfaction (i.e., relational and communication) relate to doctoral

students' persistence and perceived time to degree. Golde (2005) argued that the biggest reason doctoral students do not complete their academic degree is because they lack a satisfying and well-developed relationship with their advisor. Indeed, a substantial body of research supports this claim as scholars have repeatedly shown that a successful student-advisor relationship reduces doctoral students' likelihood of leaving their respective programs prematurely (e.g., Golde, 2000; Lovitts, 2001; Lovitts & Nelson, 2000). Based on this literature, student-advisor satisfaction should also be related positively with students' persistence and perceived time to degree. Therefore, the following hypothesis is offered:

H13: Student-advisor satisfaction (i.e., relational and communication) will positively relate to (a) students' and (b) advisors' perceptions of doctoral students' persistence and perceived time to degree.

Although the quality of the student-advisor relationship has become a well-established predictor of doctoral students' degree completion (see Gardner, 2009), the association between students' psychosocial development and attrition has not yet been explored. Therefore, the fourteenth hypothesis will examine the extent to which perceived psychosocial development is related to students' and advisors' perceptions of persistence and perceived time to degree. Tessmer (2012) noted that examining doctoral students' psychosocial development may uncover unique solutions to otherwise longstanding issues of graduate education including doctoral student attrition. Relatedly, Cavendish (2007) explained that if a graduate student has "learned the skills, procedures, and personal characteristics that are necessary to graduate... completion of the degree is more likely to occur in a timely manner" (p. 28). Thus, it is probable that students'

psychosocial development, which may or may not coincide with the mission of their respective doctoral program, shares a significant relationship with doctoral students' intention to persist and their subsequent ability to finish their degree. Therefore, the following hypothesis is offered:

H14: Doctoral students' psychosocial development will positively relate to (a) students' and (b) advisors' perceptions of doctoral students' persistence and perceived time to degree.

Persistence and timely completion are only a part of the criteria used to evaluate doctoral students' success in graduate school. Specifically, McAlpine et al. (2009) noted, "We need to understand better the experiences of and related challenges faced by doctoral students in the process of coming to understand academic practice and establishing themselves as academics" (p. 97). Therefore, the fifteenth hypothesis will examine the extent to which psychosocial development is related to doctoral students' and advisors' perceptions of students' (a) academic preparedness and (b) quality of work. Recall, academic preparedness generally refers to doctoral students' readiness to assume the responsibilities (e.g., service, teaching, and research) of faculty members (Golde, 2004), while quality of work entails the overall value that is assigned to doctoral students' current accomplishments (Morrison et al., 2011). Students who are professionally and personally developed are more likely to be prepared for their future career, embody the skills and knowledge necessary to succeed in their respective profession, and understand what is expected of them in their chosen occupation (Gardner & Barnes, 2007). Antony (2002) noted that processes such as psychosocial maturity progress "the neophyte from the earliest thinking about what it might be like to be a [faculty] member...and through

interactions with the training socializes him [sic] to become a more accepted member of that profession” (p. 364). Moreover, the quality to which doctoral students complete their responsibilities is likely related to their psychosocial maturity in graduate school (Tessmer, 2012). For instance, the quality of students’ accomplishments is logically associated with the purpose they have for beginning their work (i.e., vector six) and the integrity they have for completing it (i.e., vector seven). In short, then, it is apparent that psychosocial development, academic preparedness, and quality of work are interrelated constructs that comprise students’ success. Thus, the following hypothesis is offered:

H15: Doctoral students’ psychosocial development will positively relate to (a) students’ and (b) advisors’ perceptions of doctoral students’ academic preparedness and their quality of work.

Finally, successfully developed doctoral students are expected to conduct original research (Austin, 2002). Therefore, the sixteenth hypothesis will examine the relationship between psychosocial development and two constructs that are critical to the scholarly process: research self-efficacy and productivity. Lovitts (2005) noted that learning to conduct original research involves a series of developmental processes and to “successfully negotiate these processes students must undergo both psychological and social transformations” (p.140). In other words, as students mature through the vectors of psychosocial development, they simultaneously enhance their research self-efficacy and productivity as they grow more confident in their identity and become guided by their future goals and aspirations (Reisser, 1995). Thus, the following hypothesis is offered:

H16: Doctoral students’ psychosocial development will positively relate to (a) students’ and (b) advisors’ perceptions of doctoral students’ research self-

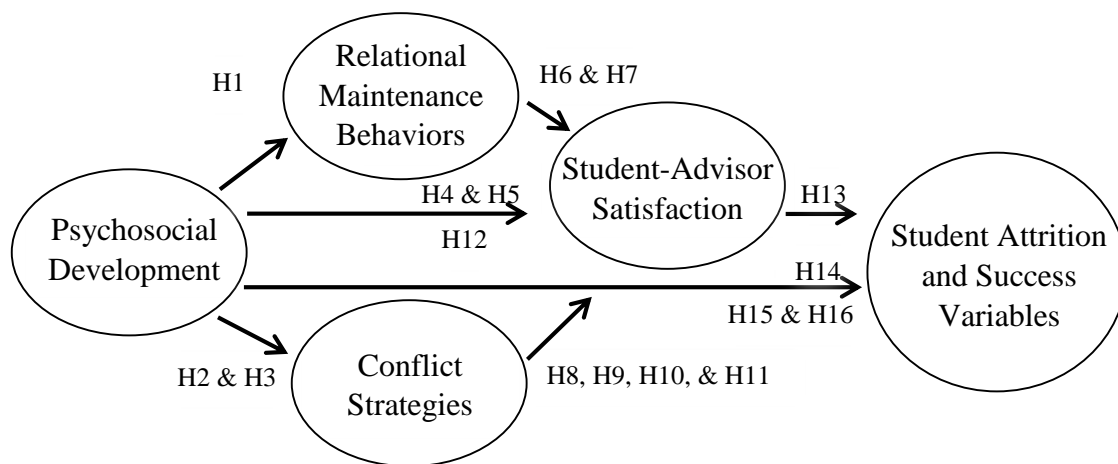
efficacy and research productivity.

Summary

The current dissertation has three objectives: (a) to examine student development within the doctoral education context in order to understand how Chickering and Reisser's vectors influence students' communication with their advisor; (b) to investigate the extent to which students' development and communication influence the satisfaction within the student-advisor relationship; and (c) to explore the relationships between psychosocial development, doctoral student attrition, and student success in graduate school. Toward these goals, students' and advisors' perceptions will be examined. A conceptual (not statistical) diagram of this dissertation's hypotheses is shown in Figure 1.

Figure 1

Conceptual Framework Depicting Hypothesized Relationships between Doctoral Students' Psychosocial Development, Relational Behaviors, and Outcomes



CHAPTER II

Methodology

Overview

The hypotheses provided above were tested using self-report survey data from doctoral students and (to a lesser extent) academic/dissertation advisors. Doctoral students were asked to report on themselves, whereas advisors were asked to report on a current doctoral advisee. If participating advisors had more than one student, they were asked to report on the student who they have known the longest (Mansson, 2011). As explained in the procedures section, the hypotheses were tested using two unique datasets (i.e., one dataset with the student sample and another with paired dyadic responses).

Sampling

Three sampling techniques were utilized to solicit participants. First, network sampling (Granovetter, 1976) was conducted primarily through the author's social networking sites (e.g., Facebook, Twitter, LinkedIn) and personal email accounts. Snowball sampling is a nonprobability procedure that yields a sample "through referrals made among people who share or know of others who possess some characteristics that are of research interest" (Biernacki & Waldorf, 1981, p. 141). In this case, participants who were (a) current doctoral students, (b) advisors of current doctoral students, or (c) in positions that worked closely with doctoral students and advisors (e.g., staff members, department chairs, deans) were asked to share a pre-approved recruitment message (see Appendix A) with any individual who met the inclusion criteria. The recruitment message solicited participation by providing a link to an online survey that was generated through the website Qualtrics. Moreover, the recruitment message and the corresponding

online cover letter (see Appendix B and C) gave participants information regarding the purpose of the study, protected rights of participants, acknowledgement of approval from West Virginia University's Institutional Review Board, and contact information for the primary author. Additionally, all doctoral student participants were informed that their participation could qualify them to win one of five 50 dollar gift cards from Amazon.

Second, convenience sampling was used to solicit participants as individuals were contacted primarily through phone calls, university emails, and face-to-face conversations on the campus of West Virginia University. Convenience sampling broadly refers to "taking available samples at hand" (Kerlinger, 1986, p. 120); in this case, the researcher directly contacted academic departments at West Virginia University with Ed.D. or Ph.D. programs to solicit current doctoral students and graduate faculty members (i.e., who served as advisors) to complete the online survey. Moreover, to increase the likelihood of recruiting intact dyads, participants who completed the survey were asked to give their advisee's or advisor's email address (if they felt comfortable) so that the researcher could forward the survey opportunity to other potential participants. Emails were sent approximately one week prior to the close of data collection to remind these individuals about their opportunity to participate (see Appendix D).

Third, volunteer sampling was used to solicit participants through academic online listserv accounts such as the Communication Research and Theory Network (CRTNET), the National Academic Advising Association Listserv (NACADA), and the American Educational Research Association Graduate Studies Discussion Forum (AERA-GS). Volunteer sampling generally refers to soliciting "participants [who] freely choose to respond to the [research or survey] questions" (Lefever, Dal, & Matthiasdottir,

2007, p. 576). In this study, members of CRTNET, NACADA, and the AERA-GS (i.e., doctoral students, advisors) were asked to volunteer through a brief announcement from the researcher. Listserv announcements were consistent with the recruitment message as they (a) introduced the purpose of the study, (b) specified the inclusion criteria, and (c) provided two online survey links (i.e., a student version and an advisor version).

Participants

As a result of these sampling techniques, doctoral students and advisors ($N = 422$; 166 males, 246 females, 10 unreported) enrolled or employed at various doctoral-granting institutions from across the country participated in this dissertation. To qualify for participation, students were required to be (a) enrolled full-time in a traditional (i.e., face-to-face) Ph.D. or Ed.D. program and (b) have a single academic/dissertation advisor; students enrolled in master programs and/or online doctoral programs were excluded from this study because these individuals often lack a substantive relationship with their advisor due to limited face-to-face interactions and opportunities to collaborate (Lindner, Dooley, & Murphy, 2001). Participating doctoral students ($n = 304$; 99 males, 200 females, 5 unreported) ranged in age from 22 to 60 years ($M = 30.07$, $SD = 6.09$) and represented over 32 academic disciplines (see Table 3) including communication ($n = 92$; 30.3%), psychology ($n = 30$; 9.9%), and engineering ($n = 16$; 5.3%). For advisors to qualify for participation, they were required to be (a) listed as a graduate faculty member and (b) the advisor of at least one doctoral student. Participating advisors ($n = 118$, 67 males, 46 females, 5 unreported) ranged in age from 29 to 75 years ($M = 47.36$, $SD = 10.46$) and had approximately 16.25 years ($SD = 10.18$) of faculty member experience. Further demographic details about the participants can be found in Table 1 and Table 2.

Table 1

Doctoral Student Demographic Data

1. Sex	Males ($n = 99$; 32.6%)	Females ($n = 200$; 65.8%)	
2. Age	Range (22-60)	$M = 30.07$	$SD = 6.09$
3. Ethnicity	Asian ($n = 37$; 12.5%)	Black ($n = 18$; 6.1%)	
	Hispanic ($n = 10$; 3.4%)	White ($n = 211$; 71.3%)	
	Middle Eastern ($n = 10$; 3.4%)	Native American ($n = 2$; .7%)	
	Other ($n = 8$; 2.7%)		
4. Degree	Ph.D. ($n = 284$; 95%)	Ed.D. ($n = 11$; 3.7%)	
5. Status in Program	Working on Dissertation ($n = 164$; 55.2%)	Taking Comprehensive Exams ($n = 34$; 11.4%)	Taking Coursework ($n = 99$; 33%)
6. Months in Program	Range (2-96)	$M = 30.42$	$SD = 17.52$
7. Primary Interest	Research ($n = 190$; 64.2%)	Teaching ($n = 106$; 35.8%)	
8. University Carnegie Status	Very High ($n = 108$; 36%)	High ($n = 84$; 28.3%)	
	Research ($n = 30$; 10.1%)	Unsure ($n = 75$; 25.3%)	
9. Funded	Yes ($n = 277$; 93.9%)	No ($n = 18$; 6.1%)	
9a. Types of Funding	Teaching Assistantship ($n = 146$; 50%)	Research Assistantship ($n = 76$; 26%)	
	Academic Fellowship ($n = 37$; 12.7%)	N/A ($n = 33$; 11.3%)	
10. Funds tied to advisor	Yes ($n = 66$; 22.3%)	No ($n = 230$; 77.7%)	
11. Initiated Relationship	Student ($n = 200$; 68%)	Advisor ($n = 44$; 15%)	Department ($n = 50$; 17%)
12. Changed Advisor	Yes ($n = 47$; 15.7%)	No ($n = 252$; 84.3%)	
12a. Number of previous advisors if changed	Range (1-4)	$M = 1.41$	$SD = .81$
13. Months in relationship	Range (1-96)	$M = 26.32$	$SD = 16.38$

Table 2

Faculty Member Demographic Data

1. Sex	Males (<i>n</i> = 67; 56.8%)	Females (<i>n</i> = 46; 39.0%)	
2. Age	Range (29-75)	<i>M</i> = 47.36	<i>SD</i> = 10.46
3. Ethnicity	Asian (<i>n</i> = 5; 4.2%)	Black (<i>n</i> = 3; 2.5%)	
	Hispanic (<i>n</i> = 2; 1.7%)	White (<i>n</i> = 97; 82.2 %)	
	Middle Eastern (<i>n</i> = 6; 5.1%)	Other (<i>n</i> = 5; 4.2%)	
4. Faculty position	Assistant Professor (<i>n</i> = 21; 17.8%)	Associate Professor (<i>n</i> = 48 40.7%)	Full Professor (<i>n</i> = 46 39%)
5. Primary interest	Research (<i>n</i> = 87; 73.7%)	Teaching (<i>n</i> = 21; 17.8%)	
6. Faculty experience (Years)	Range (1-47)	<i>M</i> = 16.25	<i>SD</i> = 10.18
7. Advising experience (Years)	Range (1-45)	<i>M</i> = 13.05	<i>SD</i> = 9.90
8. Advising training Received	Yes (<i>n</i> = 9; 7.6%)	No (<i>n</i> = 106; 89.8%)	
9. Number of previous advisees	Range (1-60)	<i>M</i> = 8.54	<i>SD</i> = 8.42
10. Serving multiple advisees	Yes (<i>n</i> = 84; 71.2%)	No (<i>n</i> = 31; 26.3%)	

Procedures

Two versions of a survey were created for this dissertation. The first version was distributed exclusively to doctoral students and contained all of the independent and dependent variables. The second version was distributed to advisors and contained only dependent variables. This decision was made for two reasons. First, advisors were not asked to complete the independent variables in this study (i.e., psychosocial development, relational maintenance behaviors, conflict strategies) because they were deemed unqualified to report on several of the targeted constructs (e.g., perceived identity that

students have about themselves). Second, advisors were also not asked to report on the independent variables because respondent fatigue was a serious concern for faculty members, particularly since they received no incentive for participating. Therefore, two versions of the survey were created and distributed to students and advisors, respectively.

Similar to Mansson (2011), dyads (i.e., containing both a student and an advisor survey) were paired together by asking participants to create a unique dyadic identifier. Specifically, doctoral students were asked to provide their own initials followed by their advisor's initials; in turn, advisors were asked to provide their doctoral student's initials followed by their own initials. The resulting four letter code was used to recognize contributing dyads while simultaneously upholding the research participants' anonymity. Moreover, the initials provided on these surveys were not used for any other purpose in this dissertation and were replaced with standard code numbers (e.g., "001") once the dyadic members were paired together. To increase the likelihood of soliciting intact dyads, participants who completed the survey were also given the option of forwarding an automatically generated email (with a corresponding link to the other survey) directly to their advisor/advisee. This message contained the original recruitment script with two modifications: (a) it stated that their advisor/advisee had already taken the survey and (b) informed the participant that their assistance was specifically needed to complete a dyad.

All participants responded to a series of demographic questions and completed numerous scales related to the hypotheses of this dissertation. Specifically, doctoral students completed four measures in reference to Chickering and Reisser's (1993) vectors of psychosocial development. These measures included: the Relations with Other People Subscale (vector four; Baker & Siryk, 1989), the Sense of Identity Subscale (vector five;

Lounsbury, Huffstetler, Leong, & Gibson, 2005), the Psychosocial Inventory of Ego Strengths (PIES) Purpose Subscale (vector six; Markstrom, Sabino, Turner, & Berman, 1997), and the PIES Wisdom Subscale (vector seven; Markstrom et al., 1997). Doctoral students also completed measures that assessed their communication behaviors including the Advisee Relational Maintenance Scale (Mansson & Myers, 2012) and the Conflict Strategies Scale (Bevan & Sparks, 2014; Canary, Cunningham, & Cody, 1988). Doctoral students also responded to the Research Productivity Measure (Kahn & Scott, 1997).

Both doctoral students and advisors completed scales for student-advisor relational outcomes (i.e., relational and communication satisfaction) as well as doctoral students' personal outcomes. These scales included: the Relationship Assessment Scale (Hendrick, 1988), the Student Communication Satisfaction Scale (Goodboy et al., 2009), the Turnover Intention Measure (Pattie, Benson, & Baruch, 2006), the Perceived Time-to-Degree Scale (Cavendish, 2007), and the Research Self-Efficacy Scale (Paglis et al., 2006). Doctoral students and advisors also completed the Academic Preparedness Scale and the Graduate Student Quality of Work Scale which were developed specifically for this dissertation (see data analysis section). For each of the outcome variables, the directions and the wording of individual items were modified to create self- (i.e., student) and other-report (i.e., advisor) versions of the questionnaire (see Appendix E and F). Specifically, pronouns and verbs were altered so that students and advisors both reported on their perceptions of the doctoral student, with the exception of relational and communication satisfaction in which advisors were asked to report on their own satisfaction in the relationship. Cronbach alpha reliability coefficients, means, and standard deviations for all of the instruments used in this study can be found in Table 4.

Table 3

Academic Disciplines Represented by Doctoral Students

Discipline	<i>n</i>	%
1. Communication	92	30.3
2. Psychology	30	9.9
3. Engineering	16	5.3
4. Biology	16	5.3
5. Sport Physiology	16	5.3
6. Education	15	4.9
7. English	8	2.6
8. Curriculum and Instruction	7	2.3
9. Physics	7	2.3
10. Public Health	6	2.0
11. History	5	1.6
12. Anthropology	5	1.6
13. Economics	5	1.6
14. Biomedical Sciences	5	1.6
15. Animal Science	5	1.6
16. Chemistry	5	1.6
17. Computer Science	4	1.3
18. Business/Management	4	1.3
19. Epidemiology	3	1.0
20. Geography	3	1.0
21. Mathematics	3	1.0
22. Entomology	3	1.0
23. Forestry	3	1.0
24. Sociology	2	0.7
25. Journalism	2	0.7
26. Media	2	0.7
27. Neuroscience	2	0.7
28. Advertising	2	0.7
29. Astronomy	1	0.3
30. Geology	1	0.3
31. Counseling	1	0.3
32. Other	6	2.0

Instrumentation

Vector Four (Developing Mature Relationships): The *Relations with Other People Subscale* (see items 1-7 of Appendix E) is a seven item, unidimensional instrument taken from the Student Adaptation to College Questionnaire; it measures the extent to which individuals have healthy interpersonal relationships with others including friends, peers, and professors. Responses were solicited on a 7-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*. Previous Cronbach alpha reliability coefficients ranging from .83 to .91 have been reported for the subscale (Baker & Siryk, 1999; Beyers & Goossens, 2002; Swenson, Nordstrom, & Hiester, 2008).

Vector Five (Establishing Identity): The *Sense of Identity Subscale* (see items 8-15 of Appendix E) is an eight item, unidimensional instrument taken from the Adolescent Personal Style Inventory; it measures the extent to which individuals have achieved a solidified personal identity. Responses were solicited using a 7-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*. Previous Cronbach alpha reliability coefficients ranging from .84 to .87 have been reported for the scale (Lounsbury et al., 2005; Lounsbury et al., 2008; Lounsbury, Saudargas, Gibson, & Leong, 2005).

Vector Six (Developing Purpose): The *Purpose Subscale* (see items 16-23 of Appendix E) is an eight item, unidimensional instrument taken from the Psychosocial Inventory of Ego Strengths; it measures purpose by assessing individuals' courage to pursue career and personal goals. Responses were solicited using a 7-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*. Previous Cronbach alpha reliability coefficients ranging from .71 to .80 have been reported for the scale (Adams, Berzonsky, & Keating, 2006; Markstrom & Marshall, 2007; Markstrom et al., 1997).

Table 4

Cronbach Alpha Reliability Coefficients, Means, and Standard Deviations for All Variables

Variables	Advisee Reports			Advisor Reports		
	α	M	SD	α	M	SD
1. Psychosocial Development						
1a. Mature Relationships (Vector 4)	.78	28.18	4.42	--	--	--
1b. Identity (Vector 5)	.91	34.00	5.18	--	--	--
1c. Purpose (Vector 6)	.85	32.28	4.76	--	--	--
1d. Integrity (Vector 7)	.85	32.04	4.86	--	--	--
2. Relational Maintenance						
2a. Appreciation	.96	32.67	8.39	--	--	--
2b. Tasks	.90	30.27	4.49	--	--	--
2c. Protection	.90	23.04	5.18	--	--	--
2d. Courtesy	.88	25.38	3.23	--	--	--
2e. Humor	.84	16.94	4.07	--	--	--
2f. Goals	.90	17.39	3.82	--	--	--
3. Conflict Strategies						
3a. Integrative Strategy	.87	57.97	8.09	--	--	--
3b. Avoidance Strategy	.92	17.04	8.80	--	--	--
3c. Distributive Strategy	.91	15.60	7.79	--	--	--
4. Satisfaction						
4a. Relational Satisfaction	.94	20.84	4.82	.83	21.36	3.86
4b. Communication Satisfaction	.95	32.80	7.11	.89	38.21	5.98
5. Student Outcomes						
5a. Academic Preparedness	.91	55.73	9.84	.94	57.50	11.82
5b. Quality of Work	.85	28.06	5.04	.87	28.87	6.44
5c. Time-to-Degree	.79	13.34	2.19	.90	13.23	2.82
5d. Persistence	--	5.40	14.05	--	5.75	14.83
5e. Research Self-Efficacy	.92	43.54	6.41	.96	43.41	7.76
5f. Research Productivity	.76	25.46	19.43	--	--	--

Note. Reliability coefficient not calculated for the one-item measure of persistence.

Vector Seven (Developing Integrity): The *Wisdom Subscale* (see items 24-31 of Appendix E) is an eight item, unidimensional instrument that is also taken from the Psychosocial Inventory of Ego Strengths; it measures integrity by assessing individuals' appreciation of accumulated knowledge, wisdom, and experiences. Responses were solicited using a 7-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*. Previous Cronbach alpha reliability coefficients ranging from .72 to .75 have been reported for the scale (Dunkel, Kim, & Papini, 2012; Markstrom, Li, Blackshire, & Wilfong, 2005; Markstrom et al., 1997).

The *Advisee Relational Maintenance Scale* (see items 32-56 of Appendix E) is a 25 item, six-dimensional instrument that measures doctoral students' use of relational maintenance behaviors (i.e., courtesy, humor, goals, protection, tasks, appreciation). Responses were solicited using a 7-point Likert scale ranging from (1) *strongly disagree* to (7) *strongly agree*. Previous Cronbach alpha reliability coefficients ranging from .70 to .94 have been reported for each of the six subscales (Mansson & Myers, 2012).

The *Conflict Strategies Scale* (see items 57-86 of Appendix E) is a 30 item, three-dimensional instrument that measures individuals' perceptions of conflict strategies (i.e., integrative, avoidance, distributive). In this study, integrative and avoidance items were adapted directly from Canary et al. (1988) and Bevan and Sparks (2014); distributive items were modified to meet the unique constraints of the student-advisor relationship. Responses were solicited using a 7-point bipolar response format ranging from (1) *not at all* to (7) *a great extent*. Previous Cronbach alpha reliability coefficients ranging from .76 to .92 have been reported for earlier versions of the three subscales (Bevan, 2010; Bevan, Finan, & Kaminsky, 2008; Bevan & Sparks, 2014).

The *Relationship Assessment Scale* (see items 111-115 of Appendix E and items 21-25 of Appendix F, respectively) is a seven item, unidimensional instrument that measures individuals' perceived satisfaction with a relational partner. Cavendish's (2007) five-item modified version of the scale was used in this study because it has successfully been adapted to the doctoral student-advisor relationship. Responses are solicited using a 5-point Likert scale ranging from (1) *strongly disagree* to (5) *strongly agree*. Previous Cronbach alpha reliability coefficients ranging from .83 to .90 have been reported for the scale (Cavendish, 2007; Hendrick, 1988; Miczo, Segrin, & Allspach, 2001).

The *Student Communication Satisfaction Scale* (see items 116-123 of Appendix E and items 26-33 of Appendix F, respectively) is an eight item, unidimensional instrument that assesses the extent to which individuals are satisfied with student-instructor interactions. Similar to Mansson (2011), items were modified to reflect the advisee-advisor relationship, rather than the student-instructor relationship. Responses were solicited using a 5-point Likert scale ranging from (1) *strongly disagree* to (5) *strongly agree*. Previous Cronbach alpha reliability coefficients ranging from .74 to .98 have been reported for the scale (Goodboy et al., 2009; Mansson, 2011; Myers et al., 2014).

The *Turnover Intention Measure* (see item 110 of Appendix E and item 37 of Appendix F, respectively) is a one item instrument that reads "What are the chances that you/your advisee will quit the graduate program in the next 12 months?" In this study, the item was reversed coded to reflect doctoral students' persistence. Responses to this item were solicited using an open percentage ranging from 0% to 100%. A reliability coefficient for the scale cannot be calculated due to the one-item format.

The *Perceived Time-to-Degree Scale* (see items 107-109 of Appendix E and items

34-36 of Appendix F, respectively) is a three item, unidimensional instrument that measures doctoral students' timely progression through their respective program.

Responses were solicited using a 5-point Likert scale ranging from (1) *not at all confident* to (5) *very confident*. A previous Cronbach alpha reliability coefficient of .87 has been reported for the scale (Cavendish, 2007).

The *Research Self-Efficacy Scale* (see items 124-133 of Appendix E and items 38-47 of Appendix F) is a ten item, unidimensional instrument that assesses individuals' perceived confidence in completing research-related activities (e.g., conducting a literature review, analyzing data, proposing research questions/hypotheses). Unlike other measures of self-efficacy, this scale uses low-inference items to reflect specific research behaviors, thus lending itself to both self- and other-reports. Responses were solicited using a 5-point Likert scale ranging from (1) *not at all confident* to (5) *very confident*. Previous Cronbach alpha reliability coefficients ranging from .92 to .93 have been reported for the scale (Cavendish, 2007; Paglis et al., 2006).

Data Analysis

Scale Development. Because no previous scales existed to measure doctoral students' academic preparedness and their quality of work in graduate school from both students' and advisors' perspectives, two scales were created specifically for this study. Items for both of these measures were developed based on previous qualitative investigations that explored doctoral students' socialization (e.g., Baker & Pifer 2011) and doctoral students' academic preparedness (e.g., Eisenhart & DeHaan, 2005), as well as the quality and evaluation of doctoral students' work and scholarship (e.g., Morrison et al., 2011). Fourteen items were originally created for the *Academic Preparedness Scale*

(see items 87-100 of Appendix E and items 1-14 of Appendix F, respectively) and 6 items were created for the *Graduate Student Quality of Work Scale* (see items 101-106 of Appendix E and items 15-20 of Appendix F, respectively).

Each scale was subjected to an exploratory factor analysis (EFA) and items were extracted using principle axis factoring. It was uncertain whether multiple factors existed in the Academic Preparedness Scale, therefore an oblique rotation was used (i.e., direct oblimin) to examine the underlying factor structure of the instrument. The Graduate Student Quality of Work Scale was thought to be unidimensional, thus no rotation was used for this measure. Kaiser-Meyer-Olkin's test of sampling adequacy (.92) and Bartlett's test of sphericity [$\chi^2(91) = 2066.02, p < .001$] indicated that the sample size and item pool met the necessary minimum requirements for conducting factor analyses. To be retained for interpretation, factors were required to: (a) account for more than five percent of the overall variance, (b) possess an eigenvalue greater than one; (c) contain at least two or more items; and (d) demonstrate face validity/general interpretability (McCroskey & Young, 1979). The items were required to produce primary loadings greater than .60 and secondary loadings smaller than .40 to be retained. Cross-loading items (i.e., those with primary loadings on multiple factors) were removed from analyses.

Following one round of item trimming in which four poorly performing items were removed from the EFA, the Academic Preparedness Scale produced a single-factor solution that contained 10 of the original 14 items and accounted for 55.86% of the overall variance. The Cronbach alpha reliability coefficient for this scale was .91 for doctoral students and .94 for advisors. Similarly, following one round of item trimming in which one item was removed from the EFA, the Graduate Student Quality of Work Scale

produced a single factor solution that contained five of the original six items and accounted for 62.39% of the overall variance. The Cronbach alpha reliability coefficient for this scale was .85 for doctoral students and .87 for advisors. Factor loadings, means, and standard deviations for each individual item can be found in Table 5 and Table 6.

Confirmatory factor analyses. In order to address the content validity of the remaining measures used in this study (Kerlinger, 1986), confirmatory factor analyses (CFAs) were conducted prior to hypothesis testing for most of the utilized instruments using Amos (version 19). CFA is a deductive procedure used to evaluate the appropriateness of a predetermined factor structure by assessing its goodness of fit (within the targeted sample) and the extent to which items (or manifest variables) represent unobserved (or latent) variables (Brown, 2015). Several criteria and indices exist for evaluating the model fit of a CFA (e.g., Hu & Bentler, 1999; Kline, 2011; Mulaik, James, Van Alstine, Bennett, Lind, & Stilwell, 1989). As Hox (2010) noted, “given the many possible goodness-of-fit indices, the customary advice is to assess fit by inspecting several fit indices that derive from different principles” (p. 307). Notably, researchers tend to use a combination of relative and absolute indices including (a) minimum fit function chi-square, (b) root mean square error of approximation (RMSEA), (c) standardized root mean square residual (SRMR), and (d) the comparative fit index (CFI) to evaluate the fit of structural equation models. An acceptable model is thought to exist if the (a) chi-square value is non-significant, (b) the RMSEA value is below .10, (c) the SRMR value is below .06, and (d) the CFI value is above .95 (Hu & Bentler, 1999; Kline, 2011). Visual depictions of the CFAs are shown in Figures 2 through 7 and a summary of the fit statistics can be found in Table 7.

Table 5

EFA Factor Loadings for Academic Preparedness Scale

Items	Loading	(M, SD)
1. I am prepared for a career in my academic field.	.71	(5.58, 1.26)
2. I know the scholarship in my academic field.	.67	(5.65, 1.16)
3. I am not ready for an academic career.	.61	(5.24, 1.67)
4. I can perform the responsibilities of a faculty member.	.75	(5.47, 1.45)
5. I am prepared to provide service to my academic field.	.82	(5.85, 1.08)
6. I do not have the skills to be a productive faculty member.*	.74	(5.62, 1.41)
7. I can fulfill professional responsibilities in my academic field.	.79	(5.90, 1.03)
8. I am capable of serving on editorial boards in my academic field.	.65	(5.01, 1.49)
9. I am capable of teaching undergraduate students about my academic field.	.79	(5.50, 1.61)
10. I am not prepared to be a faculty member.*	.60	(5.95, 1.08)
Eigenvalue	5.59	
% of Variance	55.86	

Note. Response format ranging from (1) *strongly disagree* to (7) *strongly agree*. * Reverse-coded.

Table 6

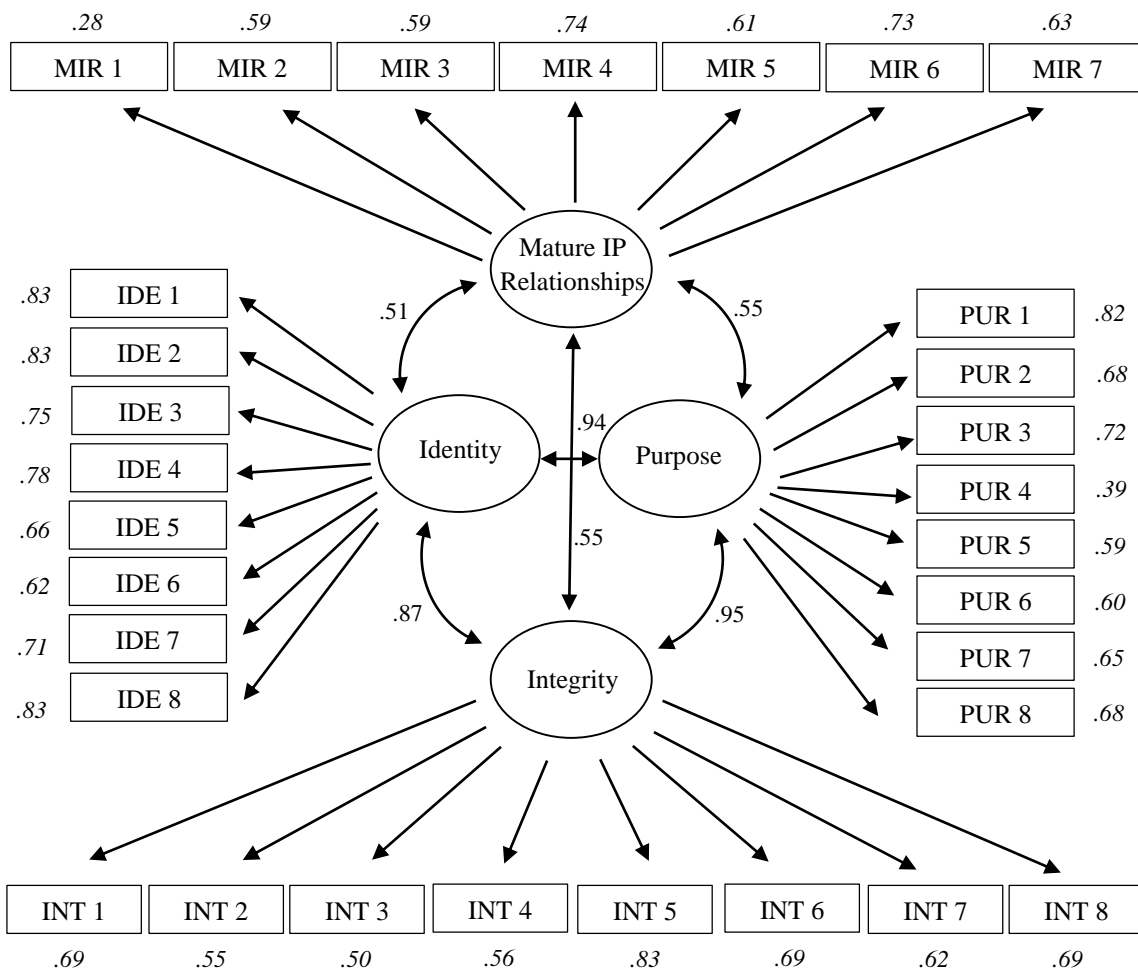
EFA Factor Loadings for Graduate Student Quality of Work Scale

Items	Loading	(M, SD)
1. I complete quality work.	.69	(5.04, 1.32)
2. My work is better than most graduate students.	.76	(5.87, 1.16)
3. I perform my academic responsibilities to the highest possible level.	.74	(5.08, 1.39)
4. I exceed the expectations that my advisor places upon me.	.72	(5.96, 1.29)
5. I produce work that is worse than most graduate students.*	.73	(6.12, 1.21)
Eigenvalue	3.12	
% of Variance	62.39	

Note. Response format ranging from (1) *strongly disagree* to (7) *strongly agree*. * Reverse-coded.

Figure 2

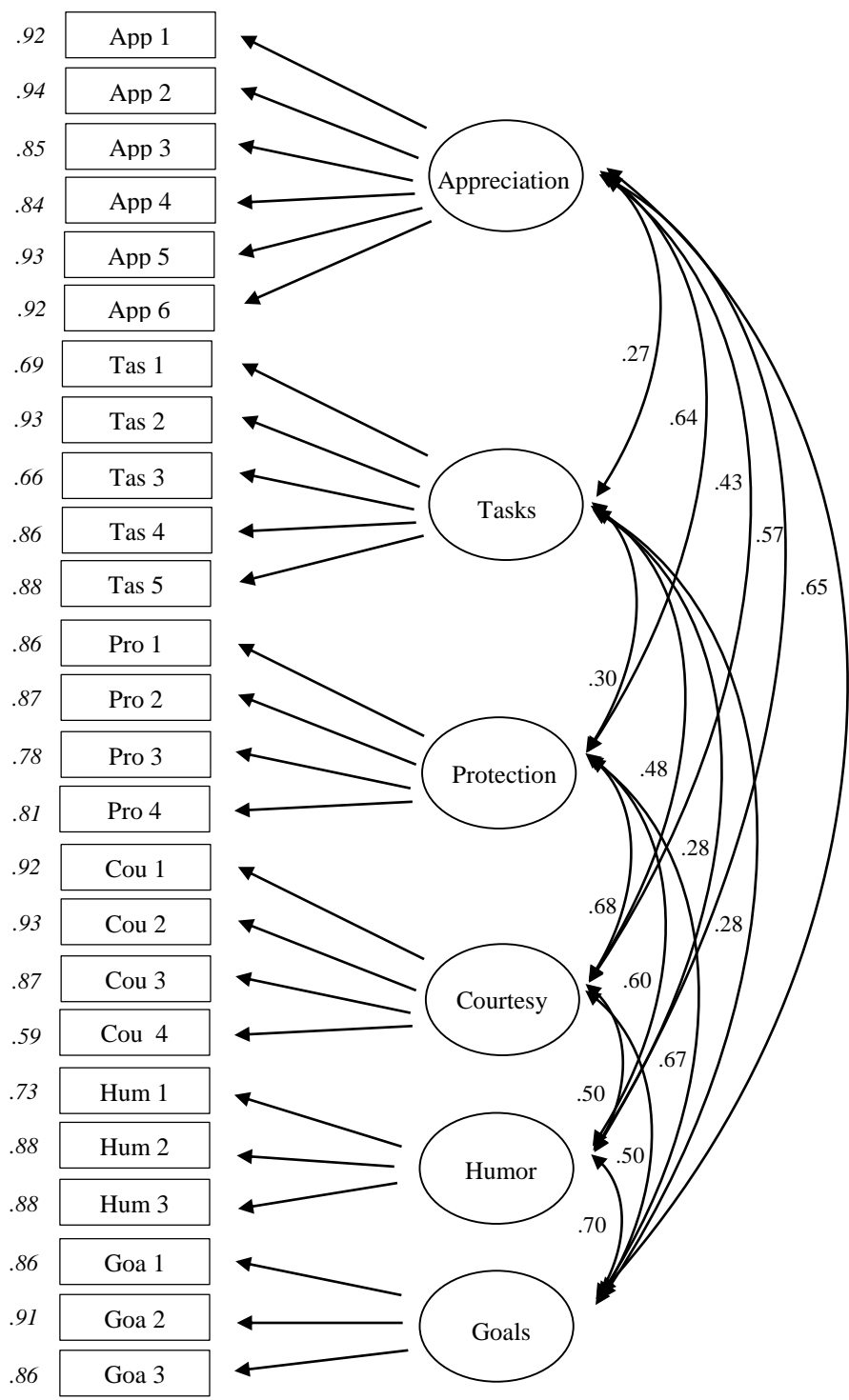
Confirmatory Factor Analysis of the Psychosocial Development Scales



Note. $\chi^2(427) = 1172.74, p < .001, RMSEA = .08, CFI = .83, SRMR = .06$. Standardized loadings in italics.

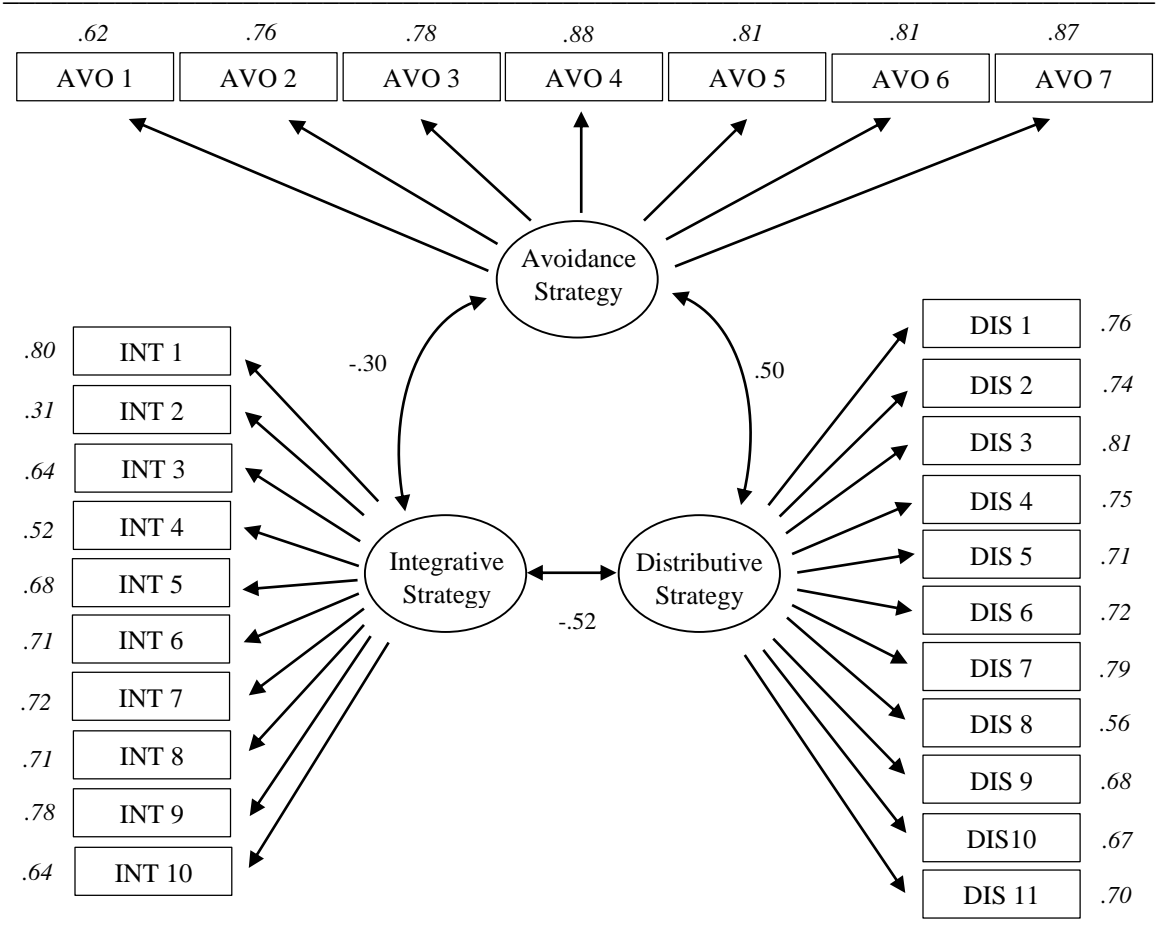
Figure 3

Confirmatory Factor Analysis of the Advisee Relational Maintenance Scale



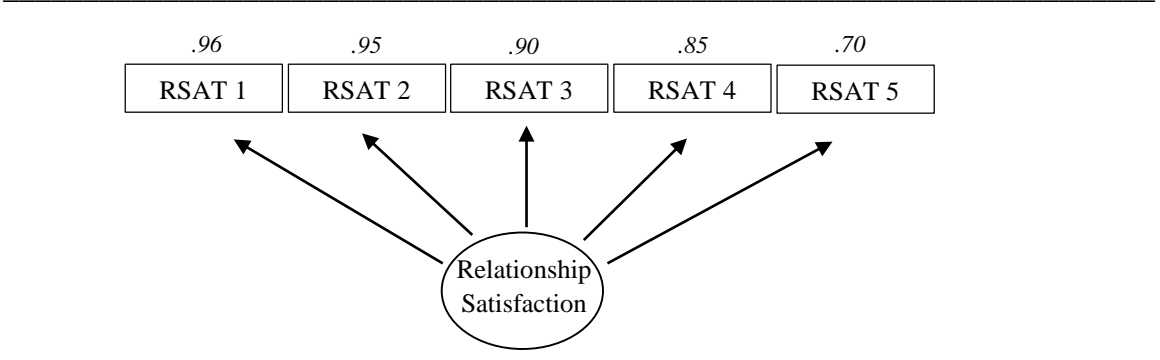
Note. $\chi^2(260) = 870.92, p < .001, RMSEA = .09, CFI = .90, SRMR = .07$. Standardized loadings in italics.

Figure 4
Confirmatory Factor Analysis of the Conflict Strategies Scale



Note. $\chi^2(347) = 1292.78, p < .001, RMSEA = .10, CFI = .80, SRMR = .07$. Standardized loadings in italics.

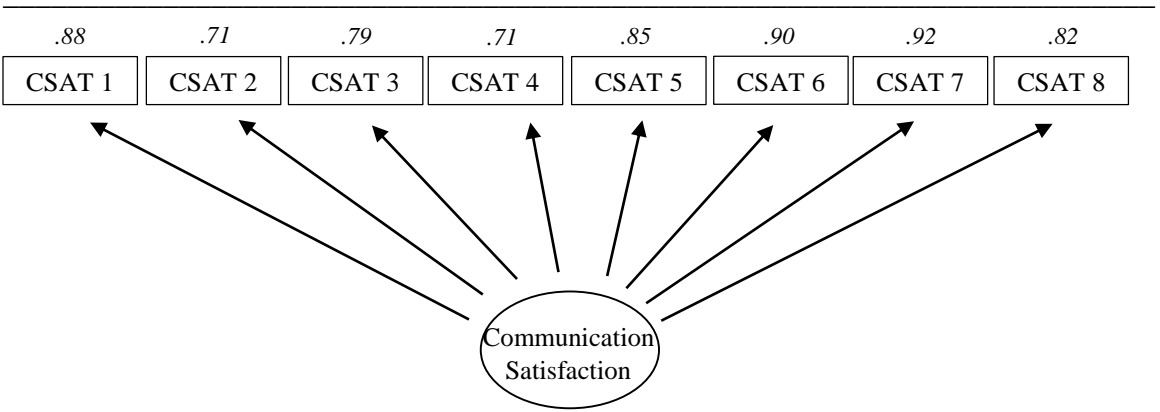
Figure 5
Confirmatory Factor Analysis of the Relationship Assessment Scale



Note. $\chi^2(5) = 75.82, p < .001, RMSEA = .23, CFI = .95, SRMR = .03$. Standardized loadings in italics.

Figure 6

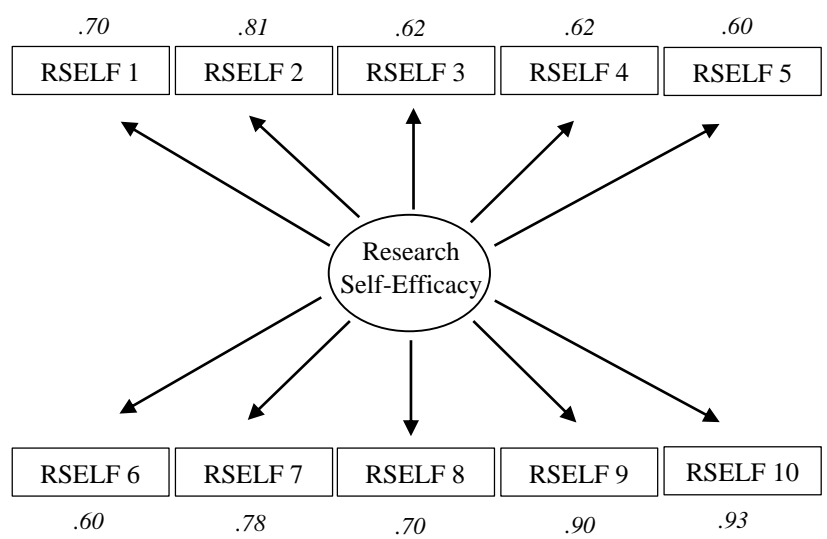
Confirmatory Factor Analysis of the Student Communication Satisfaction Scale



Note. $\chi^2(19) = 124.65, p < .001, RMSEA = .14, CFI = .95, SRMR = .03$. Standardized loadings in italics.

Figure 7

Confirmatory Factor Analysis of the Research Self-Efficacy Scale



Note. $\chi^2(34) = 166.70, p < .001, RMSEA = .12, CFI = .93, SRMR = .06$. Standardized loadings in italics.

Table 7

Summary of CFAs and Fit Indices

Scale	Fit Statistics					
	χ^2	<i>df</i>	<i>p</i>	RMSEA	CFI	SRMR
1. Psychosocial Development (Four-Factor)	1172.74	427	<i>p</i> < .001	.08	.83	.06
1a. Relations with Other People Subscale	31.61	11	<i>p</i> < .01	.08	.96	.05
1b. Sense of Identity Subscale	98.48	19	<i>p</i> < .001	.13	.94	.03
1c. Purpose Subscale	148.66	20	<i>p</i> < .001	.15	.85	.07
1d. Wisdom (Integrity) Subscale	111.65	20	<i>p</i> < .001	.13	.88	.06
2. Advisee Relational Maintenance Scale	870.92	260	<i>p</i> < .001	.09	.90	.07
3. Conflict Strategies Scale	1292.78	347	<i>p</i> < .001	.10	.80	.07
4. Relationship Assessment Scale	75.82	5	<i>p</i> < .001	.23	.95	.03
5. Student Communication Satisfaction Scale	124.65	19	<i>p</i> < .001	.14	.95	.03
6. Research Self-Efficacy Scale	166.70	34	<i>p</i> < .001	.12	.93	.06

Hypotheses testing. Prior to testing the primary hypotheses of this dissertation, two correlation matrices were computed using the doctoral student sample (see Table 8) and the dyadic (student-advisor) sample (see Table 9). All of the hypotheses (i.e., with the exception of Hypothesis 12) were tested by first examining these correlations to determine if significant zero-order relationships existed within the data (i.e., both the student sample and the dyadic sample). Subsequently, follow-up ordinary least square (OLS) regression analyses were computed using the respective independent variables (i.e., psychosocial development vectors, relational maintenance behaviors, and conflict strategies) to predict the various relational and personal outcome variables (i.e., satisfaction, persistence, perceived time to degree, academic preparedness, quality of work, research self-efficacy, and research productivity). However, due to the small sample size, regressions were only computed for the student sample ($n = 304$) and not for the dyadic sample ($n = 52$), as the latter sample lacked the statistical power of at least 20 participants per independent variable (e.g., see Maxwell, 2000).

To test the twelfth hypothesis, which predicted students' communication behaviors (i.e., relational maintenance behaviors and conflict strategies) would mediate the relationship between psychosocial development (i.e., four vectors) and student-advisor satisfaction, a set of 16 parallel multiple mediation models (see Figures 8 to 23) using OLS path analyses were computed using PROCESS in SPSS (Hayes, 2012). The purpose of these models was to examine the extent to which psychosocial development's effect on student-advisor satisfaction was transmitted through doctoral students' conflict strategies and maintenance behaviors. Although these models contained simultaneous mediators (see Hayes, 2013), they were limited to one independent variable and one dependent variable; thus, 16 models were computed to account for the four vectors of development, the two sets of mediators, and the two types of student-advisor satisfaction.

Parallel mediation models were selected over simple mediation models because previous research on relational maintenance behaviors and conflict strategies indicate that each are comprised of multiple dimensions (i.e., six and three, respectively) which work in tandem to influence various personal and relational outcomes (Dainton, 2003). Such variables are ideally suited for parallel mediation models, then, as "antecedent variable X [e.g., development] is modeled as influencing consequent Y [e.g., satisfaction] directly as well as indirectly through two or more mediators, with the condition that no mediator causally influences another" (Hayes, 2013, p. 125). Parallel mediation models were also chosen because they allow researchers to examine the unique indirect effect of each mediator through co-variation, controlling for other indirect effects of each mediator. In this study, all indirect effects were calculated using bias-corrected bootstrap confidence intervals generated from 50,000 bootstrap samples.

Summary

This chapter reviewed the methodology that was used to address the hypotheses of the dissertation. Along with demographic information, students and advisors completed a variety of self-report measures and tests of associations were used to examine the 16 hypotheses. This chapter also included an overview of the procedures used throughout the data collection, a description of the individuals who participated, an overview of the scales that were used, and an explanation of how the data was analyzed.

Table 8

Correlation Matrix for All Variables Using Doctoral Student Sample

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
<i>Psychosocial Development</i>																				
1. Vector4	--																			
2. Vector5	.44 [^]	--																		
3. Vector6	.45 [^]	.79 [^]	--																	
4. Vector7	.47 [^]	.74 [^]	.78 [^]	--																
<i>Relational Maintenance</i>																				
5. Appreciation	.32 [^]	.27 [^]	.22 [^]	.24 [^]	--															
6. Tasks	.33 [^]	.42 [^]	.45 [^]	.41 [^]	.34 [^]	--														
7. Protection	.32 [^]	.28 [^]	.27 [^]	.27 [^]	.61 [^]	.34 [^]	--													
8. Courtesy	.28 [^]	.41 [^]	.32 [^]	.33 [^]	.40 [^]	.45 [^]	.58 [^]	--												
9. Humor	.41 [^]	.19 [^]	.21 [^]	.20 [^]	.52 [^]	.27 [^]	.53 [^]	.39 [^]	--											
10. Goals	.34 [^]	.28 [^]	.31 [^]	.29 [^]	.59 [^]	.30 [^]	.57 [^]	.40 [^]	.65 [^]	--										
<i>Conflict Strategies</i>																				
11. Integrative Strategy	.38 [^]	.40 [^]	.34 [^]	.33 [^]	.65 [^]	.35 [^]	.57 [^]	.51 [^]	.61 [^]	.64 [^]	--									
12. Avoidance Strategy	-.32 [^]	-.42 [^]	-.47 [^]	-.44 [^]	-.26 [^]	-.42 [^]	-.45 [^]	-.34 [^]	-.21 [^]	-.28 [^]	-.33 [^]	--								
13. Distributive Strategy	-.29 [^]	-.31 [^]	-.32 [^]	-.34 [^]	-.34 [^]	-.33 [^]	-.51 [^]	-.49 [^]	-.34 [^]	-.31 [^]	-.46 [^]	.51 [^]	--							
<i>Satisfaction</i>																				
14. Relational Satisfaction	.40 [^]	.30 [^]	.28 [^]	.25 [^]	.63 [^]	.34 [^]	.73 [^]	.43 [^]	.58 [^]	.60 [^]	.58 [^]	-.41 [^]	-.42 [^]	--						
15. Comm. Satisfaction	.43 [^]	.35 [^]	.33 [^]	.33 [^]	.63 [^]	.36 [^]	.71 [^]	.46 [^]	.61 [^]	.66 [^]	.64 [^]	-.44 [^]	-.44 [^]	.91 [^]	--					
<i>Student Outcomes</i>																				
16. Academic Preparedness	.42 [^]	.54 [^]	.59 [^]	.54 [^]	.31 [^]	.45 [^]	.28 [^]	.36 [^]	.30 [^]	.36 [^]	.37 [^]	-.39 [^]	-.27 [^]	.33 [^]	.34 [^]	--				
17. Quality of Work	.39 [^]	.51 [^]	.54 [^]	.49 [^]	.32 [^]	.56 [^]	.28 [^]	.34 [^]	.30 [^]	.27 [^]	.31 [^]	-.34 [^]	-.27 [^]	.30 [^]	.28 [^]	.67 [^]	--			
18. Time-to-Degree	.29 [^]	.26 [^]	.27 [^]	.28 [^]	.20 [^]	.32 [^]	.24 [^]	.23 [^]	.23 [^]	.23 [^]	.24 [^]	-.29 [^]	-.24 [^]	.36 [^]	.35 [^]	.30 [^]	.32 [^]	--		
19. Persistence	.23 [^]	.24 [^]	.24 [^]	.21 [^]	.30 [^]	.34 [^]	.28 [^]	.33 [^]	.29 [^]	.31 [^]	.28 [^]	-.18 [^]	-.19 [^]	.38 [^]	.33 [^]	.27 [^]	.27 [^]	.25 [^]	--	
20. Research Self-Efficacy	.41 [^]	.43 [^]	.48 [^]	.45 [^]	.20 [^]	.41 [^]	.22 [^]	.29 [^]	.29 [^]	.25 [^]	.31 [^]	-.33 [^]	-.27 [^]	.31 [^]	.29 [^]	.65 [^]	.61 [^]	.45 [^]	.37 [^]	--
21. Research Productivity	.16 [†]	.11	.14 [*]	.04	.10	-.08	-.03	.03	.17 [†]	.11	.13 [*]	.13 [*]	.02	-.01	.03	.30 [^]	.17 [†]	.06	.08	.27 [^]

Note. * $p < .05$, † $p < .01$, ^ $p < .001$. Two-tailed Pearson correlations.

Table 9

Correlation Matrix using Paired Data between Doctoral Students and their Advisors

	<i>Advisors' Outcomes</i>		<i>Advisors' Perceptions of Doctoral Student Outcomes</i>				
	Relational Satisfaction	Communication Satisfaction	Perceived Persistence	Perceived Time to Degree	Academic Preparedness	Quality of Work	Research Efficacy
<i>Students' Perceived Psychosocial Development</i>							
1. Vector4	.42[^]	.45[†]	.02^{ns}	.32[*]	.32[*]	.43[^]	.42[†]
2. Vector5	.48[^]	.50[^]	.12^{ns}	.28[*]	.46[^]	.44[^]	.47[^]
3. Vector6	.38[†]	.45[^]	.08^{ns}	.27[*]	.44[^]	.42[†]	.46[^]
4. Vector7	.45[^]	.51[^]	.09^{ns}	.31[*]	.46[^]	.45[^]	.46[^]
<i>Students' Perceived Relational Maintenance</i>							
5. Appreciation	.42[†]	.39[†]	.19 ^{ns}	.26 ^{ns}	.43 [^]	.45 [^]	.35 [*]
6. Tasks	.54[^]	.53[^]	.09 ^{ns}	.43 [^]	.41 [†]	.56 [^]	.55 [^]
7. Protection	.52[^]	.47[^]	.11 ^{ns}	.35 [†]	.49 [^]	.43 [^]	.43 [^]
8. Courtesy	.30[*]	.32[*]	.06 ^{ns}	.23 ^{ns}	.18 ^{ns}	.33 [*]	.33 [*]
9. Humor	.31[*]	.36[†]	.21 ^{ns}	.34 [*]	.22 ^{ns}	.25 ^{ns}	.35 [*]
10. Goals	.37[†]	.40[†]	.16 ^{ns}	.27 [*]	.39 [†]	.36 [†]	.48 [^]
<i>Students' Perceived Conflict Strategies</i>							
11. Integrative Strategy	.36[†]	.38[†]	.06 ^{ns}	.25 ^{ns}	.31 [*]	.35 [*]	.37 [*]
12. Avoidance Strategy	-.42[†]	-.39[†]	-.04 ^{ns}	-.26 ^{ns}	-.37 [†]	-.38 [†]	-.49 [^]
13. Distributive Strategy	-.43[†]	-.43[†]	-.07 ^{ns}	-.28 [*]	-.36 [†]	-.42 [†]	-.47 [^]

Note. * $p < .05$, [†] $p < .01$, [^] $p < .001$. ^{ns} $p > .05$ Two-tailed Pearson correlations. $n = 52$ paired dyads. Hypothesized relationships depicted in bold.

CHAPTER III

Results

Hypothesis One

The first hypothesis posited that doctoral students' perceived psychosocial development (i.e., developing mature interpersonal relationships, establishing identity, developing purpose, developing integrity) would be related positively to their own reports of relational maintenance behavior (i.e., appreciation, tasks, protection, courtesy, humor, goals) with their advisor. This hypothesis was supported. Pearson correlations revealed that all four vectors of psychosocial development were significantly ($p < .001$) and positively related to all six forms of relational maintenance behavior (see Table 8). The correlation coefficients for these relationships ranged from .22 to .45.

Six post-hoc OLS regressions (see Table 10) were computed to predict doctoral students' relational maintenance behavior based on their perceived psychosocial development. In the first regression, a significant model was obtained for appreciation, $F(4, 293) = 10.55, p < .001, R^2 = .13$, with mature interpersonal relationships ($\beta = .26, p < .001$) serving as the only unique and significant predictor. In the second regression, a significant model was obtained for tasks, $F(4, 292) = 22.17, p < .001, R^2 = .23$, with mature interpersonal relationships ($\beta = .12, p < .05$) and purpose ($\beta = .23, p < .01$) each serving as unique and significant predictors. In the third regression, a significant model was obtained for protection, $F(4, 291) = 10.73, p < .001, R^2 = .13$, with mature interpersonal relationships ($\beta = .24, p < .001$) again serving as the only unique and significant predictor. In the fourth regression, a significant model was obtained for courtesy, $F(4, 291) = 15.82, p < .001, R^2 = .18$, with mature interpersonal relationships (β

= .14, $p < .05$) and identity ($\beta = .37, p < .001$) each serving as unique and significant predictors. In the fifth regression, a significant model was obtained for humor, $F(4, 290) = 15.83, p < .001, R^2 = .18$, with mature interpersonal relationships ($\beta = .41, p < .001$) serving as the only unique and significant predictor. In the sixth regression, a significant model was obtained for goals, $F(4, 292) = 12.70, p < .001, R^2 = .15$, with mature interpersonal relationships ($\beta = .24, p < .001$) again serving as the only unique and significant predictor.

Hypotheses Two and Three

The second hypothesis posited that doctoral students' perceived psychosocial development would be related positively to their own use of integrative conflict strategies. The third hypothesis posited that doctoral students' perceived psychosocial development would be related negatively to their own use of distributive and avoidance conflict strategies. Both hypothesis two and hypothesis three were supported. Pearson correlations revealed that all four vectors of psychosocial development were significantly ($p < .001$) related to all three conflict strategies. As expected, psychosocial development correlated positively with integrative conflict (coefficients ranging from .34 to .40) and negatively with distributive and avoidance conflict (coefficients ranging from -.29 to -.47).

Three post-hoc OLS regressions (see Table 11) were computed to predict doctoral students' conflict strategies based on their perceived psychosocial development. In the first regression, a significant model was obtained for integrative conflict, $F(4, 290) = 20.32, p < .001, R^2 = .22$, with mature interpersonal relationships ($\beta = .27, p < .001$) and identity ($\beta = .30, p < .001$) each serving as unique and significant predictors.

Table 10

Multiple Regressions using Psychosocial Development to Predict Relational Maintenance

Criterion/Predictor Variables	B	SEB	β	<i>t</i>
<u>Appreciation</u>				
Mature IP Relationships	.497	.119	.263[^]	4.174
Identity	.272	.151	.170	1.799
Purpose	-.162	.178	-.093	-.911
Integrity	.113	.161	.066	.702
<u>Tasks</u>				
Mature IP Relationships	.115	.059	.115[*]	1.938
Identity	.097	.074	.117	1.319
Purpose	.207	.087	.230[†]	2.393
Integrity	.088	.079	.099	1.117
<u>Protection</u>				
Mature IP Relationships	.281	.074	.240[^]	.240
Identity	.112	.095	.113	1.173
Purpose	.032	.111	.030	.287
Integrity	.048	.100	.045	.474
<u>Courtesy</u>				
Mature IP Relationships	.100	.045	.135[*]	2.230
Identity	.233	.057	.373[^]	4.106
Purpose	-.036	.067	-.052	-.534
Integrity	.013	.061	.020	.219
<u>Humor</u>				
Mature IP Relationships	.391	.057	.414[^]	6.800
Identity	-.003	.072	-.004	-.047
Purpose	.030	.085	.035	.353
Integrity	-.009	.077	-.010	-.116
<u>Goals</u>				
Mature IP Relationships	.213	.054	.243[^]	3.901
Identity	.034	.069	.046	.491
Purpose	.102	.081	.127	1.255
Integrity	.035	.074	.044	.477

Note. Appreciation, $F(4, 293) = 10.55, p < .001, R^2 = .13$. Tasks, $F(4, 292) = 22.17, p < .001, R^2 = .23$. Protection, $F(4, 291) = 10.73, p < .001, R^2 = .13$. Courtesy, $F(4, 291) = 15.82, p < .001, R^2 = .18$. Humor, $F(4, 290) = 15.83, p < .001, R^2 = .18$. Goals, $F(4, 292) = 12.70, p < .001, R^2 = .15$. Significant predictor variables in bold. * $p < .05$, [†] $p < .01$, [^] $p < .001$.

Table 11

Multiple Regressions using Psychosocial Development to Predict Conflict Strategies

Criterion/Predictor Variables	B	SEB	β	<i>t</i>
<i>Integrative Strategy</i>				
Mature IP Relationships	.505	.110	.273[^]	4.575
Identity	.466	.140	.298[^]	3.325
Purpose	-.007	.165	-.004	-.042
Integrity	-.032	.150	-.019	-.211
<i>Distributive Strategy</i>				
Mature IP Relationships	-.279	.111	-.159[*]	-2.522
Identity	-.108	.143	-.072	-.758
Purpose	-.074	.169	-.046	-.438
Integrity	-.283	.150	-.178[*]	-2.522
<i>Avoidance Strategy</i>				
Mature IP Relationships	-.225	.118	-.112	-1.901
Identity	-.080	.151	-.047	-.527
Purpose	-.488	.178	-.265[†]	-2.738
Integrity	-.281	.159	-.155	-1.768

Note. Integrative Strategy, $F(4, 290) = 20.32, p < .001, R^2 = .22$. Distributive Strategy, $F(4, 287) = 12.20, p < .001, R^2 = .15$. Avoidance Strategy, $F(4, 288) = 24.30, p < .001, R^2 = .25$. Significant predictor variables in bold. ^{*} $p < .05$, [†] $p < .01$, [^] $p < .001$.

In the second regression, a significant model was obtained for distributive conflict, $F(4, 287) = 12.20, p < .001, R^2 = .15$, with mature interpersonal relationships ($\beta = -.16, p < .05$) and integrity ($\beta = -.18, p < .05$) each serving as unique and significant predictors. In the third regression, a significant model was obtained for avoidance conflict, $F(4, 288) = 24.30, p < .001, R^2 = .25$, with purpose ($\beta = -.27, p < .001$) serving as the only unique and significant predictor.

Hypotheses Four and Five

The fourth hypothesis posited that doctoral students' perceived psychosocial

development would be related positively to (a) students' and (b) advisors' relational satisfaction. Similarly, the fifth hypothesis predicted that doctoral students' perceived psychosocial development would be related positively to (a) students' and (b) advisors' communication satisfaction. Both hypothesis four and hypothesis five were supported. Pearson correlations revealed that all four vectors of psychosocial development were significantly ($p < .001$) and positively related to doctoral students' relational and communication satisfaction (coefficients ranging from .25 to .43). All four vectors of psychosocial development were also related positively ($p < .01$) to advisors' relational and communication satisfaction (coefficients ranging from .38 to .51).

Two post-hoc OLS regressions (see Table 12) were computed to predict doctoral students' satisfaction (i.e., relational and communication) based on their perceived psychosocial development. In the first regression, a significant model was obtained for relational satisfaction, $F(4, 292) = 17.57, p < .001, R^2 = .20$, with mature interpersonal relationships serving as the only unique and significant predictor ($\beta = .37, p < .001$). In the second regression, a significant model was obtained for communication satisfaction, $F(4, 291) = 21.54, p < .001, R^2 = .23$, with mature interpersonal relationships again serving as the only unique and significant predictor.

Hypotheses Six and Seven

The sixth hypothesis predicted that doctoral students' relational maintenance behaviors would be related positively to (a) students' and (b) advisors' relational satisfaction. Relatedly, the seventh hypothesis posited that doctoral students' relational maintenance behaviors would be associated positively to (a) students' and (b) advisors' communication satisfaction. Both hypothesis six and hypothesis seven were supported.

Table 12

Multiple Regressions Using Psychosocial Development to Predict Satisfaction

Criterion/ Predictor Variables	B	SEB	β	<i>t</i>
<i>Relational Satisfaction</i>				
Mature IP Relationships	.400	.066	.367[^]	6.056
Identity	.144	.084	.157	1.714
Purpose	.005	.098	.005	.056
Integrity	-.032	.090	-.032	-.353
<i>Communication Satisfaction</i>				
Mature IP Relationships	.565	.096	.348[^]	5.868
Identity	.182	.124	.133	1.472
Purpose	-.004	.147	-.003	-.026
Integrity	.123	.131	.084	.941

Note. Relational Satisfaction, $F(4, 292) = 17.57, p < .001, R^2 = .20$. Communication Satisfaction, $F(4, 291) = 21.54, p < .001, R^2 = .23$. Significant predictor variables in bold. * $p < .05$, $^{\dagger}p < .01$, $^{\wedge}p < .001$.

Pearson correlations revealed that all six relational maintenance behaviors were

Table 13

Multiple Regressions using Relational Maintenance Behaviors to Predict Satisfaction

Criterion/ Predictor Variables	B	SEB	β	<i>T</i>
<i>Relational Satisfaction</i>				
Appreciation	.119	.028	.209[^]	4.177
Tasks	.052	.044	.049	1.176
Protection	.433	.049	.467[^]	8.792
Courtesy	-.053	.070	-.036	-.757
Humor	.171	.059	.145[†]	2.904
Goals	.145	.067	.115[*]	2.174
<i>Communication Satisfaction</i>				
Appreciation	.151	.042	.180[^]	4.029
Tasks	.075	.065	.048	3.186
Protection	.504	.072	.371[^]	.207
Courtesy	.021	.103	.010	6.998
Humor	.274	.086	.159[†]	1.161
Goals	.392	.097	.212[^]	3.613

Note. Relational Satisfaction, $F(6, 287) = 80.84, p < .001, R^2 = .63$. Communication Satisfaction, $F(6, 285) = 81.70, p < .001, R^2 = .63$. Significant predictor variables in bold. * $p < .05$, $^{\dagger}p < .01$, $^{\wedge}p < .001$.

significantly ($p < .001$) and positively related to doctoral students' relational and communication satisfaction (coefficients ranging from .34 to .73). All six relational maintenance behaviors were also positively related ($p < .05$) to advisors' relational and communication satisfaction (coefficients ranging from .31 to .54).

Two post-hoc OLS regressions (see Table 13) were computed to predict doctoral students' satisfaction (i.e., relational and communication) based on their own reports of relational maintenance behaviors (i.e., appreciation, tasks, protection, courtesy, humor, goals). In the first regression, a significant model was obtained for relational satisfaction, $F(6, 287) = 80.84, p < .001, R^2 = .63$, with appreciation ($\beta = .21, p < .001$), protection ($\beta = .47, p < .001$), humor ($\beta = .15, p < .01$), and goals ($\beta = .12, p < .05$) each serving as unique and significant predictors. In the second regression, a significant model was obtained for communication satisfaction, $F(6, 285) = 81.70, p < .001, R^2 = .63$, with appreciation ($\beta = .18, p < .001$), protection ($\beta = .37, p < .001$), humor ($\beta = .16, p < .01$), and goals ($\beta = .21, p < .05$) again serving as unique and significant predictors.

Hypotheses Eight, Nine, Ten, and Eleven

The eighth and ninth hypotheses posited that doctoral students' use of integrative conflict strategies would be related positively to (a) students' and (b) advisors' satisfaction (i.e., relational and communication). The tenth and eleventh hypotheses predicted that doctoral students' use of distributive and avoidance conflict strategies would be related negatively to (a) students' and (b) advisors' satisfaction. All four hypotheses (i.e., eight through eleven) were supported. Pearson correlations revealed that all three conflict strategies were significantly ($p < .001$) related in their hypothesized direction to students' relational and communication satisfaction (coefficients ranging

from .41 to .64). All three conflict strategies were also significantly ($p < .01$) related in their predicted direction to advisors' relational and communication satisfaction (coefficients ranging from .36 to .43).

Two post-hoc OLS regressions (see Table 14) were computed to predict doctoral students satisfaction (i.e., relational and communication) based on their own reports of conflict strategies (i.e., integrative, distributive, avoidance). In the first regression, a significant model was obtained for relational satisfaction, $F(3, 284) = 63.68, p < .001, R^2 = .40$, with integrative ($\beta = .47, p < .001$) and avoidance ($\beta = -.21, p < .001$) strategies each serving as unique and significant predictors. In the second regression, a significant model was obtained for communication satisfaction, $F(3, 284) = 87.06, p < .001, R^2 = .48$, with integrative ($\beta = .53, p < .001$) and avoidance ($\beta = -.23, p < .001$) strategies again serving as unique and significant predictors.

Table 14

Multiple Regressions using Conflict Strategies to Predict Satisfaction

Criterion/ Predictor Variables	B	SEB	<i>B</i>	<i>t</i>
<i>Relational Satisfaction</i>				
Integrative Strategy	.282	.031	.470[^]	9.026
Avoidance Strategy	-.116	.030	-.210[^]	-3.917
Distributive Strategy	-.060	.035	-.097	-1.703
<i>Communication Satisfaction</i>				
Integrative Strategy	.468	.043	.531[^]	10.898
Avoidance Strategy	-.182	.041	-.225[^]	-4.485
Distributive Strategy	-.076	.048	-.083	-1.562

Note. Relational Satisfaction, $F(3, 284) = 63.68, p < .001, R^2 = .40$. Communication Satisfaction, $F(3, 284) = 87.06, p < .001, R^2 = .48$. Significant predictor variables in bold. * $p < .05$, [†] $p < .01$, [^] $p < .001$.

Hypothesis Twelve

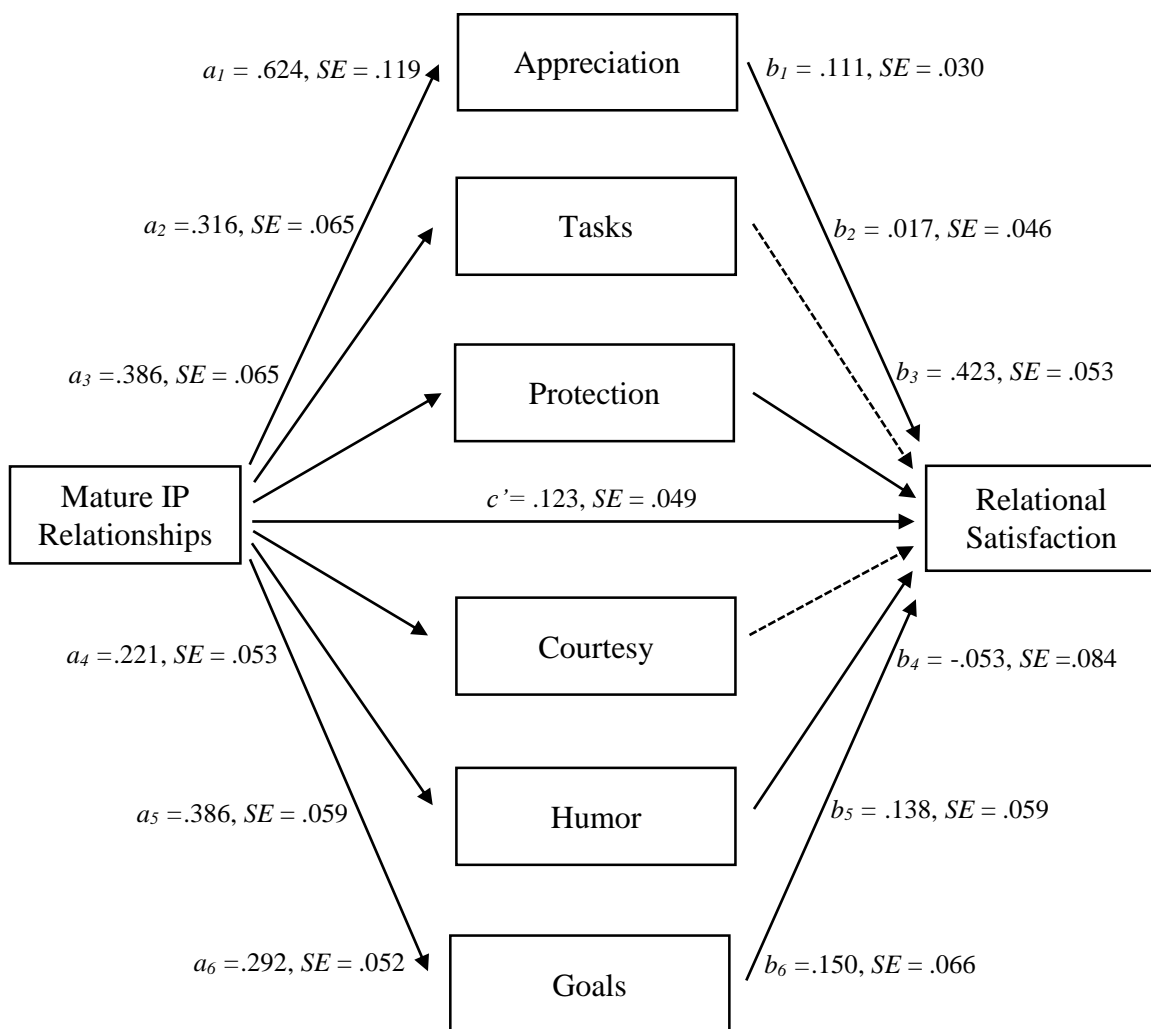
The twelfth hypothesis posited that doctoral students' communication behaviors (i.e., relational maintenance behaviors, conflict strategies) would mediate the relationship between psychosocial development and student-advisor satisfaction (i.e., relational, communication). This hypothesis was supported. Evidence of indirect effects were present throughout each of the 16 parallel mediation models; thus, for the sake of clarity, these models will be discussed in one of four groups based on their included variables.

Findings from the first group of parallel mediation models (see Figures 8 to 11) revealed that psychosocial development indirectly influenced relational satisfaction through its effects on doctoral students' relational maintenance behaviors. Specifically, in each of the four calculated models, bias-corrected confidence intervals from 50,000 bootstrap samples were entirely above zero for four of the six relational maintenance behaviors: appreciation, protection, humor, and goals. The completely standardized indirect effects for each of these mediators ranged from .030 to .149. Evidence of a direct effect for mature interpersonal relationships on relational satisfaction also emerged in Figure 8 ($c' = .123$, $SE = .049$); however, there was no other evidence that doctoral students' identity, purpose, or integrity directly influenced relational satisfaction independently of the effects that were transmitted through the relational maintenance behaviors. Indirect effects, standard errors, bootstrapped confidence intervals, and completely standardized indirect effects for the four models can be found in Table 15.

Results from the second group of parallel mediation models (see Figures 12 to 15) indicated that psychosocial development also indirectly influenced communication satisfaction through its effects on doctoral students' relational maintenance behaviors.

Figure 8

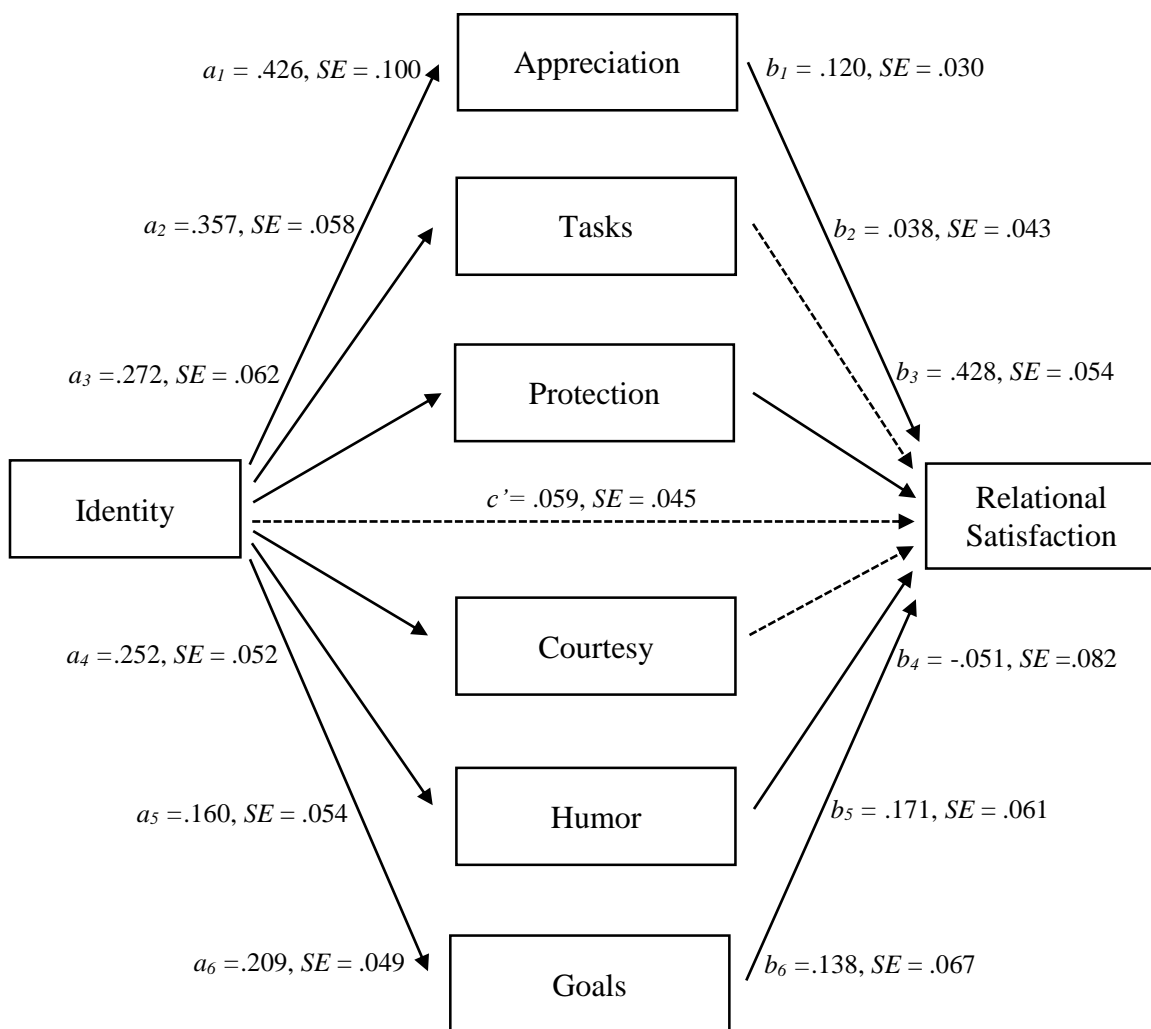
Parallel Mediation Model of Mature Interpersonal Relationships, Relational Maintenance Behaviors, and Relational Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 9

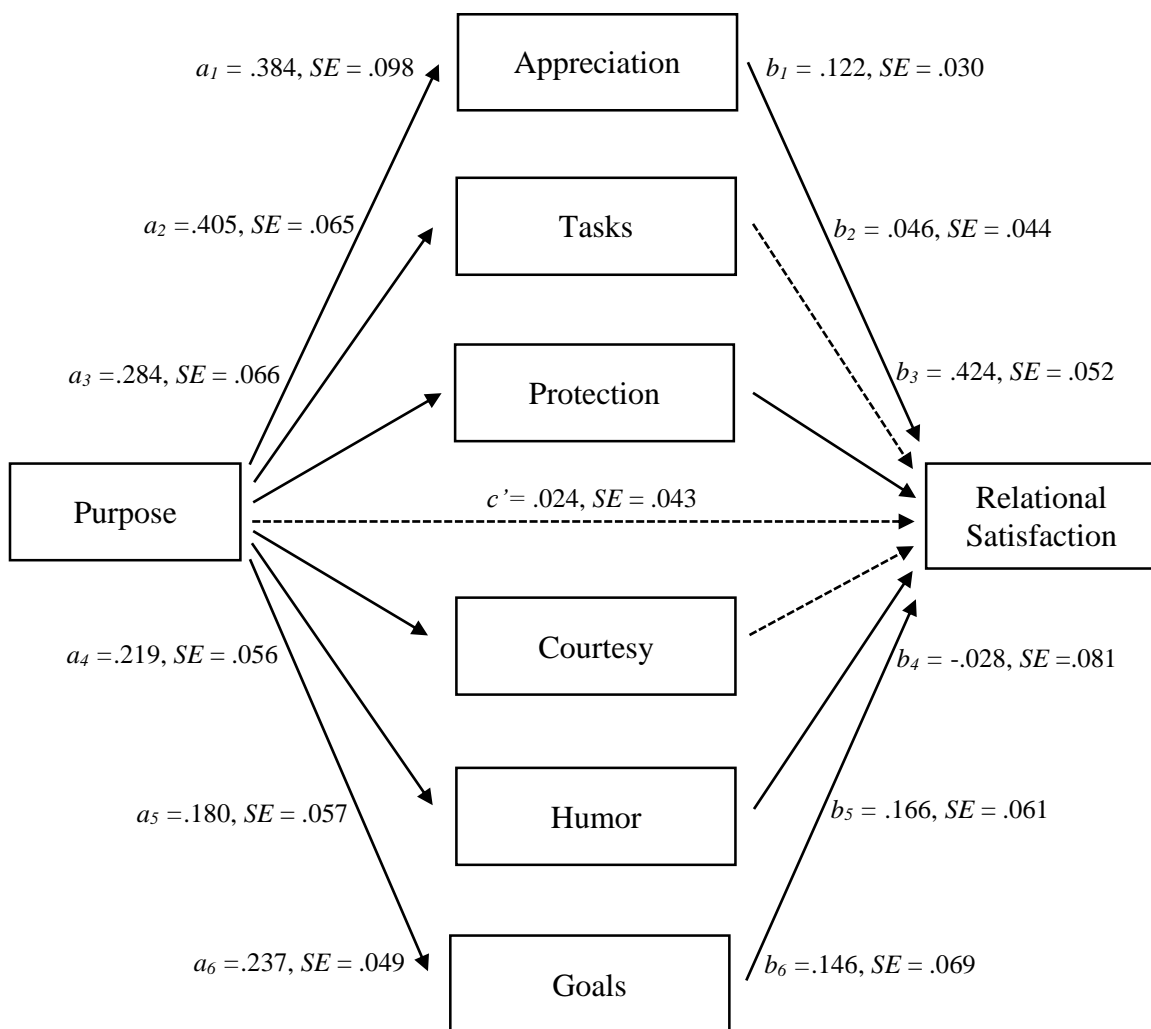
Parallel Mediation Model of Identity, Relational Maintenance Behaviors, and Relational Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 10

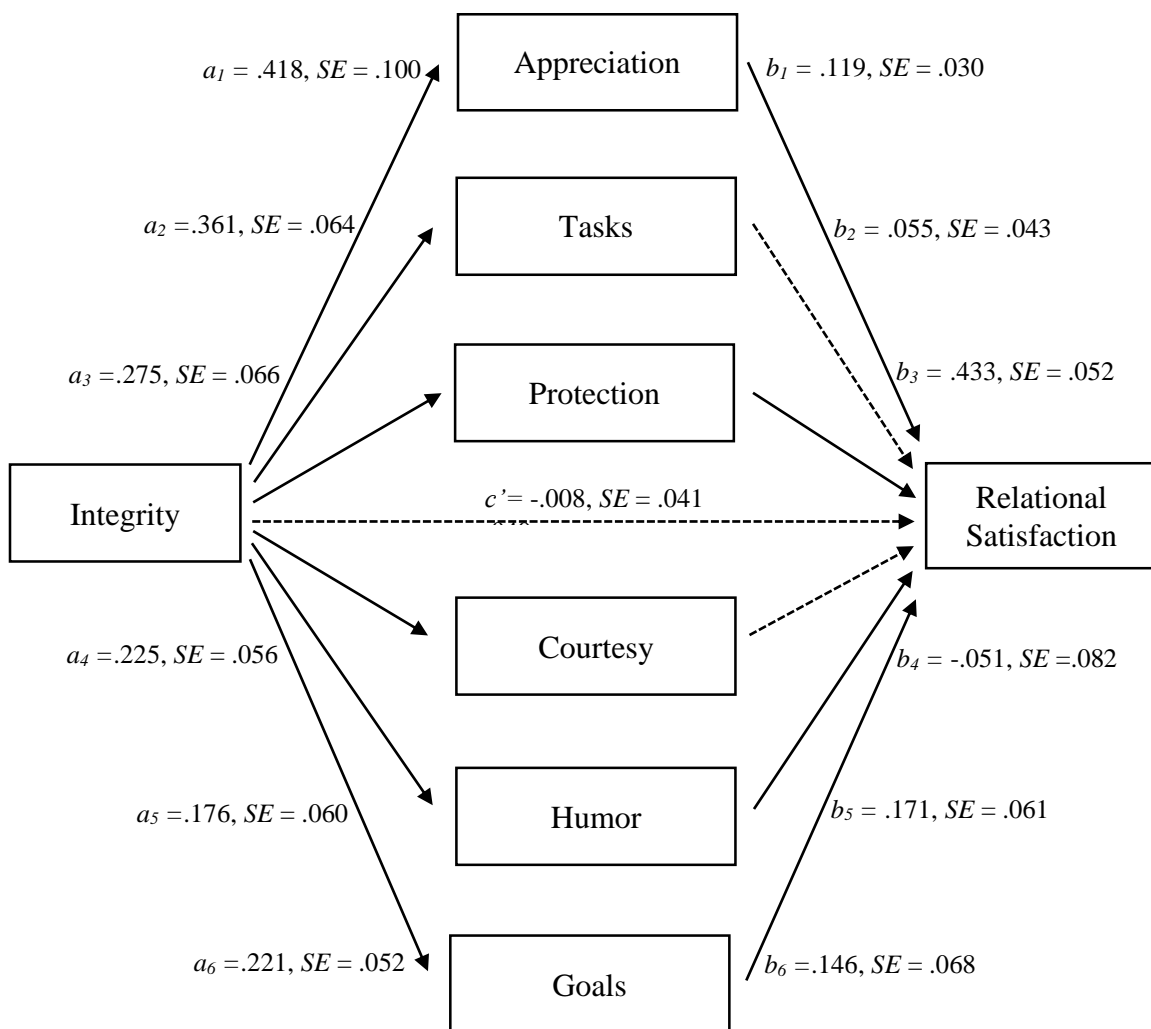
Parallel Mediation Model of Purpose, Relational Maintenance Behaviors, and Relational Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 11

Parallel Mediation Model of Integrity, Relational Maintenance Behaviors, and Relational Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Table 15

OLS Path Analyses for the Indirect Effects of Development on Relational Satisfaction through the Enactment of Relational Maintenance Behaviors

IV	Parallel Mediators	DV	<i>ab</i>	<i>SE</i>	95% CI lower, upper	<i>ab_{cs}</i>
V4	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> → Appreciation → → Tasks → → Protection → → Courtesy → → Humor → → Goals → </div>	Relational Satisfaction	.069	.024	.032, .129*	.063
			.005	.015	-.024, .035	.005
			.163	.033	.105, .238*	.149
			-.012	.019	-.056, .021	-.011
			.053	.024	.014, .108*	.049
			.044	.021	.008, .093*	.040
V5	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> → Appreciation → → Tasks → → Protection → → Courtesy → → Humor → → Goals → </div>	Relational Satisfaction	.051	.018	.024, .095*	.055
			.013	.016	-.015, .047	.014
			.116	.028	.068, .180*	.124
			-.013	.021	-.060, .024	-.014
			.027	.013	.008, .062*	.029
			.029	.016	.004, .069*	.031
V6	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> → Appreciation → → Tasks → → Protection → → Courtesy → → Humor → → Goals → </div>	Relational Satisfaction	.047	.018	.020, .092*	.046
			.019	.018	-.015, .057	.018
			.120	.031	.067, .190*	.117
			-.006	.018	-.047, .025	-.006
			.030	.015	.008, .068*	.029
			.034	.019	.005, .079*	.034
V7	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> → Appreciation → → Tasks → → Protection → → Courtesy → → Humor → → Goals → </div>	Relational Satisfaction	.050	.018	.023, .094*	.050
			.020	.016	-.009, .056	.020
			.119	.031	.066, .189*	.119
			-.012	.019	-.055, .022	-.012
			.030	.015	.009, .068*	.030
			.032	.018	.005, .076*	.032

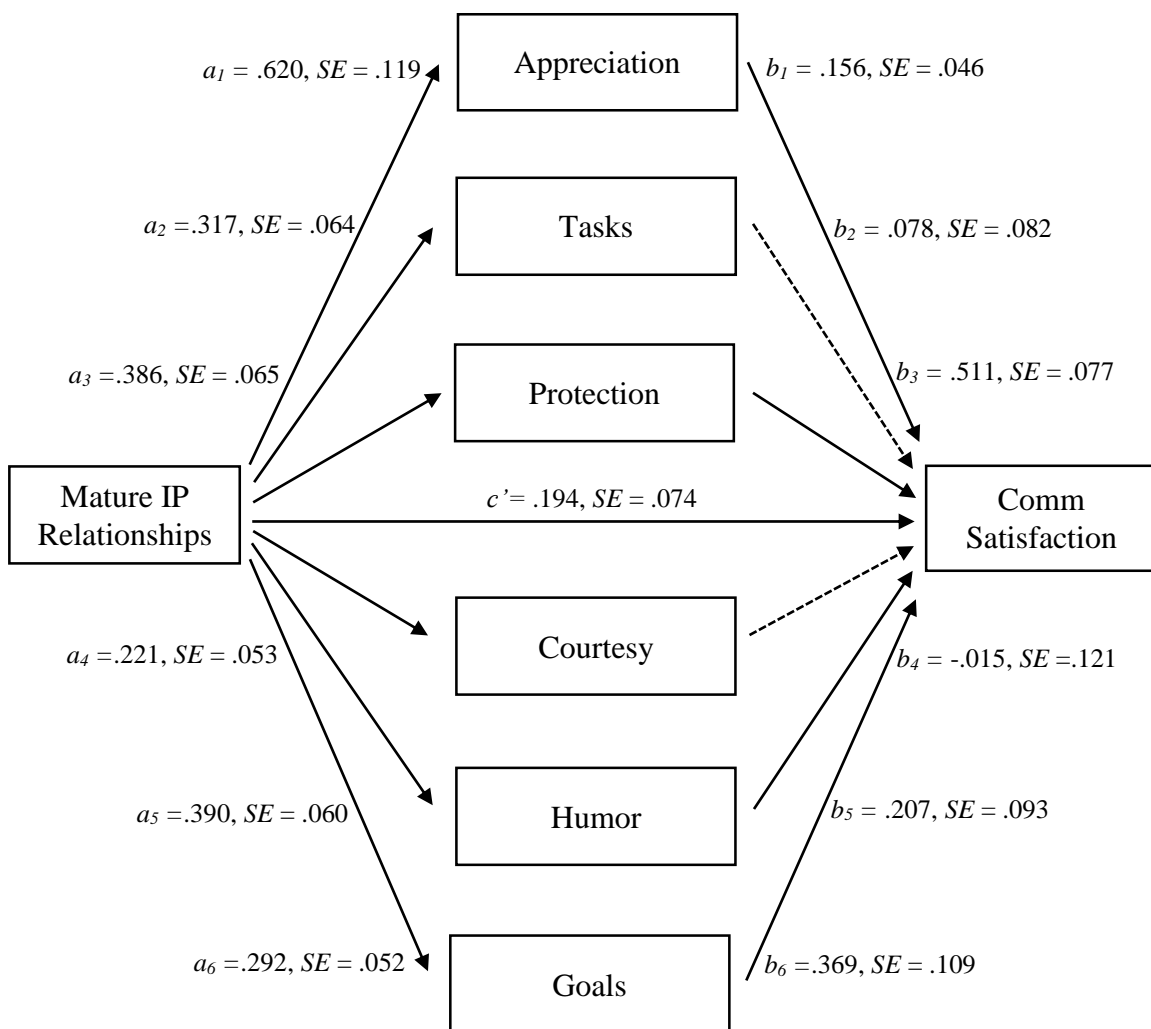
Note. V4, Vector Four (Mature Interpersonal Relationships); V5, Vector Five (Identity); V6, Vector Six (Purpose); V7, Vector Seven (Integrity); IV, independent variable; DV, dependent variable; *ab*, Indirect effect; CI, bootstrapped confidence interval; *ab_{cs}*, completely standardized indirect effect. Statistics generated from parallel mediation models using 50,000 bootstrap samples and bias-corrected confidence intervals. Variables inside the brackets were analyzed simultaneously so that indirect effects provided represent unique contributions of each individual mediator (i.e., while controlling for the effects of other mediators in the model). *Confidence interval excludes zero.

Specifically, in each of the four models, bias-corrected confidence intervals from 50,000 bootstrap samples were entirely above zero for the same four relational maintenance behaviors (i.e., appreciation, protection, humor, and goals). The completely standardized indirect effects for each of these mediators ranged from .033 to .122. Evidence of a direct effect for mature interpersonal relationships ($c' = .194$, $SE = .074$) and identity ($c' = .142$, $SE = .071$) on communication satisfaction also emerged in Figure 12 and Figure 13; however, there was no evidence that doctoral students' purpose or integrity directly influenced communication satisfaction independently of its effect on relational maintenance behaviors. A summary of the indirect effects, standard errors, bootstrapped confidence intervals, and completely standardized indirect effects for the four models can be found in Table 16.

Findings from the third group of parallel mediation models (see Figures 16 to 19) revealed that psychosocial development also indirectly influenced relational satisfaction through its effects on doctoral students' conflict strategies. In each of the four calculated models, bias-corrected confidence intervals from 50,000 bootstrap samples were entirely above zero for two of the three conflict strategies: integrative and avoidance. The completely standardized indirect effects for each of these mediators ranged from .059 to .188. Evidence of a direct effect for mature interpersonal relationships ($c' = .174$, $SE = .058$) on relational satisfaction emerged in Figure 16; however, there was no evidence to suggest that students' identity, purpose, or integrity directly influenced relational satisfaction independently of the transmitted effects that existed through the conflict strategies. Indirect effects, standard error, confidence intervals, and completely standardized indirect effects for the four models can be found in Table 17.

Figure 12

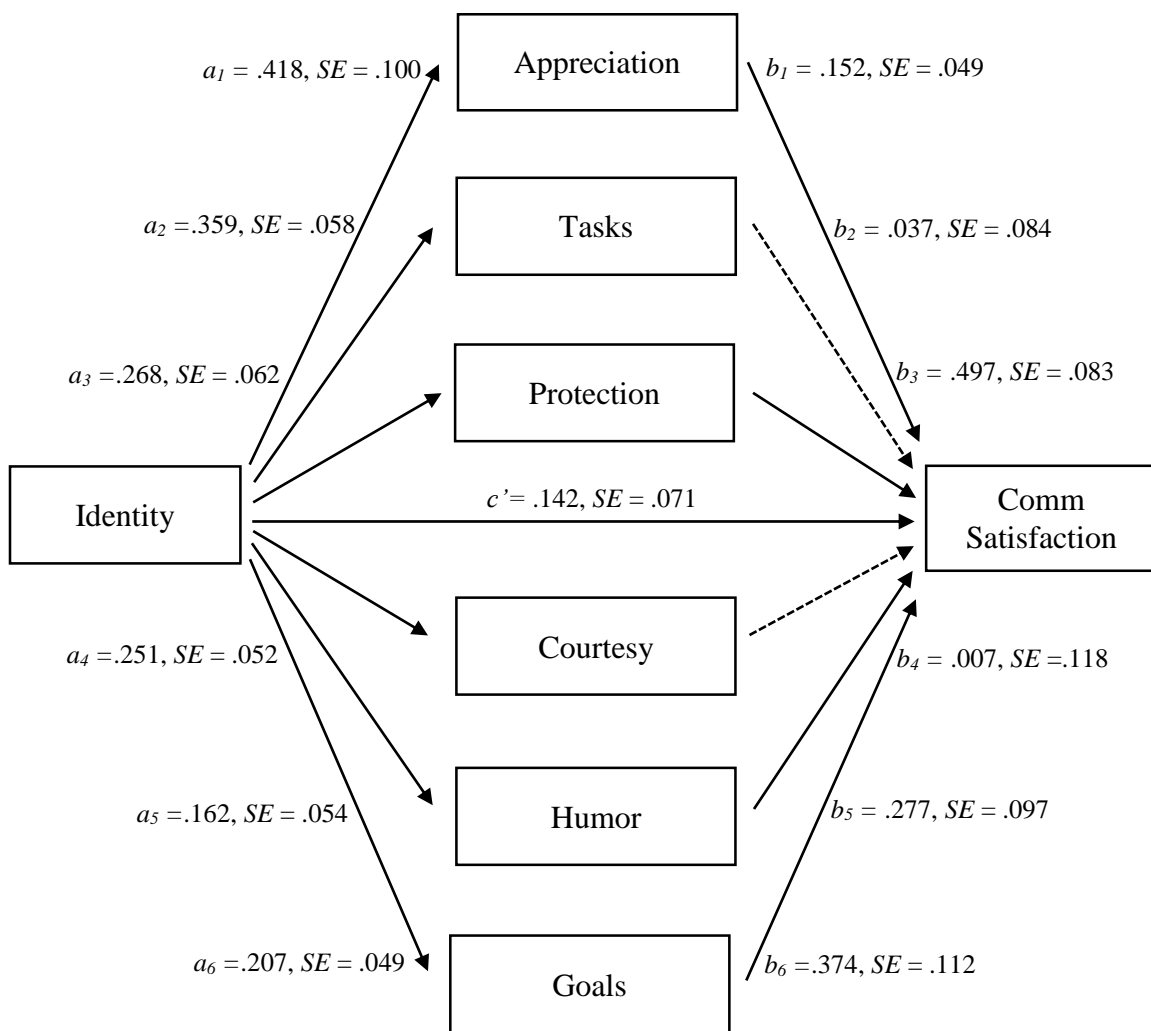
Parallel Mediation Model of Mature Interpersonal Relationships, Relational Maintenance Behaviors, and Communication Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 13

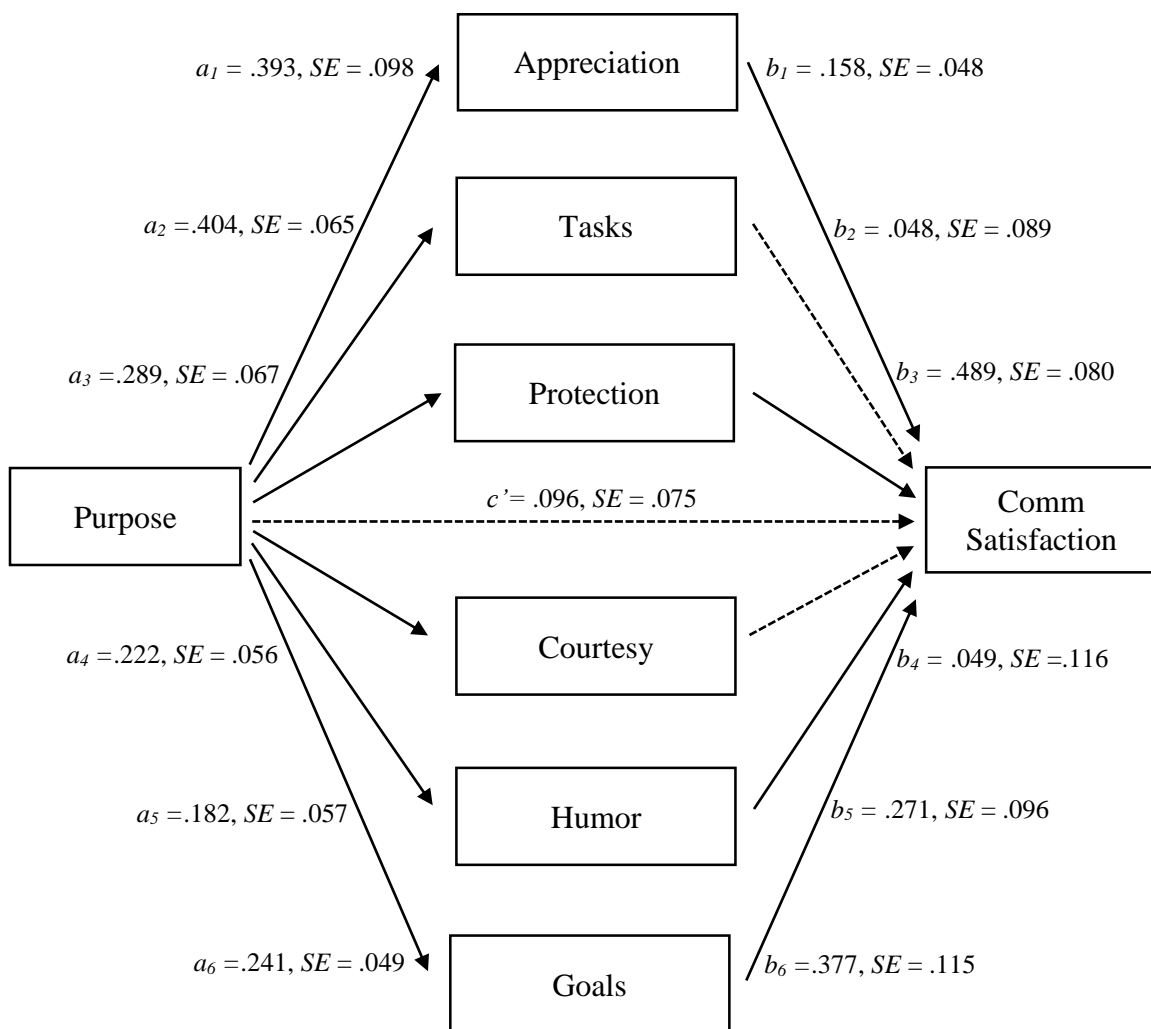
Parallel Mediation Model of Identity, Relational Maintenance Behaviors, and Communication Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 14

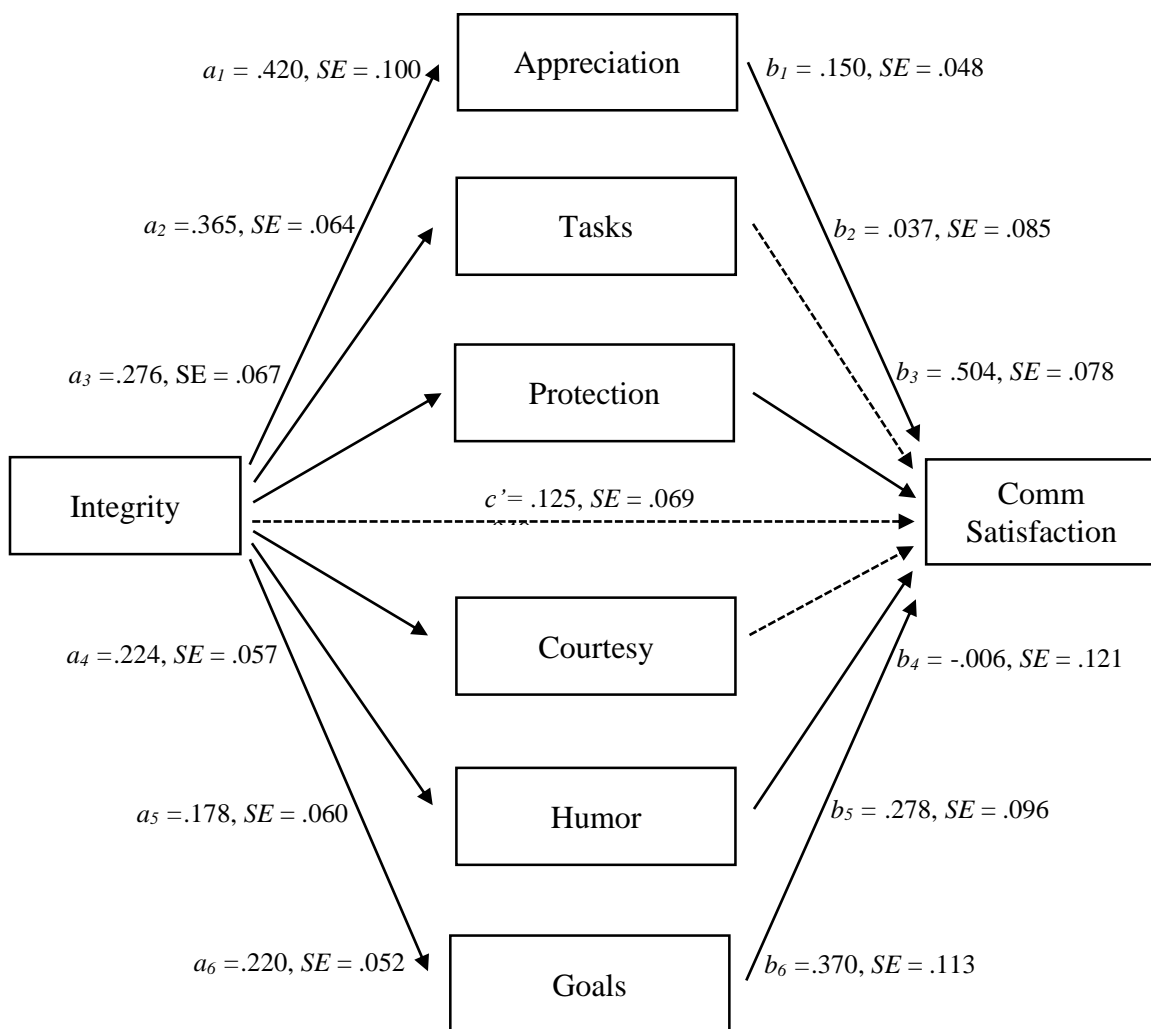
Parallel Mediation Model of Purpose, Relational Maintenance Behaviors, and Communication Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 15

Parallel Mediation Model of Integrity, Relational Maintenance Behaviors, and Communication Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Table 16

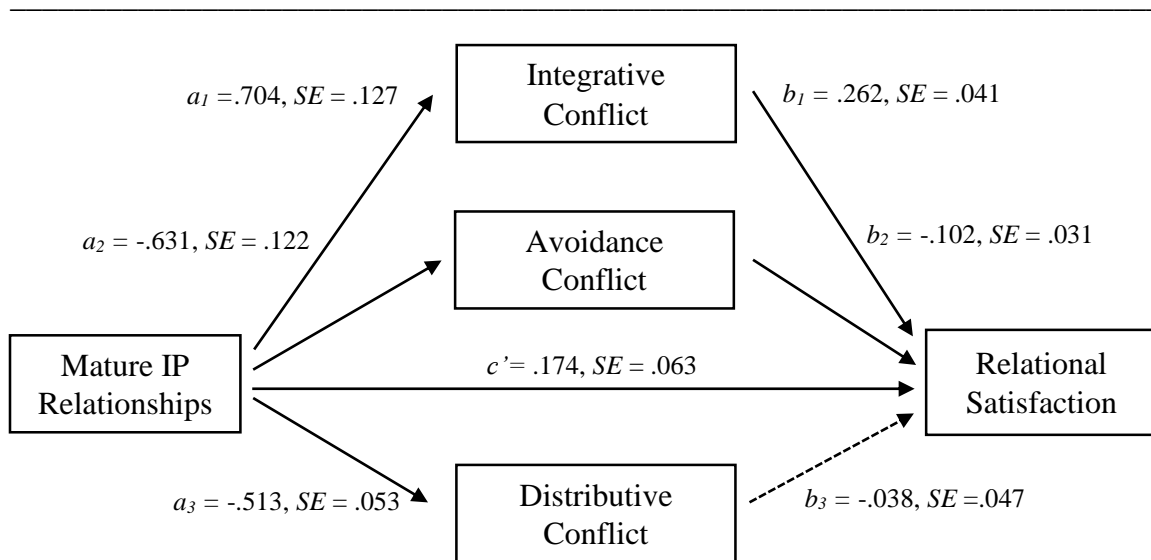
OLS Path Analyses for the Indirect Effects of Development on Communication Satisfaction through the Enactment of Relational Maintenance Behaviors

IV	Parallel Mediators	DV	<i>ab</i>	<i>SE</i>	95% CI lower, upper	<i>ab_{cs}</i>
V4	→ Appreciation → → Tasks → → Protection → → Courtesy → → Humor → → Goals →	Comm Satisfaction	.096	.037	.040, .186*	.060
			.025	.025	-.024, .077	.015
			.197	.045	.120, .299*	.122
			-.003	.027	-.061, .045	-.002
			.081	.038	.016, .168*	.050
			.108	.038	.046, .196*	.067
V5	→ Appreciation → → Tasks → → Protection → → Courtesy → → Humor → → Goals →	Comm Satisfaction	.064	.025	.025, .125*	.046
			.013	.029	-.041, .073	.010
			.133	.034	.076, .212*	.097
			.002	.029	-.057, .057	.001
			.045	.021	.015, .100*	.033
			.078	.031	.030, .155*	.057
V6	→ Appreciation → → Tasks → → Protection → → Courtesy → → Humor → → Goals →	Comm Satisfaction	.062	.025	.024, .126*	.041
			.019	.034	-.046, .087	.013
			.142	.037	.080, .228*	.094
			.011	.025	-.038, .063	.007
			.049	.023	.016, .111*	.033
			.091	.035	.036, .175*	.060
V7	→ Appreciation → → Tasks → → Protection → → Courtesy → → Humor → → Goals →	Comm Satisfaction	.063	.025	.025, .126*	.043
			.014	.030	-.041, .076	.009
			.139	.039	.073, .229*	.095
			-.001	.027	-.059, .050	-.001
			.050	.023	.016, .110*	.034
			.082	.033	.031, .164*	.056

Note. V4, Vector Four (Mature Interpersonal Relationships); V5, Vector Five (Identity); V6, Vector Six (Purpose); V7, Vector Seven (Integrity); IV, independent variable; DV, dependent variable; *ab*, Indirect effect; CI, bootstrapped confidence interval; *ab_{cs}*, completely standardized indirect effect. Statistics generated from parallel mediation models using 50,000 bootstrap samples and bias-corrected confidence intervals. Variables inside the brackets were analyzed simultaneously so that indirect effects provided represent unique contributions of each individual mediator (i.e., while controlling for the effects of other mediators in the model). *Confidence interval excludes zero.

Figure 16

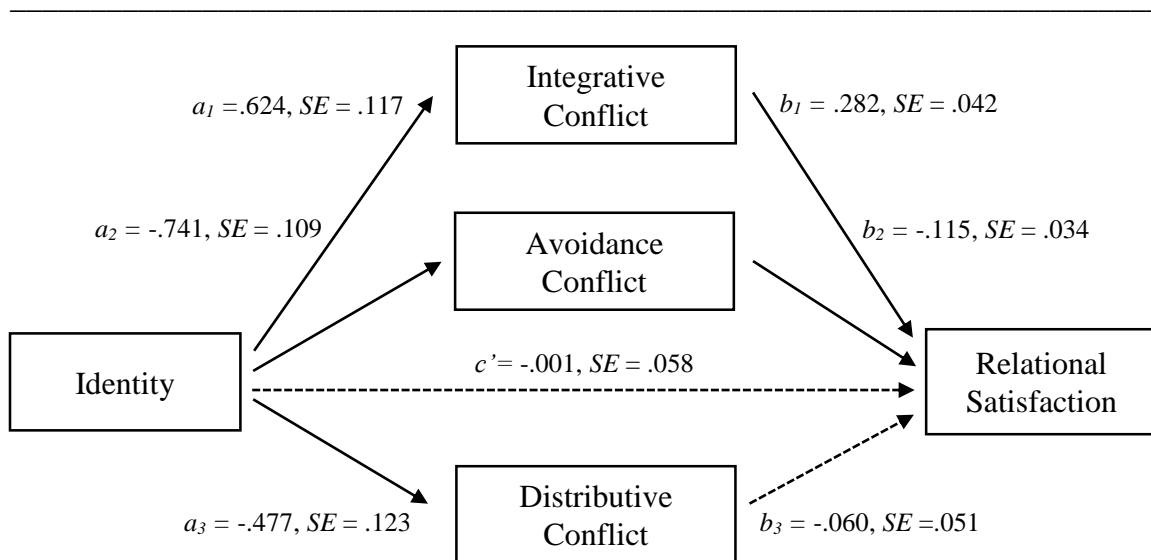
Parallel Mediation Model of Mature Interpersonal Relationships, Conflict Strategies, and Relational Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 17

Parallel Mediation Model of Identity, Conflict Strategies, and Relational Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 18

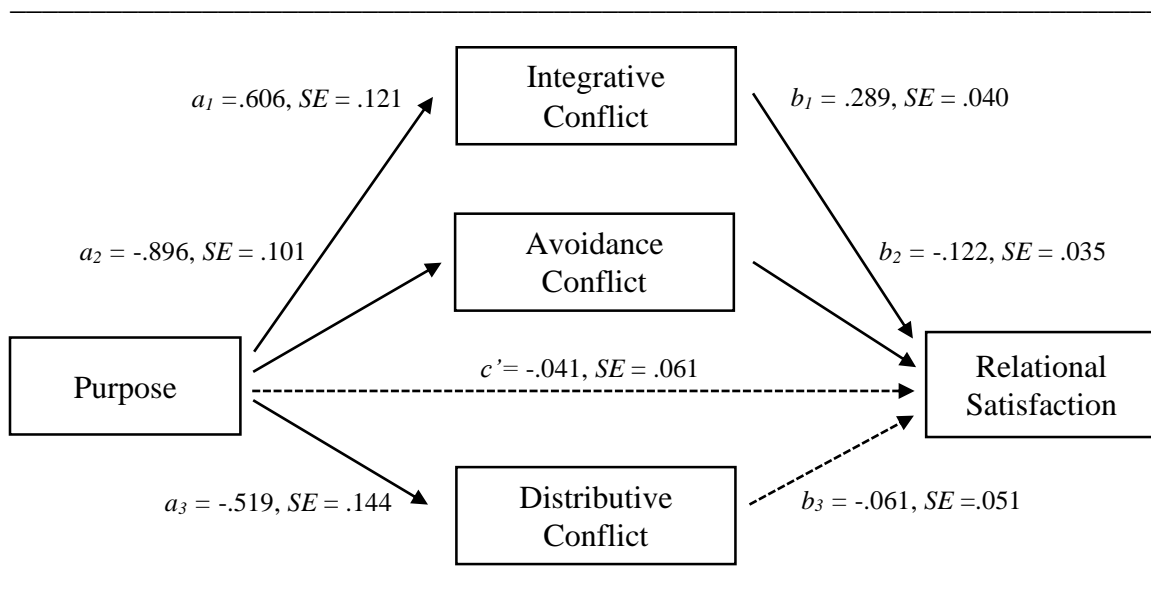
Parallel Mediation Model of Purpose, Conflict Strategies, and Relational Satisfaction

Figure 19

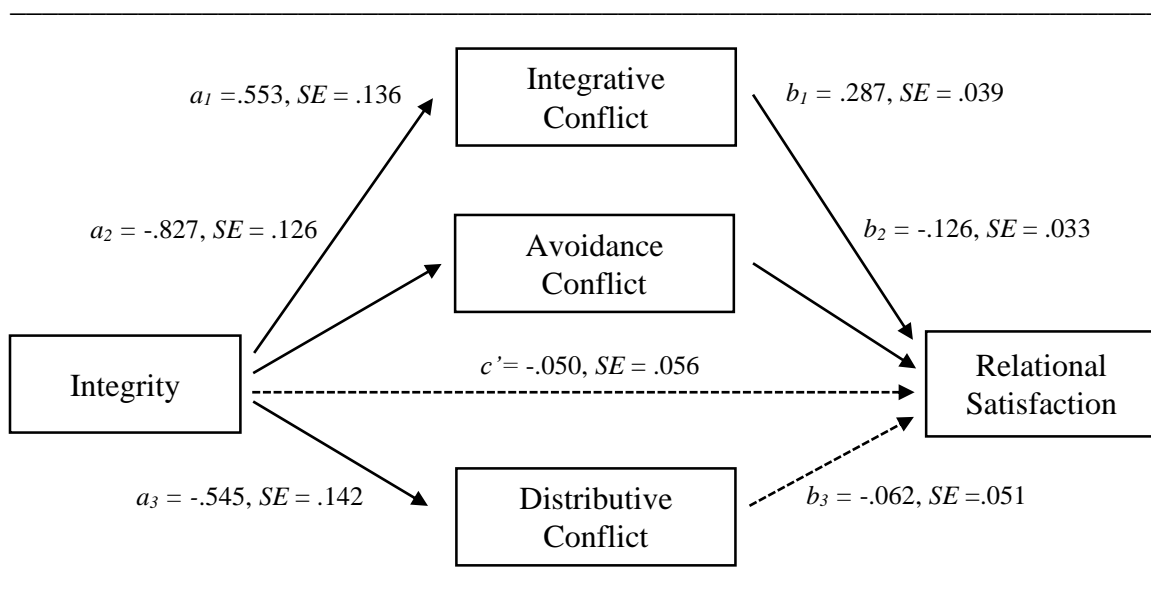
Parallel Mediation Model of Integrity, Conflict Strategies, and Relational Satisfaction

Table 17

OLS Path Analyses for the Indirect Effects of Development on Relational Satisfaction through the Enactment of Conflict Strategies

IV	Parallel Mediators	DV	<i>ab</i>	<i>SE</i>	95% CI lower, upper	<i>ab_{cs}</i>
V4	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> → Integrative → → Avoidance → → Distributive → </div>	Relational Satisfaction	.184	.041	.115, .277*	.171
			.064	.023	.028, .120*	.059
			.019	.022	-.021, .066	.018
V5	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> → Integrative → → Avoidance → → Distributive → </div>	Relational Satisfaction	.176	.039	.110, .266*	.188
			.085	.028	.038, .149*	.091
			.029	.024	-.009, .083	.031
V6	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> → Integrative → → Avoidance → → Distributive → </div>	Relational Satisfaction	.175	.039	.108, .265*	.173
			.110	.034	.052, .185*	.108
			.032	.025	-.010, .090	.031
V7	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> → Integrative → → Avoidance → → Distributive → </div>	Relational Satisfaction	.159	.042	.088, .255*	.158
			.104	.032	.050, .177*	.104
			.034	.026	-.011, .091	.034

Note. V4, Vector Four (Mature Interpersonal Relationships); V5, Vector Five (Identity); V6, Vector Six (Purpose); V7, Vector Seven (Integrity); IV, independent variable; DV, dependent variable; *ab*, Indirect effect; CI, bootstrapped confidence interval; *ab_{cs}*, completely standardized indirect effect. Statistics generated from parallel mediation models using 50,000 bootstrap samples and bias-corrected confidence intervals. Variables inside the brackets were analyzed simultaneously so that indirect effects provided represent unique contributions of each individual mediator (i.e., while controlling for the effects of other mediators in the model). *Confidence interval excludes zero.

Results from the final group of parallel mediation models (see Figures 20 to 23) indicated that psychosocial development also indirectly influenced communication satisfaction through its effects on doctoral students' conflict strategies. Specifically, in each of the four models, bias-corrected confidence intervals from 50,000 bootstrap samples were entirely above zero for the same two conflict strategies (i.e., integrative and avoidance). The completely standardized indirect effects for each of these mediators

ranged from .062 to .206. Again, evidence of a direct effect for mature interpersonal relationships ($c' = .194$, $SE = .074$) on communication satisfaction emerged in Figure 20; however, there was no evidence indicating that doctoral students' identity, purpose, or integrity directly influenced communication satisfaction independently of its effect on conflict strategies. A summary of the indirect effects, standard error, confidence intervals, and completely standardized indirect effects for the four models can be found in Table 18.

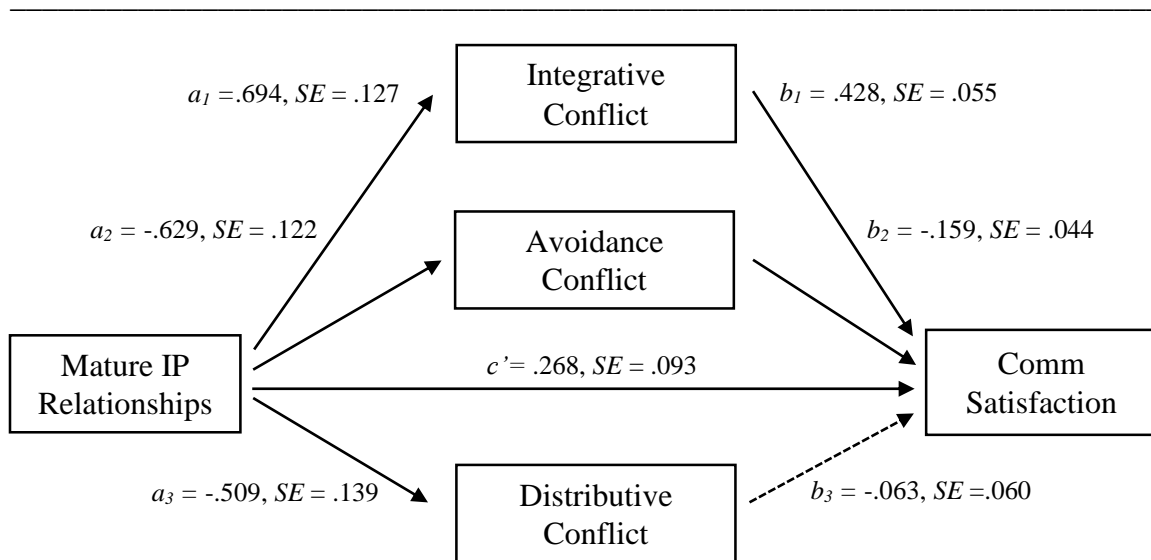
Hypothesis Thirteen

The thirteenth hypothesis posited that student-advisor satisfaction (i.e., relational and communication) would be related positively to perceptions of doctoral students' persistence and perceived time to degree. This hypothesis was partially supported. Pearson correlations revealed that doctoral students' relational and communication satisfaction were both significantly ($p < .001$) and positively related to their own perceptions of persistence and perceived time to degree (coefficients ranging from .29 to .38). Advisors' relational ($r = .55$, $p < .001$) and communication satisfaction ($r = .56$, $p < .001$) were also significantly related to their perceptions of doctoral students' perceived time to degree, but were not significantly associated ($p > .05$) with their perceptions of doctoral students' persistence.

Two post-hoc OLS regressions (see Table 19) were computed to predict doctoral students' persistence and their perceived time to degree based on their own reported relational and communication satisfaction. In the first regression, a significant model was obtained for persistence, $F(2, 296) = 25.41$, $p < .001$, $R^2 = .15$, with relational satisfaction ($\beta = .43$, $p < .001$) serving as the only unique and significant predictor. In the second

Figure 20

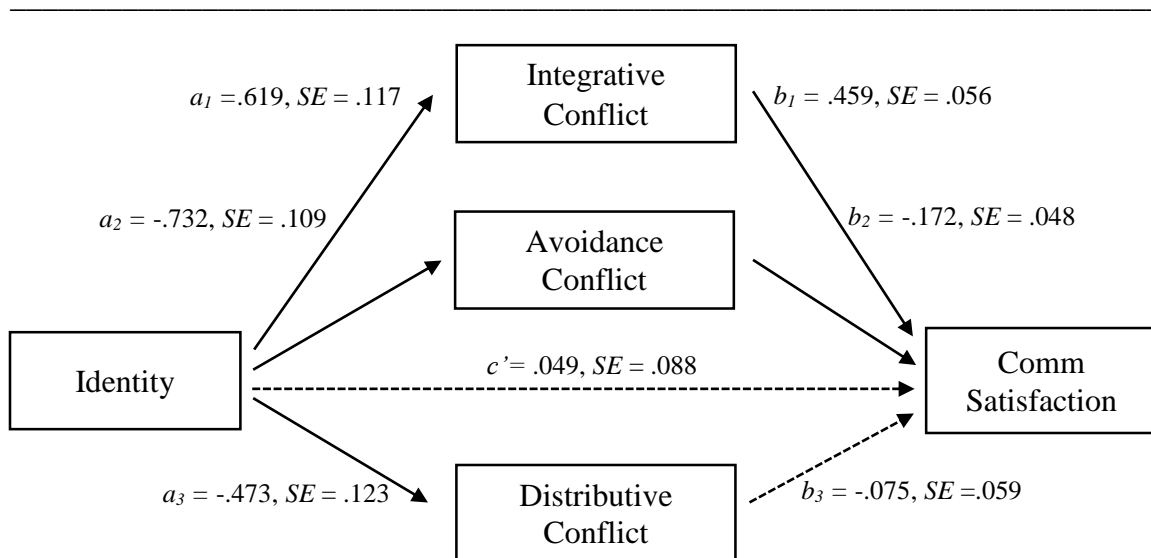
Parallel Mediation Model of Mature Interpersonal Relationships, Conflict Strategies, and Communication Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 21

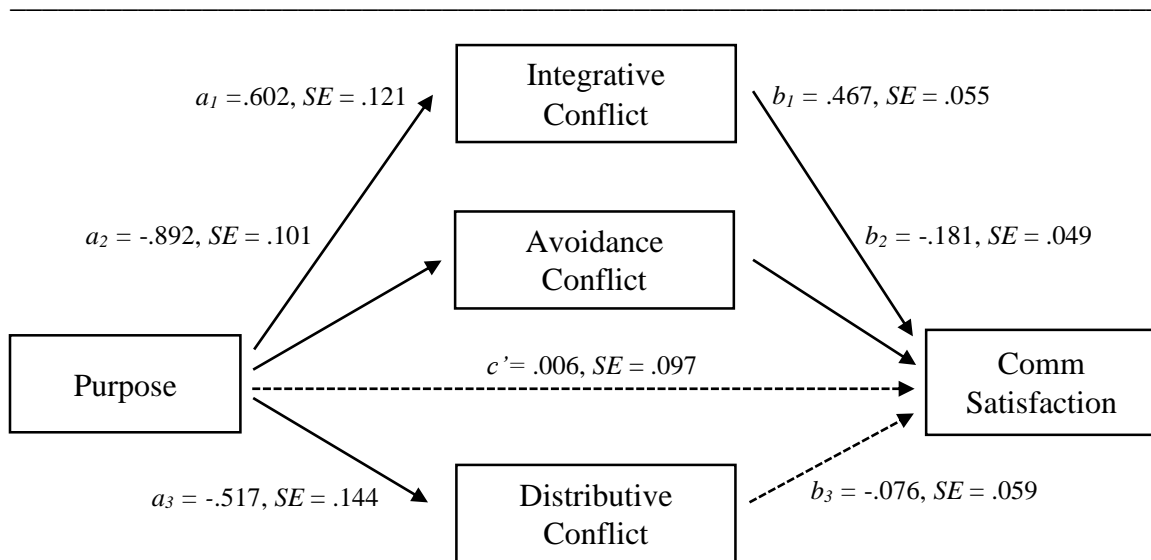
Parallel Mediation Model of Identity, Conflict Strategies, and Communication Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 22

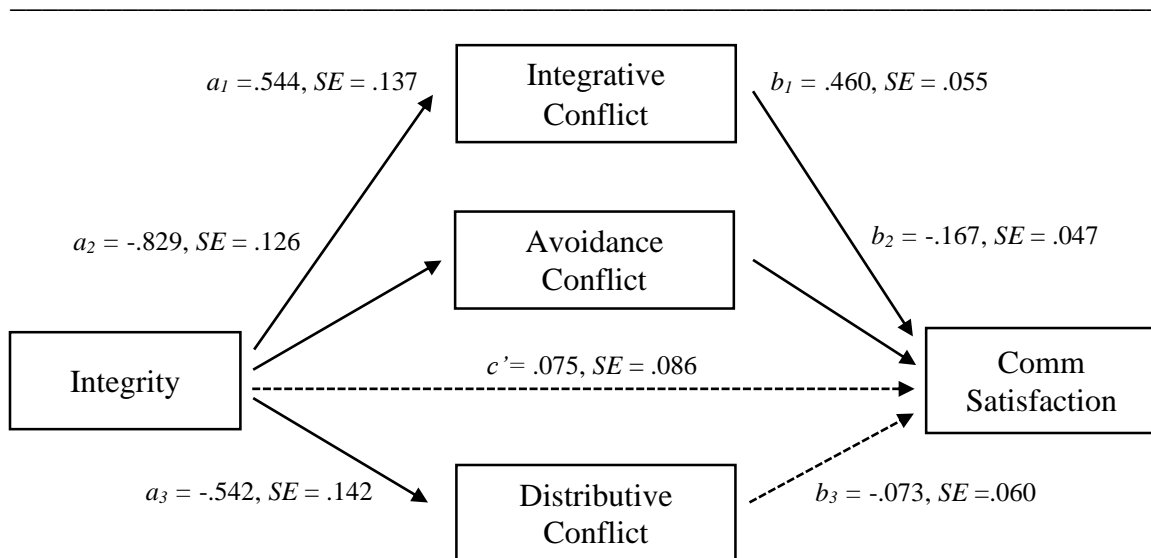
Parallel Mediation Model of Purpose, Conflict Strategies, and Communication Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Figure 23

Parallel Mediation Model of Integrity, Conflict Strategies, and Communication Satisfaction



Note. Unstandardized coefficients shown in figure. Solid paths are significant ($p < .05$).

Table 18

OLS Path Analyses for the Indirect Effects of Development on Communication Satisfaction through the Enactment of Conflict Strategies

IV	Parallel Mediators	DV	<i>ab</i>	<i>SE</i>	95% CI lower, upper	<i>ab_{cs}</i>
V4	→ Integrative → → Avoidance → → Distributive →	Comm. Satisfaction	.297	.062	.188, .435*	.185
			.100	.033	.047, .182*	.062
			.032	.030	-.021, .096	.020
V5	→ Integrative → → Avoidance → → Distributive →	Comm. Satisfaction	.284	.060	.181, .418*	.206
			.126	.039	.059, .216*	.091
			.036	.028	-.014, .098	.026
V6	→ Integrative → → Avoidance → → Distributive →	Comm. Satisfaction	.280	.061	.177, .420*	.188
			.161	.048	.081, .271*	.108
			.039	.030	-.016, .102	.026
V7	→ Integrative → → Avoidance → → Distributive →	Comm. Satisfaction	.250	.064	.139, .394*	.170
			.139	.045	.064, .241*	.094
			.039	.032	-.019, .106	.027

Note. V4, Vector Four (Mature Interpersonal Relationships); V5, Vector Five (Identity); V6, Vector Six (Purpose); V7, Vector Seven (Integrity); IV, independent variable; DV, dependent variable; *ab*, Indirect effect; CI, bootstrapped confidence interval; *ab_{cs}*, completely standardized indirect effect. Statistics generated from parallel mediation models using 50,000 bootstrap samples and bias-corrected confidence intervals. Variables inside the brackets were analyzed simultaneously so that indirect effects provided represent unique contributions of each individual mediator (i.e., while controlling for the effects of other mediators in the model). *Confidence interval excludes zero.

regression, a significant model was obtained for perceived time to degree, $F(2, 295) = 22.67, p < .001, R^2 = .13$, with relational satisfaction ($\beta = .27, p < .05$) again serving as the only unique and significant predictor.

Hypothesis Fourteen

The fourteenth hypothesis posited that doctoral students' perceived psychosocial development would be related positively to (a) students' and (b) advisors' perceptions of

students' persistence and perceived time to degree. Hypothesis 14a was supported, whereas hypothesis 14b was partially supported. Pearson correlations revealed that all four vectors of psychosocial development were significantly ($p < .001$) and positively related to doctoral students' persistence and perceived time to degree (coefficients ranging from .25 to .43). All four vectors of psychosocial development were also related positively ($p < .05$) to advisors' reports of students' perceived time to degree (coefficients ranging from .27 to .32); however, none of the four vectors were significantly ($p > .05$) related to advisors' reports of students' persistence.

Two post-hoc OLS regressions (see Table 20) were computed to predict doctoral students' persistence and their perceived time to degree based on their reported psychosocial development. In the first regression, a significant model was obtained for persistence, $F(4, 293) = 6.54, p < .001, R^2 = .08$, with mature interpersonal relationships ($\beta = .15, p < .05$) serving as the only unique and significant predictor. In the second regression, a significant model was obtained for perceived time to degree, $F(4, 292) = 10.21, p < .001, R^2 = .12$, with mature interpersonal relationships ($\beta = .19, p < .01$) again serving as the only unique and significant predictor.

Hypothesis Fifteen

The fifteenth hypothesis posited that doctoral students' perceived psychosocial development would be related positively to (a) students' and (b) advisors' perceptions of students' academic preparedness and quality of work. This hypothesis was supported. Pearson correlations revealed that all four vectors of psychosocial development were significantly ($p < .001$) and positively related to doctoral students' perceptions of their own academic preparedness and quality of work (coefficients ranging from .39 to

Table 19

Multiple Regressions using Satisfaction to Predict Doctoral Student Attrition Variables

Criterion/ Predictor Variables	B	SEB	β	t
<i>Persistence</i>				
Relational Satisfaction	1.249	.374	.428[^]	3.342
Communication Satisfaction	-.116	.254	-.051 [^]	-.396
<i>Perceived Time to Degree</i>				
Relational Satisfaction	.121	.031	.470[*]	2.054
Communication Satisfaction	.033	.040	.106	.822

Note. Persistence, $F(2, 296) = 25.41, p < .001, R^2 = .15$. Perceived time to degree, $F(2, 295) = 22.67, p < .001, R^2 = .13$. Significant predictor variables in bold. ^{*} $p < .05$, [†] $p < .01$, [^] $p < .001$.

Table 20

Multiple Regressions using Psychosocial Development to Predict Student Attrition Variables

Criterion/ Predictor Variables	B	SEB	β	t
<i>Persistence</i>				
Mature IP Relationships	.459	.196	.151[*]	2.336
Identity	.215	.249	.084	.862
Purpose	.213	.293	.076	.725
Integrity	.097	.266	.035	.366
<i>Communication Satisfaction</i>				
Mature IP Relationships	.093	.031	.187[†]	2.960
Identity	.021	.040	.049	.516
Purpose	.008	.047	.018	.178
Integrity	.097	.043	.164	1.735

Note. Persistence, $F(4, 293) = 6.54, p < .001, R^2 = .08$. Perceived time to degree, $F(4, 292) = 81.70, p < .001, R^2 = .12$. Significant predictor variables in bold. ^{*} $p < .05$, [†] $p < .01$, [^] $p < .001$.

.54). All four vectors of psychosocial development were also significantly ($p < .05$) and positively related to advisors' perceptions of doctoral students' academic preparedness and quality of work (coefficients ranging from .32 to .46).

Two post-hoc OLS regressions (see Table 21) were computed to predict doctoral students' academic preparedness and their quality of work based on their reported psychosocial development. In the first regression, a significant model was obtained for academic preparedness, $F(4, 287) = 46.26, p < .001, R^2 = .39$, with mature interpersonal relationships ($\beta = .16, p < .01$) and purpose ($\beta = .34, p < .001$) each serving as unique and significant predictors. In the second regression, a significant model was obtained for quality of work, $F(4, 289) = 35.52, p < .001, R^2 = .33$, with mature interpersonal relationships ($\beta = .16, p < .01$) and purpose ($\beta = .25, p < .01$) again serving as unique and significant predictors.

Hypothesis Sixteen

The sixteenth hypothesis posited that doctoral students' perceived psychosocial development would be related positively to (a) students' and (b) advisors' perceptions of students' research self-efficacy and research productivity. This hypothesis was partially supported. Pearson correlations revealed that all four vectors of psychosocial development were significantly ($p < .001$) and positively related to doctoral students' perceptions of their own research self-efficacy (coefficients ranging from .41 to .48); however, only mature interpersonal relationships ($r = .16, p < .01$) and purpose ($r = .14, p < .05$) were significantly related to doctoral students' research productivity. Moreover, all four vectors of psychosocial development were significantly ($p < .01$) and positively related to advisors' perceptions of doctoral students' research self-efficacy (coefficients

ranging from .42 to .47); but, advisors were not asked to complete the research productivity measure as they were deemed unqualified to complete many of the items.

Two post-hoc OLS regressions (see Table 22) were computed to predict doctoral students' research self-efficacy and research productivity based on their perceived psychosocial development. In the first regression, a significant model was obtained for research self-efficacy, $F(4, 282) = 27.96, p < .001, R^2 = .28$, with mature interpersonal relationships ($\beta = .21, p < .001$) and purpose ($\beta = .25, p < .01$) each serving as unique and significant predictors. In the second regression, a significant model was obtained for research productivity, $F(4, 259) = 3.93, p < .01, R^2 = .06$, with mature interpersonal relationships ($\beta = .15, p < .05$) serving as the only unique and significant predictor.

Table 21

Multiple Regressions using Psychosocial Development to Students' Academic Preparedness and Quality of Work

Criterion/ Predictor Variables	B	SEB	β	<i>t</i>
<i>Academic Preparedness</i>				
Mature IP Relationships	.387	.127	.161[†]	3.042
Identity	.281	.162	.139	1.740
Purpose	.736	.189	.335[^]	3.888
Integrity	.201	.173	.093	1.167
<i>Quality of Work</i>				
Mature IP Relationships	.189	.064	.164[†]	2.962
Identity	.152	.082	.157	1.860
Purpose	.267	.097	.252[†]	2.748
Integrity	.109	.087	.104	1.254

Note. Academic preparedness, $F(4, 287) = 46.26, p < .001, R^2 = .39$. Quality of work, $F(4, 289) = 35.52, p < .001, R^2 = .33$. Significant predictor variables in bold. * $p < .05$, [†] $p < .01$, [^] $p < .001$.

Table 22

Multiple Regressions using Psychosocial Development to Students' Research Self-Efficacy and Research Productivity

Criterion/ Predictor Variables	B	SEB	β	<i>t</i>
<i>Research Self-Efficacy</i>				
Mature IP Relationships	.302	.085	.206[^]	3.561
Identity	.071	.106	.058	.670
Purpose	.335	.125	.251[†]	2.676
Integrity	.158	.114	.120	1.380
<i>Research Productivity</i>				
Mature IP Relationships	.653	.312	.148[*]	2.094
Identity	.369	.385	.102	.958
Purpose	.845	.455	.212	1.857
Integrity	-.867	.407	-.226	-2.119

Note. Research self-efficacy, $F(4, 282) = 27.96, p < .001, R^2 = .28$. Research productivity, $F(4, 259) = 3.93, p < .01, R^2 = .06$. Significant predictor variables in bold. ^{*} $p < .05$, [†] $p < .01$, [^] $p < .001$.

Summary

The results that were obtained in this chapter indicate that doctoral students' psychosocial development is generally related positively to (a) students' communication behaviors with their advisor, (b) student-advisor satisfaction, (c) students' persistence and time to degree, and (d) students' success in graduate school. Moreover, students' communication behaviors, relational outcomes, and personal outcomes are also positively interrelated with each other. Based on the mediation analyses, the effects of psychosocial development on students' relational and communication satisfaction appears to be transmitted through the relational maintenance behaviors and conflict strategies they use with their advisor. To some extent, the relationships that were uncovered in this chapter are evident to both doctoral students and their advisors, as significant relationships were discovered in the larger student sample, as well as the smaller dyadic sample.

CHAPTER IV

Discussion

The general purpose of this dissertation was to examine how psychosocial development affects doctoral students' relationship with their advisor and indicators of success in graduate school. More specifically, this dissertation had three main objectives. The first objective was to integrate Chickering and Reisser's (1993) vectors of psychosocial development into the doctoral education context in order to understand how progression along the vectors is associated with communication behaviors that students enact with their advisor. The second objective was to investigate the extent to which doctoral students' psychosocial development and communication behaviors functioned together to affect satisfaction in the doctoral student-advisor relationship. The third objective was to explore the influence of psychosocial development on doctoral students' attrition and success in graduate school. In line with these objectives, this chapter discusses the collective results of the study, interprets the implications of the findings, reviews the limitations of the dissertation, and provides directions for future research.

The results from this study can be summarized into five sets of findings. The first set of findings center on psychosocial development's association with doctoral students' use of relational maintenance behaviors with their advisor. In general, this set of results suggests that doctoral students who develop further along Chickering and Reisser's (1993) vectors of psychosocial development are more likely to maintain their relationships with their advisors. Specifically, students who are psychosocially mature appear to be more inclined to (a) express their gratitude about the student-advisor relationship (i.e., appreciation), (b) exude effort to complete their responsibilities in a

timely manner (i.e., tasks), (c) maintain a positive image of their advisor in conversations with peers and faculty (i.e., protection), (d) make an effort to be respectful and polite, (e) laugh with their advisor while partaking in social events (i.e., humor), and (f) consult their advisor about future career plans (i.e., goals). Taken together, these findings indicate that as students grow psychosocially, they develop various interpersonal skills (including relational maintenance behaviors) and aspects of themselves (including elements of their identity) which are used to cultivate and sustain a successful working relationship with their advisor in graduate school (Bair et al., 2004; Tessmer, 2012).

One explanation for these results may be found in the social identity literature. Establishing an identity (i.e., vector five) is at the center of Chickering and Reisser's (1993) theory as it is formed by students' maturity in previous vectors and influences their progression in vectors yet to come (Pascarella & Terenzini, 2005). In fact, Chickering and Reisser noted that identity is the vector under which "all the [other] developmental vectors could be classified" (p. 173). Identity is also a central tenet of self-expansion theory (Aron, Mashek, & Aron, 2004), which communication researchers have recently adopted into the relational maintenance literature (Ledbetter, 2013; Ledbetter, Stassen, Muhammad, & Kotey, 2010). Self-expansion theory focuses on shared identities, which encompass "the features that distinguish the person from other people and objects, primarily the characteristics, memories, and other features that locate the person in social and physical space" (Aron et al., 2004, p. 28). Using this definition and framework, Ledbetter, Stassen-Ferrara, and Dowd (2013) argued that identity plays a central role in predicting the use of relational maintenance behaviors and possibly other communication behaviors such as conflict strategies. Ledbetter and colleagues (2013) conceptualized

“relational partners as communally oriented, [and] driven to expand their sense of self” (p. 40), thus suggesting that individuals have a need to communicate with others which corresponds with their need to reinforce their own identity. For doctoral students who desire a career in academia, both of these needs involve maintaining a relationship with their advisor who likely embodies aspects of their own ideal identity. Put differently, mature doctoral students are able to recognize that part of their identity in graduate school is dependent upon the relationship they have with their advisor; thus, they engage in efforts to maintain this relationship to the best of their ability. Although self-expansion theory has previously been limited to romantic relationships (Ledbetter, 2013), the initial conclusion that identity plays an essential role in predicting communication behaviors and relational success is parallel with the results found in this study and is congruent with previous psychosocial development research (Thomas & Chickering, 1984). Put simply, the establishment of an identity appears to explain individuals’ maintenance behaviors because it epitomizes the primary “representation of the self” (Aron et al., 2004, p. 38).

The second set of findings focus on the significant associations that emerged between psychosocial development and doctoral students’ use of conflict strategies with their advisor. These relationships indicate that as students progress through Chickering and Reisser’s (1993) vectors, they become more likely to use integrative strategies and less likely to use distributive and avoidance strategies to handle the conflict they encounter with their advisor. In other words, as students learn to develop mature interpersonal relationships, establish their own personal identity, and cultivate purpose and integrity for their behavior, they also become more likely to address their conflict in a way that is direct and mutually beneficial for themselves and their advisor. On the other

hand, students who do not mature psychosocially appear to be more inclined to handle their disagreements by using selfish and contemptuous methods of conflict resolution (i.e., distributive); or, they may prefer to avoid instances of conflict altogether.

One explanation for this set of results can be found in the communication literature which suggests that the effect of psychosocial development on conflict strategies is related to an increase in communication competence (Canary et al., 2001; Canary & Spitzberg, 1989; Cupach & Spitzberg, 1983). Spitzberg (1983) referred to communication competence as a “broader set of concerns entailed in communicative motivation, knowledge, and skills... [that] relate to functionally effective communication appropriate to its context” (p. 323). Although communication competence was not directly assessed in this dissertation, the notion of effectively and appropriately communicating in a variety of situations is congruent with psychosocial development in that both require individuals to monitor their perceived personal image (or identity), and either maintain or alter this perception in the minds of others through communication (Chickering & Reisser, 1993). Thus, the effects of development on students’ conflict strategies may be attributable to the image that mature students are able to project into the minds of others (e.g., advisors, faculty, peers) through effective and appropriate communicative messages. Doctoral students arguably become more competent and therefore use more integrative conflict strategies when they develop mature interpersonal relationships (i.e., vector four) and establish their identity (i.e., vector five). As students cultivate relationships they also acquire the experience of handling conflict, thus creating learning opportunities that can be applied to the advisory relationship; moreover, as students develop their mature identity they likely use conflict strategies that align with

this desired perception. In other words, psychosocially developed doctoral students are more likely to handle their conflict using integrative strategies because they have practice in negotiating interpersonal conflict and use their experiences to address disagreements in a way that coincides with their ideal personal and social identity (c.f., Gross et al., 2004).

The third set of findings deal with the mediated relationships that emerged between psychosocial development, relational maintenance behaviors, conflict strategies, and student-advisor satisfaction. These results indicate that as doctoral students progress along Chickering and Reisser's vectors of psychosocial development, they also acquire the ability to effectively communicate with their advisor, which in turn promotes satisfaction in the student-advisor relationship. Conversely, doctoral students who lack psychosocial maturity are less inclined to use effective communication behaviors, and thus, are less likely to experience relational and communication satisfaction with their advisor. Put differently, the communication behaviors in which students enact as a result of their psychosocial maturity serve as mediating variables between development and student-advisor satisfaction. These mediated relationships are rather consistent for each of Chickering and Reisser's (1993) developmental vectors, with the exception of mature interpersonal relationships (i.e., vector four), which maintained a unique direct effect on satisfaction despite simultaneously accounting for the indirect effects that were exhibited through students' communication behaviors. In other words, the extent to which students experience satisfaction in their advisory relationships is related positively to their own psychosocial development; however, for the most part, there is no evidence to suggest that this influence exist independently of its effect on doctoral students' relational maintenance behaviors and conflict strategies.

This set of findings is similar to conclusions drawn from the undergraduate literature in which growth along the vectors is believed to alter students' behavior and consequently their psychosocial characteristics and related outcomes (see Martin, 2000). As Reisser (1995) explained, psychosocial maturation brings with it a host of observable changes, most frequently seen in the way students interact and get along with others. It is through these interactions that psychosocial development affects students' relationships and ultimately their satisfaction in college (Pascarella & Terenzini, 2005). Put differently, students who are psychosocially mature tend to enjoy satisfying relationships with others (e.g., their advisor) because they behave in a way that is pleasant, thoughtful, and socially responsible (Chickering & Braskamp, 2009). Relatedly, Tinto (1993) claimed in his theory of student departure that development coupled with positive social interactions with peers, faculty members, and advisors, function together to enhance students' social integration, which includes successful interpersonal relationships in college. Although such claims are derived from the undergraduate context, the findings from this study combined with the literature on doctoral education (e.g., Bair & Haworth, 2005; Gardner, 2009; Walker et al., 2008) suggest that similar takeaways can be made about doctoral students' communication behavior and interpersonal interactions which appear to play a mediating role in the relationship between psychosocial development and satisfaction.

The fourth set of findings center on the associations between the vectors of psychosocial development and variables related to doctoral student attrition. Specifically, the results from this study suggest that as doctoral students become more psychosocially developed, they also become more inclined to persist until graduation and are more likely to complete their degree in a timely fashion. Advisors' reports also indicate that greater

psychosocial maturity is associated with perceived time to degree; however, no significant associations were uncovered between doctoral students' self-reports of psychosocial development and advisors' reports of doctoral students' persistence. Nonetheless, these results suggest that doctoral student attrition is influenced, to some degree, by the extent to which students have cultivated mature interpersonal relationships, established an identity, developed purpose, and developed integrity.

This set of findings may be explained by the fact that psychosocial development deters doctoral students from quitting their respective programs by helping to foster and maintain beneficial relationships with other individuals in the graduate education context. Pascarella and Terenzini (1991) noted, "the influence of interpersonal interaction with these groups [i.e., faculty members and peers] is manifested in intellectual outcomes as well as in changes in attitudes, values, aspirations and a number of psychosocial characteristics (p. 620). Put differently, as students progress along Chickering and Reisser's (1993) vectors of psychosocial development, not only are they able to cultivate and maintain mature interpersonal relationships through newly acquired social skills, they are also able to apply these skills in a way that helps them to persist through graduate school (Gardner, 2009). Specifically, it is through the relationships that doctoral students have with members of their cohort, faculty members in their department, and particularly the advisor of their dissertation, that many students acquire the informational, tangible, and emotional support that is needed to attain a doctoral degree (Golde, 2000). In short, then, the relationship found in this dissertation between psychosocial development and students' perceived time to degree and persistence in graduate school illustrates "how and why relationships matter" within the doctoral education context (Sweitzer, 2009, p. 30).

The fifth set of findings deal with the positive relationships that exist between psychosocial development and doctoral students' success in graduate school. Students who are further developed along Chickering and Reisser's vectors of psychosocial development are also more likely to be perceived as academically prepared. Moreover, students are perceived as producing a better quality of work, demonstrating greater research self-efficacy, and to some extent, producing more scholarly achievements (e.g., publications, conferences papers) when they report greater psychosocial maturation. To a certain degree, these results suggest that students' interpersonal relationships, identity, purpose, and integrity positively influence their success as students at the doctoral level.

This set of findings is likely explained by the fact that psychosocial maturity enhances the skills, knowledge, and confidence that is necessary to flourish in graduate school and eventually succeed in academia (Gardner and Barnes, 2007). Gardner (2009) observed that "psychosocial development is at work throughout all phases of the doctoral student experience, specifically as the student seeks not only to become competent in his or her subject matter, but also to establish a professional identity through attainment of this new degree" (p. 21). As doctoral students become more knowledgeable in their subject area and solidify their professional and personal identity, they also acquire a related set of abilities (e.g., teaching, writing, deliberating) which help them to accomplish their day-to-day responsibilities (Austin & McDaniels, 2006). Moreover, the development of these skills not only translate to short-term success (e.g., research productivity; Cavendish, 2007), but also have significant long-term benefits as they are beneficial to faculty members throughout their entire career. In other words, psychosocial development likely serves as a catalyst for the acquirement of intellectual and

professional skills which contribute to the completion of doctoral degrees and assist students and faculty members throughout their entire tenure in academia (Austin, 2002).

In summary, these five sets of findings attest to the importance of psychosocial development in the doctoral education context and suggest that progression along Chickering and Reisser's vectors is associated with a host of relational and educational benefits for students. From a relational perspective, psychosocial development appears to enhance doctoral students' social competence and subsequently the satisfaction they experience in their advisory relationship. From an educational perspective, psychosocial development seems to promote doctoral students' success in graduate school and potentially their future career by equipping them with the necessary skill set that is needed to succeed in academia. As Austin (2002) noted, these relationships and "the development of graduate students as prospective faculty members is shaped by many factors that take place in a nonlinear, complex way" (p. 102). In other words, although the effects may be intricate and indirect, growth along Chickering and Reisser's vectors is unquestionably a positive experience for doctoral students that ultimately encourages their relationships with others and improves their performance in graduate school.

Theoretical and Practical Implications

The findings from this dissertation have both theoretical and practical implications. On a theoretical level, this dissertation extends Chickering and Reisser's (1993) vectors of psychosocial development in three significant ways: (a) it quantitatively adopts the vectors into the doctoral education context; (b) it demonstrates the relationships that exist between psychosocial growth and actual communication behaviors; and (c) it establishes the mechanisms through which psychosocial maturity

influences student outcomes. Moreover, while the original tenets of the theory have been in existence for nearly half a century (Chickering, 1969), results from this dissertation suggest the possibility that the vectors of psychosocial development may need to be reevaluated/ revised to encompass the unique changes brought about by doctoral education and potentially the advanced level of maturity reached by graduate students.

Although the vectors of psychosocial development have been used extensively to explore undergraduate students' maturation in college (see Evans et al., 2010; Jones & Abes, 2013; Pascarella & Terenzini, 2005), the theory has only been applied to the doctoral education context as a guiding theoretical perspective or framework for conducting qualitative investigations (Gardner, 2009; Tessmer, 2012). This study empirically integrated Chickering and Reisser's (1993) vectors of psychosocial development into the doctoral education literature by successfully adapting previous quantitative instruments from the undergraduate context to explore the effects of psychosocial development on doctoral students' relational and personal outcomes. Similar to conclusions from the undergraduate literature in which psychosocial development has been labeled as critical to students' success and well-being (Pascarella & Terenzini, 2005), progression along Chickering and Reisser's vectors at the doctoral level appears to be related positively to a host of social, individual, and educational benefits. This initial evidence and original adaptation of one of the most widely recognized developmental theories is important because it reinforces the notion that psychosocial development, "in all its complexity and orneriness, [serves] as the unifying purpose for higher education" (Chickering & Reisser, 1993, p. xv).

This dissertation also extends Chickering and Reisser's vectors by examining the

relationships that exist between psychosocial maturity and the development of students' actual communication behaviors. Specifically, this dissertation extended the theory by supporting a primary assumption of the psychosocial development literature in that behavior, or more accurately communication, is the primary outlet through which the effects of development are conveyed (Newman & Newman, 2014). Although Chickering himself has mentioned that communication is vital to the process of psychosocial development (Chickering, 1974; Chickering & Braskamp, 2009; Thomas & Chickering, 1984), this study provides the rare empirical support that has historically been lacking from this claim by identifying two communication behaviors (i.e., relational maintenance behaviors, conflict strategies) on which psychosocial development has a positive effect. Such findings not only help to validate Chickering and Reisser's (1993) vectors, but also demonstrate a successful merger of the developmental and communication literatures.

The third extension of Chickering and Reisser's theory stems from the mediation analyses conducted in this dissertation, which provides a mechanism to explain the effects of psychosocial development on satisfaction, as well as potentially other common outcome variables and characteristics (see Lounsbury et al., 2005; Martin, 2000). Specifically, the results of this study suggest that while psychosocial development has been accurately described as a positive internal process capable of generating both individual and relational benefits for students (Reisser, 1995), the effects generated on the latter (i.e., relational success) appear to be transmitted by students' efforts to maintain their interpersonal relationships and handle conflict through effective and appropriate communication (Canary et al., 2001; Cupach et al., 2010; Spitzberg & Hecht, 1984). In other words, relational maintenance behaviors and conflict strategies may be important

intervening variables for explaining the positive interpersonal outcomes that result from an increase in psychosocial development. Moreover, this extension addresses one of the significant criticisms raised against Chickering and Reisser's (1993) vectors, which is the lack of postulates and/or specific predictions found within the theory (Kuh, 1988).

Of course, it is also possible that the vectors of psychosocial development operate differently for doctoral students altogether, which in that case would require a significant revision/overhaul to the original theoretical framework (Chickering, 1969; Chickering & Reisser, 1993). Granted, evidence for this conclusion did not necessarily emerge in this dissertation, as all of the hypothesized relationships were either fully or partially supported. However, because of the vast differences that exist between doctoral students and undergraduates (Hodgson & Simoni, 1995), and because doctoral degrees foster opportunities “for increased psychosocial development that may not have been encountered during previous academic experiences” (Tessmer, 2012, p. 276), further investigations using both inductive and deductive methodologies may be warranted to determine if psychosocial development is indeed similar in both the undergraduate and graduate education context, or if significant revisions are needed to the vectors/theory.

This dissertation also has several practical implications. In fact, Chickering was adamant about using psychosocial development research in a pragmatic and realistic way as he noted that the vectors were “not written to advance theory per se but rather to improve practice” (Thomas & Chickering, 1984, p. 394). In line with this sentiment, several practical implications can be drawn from this dissertation to improve the doctoral student experience in graduate school. Practitioners, administrators, and student affairs personnel can use the results of this study to enhance doctoral students' socialization

practices by helping them to assimilate into their role as a graduate student and preparing them for their future responsibilities in academia. In the doctoral context, socialization has been defined as the process by which individuals learn to adopt the values, attitudes, skills, and knowledge needed for membership in a given society, organization, or group (Gardner, 2010). In other words, doctoral student socialization is a desired outcome for graduate programs, but also an important predictor of students' growth and maturity because "thinking about socialization as a developmental process essentially ascribes a serial nature to the development of identity, commitment, and role acquisition" (Antony, 2002, p. 364). Therefore, based on the results of this dissertation which found that progression along Chickering and Reisser's vectors was associated positively with doctoral students' academic preparedness, it is suggested that graduate programs make both formal and informal efforts to encourage psychosocial development as the effects could yield significant contributions to students' career readiness and future success.

One way that practitioners can promote doctoral students' psychosocial development and consequently their socialization and academic preparedness is through preparing future faculty (PFF) programs (see Jones et al., 2004; O'Meara & Jaeger, 2006; Richlin & Essington, 2004). PFF programs "encourage higher education institutions to broaden the preparation of doctoral students who aspire to become faculty... [by asking] mentors, not just those at doctoral institutions, to bring their intellectual and experiential knowledge to the professional development of the next generation of academics" (Golde, 2004, p. 29). Since 1993, these programs have grown and diversified significantly; however, their fundamental purpose has remained constant: helping doctoral students acquire the skills needed to teach, research, and provide service to others (Gaff, 2002).

Moreover, many PFF programs recognize that “knowledge of one’s field is necessary but not sufficient” thus they encourage doctoral students to also “find an appropriate fit between their interests and the needs of an institution and expand the range of their options for an academic career” (Adams, 2002, p. 6). The results from this study might easily coincide with PFF programs and could be used to educate doctoral students about the significance of psychosocial maturity and the importance of developing one’s identity in graduate school. Specifically, PFF programs could begin to identify the potential deficiencies that students have across Chickering and Reisser’s (1993) vectors and work to enhance doctoral student development by constructing vector-specific programs that are tailored to meet individuals’ needs and shortcomings. Such work may have numerous long-term academic benefits as faculty members who know how to integrate their identity with their professional responsibilities are more likely to make meaningful contributions through teaching, research, and service (Austin, Connolly, & Colbeck, 2008).

This dissertation also yields practical implications for advisors and graduate faculty members. Advisors should recognize that they play a critical role in the psychosocial development of doctoral students and share some responsibility (within reason) for the maturation of students’ identity (Tessmer, 2012). That being said, advisors may be limited in the extent to which they can encourage growth along each of the specific vectors. For instance, advisors can arguably promote the development of identity (i.e., vector five) by discussing with students who they want to be as scholars, teachers, and academics. Such conversations would even be in accordance with one of advisors’ many responsibilities which is to develop doctoral students into their desired professional image (c.f., Bair et al., 2004). Likewise, advisors can engage in casual conversations

about students' short-term and long-term career goals, thus helping to provide purpose (i.e., vector six) to their future actions and behaviors. Yet, for many advisors, promoting integrity (i.e., vector seven) may be beyond the realm of possibility as growth in Chickering and Reisser's (1993) final vector requires "not only increased congruence between behavior and values, but also movement toward responsibility for self and others and the consistent ability to thoughtfully apply ethical principles" (p. 236). Development in the seventh vector may continue to occur long after students leave their doctoral program, and thus advisors influence on students' integrity may be limited. That being said, advisors who continue to serve a mentoring capacity to doctoral students after graduation may be more likely to contribute to the development of students' integrity as these types of relationships tend to offer professional, relational, and personal advice throughout the span of several years or decades (Kogler Hill et al., 1989).

Finally, the results from this dissertation have direct implications for doctoral students. Put simply, upon entering and leaving their respective program, students are encouraged to ask themselves: Who do I want to be and what is required of me to get there? At first glance, these two questions seem rudimentary; however, upon further inspection they encapsulate the final three vectors of psychosocial development (i.e., identity, purpose, integrity; Chickering & Reisser, 1993) and are instrumental in determining whether students are ready for a career after graduate school (Daresh & Playko, 1995). Based on the findings in this study, one resource that may aid students in answering these questions is mature interpersonal relationships (Reisser, 1995). Specifically, doctoral students are encouraged to be approachable and seek out members of their cohort early in the doctoral experience (e.g., the first week of classes) in order to

cultivate relationships with their peers. In graduate school, these relationships can help reduce the competitive and potentially hostile climate that many students experience while earning their doctorate, and instead, replace it with a collaborative environment that is characterized by cooperation and collegiality (Golde, 2004). Moreover, these social connections with peers yield a plethora of relational and academic benefits throughout graduate school as they serve as vital sources of emotional, tangible, and informational support (Gardner, 2009). To maximize these benefits, students should take advantage of opportunities such as graduate student orientations, peer-mentoring and PFF programs, and even university-sponsored social events, as the peer-to-peer interactions that occur during these activities likely promote the growth of mature interpersonal relationships and consequently psychosocial development.

Limitations and Future Directions

There are five limitations of this dissertation that should be considered when interpreting the results of this study. The first limitation involves the structural validity of the utilized instruments. Levine (2005) advocated for communication researchers to subject their measurement choices to CFAs because “valid measurement is absolutely essential for meaningful empirical research” (p. 335). However, as evident from the summary of CFAs provided above (see Table 7), the instruments used in this dissertation failed to reach the recommended criteria of good-fitting models set forth by researchers such as Brown (2015), Hu and Bentler (1999), and Kline (2011). Specifically, none of the measures used in this study completely met the following criteria: (a) non-significant chi-square value, (b) an RMSEA value below .10, (c) an SRMR value below .06, and (d) a CFI value above .95. Although measures such as the Advisee Relational Maintenance

Scale (Mansson & Myers, 2012) and Relations with Other People Subscale (Baker & Siryk, 1989) met several of the recommended criteria, the indices for these instruments suggested that the scales fit the data moderately at best. Granted, the evaluation of CFAs is “complicated by the fact that fit indices are often differentially affected by various aspects of the analytic situation, such as sample size, model complexity, estimation method...amount and type of misspecification, normality of data, and type of data” (Brown, 2015, p. 74); nonetheless, the scales used in this dissertation failed to factor as expected, thus creating a concern to the validity of the study and the results uncovered.

That said, because the instruments had been validated in previous investigations, the decision was made not to modify the measures used in this study to better fit the data (e.g., by correlating error terms or dropping poor loading items). Without theoretical or empirical rationale for doing so, modifications (i.e., additions) and/or specifications (i.e., removals) to CFAs call into question the integrity of the data (see Schreiber, Nora, Stage, Barlow, & King, 2006). Moreover, because “a defining principle of CFA is that the hypothesized factor model is formulated *before* the data are collected” (Morrison, 2009, p. 201), the scales were kept in their original form, despite the poor model fit. It is recommended that scholars reexamine the measures used in this dissertation to determine if revisions can be made to improve the performance of the instruments.

The second limitation deals with the participants’ responses to the outcome variables of this dissertation. Specifically, this limitation is centered on two concerns: (a) the potential of isomorphism between relational satisfaction and communication satisfaction and (b) the overall positive skew that was evident in both doctoral students’ and advisors’ responses. As seen in Table 8, the correlation coefficient between relational

satisfaction and communication satisfaction was extremely high ($r = .91, p < .001$). In situations where two variables correlate above .70, it is possible that researchers are “measuring the same construct” as correlations of this magnitude suggest that the variables in question are “too redundant to be treated as individual indicators” (Meyers, Gamst, & Guarino, 2013, p. 229). Although relational satisfaction and communication satisfaction are *conceptually* unique (c.f., Goodboy et al., 2009), the correlation of .91 suggests that participants in this study were either (a) unable to distinguish between the two operationalizations or (b) identified the concepts as overlapping variables. Relatedly, this concern may be associated with the positive bias that was seen throughout most of the outcome variables in this study. While advisors were solicited in addition to doctoral students to overcome self-report biases, an examination of the composite and item means (see Tables 4, 5, and 6) indicates that the data were significantly skewed (with skewness values ranging from -1.502 to -.820) for both advisors’ and students’ perceptions of the outcome variables (i.e., including relational and communication satisfaction). This particular limitation is problematic because it is likely that not all doctoral students fall into the estimated range of success that was reported on in this study; thus, the results may not be truly representative of all students, specifically those who struggle to succeed or who have a poor relationship with their advisor. This concern may be attributable to the sampling strategies that were used to solicit participants (e.g., petitioning students who were currently enrolled and asking advisors to report on the student in which they have worked with the longest) as these methods may have inadvertently excluded a particular group of potential participants (e.g., first-year doctoral students). Doctoral students who participated in this study reported working with their advisor for an average

of 30 months, whereas students who had negative advisory relationships may have already decided to quit their doctoral program before this time. As such, future investigations are encouraged to target first-year doctoral students and those who recently decided to quit graduate school to determine whether the findings in this study are applicable to their experiences or whether they differ as a result of their circumstances.

The third limitation of this dissertation centers on the overreliance of communication Ph.D. students as research participants. Over 30% of the student sample ($n = 92$) was taken from the communication studies discipline, whereas the next closest discipline (i.e., psychology) accounted for less than 10%. This limitation is undoubtedly a result of the network sampling technique that was used to solicit participants (Granovetter, 1976); nonetheless, the disciplinary imbalance suggests that caution should be taken when generalizing the results from this study to various types of doctoral programs. As Austin (2002) noted, “relationships between faculty members and graduate students differ across disciplines, as do career possibilities and the preferred balance in faculty work between teaching and research” (p. 103). Moreover, this discrepancy is particularly troubling because many of the variables (i.e., relational maintenance behaviors, conflict strategies, communication satisfaction) were derived from the communication studies discipline, thus increasing the chances that a significant portion of the sample was already familiar with the important role that communication plays in interpersonal relationships prior to participating in this dissertation. Therefore, it is important to consider such disciplinary distinctions when evaluating the utility of these findings and the suggested implications that are derived from the admittedly disproportionate sample.

The fourth limitation of this dissertation deals with the small sample size of paired dyadic respondents (i.e., students and advisors). With a limited number of dyads ($n = 52$), the analyses were restricted to correlations, as the sample failed to meet the requirement of at least 20 participants per independent variable in a regression (Maxwell, 2000). Moreover, due to the fact that advisors reported only on the outcome variables in this study (and not the independent variables), dyadic analyses such as the Actor Partner Interdependence Model (APIM; Kashy & Kenny, 2000) and the Common Fate Model (CFM; Kenny & LaVoie, 1985) could not be used to examine the data. This limitation is significant because APIM and CFM analyses account for interdependence in shared participant responses and reduce the likelihood of Type II error (Wickham & Knee, 2012); thus, they are better equipped than other analyses (e.g., Pearson correlations, OLS regressions) to handle dyadic data. More specifically, dyadic analyses such as APIM and CFM can be used to better understand doctoral students' and advisors' responses as they "help researchers account for systematic error by allowing for correlated error terms between same-reporter measures" (Matthews, Conger, & Wickrama, 1996). Therefore, future exploration of the doctoral student-advisor relationship should assess independent and dependent variables from both perspectives so that APIM and CFM analyses can be used to study the dyad-level phenomena (e.g., relational maintenance behaviors, conflict strategies) that exist within the relationship (Peugh, DiLillo, & Panuzio, 2013).

The fifth limitation of this dissertation centers on the origins of Chickering and Reisser's (1993) vectors and the extent to which the theory is applicable to the doctoral education context. Specifically, developing competence (i.e., vector one), managing emotions (i.e., vector two), and moving through autonomy toward interdependence (i.e.,

vector three) were excluded from this study because most students, if not all, successfully navigate through these initial vectors prior to completing their undergraduate degree (Reisser, 1995). Therefore, the decision was made to limit the scope of this study to the latter four vectors, where students were expected to vary in their reported growth. That being said, Tessmer (2012) argued that the unique constraints, expectations, and responsibilities associated with completing a doctoral degree may actually promote psychosocial development in areas that have not yet been associated with the original theory. Put differently, doctoral students may actually grow on more advanced vectors of psychosocial development that were previously undiscovered in the theory's original sample of undergraduate students (Chickering, 1969; Chickering & Reisser, 1993). Thus, unlike this dissertation which integrated the preexisting vectors into the doctoral context, future investigations should inductively explore the vectors on which doctoral students develop psychosocially and mature as a result of their graduate education experiences.

In addition to using diverse methodologies and creating better instruments, there are many possible directions for future researchers to explore the intersection of student development and communication in the doctoral education context. First, researchers should explore how psychosocial development influences the relationships that doctoral students have with their fellow peers, as previous investigations have suggested that these relationships serve as critical sources of support and are extremely influential in doctoral students' decision to quit or persist until graduation (Bair & Haworth, 2005). In fact, some evidence suggests that "doctoral students actually speak more often and more positively about the support they receive from one another than from any other source" (Gardner, 2009, p. 66). Yet, despite their importance, the role of peers in the doctoral

education process is understudied in comparison to the student-advisor relationship (Bargar & Mayo-Chamberlain, 1983; Golde, 2000). Moreover, investigations that have explored the relationships amongst doctoral students have largely ignored the effects of psychosocial development and/or the explicit role that communication plays in these peer connections. While this dissertation emphasizes the importance of advisors, it is without question that students' experiences are also shaped by their fellow peers (Gardner, 2007), and it is likely that the relationships in which students are able to cultivate with these individuals is influenced heavily by their psychosocial development (Tessmer, 2012).

Second, researchers should examine what happens to doctoral students who struggle to develop psychosocially. Arguably, students who are not psychosocially mature are at the highest risk for attrition and make the decision to quit their doctoral program because of their social and personal deficiencies (Gardner, 2007). However, due to a lack of alternatives, interpersonal/familial pressure, or general indecisiveness, it is also possible that these students linger around their doctoral program for potentially several years, creating a difficult situation for both students and departments (c.f., Nyquist et al., 1999). Regardless, deficiencies related to psychosocial development may significantly hinder doctoral students in their graduate program, or potentially beyond their educational experiences if they decide to pursue an alternative career path (Gardner, 2009). Thus, future investigations should explore negative events such as failing a course or even comprehensive exams, as these instances may be perceived as identity crises that relate to doctoral students' psychosocial immaturity and may even trigger the decision to quit graduate school. Moreover, to fully understand this paradox, researchers should also examine doctoral students who have already left their respective program prematurely, in

order to determine the extent to which psychosocial development affects student attrition.

Third, related to this concern, researchers should explore the behaviors, messages, and strategies that advisors use with their doctoral students to encourage their psychosocial development in graduate school. Results from this study suggest that progression on Chickering and Reisser's (1993) vectors is appreciated by graduate advisors (as evident through their reports on various outcome variables); however, since only one investigation has previously applied the vectors to the doctoral education context (Tessmer, 2012), it is unclear as to how advisors directly or indirectly contribute to students' psychosocial maturity. One direct method, as suggested by Hall and Burns (2009), is that advisors "encourage students to express ideas and questions that do not necessarily align with their own" (p. 61); yet, it is more realistic to assume that advisors promote doctoral students' psychosocial development by instructing them in a way that is similar to their educational background. Advisors may also indirectly encourage doctoral students' development through observations and modeling, as many students learn the demeanor and skills associated with being a faculty member through similar processes (Austin & McDaniels, 2006; Paglis et al., 2006). Future researchers could explore the extent to which these methods, or others which are currently unknown, are used by advisors to influence doctoral students' psychosocial maturity.

Fourth, future researchers should also consider adopting additional developmental perspectives to supplement Chickering and Reisser's (1993) vectors of psychosocial development in order to better understand the doctoral experience and the various ways in which individuals grow as a result of being a doctoral student. As noted in the introduction, the development literature as a whole has largely overlooked the changes

and maturation that students undergo as part of the doctoral process (Tessmer, 2012). For instance, greater attention is needed to understand doctoral students' cognitive development (e.g., Bowman, 2010; Brendel, Kolbert, & Foster, 2002; Cruce, Wolniak, Seifert, & Pascarella, 2006), intellectual and ethical development (e.g., Altbach, Arnold, & King, 2014; Lambie, Hagedorn, & Ieva, 2010; Pike & Kuh, 2005), and moral development (e.g., Austin, Simpson, & Reynen, 2005; King & Mayhew, 2002; Patenaude, Niyonsenga, & Fafard, 2003) in graduate school. By utilizing these diverse frameworks, researchers can examine the multitude of changes that are present within the graduate education context including the extent to which doctoral students communicate and interact with their colleagues and faculty members.

Finally, researchers should continue to explore other aspects of doctoral students' identity. The processes by which individuals come to understand and accept their own personal characteristics and features shape their educational experiences and play an important role in students' personal and social development (Jones & Abes, 2013). However, similar to psychosocial development, research examining how doctoral students establish various aspects of their identity in graduate school is largely nonexistent. For instance, future investigations should explore the development of doctoral students' gender identity (e.g., Edward & Jones, 2009), racial identity (e.g., Barker, 2010), cultural identity (Torres, 2009), and sexual identity (e.g., Bilodeau & Renn, 2005) as these processes function simultaneously to comprise doctoral students' sense of self and ultimately depict their perceived view of the world. Relatedly, future researchers who continue to use Chickering's and Reisser's (1993) view of identity are encouraged to reexamine and reevaluate the appropriateness of the theory in regards to

explaining the development of minority students, as the vectors were originally intended to explain the psychosocial maturation of Caucasian males (Torres et al., 2011). As Kodama et al. (2001) noted, “using theories with populations for whom they were not designed is another form of marginalization...as it leads to the exclusion of a group of students whose unique needs are misunderstood, misdiagnosed, or not met at all” (p. 430). In other words, future investigations should continue to “challenge, question, and critique traditional theoretical perspectives” such as Chickering and Reisser’s (1993) vectors of psychosocial development in order to understand “how sociopolitical and historical contexts, privilege, and power may have shaped the theory; and the applicability of the theory to various student populations” (Patton et al., 2007, p. 49).

Conclusion

The goal of doctoral education is to prepare “a student to become a scholar: that is, to discover, integrate, and apply knowledge, as well as to communicate and disseminate it” (Council of Graduate Schools, 2005, p. 1). Unfortunately, this goal is often unmet as many students who enter doctoral programs fail to acquire their intended degree (Terrell et al., 2009). Moreover, persistence until graduation does not inherently elicit the desired outcomes of doctoral education, as many students who leave with a doctoral degree do so with a deficiency in skills and a lack of preparation (Lovitts, 2008). As such, this dissertation aimed to examine the effects of psychosocial development on doctoral students’ experiences in graduate school. Chickering and Reisser’s (1993) vectors of development were used as a guiding theoretical perspective because the framework addresses important issues that doctoral students face, including “how to define themselves, their relationships with others, and what to do with their lives” (Evans,

Forney, & Guido-DiBrito, 1998, p. 32). At the center of this dissertation was the relationship that students have with their advisor, which is critical in predicting doctoral students' short-term and long-term success after graduate school (Lunsford, 2012). The findings of this dissertation revealed that psychosocial development plays an essential role in determining how doctoral students cultivate and maintain the student-advisor relationship. Moreover, evidence emerged to suggest that along with students' communication behaviors, psychosocial development serves as an important predictor of the relational and educational success that students experience in graduate school. The encouragement of psychosocial development may be one way in which policymakers, educators, and practitioners can enhance the quality of doctoral education programs, improve doctoral student outcomes, and better prepare future faculty members.

References

- Adams, K. A. (2002). *What Colleges and Universities Want in New Faculty*. Association of American Colleges and Universities: Washington, DC.
- Adams, G. R., Berzonsky, M. D., & Keating, L. (2006). Psychosocial resources in first-year university students: The role of identity processes and social relationships. *Journal of Youth and Adolescence*, *35*, 78-88. doi:10.1007/s10964-005-9019-0
- Adrian-Taylor, S. R., Noels, K. A., & Tischler, K. (2007). Conflict between international graduate students and faculty supervisors: Toward effective conflict prevention and management strategies. *Journal of Studies in International Education*, *11*, 90-117. doi:10.1177/1028315306286313
- Altbach, P. G., Arnold, K., & King, I. C. (2014). *College student development and academic life: Psychological, intellectual, social and moral issues*. New York: Routledge.
- Anderson, T. L., & Emmers-Sommer, T. M. (2006). Predictors of relationship satisfaction in online romantic relationships. *Communication Studies*, *57*, 153-172. doi:10.1080/10510970600666834
- Antony, J. S. (2002). Reexamining doctoral student socialization and professional development: Moving beyond the congruence and assimilation orientation. In J.C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 17, pp. 349-380). Netherlands: Springer.
- Aron, A. P., Mashek, D. J., & Aron, E. N. (2004). Closeness as including other in the self. In D.J. Mashek & A. Aron (Eds.), *Handbook of closeness and intimacy* (pp. 27-41). Mahwah, NJ: Lawrence Erlbaum.

- Atkinson, D. R., Morten, G., & Sue, D. W. (1983). *Counseling American minorities: A cross-cultural perspective* (2nd ed.). Dubuque, IA: W. C. Brown.
- Austin, A. E. (2002). Preparing the next generation of faculty: Graduate school as socialization to the academic career. *The Journal of Higher Education*, 73, 94-122. doi:10.1353/jhe.2002.0001
- Austin, A. E. (2003). Creating a bridge to the future: Preparing new faculty to face changing expectations in a shifting context. *The Review of Higher Education*, 26, 119-144. doi:10.1353/rhe.2002.0031
- Austin, A. E., Connolly, M. R., & Colbeck, C. L. (2008). Strategies for preparing integrated faculty: The center for the integration of research, teaching, and learning. *New Directions for Teaching and Learning*, 113, 69-81. doi:10.1002/tl.309
- Austin, A. E., & McDaniels, M. (2006). Preparing the professoriate of the future: Graduate student socialization for faculty roles. In J. C. Smart (Ed.) *Higher education: Handbook of theory and research* (Vol. 21, pp. 397-456). Netherlands: Springer.
- Austin, Z., Simpson, S., & Reynen, E. (2005). 'The fault lies not in our students, but in ourselves': Academic honesty and moral development in health professions education—results of a pilot study in Canadian pharmacy. *Teaching in Higher Education*, 10, 143-156. doi:10.1080/1356251042000337918
- Ayres, J. (1983). Strategies to maintain relationships: Their identification and perceived usage. *Communication Quarterly*, 31, 62-67. doi:10.1080/01463378309369487
- Bair, C. R., & Haworth, J. G. (2005). Doctoral student attrition and persistence: A meta-

- synthesis of research. In J. C. Smart (Ed.), *Higher education: Handbook of theory and practice* (19th ed.; pp. 481-534). Norwell, MA: Kluwer Academic Publishers.
- Bair, C. R., Haworth, J. G., & Sandfort, M. (2004). Doctoral student learning and development: A shared responsibility. *Journal of Student Affairs Research and Practice, 41*, 1277-1295. doi:10.2202/1949-6605.1395
- Baker, V. L., & Pifer, M. J. (2011). The role of relationships in the transition from doctoral student to independent scholar. *Studies in Continuing Education, 33*, 5-17. doi:10.1080/0158037X.2010.515569
- Baker, R. W., & Siryk, B. (1989). *Student Adaptation to College Questionnaire: Manual*. Torrance, CA: Western Psychological Services.
- Baker, R. W., & Siryk, B. (1999). *Student Adaptation to College Questionnaire: Manual*. Torrance, CA: Western Psychological Services.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist, 37*, 122-147. doi:10.1037/0003-066X.37.2.122
- Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology, 25*, 729-735. doi:10.1037/0012-1649.25.5.729
- Barker, M. J. (2010). *Cross-race advising relationships: The role of race in advising relationships between Black doctoral student protégés and their White faculty advisors*. (Unpublished doctoral dissertation). Webster University, Saint Louis, MO.
- Bargar, R. R., & Mayo-Chamberlain, J. (1983). Advisor and advisee issues in doctoral education. *The Journal of Higher Education, 54*, 407-432. doi:10.2307/1981905
- Barnes, B. J., & Austin, A. E. (2009). The role of doctoral advisors: A look at advising

from the advisor's perspective. *Innovative Higher Education*, 33, 297-315.

doi:10.1007/s10755-008-9084-x

Barnes, B. J., Williams, E. A., & Archer, S. A. (2010). Characteristics that matter most:

Doctoral students' perceptions of positive and negative advisor attributes.

NACADA Journal, 30, 34-46. doi:10.12930/0271-9517-30.1.34

Barnett, G. A., Danowski, J. A., Feeley, T. H., & Stalker, J. (2010). Measuring quality in

communication doctoral education using network analysis of faculty-hiring

patterns. *Journal of Communication*, 60, 388-411. doi:10.1111/j.1460-

2466.2010.01487.x

Berelson, B. (1960). *Graduate education in the United States*. New York, NY: McGraw-Hill.

Bevan, J. L. (2010). Serial argument goals and conflict strategies: A comparison between

romantic partners and family members. *Communication Reports*, 23, 52-64.

doi:10.1080/08934211003598734

Bevan, J. L. (2013). Dyadic perceptions of goals, conflict strategies, and perceived

resolvability in serial arguments. *Journal of Social and Personal Relationships*,

31, 773-795. doi:10.1177/0265407513504653

Bevan, J. L., Finan, A., & Kaminsky, A. (2008). Modeling serial arguments in close

relationships: The serial argument process model. *Human Communication*

Research, 34, 600-624. doi:10.1111/j.1468-2958.2008.00334.x

Bevan, J. L., & Sparks, L. (2014). The relationship between accurate and benevolently

biased serial argument perceptions and individual negative health

perceptions. *Communication Research*, 41, 257-281.

doi:10.1177/0093650212438391

Beyers, W., & Goossens, L. (2002). Concurrent and predictive validity of the Student Adaptation to College Questionnaire in a sample of European freshman students. *Educational and Psychological Measurement, 62*, 527-538.

doi:10.1177/00164402062003009

Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological Methods & Research, 10*, 141-163.

doi:10.1177/004912418101000205

Bilodeau, B. L., & Renn, K. A. (2005). Analysis of LGBT identity development models and implications for practice. *New Directions for Student Services, 111*, 25-39.

doi:10.1002/ss.171

Bowen, W. G., & Rudenstine, N. L. (1992). *In pursuit of the PhD*. Princeton, NJ: Princeton University Press.

Bowman, N. A. (2010). College diversity experiences and cognitive development: A meta-analysis. *Review of Educational Research, 80*, 4-33.

doi:10.3102/0034654309352495

Bradbury, T. N., Fincham, F. D., & Beach, S. R. (2000). Research on the nature and determinants of marital satisfaction: A decade in review. *Journal of Marriage and Family, 62*, 964-980. doi:10.1111/j.1741-3737.2000.00964.x

Brause, R. S. (2012). *Writing your doctoral dissertation: Invisible rules for success*. New York, NY: Routledge.

Brendel, J. M., Kolbert, J. B., & Foster, V. A. (2002). Promoting student cognitive development. *Journal of Adult Development, 9*, 217-227.

doi:10.1023/A:1016056227344

- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). New York, NY: Guilford Press.
- Burleson, B. R., & Denton, W. H. (1997). The relationship between communication skill and marital satisfaction: Some moderating effects. *Journal of Marriage and the Family*, 59, 884-902. doi:10.2307/353790
- Burleson, B. R., Kunkel, A. W., & Birch, J. D. (1994). Thoughts about talk in romantic relationships: Similarity makes for attraction (and happiness, too). *Communication Quarterly*, 42, 259-273. doi:10.1080/01463379409369933
- Burleson, B. R., Metts, S., & Kirch, M. W. (2000). Communication in close relationships. In C. Hendrick & S. S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 245-258). Thousand Oaks, CA: Sage.
- Burleson, B. R., & Samter, W. (1994). A social skills approach to relationship maintenance. In D. J. Canary & L. Stafford (Eds.), *Communication and relational maintenance* (pp. 61-90). San Diego, CA: Academic Press.
- Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). New York, NY: Routledge.
- Canary, D. J., Cunningham, E. M., & Cody, M. J. (1988). Goal types, gender, and locus of control in managing interpersonal conflict. *Communication Research*, 15, 426-446. doi:10.1177/009365088015004005
- Canary, D. J., & Cupach, W. R. (1988). Relational and episodic characteristics associated with conflict tactics. *Journal of Social and Personal Relationships*, 5, 305-325. doi:10.1177/0265407588053003

- Canary, D. J., Cupach, W. R., & Serpe, R. T. (2001). A competence-based approach to examining interpersonal conflict: Test of a longitudinal model. *Communication Research*, 28, 79-104. doi:10.1177/009365001028001003
- Canary, D. J., & Spitzberg, B. H. (1987). Appropriateness and effectiveness perceptions of conflict strategies. *Human Communication Research*, 14, 93-118.
doi:10.1111/j.1468-2958.1987.tb00123.x
- Canary, D. J., & Spitzberg, B. H. (1989). A model of the perceived competence of conflict strategies. *Human Communication Research*, 15, 630-649.
doi:10.1111/j.1468-2958.1989.tb00202.x
- Canary, D. J., & Spitzberg, B. H. (1990). Attribution biases and associations between conflict strategies and competence outcomes. *Communication Monographs*, 47, 139-151. doi:10.1080/03637759009376191
- Canary, D. J., & Stafford, L. (1994). Maintaining relationships through strategic and routine interaction. In D. J. Canary & L. Stafford (Eds.), *Communication and relational maintenance* (pp. 3-22). San Diego, CA: Academic Press.
- Canary, D. J., Stafford, L., Hause, K. S., & Wallace, L. A. (1993). An inductive analysis of relational maintenance strategies: Comparisons among lovers, relatives, friends, and others. *Communication Research Reports*, 10, 3-14.
doi:10.1080/08824099309359913
- Cass, V. C. (1979). Homosexuality identity formation: A theoretical model. *Journal of Homosexuality*, 4, 219-235. doi:10.1300/J082v04n03_01
- Cavendish, S. E. (2007). *Mentoring matters: The influence of social support and relational maintenance strategies on critical outcomes in doctoral education.*

- (Unpublished doctoral dissertation). University of Kentucky, Lexington, KY.
- Chan, D. (2009). So why ask me? Are self-report data really that bad? In C. E. Lance & R. J. Vanderberg (Eds.), *Statistical and methodological myths and urban legends: Doctrine, verity and fable in the organizational and social services*. New York: Taylor and Francis.
- Chao, G. T. (1998). Invited reaction: Challenging research in mentoring. *Human Resource Development Quarterly*, 9, 333-339. doi:10.1002/hrdq.3920090404
- Chickering, A. W. (1969). *Education and identity*. San Francisco, CA: Jossey-Bass.
- Chickering, A. W. (1974). The impact of various college environments on personality development. *Journal of the American College Health Association*, 23, 82-94.
- Chickering, A. W. (1981). *The modern American college: Responding to the new realities of diverse students and a changing society*. San Francisco, CA: Jossey-Bass.
- Chickering, A. W., & Gamson, Z. F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin*, 3, 2-7. doi:10.1002/tl.37219914708
- Chickering, A. W., & Reisser, L. (1993). *Education and identity* (2nd ed.). San Francisco, CA: Jossey-Bass.
- Chickering, A. W., & Braskamp, L. A. (2009). Developing a global perspective for personal and social responsibility. *Peer Review*, 11, 27-30.
- Chiste, P. (1997). *Assessing the needs of graduate students at the University of Saskatchewan*. Unpublished manuscript. University of Saskatchewan, Saskatoon, Canada.
- Conrad, C., Haworth, J. G., & Millar, S. B. (1993). *Silent success: Master's education in*

- the United States*. Baltimore, MD: Johns Hopkins University Press.
- Coran-Hillix, T., Genshiemer, L. K., Coran-Hillix, W. A., & Davidson, W. S. (1986). Students' views of mentors in psychology graduate training. *Teaching of Psychology, 13*, 123-128.
- Council of Graduate Schools. (1990). *The doctor of philosophy degree*. Washington, DC: Council of Graduate Schools.
- Council of Graduate Schools. (2005). *The doctor of philosophy degree: A policy statement*. Washington, DC: Council of Graduate Schools.
- Cross, W. E. (1991). Rethinking nigrescence. In W. E. Cross (Ed.), *Shades of black: Diversity in African-American identity* (pp. 189-217). Philadelphia, PA: Temple University Press.
- Cruce, T. M., Wolniak, G. C., Seifert, T. A., & Pascarella, E. T. (2006). Impacts of good practices on cognitive development, learning orientations, and graduate degree plans during the first year of college. *Journal of College Student Development, 47*, 365-383. doi:10.1353/csd.2006.0042
- Cupach, W. R. (1982, May). *Communication satisfaction and interpersonal solidarity as outcomes of conflict message strategy use*. Paper presented at the International Communication Association annual convention, Boston, MA.
- Cupach, W. R., Canary, D. J., & Spitzberg, B. H. (2010). *Competence in interpersonal conflict* (2nd ed.). Long Grove, IL: Waveland Press.
- Dainton, M. (2003). Equity and uncertainty in relational maintenance. *Western Journal of Communication, 67*, 164-186. doi:10.1080/10570310309374765
- Dainton, M., & Aylor, B. (2001). A relational uncertainty analysis of jealousy, trust, and

maintenance in long-distance versus geographically close relationships.

Communication Quarterly, 49, 172-188. doi:10.1080/01463370109385624

Dainton, M., & Aylor, B. (2002). Routine and strategic maintenance efforts: Behavioral patterns, variations associated with relational length, and the prediction of relational characteristics. *Communication Monographs*, 69, 52-66.
doi:10.1080/03637750216533

Dainton, M., & Gross, J. (2008). The use of negative behaviors to maintain relationships. *Communication Research Reports*, 25, 179-191.
doi:10.1080/08824090802237600

Dainton, M., & Stafford, L. (1993). Routine maintenance behaviors: A comparison of relationship type, partner similarity and sex differences. *Journal of Social and Personal Relationships*, 10, 255-271. doi:10.1177/026540759301000206

Dainton, M., Zelle, E., & Langan, E. (2003). Maintaining friendships throughout the life span. In D. J. Canary & M. Dainton (Eds.), *Maintaining relationships through communication* (pp. 79-124). Mahwah, NJ: Lawrence Erlbaum.

Daresh, J. C., & Playko, M. A. (1995, April). *Mentoring in educational leadership development: What are the responsibilities of the proteges?*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Dindia, K. (2000). Relational maintenance. In C. Hendrick & S.S. Hendrick (Eds.), *Close relationships: A sourcebook* (pp. 287-300). Thousand Oaks, CA: Sage.

Dindia, K. (2003). Definitions and perspectives of relational maintenance communication. In D. J. Canary & M. Dainton (Eds.), *Maintaining relationships*

- through communication: Relational, contextual, and cultural variations* (pp. 1-28). Mahwah, NJ: Erlbaum.
- Dindia, K. & Baxter, L. (1987). Strategies for maintaining and repairing marital relationships. *Journal of Social and Personal Relationships*, 4, 143-158. doi:10.1177/0265407587042003
- Dindia, K., & Canary, D. J. (1993). Definitions and theoretical perspectives on maintaining relationships. *Journal of Social and Personal Relationships*, 10, 163-173. doi:10.1177/026540759301000201
- Draucker, K. F. (2004). *Intellectual and interpersonal competence between siblings: The college years*. (Unpublished master thesis). Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Duck, S. (1988). *Relating to others*. Stratford, England: Open University Press.
- Dunkel, C. S., Kim, J. K., & Papini, D. R. (2005). The general factor of psychosocial development and its relation to the general factor of personality and life history strategy. *Personality and Individual Differences*, 52, 202-206. doi:10.1016/j.paid.2011.10.1016
- Dupre-Casanova, A. E. (2008). *The relationship between creativity and psychosocial development among college honors students and non-honors students*. (Unpublished doctoral dissertation). Texas A&M University, College Station, TX.
- Edwards, K. E., & Jones, S. R. (2009). "Putting My Man Face On": A Grounded Theory of College Men's Gender Identity Development. *Journal of College Student Development*, 50, 210-228. doi:10.1353/csd.0.0063
- Efron, B., & Tibshirani, R. J. (1994). *An introduction to the bootstrap*. London, UK:

CRC Press.

Eisenhart, M., & DeHaan, R. L. (2005). Doctoral preparation of scientifically based education researchers. *Educational Researcher*, 34, 3-13.

doi:10.3102/0013189X034004003

Emke-Francis, P. M. (2010). *The advisor-advisee relationship: A qualitative study of advisee perspectives*. (Unpublished doctoral dissertation). University of Nevada, Las Vegas, NV.

Erdem, F., & Omuris, E. (2014). Mentors' perceptions on the post mentoring relationships in academic organizations. *Universal Journal of Educational Research*, 2, 537-543. doi:10.13189/ujer.2014.020802

Erdem, F., & Ozen, J. (2003). The perceptions of protégés in academic organizations in regard to the functions of mentoring. *Higher Education in Europe*, 28, 569-575. doi:10.1080/0379772032000170543

Erikson, E. H. (1959). Identity and the life cycle: Selected papers. *Psychological Issues*, 1, 1-171.

Erikson, E. H. (1963). *Childhood and society*. New York, NY: Norton.

Erikson, E. H. (1964). *Insight and responsibility*. New York, NY: Norton.

Evans, N. J., Forney, D. S., Guido, F. M., Patton, L. D., & Renn, K. A. (2010). *Student development in college: Theory, research, and practice* (2nd ed). San Francisco, CA: Jossey-Bass.

Evans, N. J., Forney, D. S., & Guido-DiBrito, F. M. (1998). *Student development in college: Theory, research, and practice*. San Francisco, CA: Jossey-Bass.

Faghihi, F., Rakow, E. A., & Ethington, C. (1999, April). *A study of factors related to*

dissertation progress among doctoral candidates: focus on students' research self-efficacy as a result of their research training and experiences. Paper presented at the Annual Meeting of the American Educational Research Association, Montreal, Canada.

- Fassinger, R. E. (1998). Lesbian, gay, and bisexual identity and student development theory. In R. L. Sanlo (Ed.), *Working with lesbian, gay, bisexual, and transgender college students: A handbook for faculty and administrators* (pp. 13-22). Westport, CT: Greenwood.
- Fincham, F. D., & Beach, S. R. H. (2006). Relationship satisfaction. In A. L. Vangelisti & D. Perlman (Eds.), *The Cambridge handbook of personal relationships* (pp. 579-594). New York, NY: Cambridge University Press.
- Fisher, R. J. (1993). Social desirability bias and the validity of indirect questioning. *Journal of Consumer Research*, 20, 303-315. doi:10.0093/5301/94/200200108200
- Forester, M., Kahn, J. H., & Hesson-McInnis, M. S. (2004). Factor structures of three measures of research self-efficacy. *Journal of Career Assessment*, 12, 3-16. doi:10.1177/1069072703257719
- Foss, K. A., & Foss, S. K. (2008). Accomplishing the mission: Creating a partnership with your advisor. In S. Morreale & P. A. Arneson (Eds.), *Getting the most from your graduate education in communication: A graduate student's handbook* (pp. 59-70). Washington, DC: National Communication Association.
- Gaff, J. G. (2002). Preparing future faculty and doctoral education. *Change: The Magazine of Higher Learning*, 34, 63-66. doi:10.1080/00091380209605571
- Gardner, S. K. (2007). "I heard it through the grapevine": Doctoral student socialization

in chemistry and history. *Higher Education*, 54, 723-740. doi:10.1007/s10734-06-9020-x

Gardner, S. K. (2009). *The development of doctoral students: Phases of challenge and support*. San Francisco, CA: Jossey-Bass.

Gardner, S. K. (2010). Contrasting the socialization experiences of doctoral students in high-and low-completing departments: A qualitative analysis of disciplinary contexts at one institution. *The Journal of Higher Education*, 81, 61-81. doi:10.1353/jhe.0.0081

Gardner, S. K., & Barnes, B. J. (2007). Graduate student involvement: Socialization for the professional role. *Journal of College Student Development*, 48, 369-387. doi:10.1353/csd.2007.0036

Gardner, S. K. & Mendoza, P. (2010). *On becoming a scholar: Socialization and development in doctoral education*. Sterling, VA: Stylus.

Geisler, C. C. (1995). *Scientist-practitioner interests, research self-efficacy, perceptions of the research training environment and their relationship to dissertation progress*. (Unpublished doctoral dissertation). Michigan State University, East Lansing, MI.

Gelso, C. J. (2006). On the making of a scientist-practitioner: A theory of research training in professional psychology. *Training and Education in Professional Psychology*, 1, 3-16. doi:10.1037/1931-3918.S.1.3.

Golde, C. M. (1997, November). *Gaps in the training of future faculty: Doctoral student perceptions*. Paper presented at the annual meeting of the Association for the Study of Higher Education. Albuquerque, NM.

- Golde, C. M. (2000). Should I stay or should I go? Student descriptions of the doctoral attrition process. *The Review of Higher Education*, 23, 199-227.
doi:10.1353/rhe.2000.0004
- Golde, C. M. (2004). The responsibility of doctoral programs for the career preparation of future faculty. *Peer Review*, 6, 26-29.
- Golde, C. M. (2005). The role of the department and discipline in doctoral student attrition: Lessons from four departments. *The Journal of Higher Education*, 76, 669-700. doi:10.1353/jhe.2005.0039
- Golde, C. M., & Dore, T. M. (2000, April). *Findings from the survey on doctoral education and career preparation*. Paper presented at the Re-envisioning the PhD Conference, Seattle WA.
- Golde, C. M., & Dore, T. M. (2001). *At cross purposes: What the experiences of today's doctoral students reveal about doctoral education*. Madison, WI: Wisconsin Center for Education Research.
- Golde, C. M., & Gallagher, H. A. (1999). The challenges of conducting interdisciplinary research in traditional doctoral programs. *Ecosystems*, 2, 281-285.
- Golde, C. M., & Walker, G. E. (2006). *Envisioning the future of doctoral education: Preparing stewards of the discipline, Carnegie essays on the doctorate* (Vol. 3). San Francisco, CA: Jossey-Bass.
- Goodboy, A. K., Martin, M. M., & Bolkan, S. (2009). The development and validation of the student communication satisfaction scale. *Communication Education*, 58, 372-396. doi:10.1080/03634520902755441
- Goodboy, A. K., Myers, S. A., & Members of Investigating Communication. (2010).

- Relational quality indicators and love styles as predictors of negative relational maintenance behaviors in romantic relationship. *Communication Reports*, 23, 65-78. doi:10.1080/08934215.2010.511397
- Granovetter, M. (1976). Network sampling: Some first steps. *American Journal of Sociology*, 81, 1287-1303. doi:10.1086/226224
- Greeley, A. T., & Tinsley, H. E. (1988). Autonomy and intimacy development in college students: Sex differences and predictors. *Journal of College Student Development*, 29, 512-520.
- Green, K. E., & Kluever, R. C. (1997, March). *The dissertation barriers scale*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
- Gross, M. A., Guerrero, L. K., & Alberts, J. K. (2004). Perceptions of conflict strategies and communication competence in task-oriented dyads. *Journal of Applied Communication Research*, 32, 249-270. doi:10.1080/0090988042000240176
- Guerrero, L. K. (1994). "I'm so mad I could scream:" The effects of anger expression on relational satisfaction and communication competence. *Southern Journal of Communication*, 59, 125-141. doi:10.1080/10417949409372931
- Guerrero, L. K., & Chavez, A. M. (2005). Relational maintenance in cross-sex friendships characterized by different types of romantic intent: An exploratory study. *Western Journal of Communication*, 69, 339-358.
doi:10.1080/10570310500305471
- Hall, S. S. (1998, November 29). Lethal chemistry at Harvard. *New York Times*.
Retrieved from <http://www.nytimes.com/1998/11/29/magazine/lethal-chemistry->

[at-harvard.html](#).

- Hall, L. A., & Burns, L. D. (2009). Identity development and mentoring in doctoral education. *Harvard Educational Review, 79*, 49-70.
- Hawkins, K. (1991). Preliminary development of a measure of faculty/advisor communication apprehension. *Communication Research Reports, 8*, 127-132.
doi:10.1080/08824099109359884
- Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling*. Retrieved from <http://afhayes.com/public/process2012.pdf>
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.
- Hecht, M. L. (1978). The conceptualization and measurement of interpersonal communication satisfaction. *Human Communication Research, 4*, 253-264.
doi:10.1111/j.1468-2958.1978.tb00614.x
- Hecht, M. L., & Sereno, K. K. (1985). Interpersonal communication satisfaction: Relationship to satisfaction with self and other. *Communication Research Reports, 2*, 141-148.
- Heiss, A. M. (1970). *Challenges to graduate schools*. San Francisco, CA: Jossey-Bass.
- Hendrick, S. S. (1988). A generic measure of relationship satisfaction. *Journal of Marriage and the Family, 50*, 93-98.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*, 1-55. doi:10.1080/10705519909540118

- Hockey, J. (1996). A contractual solution to problems in the supervision of PhD degrees in the UK. *Studies in Higher Education, 21*, 359-371.
doi:10.1080/03075079612331381271
- Hodgson, C. S., & Simoni, J. M. (1995). Graduate student academic and psychological functioning. *Journal of College Student Development, 36*, 244-253.
- Hoffer, T. B., Welch, V. J., Webber, K., Williams, K., Lisek, B., ... & Hess, M. (2006). *Doctorate recipients from United States universities: Summary report 2005*. Chicago, IL: National Opinion Research Center.
- Holligan, C. (2005). Fact and fiction: A case history of doctoral supervision. *Educational Research, 47*, 267-278. doi:10.1080/00131880500287179
- Hollingsworth, M. A., & Fassinger, R. E. (2002). The role of faculty mentors in the research training of counseling psychology doctoral students. *Journal of Counseling Psychology, 49*, 324-330. doi:10.1037/0022-0167.49.3.324
- Hood, A. B. (1984). Student development: Does participation affect growth? *ACU-I Bulletin, 52*, 16-19.
- Hox, J. J. (2010). *Multilevel analysis: Techniques and applications* (2nd ed.). New York: Routledge.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*, 1-55. doi:10.1080/10705519909540118
- Janosik, S. M., Creamer, D. G., & Cross, L. H. (1988). The relationship of residence halls' student-environment fit and sense of competence. *Journal of College Student Development, 29*, 320-326.

- Jones, A. L., Davis, S. N., & Price, J. (2004). Preparing future faculty: A new approach at North Carolina State University. *Teaching Sociology, 32*, 264-275.
doi:10.1177/0092055X0403200302
- Jones, C. E., & Watt, J. D. (2001). Moral orientation and psychosocial development: Gender and class-standing differences. *Journal of Student Affairs Research and Practice, 39*, 29-41. doi:10.2202/1949-6605.1158
- Jones, S. R., & Abes, E. S. (2013). *Identity development of college students: Advancing frameworks for multiple dimensions of identity*. San Francisco, CA: Jossey-Bass.
- Jordan, P. J., & Troth, A. C. (2004). Managing emotions during team problem solving: Emotional intelligence and conflict resolution. *Human Performance, 17*, 195-218.
doi:10.1207/s15327043hup1702_4
- Jordan-Cox, C. A. (1987). Psychosocial development of students in traditionally Black institutions. *Journal of College Student Personnel, 28*, 504-512.
- Josselson, R. (1987). *Finding herself: Pathways to identity development in women*. San Francisco, CA: Jossey-Bass.
- Kahn, J. H., & Scott, N. A. (1997). Predictors of research productivity and science-related career goals among counseling psychology doctoral students. *The Counseling Psychologist, 25*, 38-67. doi:10.1177/0011000097251005
- Kalbfleisch, P. J. (2002). Communicating in mentoring relationships: A theory for enactment. *Communication Theory, 12*, 63-69. doi:10.1093/ct/12.1.63
- Kashy, D. A., & Kenny, D. A. (2000). The analysis of data from dyads and groups. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social psychology* (pp. 451-477). New York: Cambridge University Press.

- Katz, E. L. (1997). Key players in the dissertation process. In L. F. Goodchild, K. E. Green, E. L. Katz, & C. Kluever (Eds.), *Rethinking the dissertation process: Tackling personal and institutional obstacles* (pp. 5-16). San Francisco, CA: Jossey-Bass.
- Katz, J., & Hartnett, R. T. (1976). *Scholars in the making: The development of graduate and professional students*. Cambridge, MA: Ballinger.
- Kelley, D. L., & Burgoon, J. K. (1991). Understanding marital satisfaction and couple type as functions of relational experiences. *Human Communication Research, 18*, 40-69. doi:10.1111/j.1468-2958.1991.tb00528.x
- Keltner, D., & Robinson, R. J. (1997). Defending the status quo: Power and bias in social conflict. *Personality and Social Psychology Bulletin, 23*, 1066-1077.
doi:10.1177/01461672972310007
- Kenny, D. A., & La Voie, L. (1985). Separating individual and group effects. *Journal of Personality and Social Psychology, 48*, 339-349. doi:10.1037/0022-3514.48.2.339
- Kerlinger, F. N. (1986). *Foundations of behavioral research* (3rd ed.). New York, NY: Holt, Rinehart and Winston, Inc.
- King, P. M., & Baxter Magolda, M. B. (1996). A developmental perspective on learning. *Journal of College Student Development, 37*, 163-173.
- King, P. M., & Mayhew, M. J. (2002). Moral judgement development in higher education: Insights from the Defining Issues Test. *Journal of Moral Education, 31*, 247-270. doi:10.1080/0305724022000008106
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford Press.

- Kloss, R. T. (1994). A nudge is best: Helping students through the Perry scheme of intellectual development. *College Teaching*, 42, 151-158.
doi:10.1080/87567555.1994.9926847
- Knapp, M. L., Daly, J. A., Albada, K. F., & Miller, G. R. (2002). Background and current trends in the study of interpersonal communication. In M. L. Knapp & J. A. Daly (Eds.), *Handbook of interpersonal communication* (3rd ed., pp. 3-22). Thousand Oaks, CA: Sage.
- Knefelkamp, L., Widick, C., & Parker, C. A. (1978). *Applying new developmental findings*. San Francisco, CA: Jossey-Bass.
- Knox, S., Schlosser, L. Z., Pruitt, N. T., & Hill, C. E. (2006). A qualitative examination of graduate advising relationships: The advisor perspective. *The Counseling Psychologist*, 34, 489-518. doi:10.1177/0011000006290249
- Kodama, C. M., McEwen, M. K., Liang, C. T., & Lee, S. (2001). A theoretical examination of psychosocial issues for Asian Pacific American students. *Journal of Student Affairs Research and Practice*, 38, 409-435.
doi:10.2202/1949-6605.1150
- Kogler Hill, S. E., & Bahniuk, M. H., & Dobos, J. (1989). The impact of mentoring and collegial support on faculty success: An analysis of support behavior, information adequacy, and communication apprehension. *Communication Education*, 38, 15-33. doi:10.1080/03634528909378737
- Kohlberg, L. (1972). The concepts of developmental psychology as the central guide to education: Examples from cognitive, moral, and psychological education. In M.C. Reynold (Ed.), *Psychology and the process of schooling in the next decade* (pp. 1-

- 55). Minneapolis, MN: University of Minnesota Press.
- Kram, K. E. (1985). *Mentoring at work: Developmental relationships in organizational life*. Glenview, IL: Scott, Foresman.
- Kuh, G. D. (1988). *Personal development and the college student experience: A review of the literature*. The college outcomes evaluation program: New Jersey department of higher education. Trenton, NJ.
- Kuh, G. D. & Whitt, E. J. (1988). The invisible tapestry: Culture in American colleges and university. *ASHE-ERIC Higher Education, Report 1*, 1-160.
- Lakey, S., & Canary, D. J. (2002). Actor goal achievement and sensitivity to partner as critical factors in understanding interpersonal communication competence and conflict strategies. *Communication Monographs*, 69, 217-235.
doi:10.1080/03637750216542
- Lambie, G. W., Hagedorn, W. B., & Ieva, K. P. (2010). Social-Cognitive Development, Ethical and Legal Knowledge, and Ethical Decision Making of Counselor Education Students. *Counselor Education and Supervision*, 49, 228-246.
doi:10.1002/j.1556-6978.2010.tb00100.x
- Lambie, G. W., & Vaccaro, N. (2011). Doctoral counselor education students' levels of research self-efficacy, perceptions of the research training environment, and interest in research. *Counselor Education and Supervision*, 50, 243-258.
doi:10.1002/j.1556-6978.2011.tb00122.x
- Lamude, K. G., Daniels, T. D., & Graham, E. E. (1988). The paradoxical influence of sex on communication rules coorientation and communication satisfaction in superior-subordinate relationships. *Western Journal of Communication*, 52, 122-

134. doi:10.1080/10570318809389630

Ledbetter, A. M. (2013). Relational maintenance and inclusion of the other in the self:

Measure development and dyadic test of a self-expansion theory approach.

Southern Communication Journal, 78, 289-310.

doi:10.1080/1041794X.2013.815265

Ledbetter, A. M., Stassen, F., & Dowd, M. M. (2013). Comparing equity and self-

expansion theory approaches to relational maintenance. *Personal Relationships*,

20, 38-51. doi:10.1111/j.1475-6811.2012.01395.x

Ledbetter, A. M., Stassen, H., Muhammad, A., & Kotey, E. N. (2010). Relational

maintenance as including the other in the self. *Qualitative Research Reports in*

Communication, 11, 21-28. doi:10.1080/17459430903413457

Lee, J. (1998). Effective maintenance communication in superior-subordinate

relationships. *Western Journal of Communication*, 62, 181-208.

doi:10.1080/10570319809374605

Lee, J., & Jablin, F. M. (1995). Maintenance communication in superior-subordinate

work relationships. *Human Communication Research*, 22, 220-257.

doi:10.1111/j.1468-2958.1995.tb00367.x

Lefever, S., Dal, M., & Matthiasdottir, A. (2007). Online data collection in academic

research: advantages and limitations. *British Journal of Educational*

Technology, 38, 574-582. doi:10.1111/j.1467-8535.2006.00638.x

Levine, T. R. (2005). Confirmatory factor analysis and scale validation in communication

research. *Communication Research Reports*, 22, 335-338.

doi:10.1080/00036810500317730

- Ley, P. (1988). *Communicating with patients: Improving communication, satisfaction and compliance*. New York: Croom Helm.
- Lien, L. A. (2002). *The role of social integration in students' psychosocial development*. (Unpublished doctoral dissertation). Vanderbilt University, Nashville, TN.
- Lindner, J. R., Dooley, K. E., & Murphy, T. H. (2001). Differences in competencies between doctoral students on-campus and at a distance. *American Journal of Distance Education, 15*, 25-40. doi:10.1080/08923640109527082
- Longwell-Grice, R. (2003). Get a job: Working class students discuss the purpose of college. *College Student Affairs Journal, 23*, 40-53.
- Lounsbury, Huffstetler, B. C., & Leong, F. T. L., & Gibson, L. (2005). Sense of identity and collegiate academic achievement. *Journal of College Student Development, 46*, 501-514. doi:10.1353/csd.2005.0051
- Lounsbury, J. W., Richardson, J. D., Saudargas, R. A., & Levy, J. J. (2008). An investigation of extracurricular activities in relation to sense of identity of college freshmen. *Journal of College Orientation and Transition, 15*, 47-55.
- Lounsbury, J. W., Saudargas, R. A., Gibson, L. W., & Leong, F. T. (2005). An investigation of broad and narrow personality traits in relation to general and domain-specific life satisfaction of college students. *Research in Higher Education, 46*, 707-729. doi:10.1007/11162-004-4140-6
- Lovitts, B. E. (2001). *Leaving the ivory tower: The causes and consequences of departure from doctoral study*. Lanham, MD: Rowman & Littlefield.
- Lovitts, B. E. (2005). Being a good course-taker is not enough: A theoretical perspective on the transition to independent research. *Studies in Higher Education, 30*, 137-

154. doi:10.1080/03075070500043093

Lovitts, B. E. (2008). The transition to independent research: Who makes it, who doesn't, and why. *The Journal of Higher Education, 79*, 296-325. doi:10.1353/jhe.0.0006

Lovitts, B. E., & Nelson, C. (2000). The hidden crisis in graduate education: Attrition from Ph.D. programs. *Academe, 86*, 44-50. doi:10.2307/40251951

Lunsford, L. (2012). Doctoral advising or mentoring? Effects on student outcomes.

Mentoring & Tutoring for Partnership in Learning, 2, 251-270.

doi:10.1080/13611267.2012.678974

Mainhard, T., van der Rijst, R., van Tartwijk, J., & Wubbels, T. (2009). A model for the supervisor–doctoral student relationship. *Higher Education, 58*, 359-373.

doi:10.1007/s10734-009-9199-8

Mansson, D. H. (2011). *Using mentoring enactment theory to explore the doctoral student-faculty member mentoring relationship*. (Unpublished doctoral dissertation). West Virginia University, Morgantown, WV.

Mansson, D. H., & Myers, S. A. (2012). Using mentoring enactment theory to explore the doctoral student–advisor mentoring relationship. *Communication Education, 61*, 309-334. doi:10.1080/03634523.2012.708424

Mansson, D. H., & Myers, S. A. (2013). Mentoring support and relational uncertainty in the advisor-advisee relationship. *NACADA Journal, 33*, 54-60.

doi:10.12930/NACADA-13-208

Markstrom, C. A., Li, X., Blackshire, S. L., & Wilfong, J. J. (2005). Ego strength development of adolescents involved in adult-sponsored structured activities.

Journal of Youth and Adolescence, 34, 85-95. doi:10.1007/s10964-005-3208-8

- Markstrom, C. A., & Marshall, S. K. (2007). The psychosocial inventory of ego strengths: Examination of theory and psychometric properties. *Journal of Adolescence, 30*, 63-79. doi:10.1016/j.adolescence.2005.11.003
- Markstrom, C. A., Sabino, V. M., Turner, B. J., & Berman, R. C. (1997). The psychosocial inventory of ego strengths: Development and validation of a new Eriksonian measure. *Journal of Youth and Adolescence, 26*, 705-732. doi:10.1023/A:1022348709532
- Martin, L. M. (2000). The relationship of college experiences to psychosocial outcomes in students. *Journal of College Student Development, 41*, 292-301.
- Mason, H. L. (2002). Promoting civility in graduate student education. *Journal of Pharmacy Teaching, 9*, 57-70. doi:10.1300/J060v09n03_05
- Matthews, L. S., Conger, R. D., & Wickrama, K. A. S. (1996). Work-family conflict and marital quality: mediating processes. *Social Psychology Quarterly, 59*, 62-79. doi:10.2307/2787119
- Maxwell, S. E. (2000). Sample size and multiple regression analysis. *Psychological Methods, 5*, 434-458. doi:10.1037/1082-989X.5.4.434
- McAlpine, L., & Norton, J. (2006). Reframing our approach to doctoral programs: an integrative framework for action and research. *Higher Education Research & Development, 25*, 3-17. doi:10.1080/07294360500453012
- McAlpine, L., Jazvac-Martek, M., & Hopwood, N. (2009). Doctoral student experience in education: Activities and difficulties influencing identity development. *International Journal for Researcher Development, 1*, 97-109. doi:10.1108/1759751X201100007

- McCroskey, J. C., & Young, T. J. (1979). The use and abuse of factor analysis in communication research. *Human Communication Research, 5*, 375-382.
doi:10.1111/j.1468-2958.1979.tb00651.x
- McEwen, M. K., Roper, L. D., Bryant, D. R., & Langa, M. J. (1990). Incorporating the development of African-American students into psychosocial theories of student development. *Journal of College Student Development, 31*, 429-436.
- Meeks, B. S., Hendrick, S. S., & Hendrick, C. (1998). Communication, love and relationship satisfaction. *Journal of Social and Personal Relationships, 15*, 755-773. doi:10.1177/0265407598156003
- Messman, S. J., Canary, D. J., & Hause, K. S. (2000). Motives to remain platonic, equity, and the use of maintenance strategies in opposite-sex friendships. *Journal of Social and Personal Relationships, 17*, 67-94. doi:10.1177/0265407500171004
- Meyers, L. S., Gamst, G., & Guarino, A. J. (2013). *Applied multivariate research: Design and interpretation* (2nd ed.). Thousand Oaks, CA: Sage.
- Miczo, N., Segrin, C., & Allspach, L. E. (2001). Relationship between nonverbal sensitivity, encoding, and relational satisfaction. *Communication Reports, 14*, 39-48. doi:10.1080/08934210109367735
- Miller, T. K., & Winston, R. B. (1990). Assessing development from a psychosocial perspective. In D. G. Creamer and Associates (Eds.), *College student development: Theory and practice for the 1990s* (pp. 89-126). Alexandria, VA: American College Personnel Association.
- Moneta, G. B. (2011). Need for achievement, burnout, and intention to leave: Testing an occupational model in educational settings. *Personality and Individual*

Differences, 50, 274-278. doi:10.1016/j.paid.2010.10.002

Morrison, J. T. (2009). Evaluating factor analysis decisions for scale design in communication research. *Communication Methods and Measures*, 3, 195-215.

doi:10.1080/19312450903378917

Morrison, E., Rudd, E., Zumeta, W., & Nerad, M. (2011). What matters for excellence in PhD programs?: Latent constructs of doctoral program quality used by early career social scientists. *The Journal of Higher Education*, 82, 535-563.

doi:10.1353/jhe.2011.0029

Morse, W., Nielsen-Pincus, M., Force, J., & Wulfhorst, J. D. (2007). Bridges and barriers to developing and conducting Interdisciplinary graduate-student team research.

Ecology & Society, 12, 1-14.

Mulaik, S. A., James, L. R., Van Alstine, J., Bennett, N., Lind, S., & Stilwell, C. D. (1989). Evaluation of goodness-of-fit indices for structural equation models.

Psychological Bulletin, 105, 430-445. doi:10.1037/0033-2909.105.3.430

Myers, S. A. (1995). *The induction of graduate teaching assistants: A communication model of the socialization process*. (Unpublished doctoral dissertation). Kent State University, Kent, OH.

Myers, S. A., Goodboy, A. K., & Members of COMM 600. (2014). College student learning, motivation, and satisfaction as a function of effective instructor communication behaviors. *Southern Communication Journal*, 79, 14-26.

doi:10.1080/1041794X.2013.815266

Myers, S. A., & Weber, K. (2004). Preliminary development of a measure of sibling relational maintenance behaviors: Scale development and initial findings.

Communication Quarterly, 52, 334-346. doi:10.1080/01463370409370204

Myers, T. A. (2011). Goodbye, listwise deletion: Presenting hot deck imputation as an easy and effective tool for handling missing data. *Communication Methods and Measures*, 5, 297-310. doi:10.1080/19312458.2011.624490

National Science Foundation (2010). *Survey of earned doctorates*. Retrieved from www.snf.gov/statistics/seind12/c8/dats/8-47-all.xls.

Nettles, M. T., & Millett, C. M. (2006). *Three magic letters: Getting to Ph.D.* Baltimore, MD: The John Hopkins University Press.

Newman, B., & Newman, P. (2014). *Development through life: A psychosocial approach*. Stamford, CT: Cengage Learning.

Nicklaus, H. E. (1991). *Relationship of a wellness residence hall environment and student sense of competence and academic achievement*. (Unpublished doctoral dissertation). Ball State University, Muncie, IN.

Noble, K. A. (1994). *Changing doctoral degrees: An international perspective*. Open University Press: Bristol, PA.

Nyquist, J. D., Manning, L., Wulff, D. H., Austin, A. E., Sprague, J., Fraser, P. K., ... & Woodford, B. (1999). On the road to becoming a professor: The graduate student experience. *Change: The Magazine of Higher Learning*, 31, 18-27.
doi:10.1080/00091389909602686

O'Meara, K., & Jaeger, A. J. (2006). Preparing future faculty for community engagement: Barriers, facilitators, models, and recommendations. *Journal of Higher Education Outreach and Engagement*, 11, 3-25.

Paglis, L. L., Green, S. G., & Bauer, T. N. (2006). Does adviser mentoring add value? A

- longitudinal study of mentoring and doctoral student outcomes. *Research in Higher Education*, 47, 451-476. doi:10.1007/s11162-005-9003-2
- Pahl, C. M. (2011). *Moving through autonomy toward interdependence: The relationship between Chickering and Reisser's third vector and Stephen Covey's seven habits of highly effective people* (Unpublished master's thesis). Eastern Illinois University, Charleston, IL.
- Pascarella, E. T., & Terenzini, P.T. (1991). *How college affects students*. San Francisco, CA: Jossey-Bass.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students* (Vol. 2). San Francisco, CA: Jossey-Bass.
- Patenaude, J., Niyonsenga, T., & Fafard, D. (2003). Changes in students' moral development during medical school: a cohort study. *Canadian Medical Association Journal*, 168, 840-844.
- Pattie, M., Benson, G. S., & Baruch, Y. (2006). Tuition reimbursement, perceived organizational support, and turnover intention among graduate business school students. *Human Resource Development Quarterly*, 17, 423-442.
doi:10.1002/hrdq.1184
- Patton, L. D., McEwen, M., Rendón, L., & Howard-Hamilton, M. F. (2007). Critical race perspectives on theory in student affairs. *New Directions for Student Services*, 120, 39-53. doi:10.1002/ss.256
- Perry, W. G. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. Troy, MO: Holt, Rinehart, & Winston.
- Perry, W. G. (1981). Cognitive and ethical growth: The making of meaning. In A. W.

- Chickering (Ed.), *The modern American college* (pp. 76-116). San Francisco, CA: Jossey-Bass.
- Peugh, J. L., DiLillo, D., & Panuzio, J. (2013). Analyzing mixed-dyadic data using structural equation models. *Structural Equation Modeling, 20*, 314-337.
doi:10.1080/10705511.2013.769395
- Pike, G. R., & Kuh, G. D. (2005). First-and second-generation college students: A comparison of their engagement and intellectual development. *Journal of Higher Education, 76*, 276-300. doi:10.1353/jhe.2005.0021
- Poole, M. S., McPhee, R. D., Canary, D. J., & Morr, M. C. (2002). Hypothesis testing and modeling perspectives on inquiry. In M. L. Knapp & J. A. Daly (Eds.), *Handbook of interpersonal communication* (3rd ed., pp. 23-72). Thousand Oaks, CA: Sage.
- Pope, R. L. (1998). The relationship between psychosocial development and racial identity of Black college students. *Journal of College Student Development, 39*, 273-282.
- Putnam, L. L. (2006). Definitions and approaches to conflict and communication. In J. G. Oetzel & S. Ting-Toomey (Eds.), *The Sage handbook of conflict communication: Integrating theory, research, and practice* (pp. 1-32). Thousand Oaks, CA: Sage.
- Putnam, L. L., & Poole, M. S. (1987). Conflict and negotiation. In F. M. Jablin, L. L. Putnam, K. H. Roberts, & L. W. Porter (Eds.), *Handbook of organizational communication* (pp. 549-599). Newbury Park, CA: Sage.
- Putnam, L. L., & Wilson, C. E. (1982). Communicative strategies in organizational conflicts: Reliability and validity of a measurement scale. In M. Burgoon (Ed.),

- Communication yearbook* 6 (pp. 629-652). New York, NY: Routledge.
- Reisser, L. (1995). Revisiting the seven vectors. *Journal of College Student Development*, 36, 505-511.
- Renn, K. A., & Reason, R. D. (2012). *College students in the United States: Characteristics, experiences, and outcomes*. San Francisco, CA: John Wiley & Sons.
- Richlin, L., & Essington, A. (2004). Faculty learning communities for preparing future faculty. *New directions for teaching and learning*, 97, 149-157.
doi:10.1002/tl.141
- Rodgers, R. F. (1990). Recent theories and research underlying student development. In D. Creamer & Associates (Eds.), *College student development: Theory and practice for the 1990s* (pp. 27-79). Washington, DC: University Press of America.
- Roloff, M., & Soule, K. (2002). Interpersonal conflict. In M. L. Knapp & J. A. Daly (Eds.), *Handbook of interpersonal communication* (3rd ed., pp. 475-528). Thousand Oaks, CA: Sage.
- Rudolph, F. (1962). *The American college and university: A history*. Athens, GA: University of Georgia Press.
- Schlosser, L. Z., Knox, S., Moskovitz, A. R., & Hill, C. E. (2003). A qualitative examination of graduate advising relationships: The advisee perspective. *Journal of Counseling Psychology*, 50, 178-188. doi:10.1037/0022-0167.50.2.178
- Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting structural equation modeling and confirmatory factor analysis results: A review. *The Journal of Educational Research*, 99, 323-338. doi:10.3200/JOER.99.6.323-

338

- Schuh, J. H. (1989). In the field: A student development theory to practice workshop. *Journal of Counseling and Development, 67*, 297-298.
- Schumacker, E. S., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling* (3rd ed.). Mahwah, NJ: Erlbaum.
- Serewicz, M. C. M., & Canary, D. J. (2008). Assessments of disclosure from the in-laws: Links among disclosure topics, family privacy orientations, a relational quality. *Journal of Social and Personal Relationships, 25*, 333-357.
doi:10.1177/0265407507087962
- Sillars, A. L. (1980). Attributions and communication in roommate conflicts. *Communication Monographs, 47*, 180-200. doi:10.1080/03637758009376031
- Sillars, A. L., Coletti, S. F., Parry, D., & Rogers, M. A. (1982). Coding verbal conflict tactics: Nonverbal and perceptual correlates of the "avoidance-distributive-integrative" distinction. *Human Communication Research, 9*, 83-95.
doi:10.1111/j.14682958.1982.tb00685.x
- Smallwood, S. (2004, January 16). Doctor dropout. *The Chronicle of Higher Education*, p. 19.
- Spitzberg, B. H. (1983). Communication competence as knowledge, skill, and impression. *Communication Education, 32*, 323-329.
doi:10.1080/03634528309378550
- Spitzberg, B. H. (1991). An examination of trait measures of interpersonal competence. *Communication Reports, 4*, 22-29. doi:10.1080/08934219109367517
- Spitzberg, B. H., Canary, D. J., & Cupach, W. R. (1994). A competence-based approach

- to the study of interpersonal conflict. In D. D. Cahn (Ed.), *Conflict in personal relationships* (pp. 183-202). Hillsdale, NJ: Erlbaum.
- Spitzberg, B. H., & Hecht, M. L. (1984). A component model of relational competence. *Human Communication Research, 10*, 575-599.
doi:10.1111/j.1468-2958.1984.tb00033.x
- Stafford, L. (2003). Maintaining romantic relationships: Summary and analysis of one research program. In D. J. Canary & M. Dainton (Eds.), *Maintaining relationships through communication: Relational, contextual, and cultural variations* (pp. 51-78). Mahwah, NJ: Erlbaum.
- Stafford, L. (2011). Measuring relationship maintenance behaviors: Critique and development of the revised relationship maintenance behavior scale. *Journal of Social and Personal Relationships, 28*, 278-303. doi:10.1177/0265407510378125
- Stafford, L., & Canary, D. J. (1991). Maintenance strategies and romantic relationship type, gender and relational characteristics. *Journal of Social and Personal Relationships, 8*, 217-242. doi:10.1177/0265407591082004
- Stafford, L., Dainton, M., & Haas, S. (2000). Measuring routine and strategic relational maintenance: Scale development, sex versus gender roles, and the prediction of relational characteristics. *Communication Monographs, 67*, 306-323.
doi:10.1080/03637750009376512
- Sweitzer, V. B. (2009). Towards a theory of doctoral student professional identity development: A developmental networks approach. *The Journal of Higher Education, 80*, 1-33. doi:10.1353/jhe.0.0034
- Swenson, L. M., Nordstrom, A., & Hiester, M. (2008). The role of peer relationships in

adjustment to college. *Journal of College Student Development*, 49, 551-567.

doi:10.1353/csd.0.0038

Szymanski, D. M., Ozegovic, J. J., Phillips, J. C., & Briggs-Phillips, M. (2007). Fostering scholarly productivity through academic and internship research training environments. *Training and Education in Professional Psychology*, 1, 135-146.

doi:10.1037/1931-3918.1.2.135

Taub, D. J. (1997). Autonomy and parental attachment in traditional-age undergraduate women. *Journal of College Student Development*, 38, 645-654.

Taub, D. J., & McEwen, M. K. (1992). The relationship of racial identity attitudes to autonomy and mature interpersonal relationships in Black and White undergraduate women. *Journal of College Student Development*, 33, 439-439.

Tenenbaum, H. R., Crosby, F. J., & Gliner, M. D. (2001). Mentoring relationships in graduate school. *Journal of Vocational Behavior*, 59, 326-341.

doi:10.1006/jvbe.2001.1804

Tepper, B. J. (1995). Upward maintenance tactics in supervisory mentoring and nonmentoring relationships. *Academy of Management Journal*, 38, 1191-1205.

doi:10.2307/256626

Terrell, S. R., Snyder, M. M., & Dringus, L. P. (2009). The development, validation, and application of the doctoral student connectedness scale. *The Internet and Higher Education*, 12, 112-116. doi:10.1016/j.iheduc.2009.06.004

Tessmer, K. A. (2012). *Transforming scholars: A narrative inquiry of doctoral student psychosocial development*. (Unpublished doctoral dissertation). Mercer University, Macon, GA.

- Thomas, R., & Chickering, A. W. (1984). Education and identity revisited. *Journal of College Student Personnel, 25*, 392-399.
- Torres, V. (2009). The developmental dimensions of recognizing racism. *Journal of College Student Development, 44*, 532-547. doi:10.1353/csd.0.0088
- Torres, V., Howard-Hamilton, M. F., & Cooper, D. L. (2011). *Identity development of diverse populations: Implications for teaching and administration in higher education: ASHE-ERIC higher education report* (Vol. 12). San Francisco, CA: Jossey-Bass.
- Torres, V., Jones, S. R., & Renn, K. A. (2009). Identity development theories in student affairs: Origins, current status, and new approaches. *Journal of College Student Development, 50*, 577-596. doi:10.1353/csd.0.0102
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.
- Vangelisti, A. L. (2002). Interpersonal processes in romantic relationships. In M. L. Knapp & J. A. Daly (Eds.), *Handbook of interpersonal communication* (3rd ed., pp. 643-679). Thousand Oaks, CA: Sage.
- Vekkaila, J., Pyhältö, K., & Lonka, K. (2013). Experiences of disengagement: A study of doctoral students in the behavioral sciences. *International Journal of Doctoral Studies, 8*, 61-81.
- Wade-Benzoni, K. A., Rousseau, D. M., & Li, M. (2006). Managing relationships across generations of academics: Psychological contracts in faculty-doctoral student collaborations. *International Journal of Conflict Management, 17*, 4-33. doi:10.1108/10444060610734154

- Waldeck, J. H., Orrego, V. O., Plax, T. G., & Kearney, P. (1997). Graduate student/faculty mentoring relationships: Who gets mentored, how it happens, and to what end. *Communication Quarterly*, 45, 93-109.
doi:10.1080/01463379709370054
- Waldron, V. R. (1991). Achieving communication goals in supervisor-subordinate relationships: The multi-functionality of upward maintenance tactics. *Communication Monographs*, 58, 289-306. doi:10.1080/03637759109376231
- Waldron, V. R. (2003). Relationship maintenance in organizational settings. In D. J. Canary & M. Dainton (Eds.), *Maintaining relationships through communication: Relational, contextual, and cultural variations* (pp. 163-194). Mahwah, NJ: Erlbaum.
- Waldron, V. R., & Hunt, M. D. (1992). Hierarchical level, length, and quality of supervisory relationship as predictors of subordinates' use of maintenance tactics. *Communication Reports*, 5, 82-89. doi:10.1080/08934219209367550
- Walker, G. E., Golde, C. M., Jones, L., Bueschel, A. C., & Hutchings, P. (2008). *The formation of scholars: Rethinking doctoral education for the twenty-first century* (Vol. 11). San Francisco, CA: John Wiley & Sons.
- Watt, J. D., & Vodanovich, S. J. (1999). Boredom proneness and psychosocial development. *The Journal of Psychology*, 133, 303-314.
doi:10.1080/00223989909599743
- Weisberg, J. (1994). Measuring workers' burnout and intention to leave. *International Journal of Manpower*, 15, 4-14. doi:10.1108/01437729410053590
- Weiss, C. S. (1981). The development of professional role commitment among graduate

- students. *Human Relations*, 34, 13-31. doi:10.1177/001872678103400102
- White, D. B., & Hood, A. B. (1989). An assessment of the validity of Chickering's theory of student development. *Journal of College Student Development*, 30, 354-61.
- White, J., & Nonnamaker, J. (2011). Supervising graduate assistants. *New Directions for Student Services*, 136, 43-54. doi:10.1002/ss.413
- Wickham, R. E., & Knee, C. R. (2012). Interdependence theory and the Actor–Partner Interdependence Model where theory and method converge. *Personality and Social Psychology Review*, 16, 375-393. doi:10.1177/1088868312447897
- Widick, C. (1977). The Perry scheme: A foundation for developmental practice. *The Counseling Psychologist*, 6, 35-38. doi:10.1177/001100007700600415
- Winston, R. B., & Miller, T. K. (1987). *Student developmental task and lifestyle inventory manual*. Athens, Georgia: Student Development Associates.
- Winston, R. B., Miller, T. K., & Cooper, D. (1999). *Preliminary technical manual for the Student Development Task and Lifestyle Assessment*. Athens, GA: Student Development Associates.
- Wrench, J. S., & Punyanunt, N. M. (2004). Advisee-advisor communication: An exploratory study examining interpersonal communication variables in the graduate advisee-advisor relationship. *Communication Quarterly*, 52, 224-236. doi:10.1080/01463370409370194
- Zhao, C. M., Golde, C. M., & McCormick, A. C. (2007). More than a signature: How advisor choice and advisor behaviour affect doctoral student satisfaction. *Journal of Further and Higher Education*, 31, 263-281. doi:10.1080/03098770701424983

Appendix A

Recruitment Email/Message

Hello friends and colleagues,

My name is Zachary W. Goldman and I am a Ph.D. candidate in the Department of Communication Studies at West Virginia University. As part of my dissertation research, I am investigating doctoral student development and the relationship that exists between doctoral students and advisors. If you are a current doctoral student, or an advisor, I would greatly appreciate your participation by completing a short survey for my study.

Participation will take approximately 15 minutes and it is anonymous. Your participation is completely voluntary and West Virginia University's Institutional Review Board acknowledgment of this project is on file. By completing this survey you will be entered into a drawing to win one of several 50 dollar Amazon gift cards.

To qualify for participation, doctoral students must (a) currently be enrolled in a graduate school full-time, (b) attend a traditional face-to-face Ph.D. or Ed.D. program (i.e., not an online program), and (c) have an academic/dissertation advisor. OR, if you are an advisor, you must currently (a) be considered graduate faculty and (b) have at least one Ph.D. or Ed.D. doctoral student advisee.

If you do not fit the above criteria, but you know someone who may, please forward this message along so that they may have an opportunity to participate. Your participation and assistance is greatly appreciated!

For doctoral students, click here to participate (Insert Link)

For advisors, click here to participate (Insert Link)

Sincerely,

Zachary W. Goldman
108 Armstrong Hall, P.O. Box 6293
Department of Communication Studies
West Virginia University
Morgantown, WV 26506-6293
(304)-293-3905 (ext. 33579)
zgoldman@mix.wvu.edu

Appendix B

Cover Letter for Doctoral Students



Dear Doctoral Student,

This cover letter is a request for you to take part in a survey designed to understand doctoral student development and the student-advisor relationship in graduate school. This project is being conducted by Zachary W. Goldman under the direct supervision of Dr. Alan K. Goodboy in the Department of Communication Studies at West Virginia University. This survey will take approximately 15 minutes to complete. Your participation in this project is greatly appreciated.

To participate in this study, you must currently be enrolled full-time in a traditional (i.e., face-to-face) Ph.D. or Ed.D. doctoral program. You must also have an advisor who is a graduate faculty member. Your involvement in this project will be kept anonymous. There are no perceived risks associated with participating in this study. Your participation is completely voluntary and you may cease your participation at any time without fear of penalty. You may also decide not to answer a question that you do not feel comfortable answering. West Virginia University's Institutional Review Board acknowledgement of this project is on file.

We hope that you will participate in this research study, as it could be very beneficial in understanding and bettering the doctoral-student advisor relationship. We also ask that you pass the advisor version of the survey along to your graduate faculty advisor so that he/she can also have an opportunity to participate in this study. Thank you very much for your time. Should you have any questions about this letter or the research project, please contact Zachary Goldman (zgoldman@mix.wvu.edu) or Dr. Alan K. Goodboy (alan.goodboy@mail.wvu.edu) in the Department of Communication Studies at West Virginia University (304-293-3905).

If you agree to participate please complete the following survey. Thank you for your time.

Sincerely,

Alan K. Goodboy, Ph.D.
Principal Investigator
Associate Professor
Department of Communication Studies

Zachary W. Goldman, M. A.
Co-Investigator
Ph.D. Candidate
Department of Communication Studies

DEPARTMENT OF COMMUNICATION STUDIES

PO Box 6293 | 108 Armstrong Hall
Morgantown, WV 26506-6293
☎ 304.293.3905 ☎ 304.293.8667

Equal Opportunity/Affirmative Action Institution

Appendix C

Cover Letter for Faculty Advisors



Dear Faculty Member,

This cover letter is a request for you to take part in a survey designed to understand doctoral student development and the student-advisor relationship in graduate school. This project is being conducted by Zachary W. Goldman under the direct supervision of Dr. Alan K. Goodboy in the Department of Communication Studies at West Virginia University. This survey will take approximately 15 minutes to complete. Your participation in this project is greatly appreciated.

To participate in this study, you must currently be a graduate faculty member with at least one doctoral student advisee. Your involvement in this project will be kept anonymous. There are no perceived risks associated with participating in this study. Your participation is completely voluntary and you may cease your participation at any time without fear of penalty. You may also decide not to answer a question that you do not feel comfortable answering. West Virginia University's Institutional Review Board acknowledgement of this project is on file.

We hope that you will participate in this research study, as it could be very beneficial in understanding and bettering the doctoral-student advisor relationship. We also ask that you pass the student version of the survey along to your doctoral student so that he/she can also have an opportunity to participate in this study. Thank you very much for your time. Should you have any questions about this letter or the research project, please contact Zachary Goldman (zgoldman@mix.wvu.edu) or Dr. Alan K. Goodboy (alan.goodboy@mail.wvu.edu) in the Department of Communication Studies at West Virginia University (304-293-3905).

If you agree to participate please complete the following survey. Thank you for your time.

Sincerely,

Alan K. Goodboy, Ph.D.
Principal Investigator
Associate Professor
Department of Communication Studies

Zachary W. Goldman, M. A.
Co-Investigator
Ph.D. Candidate
Department of Communication Studies

DEPARTMENT OF COMMUNICATION STUDIES

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Appendix D

Reminder Email/Message

Dear Participant,

My Name is Zachary W. Goldman and I am a Ph.D. candidate working on my dissertation in the Department of Communication Studies at West Virginia University.

I realize you are extremely busy, but recently your advisee/advisor indicated that you may be willing to participate in my dissertation research. My study is examining the relationship between students and their advisors at the doctoral level and I would really appreciate if you would consider helping me by completing a short online survey.

If you are currently a doctoral student in a Ph.D. or Ed.D. program, please click here: http://wvu.qualtrics.com/SE/?SID=SV_0rHIMfXpiyIWmlD

If you are currently a graduate faculty member and advisee doctoral students, click here: http://wvu.qualtrics.com/SE/?SID=SV_0P2I5OANrgtj9nn

Any doctoral student who completes the survey will be entered into a drawing to win one of several Amazon gift cards. Please remember that your participation will be kept anonymous and is completely voluntary. Acknowledgement of this study by West Virginia University's Institutional Review Board is on file.

Please let me know if you are unable to access the survey link by contacting me via email (zgoldman@mix.wvu.edu) or phone (304-293-3905). Also, if you have any other questions, comments, or concerns about this study please do not hesitate to contact me. Thank you again for your time and participation, it is greatly appreciated.

Sincerely,

Zachary W. Goldman
108 Armstrong Hall, P.O. Box 6293
Department of Communication Studies
West Virginia University
Morgantown, WV 26506-6293
(304)-293-3905 (ext. 33579)
zgoldman@mix.wvu.edu

Appendix E

Doctoral Student Survey

Directions: Indicate the extent to which the following items apply to your experiences.

	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	_____				
	I have informal contact with my professors.				
2.	_____				
	I get along well with my doctoral colleagues.				
3.	_____				
	I have difficulty feeling at ease with others in my department.				
4.	_____				
	I do not mix well with others in my department.				
5.	_____				
	I am different from other doctoral students in undesirable ways.				
6.	_____				
	I have met people and made several friends in my graduate program.				
7.	_____				
	I have good friends in my department that I can talk about my problems with.				
8.	_____				
	I have a definite sense of purpose in life.				
9.	_____				
	I have a firm sense of who I am.				
10.	_____				
	I have a set of basic beliefs and values that guide my actions and decisions.				
11.	_____				
	I know what I want out of life.				
12.	_____				
	I have a clear set of personal values or moral standards.				
13.	_____				
	I don't know where I fit in the world.				
14.	_____				
	I have specific personal goals for the future.				
15.	_____				
	I have a clear sense of who I want to be as an adult.				

Directions: Please indicate the extent to which you agree with the following statements.

	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
16.	_____				
	I can see a definite direction for my life.				
17.	_____				
	I am able to set realistic goals for myself.				
18.	_____				
	I really don't know what I want out of life.				
19.	_____				
	I hardly ever initiate activities, I usually follow the crowd.				
20.	_____				
	I try to pursue my aims even when I have to take risks.				
21.	_____				
	I do things that I want to do, despite the risk of failing.				
22.	_____				
	I hesitate to put too much energy into trying to reach my goals.				
23.	_____				
	I let fear keep me from reaching many of my goals.				
24.	_____				
	I am okay with the way I've handled my life so far.				
25.	_____				
	I can accept the fact that I've made mistakes in the past.				
26.	_____				
	I feel sadness and regret when I reflect on the past				
27.	_____				
	I can't seem to forgive myself for some of the mistakes I have made.				
28.	_____				
	I'm confident about my future.				
29.	_____				
	I may have difficult times ahead, but I will face them with courage.				
30.	_____				
	I'm not afraid of what the future has in store for me.				
31.	_____				
	I don't look forward to the future.				

Directions: Please indicate the extent to which you agree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral/ Undecided	Slightly Agree	Agree	Strongly Agree

32. _____ I tell my advisor that I am excited about working with him/her.
33. _____ I tell my advisor that I am happy about working with him/her.
34. _____ I tell my advisor that his/her opinion matters to me.
35. _____ I tell my advisor that I trust his/her guidance.
36. _____ I tell my advisor that I really like having him/her as my advisor.
37. _____ I tell my advisor that I enjoy working with him/her.
38. _____ I work hard on the tasks my advisor assigns me.
39. _____ I fulfill my advisor's requests in a timely manner.
40. _____ I do not lie or make promises to my advisor that I cannot keep.
41. _____ I meet my advisor's deadlines.
42. _____ I make sure I diligently complete the projects my advisor assigns me.
43. _____ I speak well of my advisor to other faculty members.
44. _____ I avoid gossiping about my advisor.
45. _____ I defend my advisor when others complain about him/her.
46. _____ I avoid criticizing my advisor to other students.
47. _____ I am respectful toward my advisor.
48. _____ I am considerate toward my advisor.
49. _____ I am polite toward my advisor.
50. _____ I am professional when talking with my advisor.
51. _____ I laugh around my advisor.
52. _____ I use humor when talking with my advisor.
53. _____ I socialize with my advisor at department parties.
54. _____ I ask my advisor for advice and feedback on my future plans.
55. _____ I talk to my advisor about what I consider are realistic goals within the program.
56. _____ I talk to my advisor about what I consider are realistic goals after I leave the program.

Directions: Indicate how often you engage in the following behaviors with your advisor.

1	2	3	4	5	6	7
Very Rarely	Rarely	Seldom	Sometimes	Occasionally	Frequently	Very Frequently

When my advisor and I disagree about something...

57. _____ I listen to my advisor's point of view
58. _____ I assertively state my position
59. _____ I show concern about his or her feelings/thoughts
60. _____ I find out what my advisor is feeling
61. _____ I say nice things
62. _____ I express my trust in him/her
63. _____ I am sympathetic to his or her position
64. _____ I accept my fair share of responsibility for the conflict
65. _____ I try to understand my advisor
66. _____ I calmly discuss the situation
67. _____ I try to change the subject.
68. _____ I avoid my advisor
69. _____ I make excuses
70. _____ I avoid the issue
71. _____ I try to postpone the issue as long as possible
72. _____ I change the topic of discussion
73. _____ I ignore the issue
74. _____ I attempt to make my advisor feel guilty.
75. _____ I shout or yell at him/her.
76. _____ I can't control my temper.
77. _____ I blame him/her for causing the conflict.
78. _____ I have to leave with the last word.
79. _____ I criticize my advisor's behavior.
80. _____ I blame the conflict on him/her.
81. _____ I let my feelings get the best of me.
82. _____ I communicate in a hostile way.
83. _____ I say things that shouldn't be said to my advisor.
84. _____ I use an aggressive conversational tone with him/her.
85. _____ I become confrontational with him/her.
86. _____ I get angry with him/her.

Directions: Indicate the extent to which you agree with the following statements about yourself.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral/ Undecided	Slightly Agree	Agree	Strongly Agree

87. _____ I am prepared for a career in my academic field.
88. _____ I know the scholarship in my academic field.
89. _____ I am not ready for an academic career.
90. _____ I can perform the responsibilities of a faculty member.
91. _____ I am prepared to provide service to my academic field.
92. _____ I do not have the skills to be a productive faculty member.
93. _____ I do not have the skills to teach undergraduate students.
94. _____ I am a competent researcher.
95. _____ I do not understand the culture of academia.
96. _____ I can fulfill professional responsibilities in my academic field.
97. _____ I am capable of serving on editorial boards in my academic field.
98. _____ I am unable to conduct research without the assistance of a faculty member.
99. _____ I am capable of teaching undergraduate students about my academic field.
100. _____ I am not prepared to be a faculty member.
101. _____ I complete quality work.
102. _____ My work is better than most graduate students.
103. _____ I perform my academic responsibilities to the highest possible level.
104. _____ I exceed the expectations that my advisor places upon me.
105. _____ I produce work that is worse than most graduate students.
106. _____ My work fails to meet the expectations placed upon graduate students.

Directions: Complete the information below about your current doctoral student status.

1	2	3	4	5
Not at All Confident	Not Confident	Undecided	Somewhat Confident	Very Confident

107. _____ I will finish all degree requirements in the “average” time for my program.
108. _____ I will finish my dissertation on schedule.
109. _____ I will (or did) finish my coursework on schedule.
110. What are the chances that you will quit your graduate program in the next 12 months? Please respond using a percentage ranging from 0% to 100% _____

Directions: Please indicate the extent to which you agree with the following statements.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

111. ____ I am satisfied with the relationship that I have with my advisor.
112. ____ My current advising relationship meets my expectations.
113. ____ I have a positive relationship with my advisor.
114. ____ My advisor meets my academic needs.
115. ____ I respect my advisor.
116. ____ My communication with my advisor feels satisfying.
117. ____ I dislike talking with my advisor.
118. ____ I am not satisfied after talking to my advisor.
119. ____ Talking with my advisor leaves me feeling like I accomplished something.
120. ____ My advisor fulfills my expectations when I talk to him/her.
121. ____ My conversations with my advisor are worthwhile.
122. ____ When I talk to my advisor, the conversations are rewarding.
123. ____ My advisor makes an effort to satisfy the concerns I have.

Directions: Complete the information below about your own ability to conduct research.

1	2	3	4	5
Not at All Confident	Not Confident	Undecided	Somewhat Confident	Very Confident

Currently, I believe that I can:

124. ____ be an effective contributor to a research project.
125. ____ successfully conduct a research project by myself.
126. ____ submit a paper to a convention that will be accepted.
127. ____ be an effective co-author on a paper.
128. ____ submit a paper to a journal that will be accepted.
129. ____ effectively conduct data analyses.
130. ____ identify and pose research questions that are worthy of study.
131. ____ complete a literature review and summarize the important issues.
132. ____ design and conduct effective research.
133. ____ be an effective and successful researcher.

Directions: Complete the questions below by writing your answer in the space provided.

134. How many published manuscripts have you (co)authored in a refereed journal? ____

135. How many unpublished manuscripts have you authored or coauthored? ____

136. How many articles have you submitted to refereed journals? ____

137. How many manuscripts are you currently in the process of submitting for publication (e.g., writing the manuscript, collecting data)? ____

138. How many presentations have you made at local/regional/national conventions? ____

139. How many presentations are you currently in the process of preparing to submit to a local, regional, or national conventions? ____

140. How many local, regional, or national research conventions have you attended? ____

Directions: Please complete the following demographic information about yourself.

Age: _____

Sex: Male _____/Female _____

What is your ethnicity? (please check one)

____ Asian/Asian-American ____ Black/African-American ____ Hispanic ____ Middle
Easter ____ Native American ____ White/Caucasian Other (please specify): _____

What type of doctoral degree are you pursuing: Ph.D. Ed.D. Other: _____

What discipline/department are you earning your degree? _____

Which of the following best describes your current status in your doctoral program?

Currently Taking
Coursework

Preparing/Taking
Comprehensive Exams

Working on
Dissertation

How many months have you spent in your current doctoral program? _____

What is your cumulative G.P.A. in your doctoral program? _____

Do you receive any funding to support your doctoral education? Yes No

If yes, please circle one: Research Assistantship Teaching Assistantship Fellowship

What is your primary interest in graduate school? Teaching Research

Is your funding tied to your advisor? Yes No

How many months have you been working with your doctoral advisor? _____

Who initiated the relationship between you and your advisor? Please circle one.

Self-Initiated/Doctoral Student

Advisor-Initiated

Department-Initiated

Have you changed advisors at any time in your program? Yes/No If yes, how many ____

Thank you for your participation. It is greatly appreciated!

Appendix F

Advisor Survey

Directions: Please indicate the extent to which you agree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral/ Undecided	Slightly Agree	Agree	Strongly Agree

1. ____ My advisee is prepared for a career in his/her academic field.
2. ____ My advisee knows the scholarship in his/her academic field.
3. ____ My advisee is not ready for an academic career.
4. ____ My advisee can perform the responsibilities of a faculty member.
5. ____ My advisee is prepared to provide service to his/her academic field.
6. ____ My advisee does not have the skills to be a productive faculty member.
7. ____ My advisee does not have the skills to teach undergraduate students.
8. ____ My advisee is a competent researcher.
9. ____ My advisee does not understand the culture of academia.
10. ____ My advisee can fulfill professional responsibilities in his/her academic field.
11. ____ My advisee is capable of serving on editorial boards in his/her academic field.
12. ____ My advisee is unable to conduct research without the assistance of a faculty member.
13. ____ My advisee is capable of teaching undergraduate students about his/her academic field.
14. ____ My advisee is not prepared to be a faculty member.
15. ____ My advisee completes quality work.
16. ____ My advisee's work is better than most graduate students.
17. ____ My advisee performs his/her academic responsibilities to the highest possible level.
18. ____ My advisee exceeds the expectations that I place upon him/her.
19. ____ My advisee produces work that is worse than most graduate students.
20. ____ My advisee's work fails to meet the expectations that are placed upon graduate students.

Directions: Please indicate the extent to which you agree with the following statements.

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Slightly Disagree	Neutral/ Undecided	Slightly Agree	Agree	Strongly Agree

-
21. _____ I am satisfied with the relationship that I have with my advisee.
22. _____ My current advising relationship meets my expectations.
23. _____ I have a positive relationship with my advisee.
24. _____ I meet my advisee's academic needs.
25. _____ I respect my advisee.
26. _____ My communication with my advisee feels satisfying.
27. _____ I dislike talking with my advisee.
28. _____ I am not satisfied after talking to my advisee.
29. _____ Talking with my advisee leaves me feeling like I accomplished something.
30. _____ My advisee fulfills my expectations when I talk to him/her.
31. _____ My conversations with my advisee are worthwhile.
32. _____ When I talk to my advisee, the conversations are rewarding.
33. _____ My advisee makes an effort to satisfy the concerns I have.

Directions: Complete the information below about your advisee's status in the program.

1	2	3	4	5
Not at All Confident	Not Confident	Undecided	Somewhat Confident	Very Confident

-
34. _____ My advisee will finish all degree requirements in the "average" time for our program.
35. _____ My advisee will finish his/her dissertation on schedule.
36. _____ My advisee will (or did) finish his/her coursework on schedule.
37. What are the chances that your advisee will quit the graduate program in the next 12 months? Please respond using a percentage ranging from 0% to 100% _____

Directions: Complete the information below about your advisee's research ability.

1	2	3	4	5
Not at All Confident	Not Confident	Undecided	Somewhat Confident	Very Confident

Currently, I believe that my advisee can:

38. _____ be an effective contributor to a research project.
39. _____ successfully conduct a research project by him/herself.
40. _____ submit a paper to a convention that will be accepted.
41. _____ be an effective co-author on a paper.
42. _____ submit a paper to a journal that will be accepted.
43. _____ effectively conduct data analyses.
44. _____ identify and pose research questions that are worthy of study.
45. _____ complete a literature review and summarize the important issues.
46. _____ design and conduct effective research.
47. _____ be an effective and successful researcher.

Directions: Please complete the following demographic information about yourself.

Age: _____ Sex: Male _____/Female _____

What is your ethnicity? (please check one)

- Asian/Asian-American Black/African-American Hispanic
 Middle Eastern Native American White/Caucasian
 Other (please specify): _____

What is your primary interest in academia? Teaching Research

Please identify your current position by circling one of the following options:

Assistant Professor Associate Professor Full Professor

How many *years* have you been a faculty member? _____

How many *years* of experience do you have advising doctoral students? _____

How many doctoral students have you served as an advisor? _____

Do you currently have more than one doctoral student advisee? Yes No

Have you received any formalized training about advising graduate students? Yes No

Thank you for your participation. It is greatly appreciated!