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**EXTENDING OUR UNDERSTANDING OF SOCIAL BELONGING:
COLLEGE STUDENTS' USE OF TECHNOLOGY,
PSYCHOSOCIAL WELL-BEING,
AND SENSE OF COMMUNITY IN UNIVERSITY LIFE**

by

SARA KATHLEEN HENRY

A dissertation submitted in partial fulfillment
of the requirements for the degree of

Doctor of Philosophy
University of San Diego

May 2010

Dissertation Committee

Athena Perrakis, Ph.D.
Noriyuki Inoue, Ph.D.
Roger Pace, Ph.D.
Ronald Riggio, Ph.D.

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ABSTRACT

Postsecondary education marks a transitional time in the lives of young adults. During this time, traditional-aged college students confront a substantial number of developmental challenges that are extraordinarily diverse and complex (Evans, Forney, & Guido-DiBrito, 1998). Erikson's (1968) theory of psychosocial development posited that the major developmental task of early adulthood is to establish close intimate relationships. The development of mature interpersonal relationships (Chickering & Reisser, 1993) is a critical priority if students are to successfully integrate into their social worlds and persist to graduation.

Early theoretical models proposed by both Spady (1970) and Tinto (1975, 1993) linked institutional commitment and persistence to the quality of students' integration into the social environment of the campus, with social integration referring to students' peer relationships and interactions with faculty. Social and academic integration into the college environment and persistence to graduation have been cited as major challenges for this population (Pascarella & Terenzini, 1980; Tinto, 1975, 1993). Social integration, or social belonging, is the central focus of this dissertation given the importance of students' sense of connectedness to others during the college years.

Given the seemingly ubiquitous use of technology among college student populations and the potential influence of this use on students' social relationships, this quantitative study explored the associations among students' use of communication technologies, perceived psychosocial well-being, and sense of community in university life. Time spent using communication technologies and motivations for use emerged as predictors of students' psychosocial well-being and sense of community.

DEDICATION

This dissertation is first and foremost dedicated to my parents, Paul and Rebecca Henry, who have been my greatest supporters. Regardless of how impossible the dream, they have always encouraged me to follow my heart and reach for new heights. The love they have for each other and for our family has provided a foundation on which to stand as we each journey through life. The unexpected twists and turns along this path have strengthened our deepest understanding of true human connection and unconditional love. It is with sincere gratitude and profound affection that I dedicate this work to them.

I would also like to dedicate this dissertation to my brother, Matthew Henry. Though I have reached the end of a doctoral degree in Leadership Studies, my brother Matthew has influenced my understanding of leadership more than any course or textbook ever could. In leading by example, Matthew has taught me what it means to live a life of service and to do so with patience, humility, and compassion for others.

I have been fortunate to have the support of many friends and colleagues, all of whom have been an integral part of my academic and professional journey. Perhaps the greatest influence on my own personal development and growth has been the mentorship I have received from two extraordinary women, Safali Evans and Renee Barnett Terry. Words cannot begin to express the appreciation I have for the support and guidance you have provided throughout the years.

Last, this dissertation is dedicated to Ashwin Budden. I may have started this journey without you, but I arrived at this place with you by my side. You have taught me what it means to love and to share a life with someone, and our adventures together have only just begun. You truly are my best friend and the love of my life.

ACKNOWLEDGMENTS

I would like to recognize several people who supported me throughout the preparation of this dissertation. This would not be possible without the support and guidance of an exceptional dissertation committee.

Athena, you have served as my faculty advisor and dissertation chair during this journey. More importantly, you have been a friend and colleague. Thank you for being a part of my life and for allowing me to be a part of yours.

Nori, you have made statistics and quantitative analysis tolerable, and at times, even exciting. In times of complete distress, you allowed me the space to express my emotion or frustration. When I arrived at a better understanding of a concept, you commended me for my diligence and hard work. I admire you for your willingness to stay right by my side as I wrestled with difficult concepts and analytical procedures. Your patience and sense of humor made the process simply wonderful.

Roger, you were right there with me from the start of this process. Over coffee and an oatmeal raisin cookie, you listened to my ridiculously ambitious ideas and patiently guided me through the proposal and dissertation. Your comments have been extremely valuable in helping to shape this work.

Ron, it was a pleasure having you as a member on this dissertation committee. When I heard you speak about social and interpersonal skill development years ago, I knew we would somehow work together during or after my doctoral program. You have been enormously influential and have consistently provided guidance and support. Thank you for always being so willing to patiently listen and sort through the challenges or snags I came across during this process.

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CHAPTER ONE

Context, Background, and Purpose of the Study

Postsecondary education marks a transitional time in the lives of emerging adults. During this time, traditional-aged college students confront a growing number of developmental challenges that are extraordinarily diverse and complex (Evans, Forney, & Guido-DiBrito, 1998). Erikson's (1968) theory of psychosocial development posited that the major developmental task of early adulthood is to establish close intimate relationships. At any age, social relationships provide friendship and social support, both of which are critical to healthy interpersonal development (Rubin, Bukowski, & Parker, 1998) and identity development (Chickering, 1969; Chickering & Reisser, 1993). During the college years, social relationships contribute to a students' sense of connection and belonging to others on campus. Early theoretical models proposed by both Spady (1970) and Tinto (1975) linked institutional commitment and persistence to the quality of students' integration into the social environment of the campus, with social integration referring to students' peer relationships and interactions with faculty. Social and academic integration into the college environment and persistence to graduation have been cited as major challenges for this population (Pascarella & Terenzini, 1980; Tinto, 1975, 1993), though social adjustment and other non-academic variables have been reported as more significant to students' adjustment to college overall (Gerdes & Mallinckrodt, 1994). Social integration, or social belonging, is the central focus of this dissertation given the importance of students' sense of belonging to their social experience on campus. Students' social relationships and their social belonging in the campus environment remain critical areas of interest for researchers interested in

elucidating the complex lives of students, the factors that contribute to students' identity development, and reasons for persistence or departure from higher education.

Of interest across numerous disciplines is the increasing use of technology for social interactions in lieu of or as complementary to face-to-face social interactions. Technology has emerged as a powerful force in the context of higher education, both as a tool to enhance students' learning and academic preparation but also as a means for social connection and the forming and strengthening of community. The role of technologically-mediated communication practices in shaping students' relationships has not been adequately explored in research. Yet, the influence of technology use on students' psychosocial well-being and sense of community in university life likely has profound implications for students' developmental processes, their social engagement and academic success, and their decisions to withdraw from the institution or persist to graduation. This quantitative study will employ survey methodology to explore the relationships among students' use of communication technologies, indicators of perceived psychosocial well-being, and factors that contribute to students' sense of community on campus. The larger intent is to fill a knowledge gap in the literature on student development and college outcomes. Foundational and current theories of student development and models related to integration and persistence are predicated on the assumption that students' social experiences are predominantly campus-based. This research will provide an initial perspective on how the social and psychological influences of technology use must be accounted for in student development theories and models of identity formation, social integration or belonging, and academic persistence, particularly given the influence of mediated forms of communication on students' social

relationships. The following sections will provide the background and purpose for this study. First, theories of student and adult development will be presented as the context and conceptual framework for this research. This will be followed by the background and purpose of the study.

Context and Conceptual Framework

The college years mark a critical time in the process of development for emerging adults. Arnett (2004) uses the term *emerging adulthood* to categorize the unique stage of extended adolescence marked by instability, exploration, and adjustment to varying academic and social relationships and by possible changes to notions of identity and self-concept. These students have passed through adolescence but have not yet reached adulthood, and they are traditionally between 18 and 25 years of age (Dyson & Renk, 2006). College students are considered particularly vulnerable to difficulties associated with adjustment given the developmental changes inherent in this life stage (Paul & Brier, 2001). The theories included in this framework provide a broad and comprehensive foundation for understanding how and where the intersection of students' use of technology, psychosocial well-being, and perceived sense of community is situated in student and adult development processes.

Student and Adult Development

Theories of student and adult development provide a conceptual framework within which to locate this research. Rodgers (1990) defined student development as "the ways that a student grows, progresses, or increases in his or her developmental capabilities as a result of enrollment in an institution of higher education" (p. 27). Knefelkamp, Widick, and Parker (1978) suggested that student development theories

should attempt to respond to the following four questions: (1) *What are the interpersonal and intrapersonal changes that occur while the student is in college?* (2) *What factors contribute to this development?* (3) *What aspects of the college environment encourage or inhibit growth?* and (4) *What developmental outcomes should we strive to achieve in college?* Student and adult development theories are numerous and many are broad in scope, yet only a few select theories provide a sophisticated perspective on the interpersonal or relational aspects involved in maturation and identity formation and the ways in which these aspects intertwine with the cognitive and emotional elements of the developmental process. Given the importance of social relationships to this research, theories that incorporate stages or phases of interpersonal development are included. First, a foundational theory of college student development will be presented.

Chickering (1969), and later Chickering and Reisser (1993), advanced a theory of college student identity development originating from Erik Erikson's concept of identity. Baxter Magolda (2001) described this concept of identity as "a psychosocial process involving challenges from the interaction of physical and cognitive growth with demands of the environment" (p. 18). Chickering departed from Erikson's theory of psychosocial development at the point of *identity versus role confusion* given the priority of this task for young adults and college students (Chickering & Reisser, 1993). Both theories posited that students' identities at the onset of college life are mostly dependent on external perceptions or expectations, and each suggested that the college years provide an opportunity for students to begin developing complex adult identities. Essential in these dimensions is the time one devotes to the integration of self-reflection and meaning making into development of an internal sense of self, as well as time spent building and

maintaining authentic interpersonal relationships.

College students' identity development was conceptualized by Chickering (1969) as a sequence of seven vectors. Though the study that guided the original model was limited to White males at a selective institution and has been cited less often in recent years, the framework has proven useful in determining where students likely are in their development during the college experience. In response to critical feedback from scholars and practitioners, the seven vectors were revised to include developing competence, managing emotions, moving through autonomy toward interdependence, developing mature interpersonal relationships, establishing identity, developing purpose, and developing integrity (Chickering & Reisser, 1993). In the *developing competence* vector, students achieve intellectual, physical, and interpersonal proficiency.

Interpersonal competence requires acquisition of social skills and the ability to be aware of and respond to others in appropriate ways. In the vector *managing emotions*, students learn to better contend with identifying and processing both positive and negative feelings. The vector *moving through autonomy toward interdependence* requires students to become emotionally independent from the need for reassurance or approval from others, where the tension between independence and affiliation or belonging become more balanced (Chickering & Reisser, 1993). In this vector, relationships become more reciprocal and the awareness of being interdependent and in community with others is heightened.

In the fourth vector *developing mature interpersonal relationships*, students grow in their capacity for intimacy and meaningful commitment in relationships with significant others and close friends (Chickering & Reisser, 1993). Through the

development of mature interpersonal relationships and into the fifth vector *establishing identity*, students strengthen their self-awareness across numerous complex and intersecting domains (e.g., race, gender, sexual orientation). It is at this juncture where students feel some success at having progressed through the first four tasks and thus begin to develop a more solid sense of self, setting the foundation for the development of purpose and integrity. The vector *developing purpose* requires an enhanced capacity for intentionality in setting priorities for vocational or career plans and aspirations, personal interests and options, and interpersonal or social commitments. The final vector *developing integrity*, involves actualizing congruence between personal values and behaviors, and it is through interpersonal relationships that students expand their notions of right and wrong, learn how to deal with moral conflicts, and struggle to make difficult decisions when the best path is not apparent. This framework points to the ways in which mature interpersonal relationships help to foster the healthy formation of identity. These vectors parallel the epistemological, intrapersonal, and interpersonal dimensions of adult development theories discussed next, specifically those vectors that reflect the importance of social relationships.

The work of Chickering (1969) and Chickering and Reisser (1993) aligns with the theories of adult development posited by Marcia Baxter Magolda and Robert Kegan. These constructivist-developmental theories offer a useful framework for exploring students' identity development during the college years. Constructivist-developmental theorists consider the cognitive, intrapersonal, and interpersonal dimensions of development as each weaves together in the progression of meaning making throughout the lifespan (Baxter Magolda, 2001). Kegan (1982) proposed six developmental stages,

or *orders of consciousness*, that progress from simple to complex ways of making meaning of our lived experiences from birth to adulthood. Each stage attempts to resolve the lifelong tension between the need for differentiation and the need for integration. In Kegan's theory of the evolving self, each phase of development rests on a particular subject-object relationship and guides how we construct the epistemological, interpersonal, and intrapersonal dimensions of self – how we determine what to believe, how we form and maintain relationships with others, and how we perceive ourselves and our way of being (Baxter Magolda, 2001). These dimensions are intimately connected and intertwined, and each refers to critical aspects of identity that hinge on the subject-object relationship, where the object of each phase is the subject of the phase that precedes it. Of the six developmental stages developed and advanced by Kegan (1982, 1994), the interpersonal, institutional, and interindividual orders are those actualized in adulthood. With a focus on college student development, Baxter Magolda (2001) built on the work of Kegan and reemphasized the epistemological, intrapersonal, and interpersonal dimensions associated with development of an internal sense of self. The intersection of these theories will be discussed next.

The epistemological, intrapersonal, and interpersonal dimensions inherent in the work of Kegan (1982, 1994) and Baxter Magolda (2001) are reflected in the vectors proposed by Chickering (1969) and later refined by Chickering and Reisser (1993). In the developing competence vector, students achieve intellectual, physical, and interpersonal proficiency, a feature similar to the epistemological and interpersonal dimensions posited by Kegan and Baxter Magolda. In the vector managing emotions, students learn to better contend with both positive and negative feelings, a component

associated with the intrapersonal dimension of development. The vector moving through autonomy toward interdependence requires students to become emotionally independent from the need for reassurance or approval and includes “an awareness of their interconnectedness with others” (Evans et al., 1998, p. 39), complementing the interindividual order of consciousness proposed by Kegan. The vector developing mature interpersonal relationships most closely aligns with Baxter Magolda’s interpersonal dimension and Kegan’s interpersonal order of development in which individuals are embedded in relationships and unable to hold personal relationships or others’ perspectives as object. In this stage, relationships define identity and limit the ability to develop an internal sense of self (Kegan, 1994). Emergence from this embeddedness allows for the establishment of healthy interpersonal relationships in which one can maintain a sense of self and appreciate the value of others. The interpersonal order is most applicable to how college students construct meaning (Baxter Magolda, 2001), and yet students at this stage have not yet established a process for reconciling their internal values with external formulas for how to live their lives.

The transition to increasingly complex principles of mental organization depends on the degree of the challenge, personal attributes, and the level of support available (Kegan, 1994), and many students do not reach the developmental stage marked by this reconciliation until after their college years (Baxter Magolda, 2001). A renegotiation of identity emerges when dissonance is created because of a challenge to current meaning-making structures (Baxter Magolda, 2009), and the process is reflected by reconciliation of tensions between internal perspectives and external formulas for how we live our lives. This tension is mediated by “the yearning for exercise of one’s own distinct agency...

and the yearning for belonging, connection, inclusion, and intimacy” (Parks, 2000, p. 91). The capacity to establish one’s own beliefs, values, sense of self, and relationships with others is central to constructing one’s own life, a concept referred to as *self-authorship* (Baxter Magolda, 2001, 2008, 2009; Kegan, 1994) or the *self-authoring mind* (Kegan & Lahey, 2009). Self-authorship reflects “an ability to construct knowledge in a contextual world, an ability to construct internal identity separate from external influences, and an ability to engage in relationships without losing one’s internal identity” (Baxter Magolda, 1999, p. 12). The meaning-making structure of self-authorship has been theorized as a threefold process of *trusting the internal voice*, *building an internal foundation*, and *securing internal commitments* (Baxter Magolda, 2008, 2009). In emerging adulthood, the process of defining an internal sense of self begins and continues to be a critical life objective.

As evidenced throughout the presentation of this conceptual framework, students’ social relationships are central to the developmental process and contribute in profound ways to the construction of identity. The influence of technology in shaping the formation of social relationships, and the subsequent effect of these mediated forms of communication on identity development, have yet to be explored fully in research on student development and outcomes related to college attendance. The following section will provide the background to this study, with an emphasis on the role of social integration in student persistence and departure, the student peer environment on college campuses, a conceptualization of community within techno-society, and the influence of technology on social relationships.

Background to the Study

The focus of this research study is to extend our understanding of social integration or social belonging as it relates to the college student experience, particularly students' use of technology, psychosocial well-being and sense of community in university life. Given the importance of social relationships to students' integration into the social and academic aspects of the college experience and the influence of this integration on students' social belonging and the decision to persist or withdraw, the background to this research study includes a discussion of concepts intimately tied to students' social relationships. The following section addresses the role of social integration in student persistence and departure, a critical review of social integration and related terms, an overview of the student peer environment on college campuses, and a discussion of students' use of communication technologies as it relates to social relationships and community formation. A statement of the problem and the purpose of this research study conclude the chapter.

The Role of Social Integration in Student Persistence and Departure

In the context of higher education, both social integration and academic integration are critically important to the decision to persist or withdraw (Astin, 1984; Pascarella & Terenzini, 1980; Spady, 1970; Tinto, 1975, 1993). Academic integration can be defined as "perceptions of the experiences in the formal and informal academic system resulting from interactions with faculty, staff, and students inside and outside the classroom settings that enhance the intellectual development of the student," while social integration can be defined as "students' perceptions of interactions with the peer group, faculty, and staff at the institution as well as involvement in extra- and co-curricular

activities (Wolf-Wendel, Ward, & Kinzie, 2009, p. 415). Persistence and degree attainment at institutions of higher education have been theoretically and empirically associated with students' capacity to establish positive social relationships with both peers and faculty (Astin, 1993; Pascarella & Terenzini, 2005), with social integration having a strong causal influence on psychological well-being (Weiser, 2001). Braxton and Lee (2005) highlighted numerous studies demonstrating an association between social integration, institutional commitment, and student persistence, specifically at residential colleges and universities. Though the influence of academic integration cannot be ignored, this study focused on college students' social relationships among peers as it relates to indicators of psychosocial well-being and factors related to a perceived sense of community on campus.

Tinto (1993) developed the initial model of integration to explain why students voluntarily withdraw from undergraduate institutions, using the work of VanGennep (1960) to shed light on the phases through which an individual passes upon joining a new group. These phases include: (1) separation from the past; (2) transition, in which the individual begins to interact with the new setting and people; and (3) incorporation, in which the individual adopts the expectations and norms of the new group. Tinto also considered the work of Durkheim (1951) and the notion of *egotistical suicide*, which stems from an individual's inability to establish membership within a community. Both Durkheim and Tinto argued that individuals need to integrate into the social environment to establish personal affiliation with others. In addition to considering the influence of social relationships, Tinto's model highlighted the reciprocal roles of student and institution in influencing a student's decision to persist or withdraw, positing that the

student needs to be willing to integrate into the college environment and that the institution must create opportunities for integration (Wolf-Wendel et al., 2009). The reciprocal person-institution relationship shifts the onus of responsibility for students' social and academic integration to both the student *and* the campus, and researchers and practitioners foster this process by attending to the impact of reciprocal relationships among students, between students and administrative staff and faculty, and between students and the campus environment. Many of the influential theoretical models of student persistence (e.g., Spady, 1970; Tinto, 1975, 1993; Pascarella & Terenzini, 1980) have focused on processes of socialization that serve to connect students and foster social integration into the campus environment, relevant mostly to traditional college students who live on campus and attend classes full-time.

As others have suggested, Tinto's (1993) model asserts both academic and social integration as key factors in determining a students' decision to persist or withdraw from higher education. Because the social and academic domains in higher education are interconnected, a student who has adjusted to the academic demands of college life may still choose to withdraw if they fail to integrate into the social life of the campus. Further, the social life of the campus is made up of formal (e.g., co-curricular activities) and informal (e.g., peer-to-peer interactions) dimensions, and both influence or are influenced by the formal and informal dimensions of the academic system. Experiences that promote positive integration into the social and academic realms of university life will strengthen the likelihood that a student will persist, while low social and intellectual integration will likely lead to student departure. These systems are also affected by events that transpire in a students' life outside the college environment (e.g., family

situations). Therefore, the decision to persist is most closely linked to the combined influence of pre-college characteristics, institutional characteristics, and academic and social integration. External influences also contribute to students' persistence and withdrawal decisions. The influence of these external events is now more immediate because of the connective capacities of various technological tools. This has yet to be explored fully in theoretical models related to student development and college outcomes.

The model of integration proposed and refined by Tinto (1975, 1993) has been tested by numerous researchers in an effort to determine the influence of various factors on student persistence and departure, with most research agendas measuring student-faculty, student-staff, or peer-to-peer interactions alongside measures of involvement in co-curricular activities and programs (Pascarella & Terenzini, 1980). Though this model has served as a widely used framework for understanding student persistence and departure, several scholars (e.g., Bean & Metzner, 1985; Harper & Quaye, 2008; Hurtado, 2007; Rendón, Jalomo, & Nora, 2000; Tierney, 1992, 2000) have critically analyzed adherence to use of the term *integration* as it relates to college outcomes. The model was also scrutinized for its prescriptive nature and for neglecting to account for the unique experiences of students from racially and ethnically diverse groups and non-traditional student populations (Wolf-Wendel et al., 2009). Hurtado and Carter (1997) suggested that Tinto's model did not value culturally relevant alternatives to campus involvement and instead promoted more traditional activities that might not appeal to all students. Further, Hurtado (2007) suggested that Tinto's model perpetuated the concept of *normative congruence* which implies "conformity to dominant modes of thinking and acting" (p. 4). The model was considered problematic due to its assumption that students

who do not fit the traditional prototype of an American college student must discard their histories in order to integrate into the campus environment and persist to graduation (Wolf-Wendel et al., 2009).

The experience of nontraditional students was thought to differ from traditional students in that these students were not as likely to integrate socially because of less time interacting with peers and faculty in the immediate campus environment and more time attending to relationships and other competing priorities external to university life (Bean & Metzner, 1985; Chickering, 1969), with these competing priorities contributing to less involvement in co-curricular programs and other campus services. The influence of external events and relationships once thought to apply mostly to students whose college experience was not strictly campus-based now relates to the experience of most college students given the emergence of technology as a social force that maintains a constant connection to social networks across time and space. Thus, theories of student development and models related to social integration and persistence and withdrawal need to be revised to reflect emergent forms of social connection that influence students' lives and their college experience.

In a recent interview with Wolf-Wendel and colleagues (2009), Tinto stressed that it is not necessary for students to assimilate to persist but stated that it is necessary to find some form of community membership that will contribute to a sense of connection to the campus. He also revealed that he now considers the term integration problematic and no longer uses it because of its historical context and its common interpretation to mean "you have to make them become like us" (p. 424). Hurtado (2007) suggested the terms *sense of belonging* or *social cohesion* as alternative but related constructs that could be

used to revise Tinto's original theoretical model. The term *social belonging* will be introduced and used throughout this dissertation as an alternative to social integration, though the term social integration will be used in reference to previous research findings.

Other theoretical frameworks have extended some of the earlier models related to student persistence and withdrawal. Thomas (2000) used social network analysis to determine the centrality of students within their social environments and the influence of social network ties to students' social integration. Findings revealed that reciprocated relationships among peers yielded a positive and direct impact on students' perceived social integration, institutional commitment, and their intent to persist. More recently, Terenzini and Reason (2005) advanced a conceptual framework that extended and synthesized previous work on student persistence and withdrawal. Their framework incorporated four sets of interrelated constructs, including student precollege characteristics and experiences, the organizational context or system, the student peer environment, and the college experiences of the individual student (Terenzini & Reason, 2005). The model proposed that students enter their university years with a diverse set of personal, academic, and social background characteristics and experiences that guide the ways in which students interact with both their peer and institutional environments (Reason, 2009). The combined influence of these different characteristics determine whether a student will persist to graduation or withdraw from the institution (Tinto, 1975, 1993; Pascarella & Terenzini, 2005). The student peer environment, one of the constructs in the model proposed by Terenzini and Reason, will be discussed next.

The Student Peer Environment on College Campuses

Peer groups provide a context within which college students form social

relationships and strengthen their social networks, and peer relationships have been shown to positively influence adjustment to college (Swenson, Nordstrom, & Hiester, 2008). Newcomb and Wilson (1966) explored the influence of college peer groups on students and contributed their sociological perspective to early notions of college student development. Tinto (1993) and Weidman (1989) contributed significantly to understanding processes of student socialization through their respective work on persistence and withdrawal. Tinto's longitudinal model referenced the factors that contribute to a student's decision to continue their education or leave the institution (e.g., pre-college characteristics, academic and social integration). Connecting to the peer culture within an institution, at any level, contributes to student persistence, whereas failure to establish a connection with peers may lead to departure (Tinto, 1993). Weidman (1989) focused his work on the socialization outcomes of college attendance influenced by interactions with social contacts in and external to the campus environment. The three components of socialization he found to be most important to the study of college impact included individual, group, and organizational influences, interpersonal and intrapersonal social processes encountered by students, and the socialization outcomes of various contexts within the college environment.

Though an extensive body of literature exists on peer culture and student peer groups, the comprehensive framework advanced by Terenzini and Reason (2005) describes the student peer environment as embodying the system of dominant and normative values, beliefs, expectations, and attitudes that characterize the collective student body. The student peer environment, or campus peer culture, can also be defined as "the forces and processes that shape individual and collective life on campus in terms

of identity, group membership, acceptable discourse, and desirable behaviors” (Renn & Arnold, 2003, p. 262). The norm of student behavior within the peer environment influences students’ college experience in subtle ways that may not be readily apparent to the individual student (Astin, 1993; Berger & Milem, 2000). These subtleties may also not be readily apparent to faculty and administrators who study the impact of peer-to-peer socialization processes on student development and college outcomes.

Terenzini and Reason (2005) referred to the peer environment as a *sense of the place* that conveys social and academic expectations. This sense can result from involvement in both the curricular and co-curricular dimensions of the campus, both of which contribute to students’ sense of social belonging and integration into the campus environment and to their institutional commitment. Research on college students has demonstrated that success in college is best predicted by quality of effort and the time and energy students’ devote to curricular and co-curricular activities (Astin, 1993; Pace, 1988; Pascarella & Terenzini, 1991, 2005). Astin (1984) hypothesized that increased involvement in the academic and social life of the campus would lead to greater success in college, and *involvement* was defined as the amount of physical and psychological energy a student devotes to his or her social and academic endeavors. Similar to Tinto (1975, 1993), Astin suggested that social integration takes places primarily through social interactions outside the classroom in peer relationships, involvement on campus, or in interactions with faculty. He also recognized the contribution of the environment to students’ college experience and developed the input-environment-output (I-E-O) model to control individual characteristics in order to isolate the effect of involvement on outcomes associated with college attendance.

Reason (2009) asserted that the goal of research on student persistence must be to explore students' experiences within the many intersecting environments they inhabit, including the student peer environment and student subcultures which are most proximal to students' individual behaviors and social relationships (Baird, 2000; Terenzini & Reason, 2005). Renn and Arnold (2003) explored the role of peer culture within smaller affinity groups given the proximal influence of these groups on student development. Building on the human development ecology of Urie Bronfenbrenner (1989, 1993), Renn and Arnold proposed that the influence of peer culture on student development could be explained through an ecological model that locates the student at the center of interconnected and concentric environmental structures, with *microsystems*, *mesosystems*, *exosystems*, and *macrosystems* joined together as "nested, interdependent, dynamic structures ranging from the proximal, consisting of immediate face-to-face settings, to the most distal, comprising broader social contexts such as classes and culture" (Bronfenbrenner, 1993, p. 4). On this theory, Bronfenbrenner (1989) writes:

The ecology of human development is the scientific study of the progressive, mutual accommodation, throughout the life course, between an active, growing human being, and the changing properties of the immediate settings in which the developing person lives, as this process is affected by the relations between these settings, and by the larger contexts in which the settings are embedded. (p. 188)

Renn and Arnold suggest that it is the reciprocal interactions among person, process, and context that creates the influential force of peer culture on student development over time, though the central focus of their model was the more immediate environments with which students more consistently identify and affiliate during the college years.

Figure 1. Bronfenbrenner's Model as Applied to a Postsecondary Environment

Note. Adapted from “Reconceptualizing research on college student peer culture,” by K. A. Renn and K. D. Arnold, 2003, *Journal of Higher Education*, 74(3), p. 268.

The ecological model as related to student development is an important theoretical contribution to the literature on peer influence, identity formation, and social integration (see Figure 1). Bronfenbrenner's human development ecology posits that individuals must tackle increasingly complex and sophisticated tasks within interconnected environmental contexts for development to occur (Renn & Arnold, 2003). Bronfenbrenner's (1993) theory rests on two tenets. First, he posits that development is a function of the interaction between the individual and the environment. Second, interaction “must take place in the immediate face-to-face setting in which the person exists” (p. 10). The most proximal level of influence is that of the *microsystem*, which Bronfenbrenner defined as the “pattern of activities, roles, and interpersonal relations

experienced by the developing persons in a given face-to-face setting with particular physical, social, and symbolic features that invite, permit, or inhibit engagement in sustained, progressively more complex interaction with, and activity in, the immediate environment” (p. 15). This definition of microsystems must be enhanced to account for the proximal influence of interpersonal relationships mediated by technological forms of communication in addition to those formed and maintained in face-to-face contexts. Friendship and peer groups are embedded within both face-to-face and mediated Microsystems. Students’ capacity to move fluidly within and among intersecting peer microsystems may influence the quantity and type of social interactions students have, thus influencing opportunities for their development (Renn & Arnold, 2003). Chickering and Reisser (1993) wrote: “When students are encouraged to form friendships and to participate in communities that become meaningful subcultures, and when a diversity of backgrounds and attitudes as well as significant interchanges and shared interests exist, development along all seven vectors is fostered” (p. 275). Thus, the study of peer culture and an exploration into student subcultures provides an avenue for understanding the influence of the peer environment on student development more fully. This exploration must consider students’ social relationships and peer subcultures as manifest in both face-to-face and mediated contexts, with neither form of interaction serving as the most predominant or proximal in terms of presumed influence on students’ social relationships.

The microsystems in which students are most intimately embedded serve as only one aspect of influence within the broader systemic forces at work. Students are also intimately tied to and involved in intersecting mesosystems of academic, social, family, and work life, each of which contributes to students’ developmental processes (Renn &

Arnold, 2003). Beyond the mesosystem is the exosystem and macrosystem. The exosystem is “a setting not containing the individual that nevertheless exerts influence on his or her developmental possibilities” (Renn & Arnold, 2003, p. 271-272), whereas the macrosystem “provides the structure and content of the inner systems and is specific to a given culture at a given moment in history” (p. 272). Renn and Arnold (2003) discuss time as another important system in Bronfenbrenner’s ecology model. The element of time, or the *chronosystem*, is referred to as the “individual’s own developmental life course... embedded in and powerfully shaped by conditions and events occurring during the historical period through which the person lives” (Bronfenbrenner, 1995, p. 641). The development and emergence of technological tools and the seemingly ubiquitous use of technology for the formation and maintenance of social relationships are trends that exist in these most distant systems and yet are a proximal influence on students’ development and outcomes related to college attendance. The influence of technology on students’ peer relationships will be discussed next.

Technology and Social Relationships

The process by which student-environment interactions shape developmental processes are relevant to this exploration of the role of technology within peer culture and the influence of both on students’ psychosocial well-being and perceived sense of community. Involvement in the curricular and co-curricular facets of campus life have been central to research on student development in the context of higher education (Astin, 1984). Much student development theory and models of integration, involvement, and student persistence and withdrawal presume a predominantly campus-based college experience. Yet, interactive uses of technology have blurred the boundaries between

experiences that are assumed to be predominantly campus-based and other sources of social or relational influence from the mesosystem, exosystem, macrosystem, and chronosystem. The interactions between microsystems that form the mesosystem of peer culture (Renn & Arnold, 2003), yet microsystems no longer occur primarily or predominantly in face-to-face contexts as originally hypothesized by Bronfenbrenner. Thus, the ecology model points to the reciprocal influence of systems that are predominantly face-to-face (e.g., student organization meetings) and those that are technologically-mediated (e.g., web-based community groups). In many ways, the two forms often complement each other, with peer groups interacting in face-to-face contexts and via web-based groups or social networks. The term *ecological niches* has been used to refer to “specified regions in the environment that are especially favorable or unfavorable to the development of individuals with particular personal characteristics” (Bronfenbrenner, 1993, p. 18). Similarly, Kuh and Love (2000) use the term *cultural enclave* to refer to a student subculture that assists students in negotiating the space between their home and the campus. These niches or enclaves are not necessarily campus-based, but whether they exist in a face-to-face or mediated context, these places typically become a reference point or anchor for students (Chickering & Reisser, 1993), adding support to use of an ecology model in considering the many forces influencing student development and related college outcomes.

Willson (2006) suggests that the ubiquity of technology-mediated social relations has implications for our understanding and experience of community and connectedness. New technological developments have transformed the manner in which students form and maintain social relationships, and they have influenced the ways in which students

engage in the life of the campus (Lloyd, Dean, and Cooper, 2007). As Willson posits, these innovations allow for new ways of thinking about and engaging in practices of socialization and the construction of social communities. Calhoun (1986) writes that “new computer and communication technologies affect social integration primarily by shifting the balance between relationships that are directly interpersonal and those that are mediated” (p. 332). These mediated social relationships have implications for the way we experience conversation and interactions within our social worlds, and it seems that the influence of technologically-mediated social relationships on students’ psychosocial well-being and sense of community and connectedness to others is an important area of inquiry with implications for student development theory.

Mediated social processes extend into the lived experiences and social relationships of individuals (Willson, 2006), yielding an experience of social interaction that is presumed to be qualitatively different than non-mediated forms of communication given the absence of vocal and nonverbal cues that convey meaning and confirmation of support or belonging (La Guardia, 2008). Willson suggests that communication technologies in our modern and postmodern communities extend the possibility for sustained interaction and social relationships that were less possible in more traditional forms of community, with virtual communities supplementing and intersecting with those formed in face-to-face contexts. These interactive technologies serve as a communication tool that can foster relationships with loved ones (Bargh & McKenna, 2004), including parents, relatives, and friends both at college and from home. Given this increased capacity to connect with social contacts, systems that at one time were more distant and less influential on students’ college experience and developmental processes

are now as proximal as the face-to-face micro-systems in which students are presumed to be predominantly embedded during their time on campus.

The student experience once thought to be primarily campus-based has now extended into a world of social relationships and community forms beyond those in the immediate campus context, an emergent reality that has implications for how students integrate socially and form community networks. Willson (2006) posited that technologically-mediated interactions have consequences for how we understand and experience community in relation with others. Further, technologies used to mediate human interaction yield unique subjective and intersubjective experiences for participants. The presupposition that interactive technologies are better suited for enhancing community is warranted, and yet both positive and negative aspects of technology use have become an increasingly popular focus of investigation in many disciplines. The impact of technology use on college students' social relationships and sense of community has not been explored thoroughly in empirical studies and serves as the major focus of this dissertation study.

Community Structure within Techno-Society

Community is typically understood as an undifferentiated and universal phenomenon, though it can also be conceived of as a concept differentiated by unique circumstances, manner of application, and diverse theoretical frameworks (Willson, 2006). Given the advancement of technologically-mediated forms of social interaction and connectedness, the concept of community must be explored through unique and emergent perspectives as it relates to the experience of college students in institutions of higher education. A students' sense of community within the college environment is a

critical factor shaping students' integration and sense of belonging within the academic and social life of the campus, and this integration or sense of connectedness has been shown to contribute to students' decisions to persist or withdraw (Tinto, 1975, 1993; Pascarella & Terenzini, 1980).

Kanter (1972) sought to understand individual choice in belonging to or withdrawing from a community. Similar to the notions of involvement (Astin, 1984) and quality of effort (Pace, 1988), he argued that greater personal investment equated to greater commitment to community structure. This increased commitment would then lead to an emotional bonding with members of the community followed by acceptance and application of community values and standards in practice. Though not all community associations are chosen by individual members (Willson, 2006), these notions are appropriate in a university setting where students ultimately select which institution they will attend and whether they will persist or withdraw. Anderson (1991) discusses the influence of *imaginings* in holding communities together across time and space. This element of imagining explains the evolution of participants' sense of belonging to a community in which most members may never actually interact with one another in a significant way. The feeling and practice of community may also emerge among members because of a shared history or significant historical event (James, 1992). The notions of choice and of imaginings help to explain how a sense of community might form on a campus where most students never come in contact with each other.

In her work on community within techno-society, Willson (2006) differentiated between traditional, modern, and postmodern communities to help explain how communities are structured and the forms of social connection inherent in each. Willson

uses the term *techno-society* to refer to predominantly Western societies where social interaction is increasingly mediated by various modes of technology extended across time and space. Traditional communities are those in which choice of membership does not exist and individuals are born into a particular place and social position. These communities can be understood as “organized around face-to-face communicative relations and concrete embodied practices” (p. 39). Modern communities are those in which individuals are able to choose membership in and among multiple communities simultaneously. Interpersonal relations in modern communities are extended by technological means and include both embodied and disembodied forms of interaction. Postmodern communities extend choice to include “an increasingly flexible identity – through freedom from embodied or geographical identity – and an increase in the possibilities of multiple community memberships” (p. 37). In this form of community, identity formation is ambiguous and community boundaries are extremely open and flexible. Communicative practices are organized almost primarily through technologically-mediated and disembodied forms of interaction. Willson uses the term *disembodied* to refer to communication that occurs through mediated forms where the body is distanced from the interaction, though an alternative perspective is that the body is very much present and mediated forms of communication are embodied despite the distance, in that the bodies of social actors are still engaged in the process of communicating via technological means.

The permeability of boundaries associated with time and space in postmodern communities adds support to the utility of Bronfenbrenner’s (1989, 1993, 1995) ecology model in considering the influence of mediated social relationships on student

development and on students' social integration and sense of connectedness. Thus, it is important to note that each of these community forms coexist simultaneously and operate in relation to each other, and the predominance of one form at any given time would not detach the individual from the influence of any other form (Willson, 2006). Evident in the research of Wellman (2001) is the notion that technologies used primarily for social practices in modern and postmodern communities coexist with or supplement the face-to-face social practices employed in more traditional community forms.

In conclusion, the research and literature on college student development has focused attention on students' identity development, social integration or belonging, student peer environments, and factors that contribute to persistence and withdrawal decisions. Given the rise in technology use for the formation and maintenance of social relationships and the significance of social relationships to students' identity development and sense of social belonging, research on college student development must respond by reconceptualizing the foundational theoretical frameworks of student development and models related to social integration and academic persistence to account for new processes of relationship formation and the influence of mediated forms of communication on students' psychosocial well-being and sense of community. Next, a statement of the problem will be presented, followed by the purpose of the study and the research questions and hypotheses that served to guide this research study.

Statement of the Problem

Social ties are increasingly formed and maintained by means other than face-to-face communication, and college students' use of technology has emerged as a crucial focal point for higher education researchers and practitioners. Students' proficiency in

the use of technology has transformed and will continue to substantially impact both the social and academic landscape on college campuses, a reality that has profound implications for the fundamental nature of students' social relationships and their sense of community and connectedness on campus. As evidenced throughout the conceptual framework presented earlier in this chapter, social relationships are central to student and adult development and contribute in significant ways to students' social integration into campus life.

Social integration is a critical component in the decision to persist or withdraw from the university, and the role of technology in shaping the experience of social belonging on college campuses is complex yet worthy of rigorous investigation. Moreover, students' social relationships contribute to the development of social and interpersonal competencies and serve to enhance the potential for success in personal relationships and professional endeavors. These social skills allow students to initiate and foster interpersonal connections, thus strengthening their social network and sense of connectedness to others. Social competence enables students to engage in healthy relationships that can serve as a source of companionship and social support. This social competence is likely enhanced by students' confidence and sense of efficacy in achieving interpersonal goals within and beyond the college environment.

While some students may arrive on campus with the capacity for developing and maintaining strong social connections, others bring with them an assortment of challenges that impede their ability to connect with their peers and the surrounding environment. According to Tinto (1993), students "who have difficulty meeting people and making new friends... have greater difficulties than do those whose typical response

is to reach out to others” (p. 58). Lewinsohn, Rohde, and Seeley (1998) posited that the identity development process associated with the transition from adolescence to adulthood may lead to lowered self-esteem, withdrawal from social support, and depression. Other concerns related to students’ social integration into campus life may be, but are not limited to, feelings of loneliness, shyness, social anxiety, low social self-confidence, low social self-efficacy, or a deficit in social skill or social competence. Interpersonal skills are a necessary prerequisite for the development and maintenance of intimate friendships and social relationships (Chickering & Reisser, 1993), as is the ability to effectively manage psychosocial stressors. If, however, students struggle to form close and supportive relationships with their peers, the result may be increased difficulty adjusting and integrating into the social life of the campus. As a result, students may experience a decreased sense of belonging in the community and a lack of social connection or support. This experience of campus life likely contributes in negative ways to students’ development during the college years and to persistence or withdrawal decisions.

The importance of social integration to student persistence or withdrawal has been established, though social integration as a construct remains complex and worthy of more extensive investigation. Technology has transformed and continues to have an impact on higher education, and thus it likely contributes to the academic and social integration of students into their college environment; it has changed the way students form community and has altered the means by which students communicate and interact with their peer networks (Gatz & Hirt, 2000). As a result, it has had a profound influence on students’ interpersonal relationships. Given the critical importance of social relationships to

students' social integration and the importance of social integration to persistence, it seems imperative that higher education researchers and administrators probe further into the complexity of students' technology use and consider how this use should be accounted for in foundational and emergent theoretical frameworks and models that guide research and practice. The prevalence of technology use in mediating social interactions necessitates questions being asked about the implications and influential nature of these means on communication practices and the formation of interpersonal relationships (Willson, 2006). As such, Cotten (2008) suggests failure to investigate the social impacts of technology use may impact college students in negative ways.

The influence of technology use is a popular focus of study in numerous fields. However, there is a dearth of literature on this topic in academic journals that are directly applicable to the individuals who work most closely with campus life and student development. Scholars in other disciplines whose research agendas focus on these constructs tend to publish and present via avenues tied to their respective areas of inquiry. Thus, student and academic affairs practitioners do not benefit from the extensive corpus of empirical research on college students nested in the journals of other academic disciplines. Research on the role of technology in shaping students' social worlds needs to be in the hands of administrators in higher education who have the capacity to mobilize change in educational interventions and professional practice. Both student affairs practitioners and scholars who focus their research efforts on the lives of college students have not paid focused attention on the associations between students' use of communication technologies, psychosocial well-being, and sense of community on campus. Little, if any, empirical research has been conducted to discover the

relationships among these three broad constructs, which is problematic given the unique position held by faculty and student affairs administrators that allows them to contribute in meaningful and enduring ways to the personal and professional success of college students. The influence of students' use of technology on perceived psychosocial well-being and on the perception of community and social connectedness in university life is worthy of focused and sustained attention, and findings from this study can be disseminated and applied conscientiously to educational programs and services within institutions of higher education. Next, the purpose of this study will be discussed.

Purpose of the Study

The central aim of this inquiry is to advance a more comprehensive research agenda and lessen the identified knowledge gap within higher education scholarship on the associations between students' use of communication technologies, psychosocial well-being, and perceived sense of community and to produce an initial model of the interrelationships among variables that can be tested at other sites and in other contexts. Research related to student development and the experiences of college students extends across multiple disciplines of academic inquiry. Thus, this work will provide faculty and practitioners in higher education a comprehensive and inclusive review of literature and research related to these constructs and will shed light on potential implications for policy and practice in education and for employers of college students. It is expected that this inquiry will provide meaningful data and a rich source of information that educators, employers, and policy makers can draw upon to strengthen their own leadership potential in advancing research agendas or professional practice that responds to these concerns. By drawing upon multiple disciplines, an integrated understanding of the relationship

between each domain will be extended.

The larger expectation is that this research will incite a critical look at the role and responsibility of administrators and faculty in higher education to address and respond to the ways in which technology has transformed and continues to transform the landscape for learning, well-being and personal development, and the construction of social communities in institutions of postsecondary education. Specifically, this research has profound implications for enhancing theoretical models that inform research and practice, and yet current models have failed to account for the influence of technology on the formation of social relationships and on indicators of psychosocial well-being and students' sense of community and social belonging.

Identification of Constructs

Three umbrella terms are most relevant to the research question and hypotheses in this study – *communication technologies*, *psychosocial well-being*, and *sense of community*. Each construct is operationalized to incorporate the domains most relevant to the research study. The influence of technology on various aspects of college students' psychosocial well-being and sense of community has become a central focus in recent years, though the associations among these constructs remain tenuous. The constructs selected for investigation in this study are supported by the results of a comprehensive literature review of relevant terms from various academic disciplines. An overview of each concept and a review of the variables subsumed within each category will provide a useful backdrop for understanding this research agenda.

Time spent using various communication technologies and motivations for use of communication technologies have been identified as most salient to an investigation of

students' technology use. The items incorporated in this study to assess time spent using communication technologies are those that most closely relate to students' social worlds and included the following as 13 unique variables: (1) emailing on a computer or laptop; (2) texting or emailing via a cell phone or personal digital assistant; (3) talking via a cell phone or personal digital assistant; (4) networking online via Facebook or other sites; (5) chatting on instant messenger or in a chat room; (6) watching television or movies; (7) playing video or computer games alone; (8) playing video or computer games with others; (9) listening to or using a personal Mp3 player or iPod; (10) following Twitter, blogs, or other newsfeeds; (11) visiting YouTube or other video sites; (12) building or enhancing personal website(s); and (13) surfing the internet or visiting web sites.

The motivations for use of technologies included: (1) meet new people and make friends; (2) interact with friends and social contacts; (3) conduct research or seek information; (4) work on school-related assignments; (5) learn more about hobbies or interests; (6) share photos, videos, or personal updates; (7) comment on blogs or other news feeds; (8) seek support for personal problems or issues; (9) purchase or sell items; (10) look for entertainment (e.g., music/video downloads); (11) waste time or procrastinate; (12) play computer games alone or with other users; (13) view pornography or adult content; and (14) share "true" self with others. These items accounted for 14 unique variables in the analysis of data. For the purposes of this study, psychosocial well-being included variables related to both mental health and social relationships as opposed to physical aspects of well-being (e.g., heart disease). Measures of psychosocial well-being will include self-reports of loneliness, depression, shyness, social anxiety, perceived social skill, social self-confidence, and social self-efficacy. The

term sense of community incorporated mattering to others, perceived social support from friends, social connectedness, and social adaptation to college. Support for each construct and the associated variables subsumed under each are presented in the following chapter of this dissertation.

Research Questions and Hypotheses

The theoretical framework presented in this chapter and the review of literature that follows provide support for the research question and hypotheses. The following research questions guide this quantitative study:

RQ1: To what extent does the use of communication technologies support or constrain students' perceived sense of community?

RQ2: To what extent does the use of communication technologies support or constrain students' perceived psychosocial well-being?

RQ3: To what extent does the use of communication technologies mediate the relationship between perceived psychosocial well-being and perceived sense of community?

Given that support for direct relationships among use of communication technologies, psychosocial well-being, and sense of community varies widely, directional hypotheses for this study cannot be stated with confidence. The hypotheses predict direct or indirect correlations among the three constructs – use of technology (UT), psychosocial well-being (PW), and sense of community (SC). Specifically, the variables related to technology use were presumed to have a direct influence on psychosocial well-being variables (UT → PW) and on indicators of students' sense of community (UT → SC). It was also predicted that variables related to psychosocial well-being would have a direct

influence on indicators of students' sense of community ($PW \rightarrow SC$), and conversely that variables related to students' sense of community would have a direct influence on indicators of psychosocial well-being ($SC \rightarrow PW$). Further, it was presumed that variables related to psychosocial well-being would have an indirect influence on indicators of sense of community through interrelationships involving both indicators of technology use and variables related to psychosocial well-being ($PW \rightarrow PW \times UT \rightarrow SC$). Next, it was predicted that variables related to sense of community would have an indirect influence on indicators of psychosocial well-being through interrelationships involving both indicators of technology use and variables related to sense of community ($SC \rightarrow SC \times UT \rightarrow PW$). Thus, this study will attempt to explore and respond to the following predictions:

- H1: Students' time spent using communication technologies is related to their psychosocial well-being.
- H2: Students' motivations for use of communication technologies are related to their psychosocial well-being.
- H3: Students' time spent using communication technologies is related to their sense of community.
- H4: Students' motivations for use of communication technologies are related to their sense of community.
- H5: The relationship between students' perceived psychosocial well-being and their perceived sense of community is mediated by time spent using communication technologies.

- H6: The relationship between students' perceived psychosocial well-being and their perceived sense of community is mediated by motivations for use of communication technologies.

The research hypotheses are intentionally broad to allow for unexpected findings to emerge from this quantitative study. For example, it is possible that the data will expose directional relationships among some constructs and indirect relationships among others. The following chapter provides support for the stated research questions and hypotheses through a review of relevant literature on students' use of technology, indicators of psychosocial well-being, and factors that contribute to students' sense of community in university life.

CHAPTER TWO

A Review of the Literature

This review of literature incorporates research and theoretical perspectives from numerous disciplines. In the previous chapter, a theoretical framework was presented to situate this review of literature and the research questions and hypotheses in the broader context of student and adult development. The preceding section further discussed the importance of social integration to academic persistence and withdrawal, the influence of the student peer environment on social relationships and college outcomes, and the impact of technology on social relationships and the formation of community as a means of providing a solid foundation for this study. The following sections review literature on college students' use of communication technologies, indicators of psychosocial well-being, and factors that contribute to a sense of community in university life. The review is not exhaustive of all variables related to these constructs or of all literature related to each variable. Within each section, the discussion focuses solely on the variables being analyzed in this study and the research findings most applicable to this research agenda. The intersection of these three areas are the focus of this review (see Figure 1).

Figure 2. Intersection of Constructs for Review of Literature

Students' Use of Communication Technologies

Technology use seems to be ubiquitous in the lives of emerging adults. Research on technology use is vast, though the impact of technology use on students' psychosocial well-being and sense of community in university life has not been explored in depth. Most research on technology use among college students has focused attention on time spent using various communication technologies and motivations for use. The term *communication technologies* will be used throughout this dissertation given the focus of this research on social relationships, though the term *information and communication technologies* is frequently used in the literature as it "encompasses a variety of communication devices and applications, such as radio, television, cell phones, computers, computer and network hardware and software, and a variety of applications for these technologies, such as gaming, social networking, instant messaging (IM), and texting" (Cotten, 2008, p. 56). Willson (2006) defined information and communication technologies as those "that are used to mediate or communicate information to and among people [and] abstract from the body inasmuch as the information or communication practices are not embedded within a face-to-face setting" (p. 47). Thus, communication technologies are those tools that mediate interpersonal processes and social relationships across time and space.

The internet and other communication technologies have emerged as a focal point for researchers in the social sciences, particularly due to the potential social and psychological consequences related to these mediated forms of communication and social interaction. As stated in the previous chapter, widespread use of the internet and other communication technologies has elicited concern in the past decade as to the impact of

this use on social and mental health (Campbell, Cumming, & Hughes, 2006; Cotten, 2008). Social relationships are of critical importance to students' identity development during the college years (Chickering & Reisser, 1993), and the impact of technology use on students' social relationships and their developmental processes is an area of critical importance for researchers and practitioners in higher education. The impact of technology use on psychosocial well-being and students' sense of community in university life is the main focus of this dissertation, with emphasis placed on both the direct and indirect effects of students' time spent using technology and motivations for use. First, a discussion of technologically-mediated communication will be presented.

Technologically-mediated communication. Communication mediated by technology has become a popular focus of inquiry given the associated benefits and challenges presumed to influence social relationships and psychological health and well-being. Willson (2006) suggested that use of communication technologies enhances our ability to connect with people across time and space, thus extending our capacity for relating with others in community. Further, social uses of technology allow individuals to connect with their friends and families on a regular basis, maintain relationships over time, feel connected to others, and access support provided by social contacts. Interactive communication technologies have also been found to provide the space for individual empowerment and creative involvement in the construction of virtual spaces and selves (Willson, 2006). At the same time, Willson suggests that technologically-mediated communication potentially enhances the experience of isolation given the distanced form of these interactions. Questions worthy of consideration are whether the use of communication technologies for interpersonal communication contributes to or detracts

from meaningful and supportive interactions with social contacts and whether this use contributes to or disrupts the formation of community (Quan-Haase, 2008). How these questions apply to the college student experience has yet to be explored in depth and emerges as the focus of this dissertation study.

Willson (2006) contends that mediated forms of communication disengage the body from social interactions, lessening the richness and complexity of messages conveyed between social actors and distorting the depth of meaning due to physical separation – in essence, the communication “becomes thinner” (p. 56). The anonymity associated with technologically-mediated communication forms and the inherent lack of vocal and nonverbal social cues in these interactions may lead to a real or perceived decrease in the quality or authenticity of these mediated social relationships (Weiser, 2001). In many respects, our sense of belonging in a group or community and our sense of social support stems from how we read others’ reactions to us. Self-determination theory asserts that our sense of support (or lack of support) in relationships typically stems from indicators of emotion expressed vocally or nonverbally in social interactions (La Guardia, 2008). This ability to regulate and integrate needs and the emotional expressions of self and other in conversation is at the core of healthy intrapersonal and interpersonal processes (La Guardia & Ryff, 2003; Ryan & Deci, 2001; La Guardia, 2008), and the formation of healthy social relationships contributes in positive ways to identity formation (Chickering, 1969; Chickering & Reisser, 1993) and social integration (Tinto, 1993). Communication technologies may serve to undermine the quality of social relationships due to the absence of nonverbal and vocal subtleties that convey authentic meaning and emotion in face-to-face interpersonal interactions. Thus, communication

mediated by technology may tend to be less nuanced and offer less confirmation of support or belonging. The implications of this for college students' psychosocial well-being and sense of community in university life have not been addressed in empirical studies on personal, social, and academic outcomes related to college attendance.

Researchers and authors who write about the social impacts of communication technologies have typically adopted one of two perspectives – the *utopian perspective* or the *dystopian perspective* (Willson, 2006). The utopian perspective views interactive technologies as “creating or assisting closer social relations through overcoming distance and creating community” (Willson, 2006, p. 56). Conversely, the dystopian perspective holds that interactive technologies constitute inauthentic social relations and undermine or weaken social life by enhancing the “individuation and compartmentalization of the individual” (p. 74). Willson (2006) asserts that the “bringing-together” that occurs through technological means is experienced in a different manner than if experienced in a face-to-face encounter (p. 31). Despite conflicting findings, both perspectives have been validated with empirical findings and each illuminates the complexity of social relationships mediated by communication technologies.

Advocates of the internet and other communication technologies claim that interpersonal relationships and social communities are strengthened and enhanced through these media, particularly because they serve as a means of communicating with loved ones (Bargh & McKenna, 2004). Baumeister and Leary (1995) hypothesized that an individual's need to belong should lead to tendencies to seek out social contact and interpersonal relationships. For some, this need for social connection and belonging may manifest more in technologically-mediated circumstances than in face-to-face social

interactions. Several benefits of internet and technology use have been cited in the literature, including increased anonymity, greater control over presentation of self and identity, and decreased perception of social risk (Caplan, 2003; Morahan-Martin & Schumacher, 2000, 2003; Shepherd & Edelman, 2005; Wallace, 1999), and it may prove a safe haven to interact socially for those who lack the social skills required in face-to-face interactions or who experience apprehension in social encounters (Caplan, 2003, 2005; McKenna, Greene, & Gleason, 2002). This notion aligns with the *social compensation hypothesis*, which posits that technologically-mediated communication can strengthen social resources for those who experience a social skill deficit in face-to-face interactions (McKenna & Bargh, 1998). Kuh and Vesper (2001) asserted that computers might facilitate communication for students whose social skills are hindered in face-to-face social interactions. Thus, the need to belong may motivate people to seek relationships through whatever means they feel most socially competent. Further, the anonymous nature of the internet and other communication technologies allows individuals more intentionality in the construction of identity than is possible in face-to-face contexts (Bargh, McKenna, & Fitzsimmons, 2002; McKenna & Bargh, 1998; McKenna et al., 2002), a claim that has significant implications for student and adult identity development.

In their research on communication technologies and indicators of psychosocial well-being, Shaw and Gant (2002) suggested that the internet and other communication technologies may be therapeutic for depressed or lonely individuals by providing a source of social support and self-esteem, an assertion supported by findings that suggest lonely individuals are better able to express their authentic selves online than with contacts in

face-to-face social interactions (McKenna et al., 2002; Morahan-Martin & Schumacher, 2000, 2003). Similarly, Gemmill and Pearson (2006) contended that communication technologies are beneficial in connecting college students to friends and family who can provide social support in times of psychological or academic stress. Further, Cummings, Lee, and Kraut (2006) investigated the physical distance between high school friends created by the transition to college. Findings revealed that geographical distance decreased the level of communication frequency and psychological closeness with pre-college friends unless friends continued to communicate frequently despite the distance. This study also demonstrated that social ties maintained by email or instant messaging yielded a greater sense of psychological connection to others than ties maintained by phone or in person, pointing to the ease with which students use communication technologies for maintaining interpersonal relationships on campus *and* at a distance.

Communication technologies may also serve as a source of support or as an opportunity to escape or avoid difficult interactions for those who experience depression or social anxiety (Anderson, 2001; Campbell, Cumming, and Hughes, 2006), especially given the tendency for depressed or socially anxious individuals to perceive their social skills negatively (Segrin & Flora, 2000). As an example, users of online chat functions have reported lower levels of social anxiety, perhaps allowing them to practice social skills in an anonymous and non-critical space and subsequently approach social situations with more confidence (Campbell et al., 2006; King & Poulos, 1998). Users in the study by Campbell and colleagues (2006) felt that the internet was psychologically beneficial and a positive influence in their lives but also reported the belief that frequent internet users are lonely and possibly addicted to technology. These findings provide support for

a growing corpus of literature suggesting unique differences in technology-mediated versus face-to-face communication that may attract individuals who experience certain social or psychological stressors.

Researchers who ascribe to the dystopian perspective claim that the use of internet or other communication technologies separates us from authentic social relationships and contributes to loneliness, depression and social anxiety, among other indicators of psychosocial distress (Kraut et al., 1998; Morahan-Martin & Schumacher, 2000, 2003; Nie & Erbring, 2000; Shaw & Gant, 2002; Weiser, 2001). In a longitudinal study among families, Kraut and colleagues (1998) reported correlations between time spent online and feelings of depression and loneliness, supporting the notion that time spent online contributes to poorer psychological well-being and might be better spent pursuing more meaningful and authentic face-to-face relationships. A study by Nie and Erbring (2000) found that nearly a quarter of participants in their study felt regular internet use reduced their time spent in person or on the phone with social contacts and decreased the amount of time spent participating in activities outside the home. Increased use was also associated with the likelihood for weakened social relationships. Inherent in these claims is the assumption that relationships formed via technology are more superficial compared to those established and maintained in face-to-face contexts.

Morahan-Martin and Schumacher (2003) noted support for the hypothesis that individuals may experience a lessened sense of belonging and connection with face-to-face contacts because of the amount of time spent online, with time spent initiating and maintaining online relationships instead of engaging in face-to-face social interactions. This is the major tenet of the *social displacement hypothesis* which posits that use of the

internet for interpersonal communication leads to less time spent in face-to-face interactions with close friends and family members and more time spent in online relationships with less familiar social contacts (Bessière, Kiesler, Kraut, & Boneva, 2008). These studies promote a perspective that positions face-to-face social interactions above mediated communication rather than advocating for the utility of both means for relating with others. Alternatively, the *social augmentation hypothesis* (e.g., Bessière et al., 2008; Kraut et al., 2002) asserts that communication via the internet or other technologies enhances an individual's ability to engage in social interactions more frequently and with more people, thus increasing the total size of their social network.

Some authors suggest that use of the internet and other communication technologies may become problematic or addictive (Caplan, 2003; Kandell, 1998; Nie & Ebring, 2000; Scherer, 1996). Caplan (2003) has advanced a theory of problematic internet use (PIU) which suggests that the negative outcomes associated with excessive online activity (e.g., compulsive use) are mediated by psychosocial problems. Numerous studies support the claim that psychosocial problems such as loneliness and depression are associated with problematic internet use (see Amichai-Hamburger & Ben-Artzi, 2003; Caplan, 2002, 2003, Kubey, Lavin, & Barrows, 2001; Morahan-Martin, 1999; Morahan-Martin & Schumacher, 2000, 2003). One factor associated with the theory of problematic internet use is the preference for online social interaction (POSI), which can be defined as “a cognitive individual-difference construct characterized by beliefs that one is safer, more efficacious, more confident, and more comfortable with online interpersonal interactions and relationships than traditional face-to-face social activities” (Caplan, 2003, p. 629). Caplan (2003) found that POSI mediated the association between

psychosocial problems and negative outcomes related to internet use among college students. Caplan (2005) extended his notion of problematic internet use by postulating that “a social skill deficit, along with exposure to the internet, predisposes an individual to develop a preference for online rather than face-to-face social interaction, which then leads to compulsive internet usage, resulting in negative outcomes” (p. 722). Individuals who report negative outcomes related to their problematic internet use tend to be drawn to the internet for interpersonal uses (see Caplan, 2002, 2003; Morahan-Martin & Schumacher, 2000). Morahan-Martin and Schumacher (2000) found that problematic internet users were more likely than non-problematic users to go online for social interactions and to meet new people, seek emotional support, or play interactive games. Conversely, they also found that problematic internet users gained social confidence online and were increasingly able to make friends, self-disclose, and be their true selves.

Despite multiple perspectives and opposing arguments on the utility of mediated forms of communication, a review of time spent using communication technologies and motivations for technology use will provide a better understanding of how these variables might influence indicators of students’ psychosocial well-being and sense of community. Individual differences related to time spent using communication technologies and motivations or goals for use need to be considered when exploring the influence of technology use more broadly. The next sections will explore time spent using communication technologies, followed by a review of motivations for use frequently cited in the literature and a discussion of the influence of technology use.

Time spent using communication technologies. The use of communication technologies occurs at higher rates among college students than among any other

demographic (Anderson, 2001; Jones, 2002; Junco & Mastrodicasa, 2007; Morgan & Cotten, 2003; Quan-Haase, 2007). The primary use of communication technologies for college students is social interaction by cell phone and through email and instant messaging (Gemmell & Peterson, 2006; Hampton & Wellman, 2001; Kraut et al., 1998), while the primary motivation for use has been interaction with family and friends (Anderson, 2001; Clark, Frith, & Demi, 2004; Gatz & Hirt, 2000; Gordon, Juang, & Syed, 2007). In a study on social interactions across technological media, Baym, Zhang, and Lin (2004) found that students used at least two to three modes of technology on a given day to facilitate communication with social contacts. Though time spent online is of less interest to researchers than motivations for use (Campbell et al., 2006; Gordon et al., 2007), time spent using the internet and other communication technologies remains an important factor to consider when assessing the potential impact of technology use and will be discussed in brief before a presentation of findings related to students' motivations for use and the influence of use on students.

Numerous studies have explored students' time spent using communication technologies. Morgan and Cotten (2003) investigated time spent using technology in a given week, and found that students spent an average of 3.9 hours using email, approximately 16 hours communicating in chat rooms or instant messaging, and almost 12 hours on average using the internet for entertainment or information-seeking purposes. Similarly, Quan-Haase (2007) studied 268 students and found that 65% spent more than three hours per day online, with 62% using email weekly and 76% using instant messaging daily. Junco and Mastrodicasa (2007) surveyed 7,705 students from seven campuses and found that approximately 75% of students used instant messaging with an

average of 35 hours reported as the median time spent chatting per week. Emanuel and colleagues (2008) found that students' time watching television and listening to music were interfering with time spent in face-to-face social interactions, a finding that supports the social displacement hypothesis discussed earlier in this chapter. The authors suggested that college students are listening, speaking, reading, and writing in the same proportions as they always have but are using new technologies to engage in each of these behaviors.

A recent large-scale study by Smith, Salaway, and Caruso (2009) included 30,616 freshmen and seniors at 103 four-year institutions and students from 12 two-year institutions. The majority of respondents (98%) reported owning either a laptop or desktop computer. Of the sample, approximately 84% used technology to download music or videos and a significant number of respondents reported contributing content to video websites (44.8%), wikis (41.9%), and blogs (37.3%). Thirty-five percent of respondents reported using podcasts and over 37% reported using Voice over Internet Protocol or VoIP (e.g., Skype) with the median frequency of use being monthly. Findings also revealed that approximately 90% of the respondents reported using social networking sites or text messaging with a median frequency of daily, and 74% of respondents reported using instant messaging with a median frequency of several times weekly. As evidenced by these findings, the main motivations for students' use of communication technologies are those related to connecting socially and maintaining relationships with others.

Motivations for use of communication technologies. It is unlikely that use of the internet or communication technologies affects all individuals similarly (Weiser,

2001). For example, using communication technologies for coping purposes may be related to different outcomes as compared to using technology for social or interactive purposes. A discussion of individual differences in technology use would likely provide a more nuanced understanding of how communication technologies influence the psychosocial well-being and social experiences of college students. As Weiser suggests, it is necessary to consider both individual differences related to use and the interaction of the individual and their environment.

Weiser (2001) suggested that an exploration of the social and psychological consequences of internet or technology use requires first asking about the functions or motivations underlying its use. After isolating a distinct set of motivations, Weiser tested a theoretically-based framework to assess how the identified functions mediated the relationship between internet use and related psychosocial effects. His goal was to produce a framework for understanding the influence of the internet on psychological well-being and social integration variables. In his model, social integration included community and social involvement as one indicator and social support as another indicator. Psychological well-being included loneliness, depression, and life satisfaction as indicators. Based on his findings, the functions were labeled Socio-Affective Regulation (SAR) and Goods-and-Information Acquisition (GIA), with SAR referring to a social or affiliative orientation toward use and GIA referring to a practical orientation toward use. Weiser reported that internet use driven by SAR negatively influenced psychosocial well-being by first reducing social integration or connectedness, yet internet use driven by GIA positively influenced psychosocial well-being by first increasing social integration or connectedness. The negative influence of SAR on social integration

was expected given the associated between internet use and decreased time spent with others in social relationships (Kraut et al., 1998; Nie & Erbring, 2000). Many studies have pointed to a diverse array of motivations for using the internet and other communication technologies, though the Socio-Affective and Goods-and-Information categories adequately encompass the major motivations referenced in the following review of research findings.

The influence of technology use. Many studies have focused specifically on outcomes associated with internet use as opposed to the influence of a broad range of technologies evident in students' social worlds. For example, Kraut and colleagues (1998) found that internet use among new users was associated with higher levels of depression and social anxiety. A later follow-up study (Kraut et al., 2002) found that internet use was related to more positive outcomes, including better communication, greater well-being and increased social involvement. These results point to benefits of internet use, though the findings were moderated by the personality and perceived social support of participants. In a study on college students, Gatz and Hirt (2000) explored the use of email and its relationship to academic and social integration. Results from a small sample of 23 students revealed that time spent using email diminished the amount of time devoted to other behaviors and activities more conducive to integrating socially. As an example, students used email rather than face-to-face conversation to consult with friends about conflicts or concerns. Later, Anderson (2001) found that at least 10% of respondents reported that internet use interfered with their grades, their health, or their social lives. Shaw and Gant (2002) found that students who engaged in online chat reported lower scores on measures of depression and loneliness but scored higher on

instruments of social support and self-esteem.

In a study of adolescent internet use, Gross and colleagues (2002) did not find evidence of a relationship between time spent using various internet functions (e.g., email, instant messaging) and indicators of psychosocial well-being, specifically loneliness and social anxiety. In this study, time using various internet functions did not decrease time spent in face-to-face social interactions, though specific motivations for use (e.g., communicating with strangers) did correlate with loneliness. Email and instant messaging were the most frequently used internet functions, and participants who used instant messaging to communicate with strangers did report higher on a measure of loneliness. Later, Nalwa and Anand (2003) reported increased feelings of loneliness among excessive internet users as compared to those who did not use the internet excessively. Morgan and Cotten (2003) found that increased use of instant messaging was associated with a decrease in depressive symptoms, whereas increased depressive symptoms were associated with online shopping, research, and computer or video games.

Ward and Tracey (2004) found support for the hypothesis that those involved in online relationships would report higher on self-report measures of shyness and indicate greater difficulty in face-to-face relationships. More recent studies have also yielded conflicting findings. Valkenburg and Peter (2007) found that social anxiety was negatively associated with computer-mediated communication. A study by Gordon and colleagues (2007) sought to provide support for the suggested relationship between internet use and psychosocial well-being among college students. Specifically, the authors hypothesized that using the internet for communication with social contacts would relate positively to psychosocial well-being, while using the internet for coping

with psychological stressors would relate negatively to well-being. The investigation explored what students were doing online and an exploratory factor analysis revealed that the internet was used primarily for meeting people, seeking information, procrastination or distraction, coping, and email. In this study, students who went online for coping purposes reported higher scores on depression and social anxiety, suggesting the internet as an easier method for connecting socially for individuals in distress.

Lloyd and colleagues (2007) explored the use of multiple technologies on students' psychosocial development, specifically their peer relationships, educational involvement and salubrious lifestyle. Results demonstrated that technology used for entertainment purposes was associated with a less healthy and more sedentary lifestyle, and technology used for social connection and interpersonal relationships (e.g., Facebook) had a negative effect on students' peer relationships. The authors suggested that although certain technologies allow students to connect more frequently, the nature of the medium may not be conducive to forming more authentic relationships. If students use technology as a means of avoiding direct interaction with peers, psychosocial development and well-being may be adversely affected.

Technology use among students has contributed to and will continue to transform the social fabric of the college campus, and the impact of students' social worlds on their well-being and sense of connectedness to the campus community is worthy of continuous and sustained inquiry. Indicators of students' psychosocial well-being and sense of community will be discussed next.

Psychosocial Variables Related to Students' Well-Being

Numerous terms have been introduced in the literature to capture and more

accurately explain the challenges faced by individuals in forming and maintaining social relationships, some of which include loneliness, depression, shyness, social anxiety, perceived social skill, social self-confidence, and social self-efficacy. These constructs relate to the social self and align with the theories of student and adult development highlighted in the conceptual framework presented in the previous chapter. Specifically, the vectors developing competence, managing emotions, moving through autonomy toward interdependence, and developing mature interpersonal relationships (Chickering & Reisser, 1993) likely incorporate diverse experiences and emotions associated with the development and maintenance of social relationships. These constructs, in part, work together to form either a strengthened or diminished sense of psychosocial well-being, and each likely contributes in positive or negative ways to feelings of belongingness, social support and connectedness, social adaptation or adjustment, and integration into the social life of the campus. Loneliness will be discussed first, followed by a review of the other indicators of psychosocial well-being included in this study.

Loneliness. The transition to college likely contributes to feelings of loneliness among college students, and if a strong social network of meaningful connections is not formed during this transition, feelings of loneliness may persist for some individuals. The study of loneliness has yielded numerous definitions and interpretations. Most notably, Robert Weiss (1973/1985) described loneliness as follows:

Loneliness appears always to be a response to the absence of some particular type of relationship or, more accurately, a response to the absence of some relational provision. In many instances it is a response to the absence of the provisions of a close, indeed intimate, attachment. It may also be a response to the absence of the

provisions of meaningful friendships, collegial relationships, or other linkages to a coherent community. (p. 17)

Loneliness has been defined as a discrepancy between desired and actual social relationships (Peplau & Perlman, 1982), though Cacioppo and Patrick (2008) suggested that loneliness does not necessarily equate to a social skill deficit but rather to the subjective feeling of being lonely. This said, Segrin and Flora (2000) found that lonely individuals rated their social skills lower than the social skills of their peers.

The experience of loneliness extends beyond a lack of social skills or a lack of social contacts. Loneliness is more likely experienced when belongingness needs are not adequately met and when there exists a lack of frequent and intimate social connections (Baumeister & Leary, 1995; Cacioppo & Patrick, 2008). Further, loneliness can be considered situational or dispositional and does not necessarily indicate deficient social self-confidence (Caplan, 2007). Also, it cannot be said to have a causal relationship with level of social contact or social activity (Morahan-Martin & Schumacher, 2003). Thus, college students may experience loneliness even with a large network of social contacts and frequent interaction with those individuals. Communication technologies foster frequent contact and connection with individuals who have or wish to have an abundance of contacts within their social networks, potentially resulting in a perception of being connected socially without necessarily feeling part of a more intimate and supportive set of social relationships.

The experience of loneliness can affect students and their college experience in negative ways. Loneliness has been shown to contribute negatively to the decision to persist or withdraw among college student populations (Cutrona, 1982; Russell, Peplau,

& Cutrona, 1980; Rottenberg & Morrison, 1993). Hawken, Duran and Kelly (1991) investigated the impact of interpersonal communication variables on both social and academic adjustment to college, citing loneliness as a possible reason for students' departure from university life. Their research revealed significant relationships between self-reported communication competence, loneliness, academic success, and persistence. More recently, Nipcon and colleagues (2006-2007) found that peer social support was negatively correlated with loneliness and positively correlated with academic persistence for both men and women. Students were more likely to persist if they experienced lower levels of loneliness and had strong social support from friends.

Other factors that may contribute to loneliness in college students are the social life of the campus, the quality of social support networks, and students' confidence in their own ability to engage socially. Zakahi and Duran (1985) found that the social experience on campus and students' dyadic communication apprehension were two factors predicting loneliness among college students. Vaux (1988) discovered that the perceived quality of students' support networks was directly related to loneliness for both men and women, with loneliness defined as a lack of satisfying interpersonal relationships. Later, a study by Christensen and Kashy (1998) revealed that lonely people were more likely to view themselves and their social competence negatively and were more likely to believe that others also viewed them negatively. A more recent review of empirical findings (see Jackson, Soderlund, & Weiss, 2000) revealed that less lonely individuals tended to be more satisfied with and have membership in highly interconnected social networks, experience greater closeness and intimacy in relationships, and perceive the availability of social support from their interpersonal

contacts. In total, these findings support the suggested importance of social integration to students' overall college experience, outcomes related to college attendance, and to students' psychosocial well-being.

Several studies have reported significant positive associations between loneliness and negative outcomes related to technology use (Caplan, 2002; Morahan-Martin & Schumacher, 2003; Amichai-Hamburger & Ben-Artzi, 2003). Some of these include social inhibition, social anxiety, self-consciousness, sensitivity to rejection, deficient social skills, difficulty making friends, initiating social activity and participating in groups, lower likelihood for intimacy and self-disclosure, low self-esteem, and depression (see review in Morahan-Martin & Schumacher, 2003). Specifically, Morahan-Martin and Schumacher (2003) surveyed 277 college students to compare the internet use of lonely and non-lonely individuals and how internet use affected social interaction. Lonely students reported greater internet use and email use than non-lonely students, and lonely users were more likely than non-lonely users to report using the internet for meeting people, emotional support, and talking to others who share similar interests. Lonely students were also more likely to prefer communicating online than in face-to-face interactions. Lonely participants reported that they had gone online when they felt depressed, anxious, or isolated as a means of coping. Internet behavior for the lonely students was causing disruptions in their lives due to feelings of guilt, spending too much time online, losing sleep, missing social engagements, and missing work or school. Conversely, a study by Gordon and colleagues (2007) found no association between loneliness and motivations for internet use.

One perspective on the connection between loneliness and technology use is the

hypothesis that lonely individuals are drawn to the internet due to features of mediated social interactions not available in face-to-face contexts (Morahan-Martin & Schumacher, 2000, 2003). McKenna and colleagues (2002) suggested that lonely individuals are “somewhat more likely to feel that they can better express their real selves with others on the internet than they can with those they know offline” (p. 28), a sentiment that is consistent with a growing body of literature demonstrating unique differences between face-to-face interactions and technologically-mediated forms of communication that may appeal to those with deficient social skills or other interpersonal challenges (Caplan, 2003, 2005; Walther & Parks, 2002). Nalwa and Anand (2003) reported increased feelings of loneliness among excessive internet users as compared to those who did not use the internet excessively. In one study, Caplan (2003) found that participants’ self-reported level of preference for online social interaction mediated the relationship between loneliness and negative outcomes associated with use of the internet, a finding that supports the notion that lonely individuals are drawn to mediated social interactions because of benefits provided by this medium over those afforded in face-to-face contexts. Though this may be true in some circumstances, a recent study by Caplan (2007) found that social anxiety was a stronger predictor of the preference for online social interaction than was loneliness. This finding seems intuitive given that loneliness is not necessarily an indicator of deficient social skill.

Research on loneliness has yielded important insight into better understanding the social world of college students at institutions of higher education. Communication technologies as a medium for interpersonal connection add another lens through which to consider students’ social interactions and the potential influence of these mediated forms

of communication on their social relationships and students' sense of connectedness on campus. At present, the associations between loneliness and technology use remain tenuous and worthy of further investigation. In the next section, depression will be discussed given its relevance to the emerging mental health crisis on college campuses (Kadison & DiGeronimo, 2005).

Depression. Depression is another indicator of psychosocial well-being that can have profound implications for students' success integrating academically and socially into the campus environment. As referenced in the preceding chapter, Lewinsohn and colleagues (1998) asserted that the identity development process associated with the transition from adolescence to young adulthood may lead to lowered self-esteem, withdrawal from social support, and symptoms related to depression. In fact, there has been a significant increase in the number of students entering college with mental health concerns (Kadison & DiGeronimo, 2005), including depression and other stressors. A study by Furr, Westefeld, McConnell, and Jenkins (2001) reported that over 50% of their total college sample ($n = 1,455$) identified themselves as depressed since entering college and cited loneliness and relationship problems as reasons for their condition, among other concerns. Depression is an aspect of psychological health that can have serious implications for students' social relationships and academic success, and knowledge of the factors that promote or prevent the onset of depression is crucial to supporting college students (Dixon & Robinson Kurpius, 2008).

One perspective suggests that depression may emerge as a result of failure to integrate socially into the environment in which one is most proximally situated (Baumeister & Leary, 1995). Without intimate social relationships that feed the need to

belong, individuals may develop depressive symptoms along with other social, emotional or psychological problems. Chickering and Reisser (1993) claimed that students are more prone to experience depression if they are overly dependent or introverted, or if they worry excessively or obsess about perfection. Hoyle and Crawford (1994) found a significant negative correlation between students' scores on measures of depression and anxiety and their sense of belonging to their university. These findings were supported by the work of Hagerty and Williams (1999) who found that students' sense of belonging was a strong negative predictor of depression. Similarly, depressed individuals reported experiencing less satisfaction and less intimacy in their social interactions than did non-depressed individuals (Nezlek, Imbrie, & Shean, 1994), a circumstance that could lead to a decreased sense of belonging on campus. This perceived lack of intimacy in interpersonal relations could be attributed to a lack of social competence. As such, Gable and Shean (2000) cited numerous studies that addressed the relationship between depression and social competence. Findings from their study revealed that depressed individuals rated themselves and their conversational partners as more deficient in social skills and less competent in social interactions than did non-depressed persons, and non-depressed persons rated themselves higher in conversational skill than depressed individuals. This lack of perceived competence likely contributes to students' poorer self-confidence, especially related to social situations. In support of this, Hermann and Betz (2006) found a direct negative correlation between self-esteem and depressive symptoms. Later, Dixon and Robinson Kurpius (2008) found that biological sex, mattering, and self-esteem together were significant predictors of depression.

The increase in depression and other mental health concerns among college

students might lead to concerns about how these individuals cope with psychological or emotional stress. Dyson and Renk (2006) investigated various characteristics of college freshmen in their transition to university life, including gender roles, levels of stress related to the first year of college, coping strategies, and depressive symptoms experienced as a result of adjustment. Findings from their study revealed that greater levels of stress were related to higher levels of depression-related symptoms, a finding later confirmed by Dixon and Robinson Kurpius (2008). Dyson and Renk also found that avoidant coping strategies were a significant predictor of depression. Interestingly, Gordon and colleagues (2007) found a positive correlation between using the internet for coping purposes and levels of depression and social anxiety, a finding that suggests that depressed individuals may be more likely to turn to the internet or other interactive technologies to cope with personal challenges due to either a lack of intimate social relationships or a lack of confidence to seek out and initiate supportive interactions. The weakened relational capacity of depressed persons has been cited as a function of negative self-perceptions rather than an actual deficit in social skill or social competence (Gotlib & Meltzer, 1987; Segrin, 1990), though social skills have also been found to moderate the relationship between stressful life events and the development of depressive symptoms (Segrin & Flora, 2000).

In a recent study, Grant and colleagues (2007) sought to examine the interpersonal features of social anxiety that are likely to predict depressive symptoms over time. The researchers hypothesized that the three interpersonal styles associated with social anxiety – *interpersonal dependency*, *avoidance of emotional expression*, and *lack of assertive communication* – would predict changes in depressive symptoms.

Findings revealed that individuals who avoided expressing emotion due to social anxiety were more likely to experience depression. This finding is significant as it emphasizes the importance of social skill for expressing emotions related to psychological or social distress. Without this social skill or related social confidence, a student with social anxiety may turn inward or might turn to the internet or another mediated form of communication for coping purposes. Social anxiety will be discussed next.

Shyness. The term shyness is often used to define individuals who exhibit anti-social tendencies or behaviors in social interactions. Shyness can be a particular source of stress for college students as it can serve to deter the formation of quality social relationships. Crozier (2001) claims that shyness inherently occurs as part of social interactions and is manifest in behaviors that lead to consequences for social relationships. It has also been found to negatively influence career development (Phillips & Bruch, 1988). Numerous definitions for shyness exist in the literature. Cheek and Briggs (1990) suggested that shyness is the opposite of social self-confidence and defined the concept as “the tendency to feel tense, worried, or awkward during social interactions, especially with unfamiliar people” (p. 321). Shyness can also be defined as “an individual’s belief that he or she is unable to make an effective contribution” (Crozier, 2001, p. 4). Shy individuals may seem anti-social in that they may act in ways that diminish their capacity for connecting socially (Leary, 1983); however, shy individuals do maintain a strong interest in forming meaningful social relationships (Baumeister & Leary, 1995). A number of studies conducted on shyness and personality correlates (see Crozier, 2001) led to the conclusion that shyness is not synonymous with introversion in that it contains elements of both sociability and self-consciousness or anxiety. Leary

(1983) has suggested that the term shyness should be used to incorporate both social anxiety and behavioral inhibition in social encounters.

Strong positive correlations have been found between shyness and loneliness (Jones, Rose, & Russell, 1990; Schmidt & Fox, 1995). Dill and Anderson (1999) suggested that shyness serves as an antecedent of loneliness due to failed attempts at interacting effectively and forming an adequate number of quality social relationships. Shy individuals tend to interact in a manner that serves to protect against interpersonal rejection and buffer feelings of social inadequacy or fears about self worth (Arkin, Lake, & Baumgardner, 1986). These behaviors have been shown to correlate with measures of shyness and social support (Jackson, Towson, & Narduzzi, 1997), as has loneliness (Leary, Koch, & Hechenbleikner, 2001). Jackson, Towson and Narduzzi (1997) explored the extent to which interpersonal competence, concern about approval from others, and perfectionism predicted shyness in a college sample. The researchers hypothesized that high levels of self-reported shyness would be predicted by perceptions of deficient social skill, high expectations of rejection, and high levels of perfectionism. Results supported the hypothesis that expectations of rejection and perceived social competence are predictors of shyness. Perfectionist standards were not related to shyness in this study. A later study by Jackson and colleagues (2002) suggested that the relationship between shyness and loneliness could be partially explained by protective self-presentational styles and reduced social support from close social contacts. In this study, highly shy individuals viewed themselves as deficient in interpersonal competence and appeared to be concerned with negative perceptions or rejection from others. Lastly, reduced social support, sensitivity to interpersonal rejection, and weakened or deficient social skill

contributed to feelings of loneliness (Jackson, Fritch, Nagasaka, & Gunderson, 2002).

The relationship of shyness to protective methods of self-presentation could lead to speculation about whether there is a tendency for shy individuals to use the internet and mediated forms of communication for pursuing or maintaining social contact with others. Given the anonymity and other benefits afforded to mediated forms of communication, it would make intuitive sense that shy individuals might be drawn to online or mediated interactions rather than those occurring in face-to-face social situations. Results related to the association between shyness and technology are inconsistent and point to the need for further research to strengthen the understanding of how shyness relates to or predicts technologically-mediated communication. In their study on shyness and social anxiety as predictors of internet use, Scealy, Phillips, and Stevenson (2002) found that shyness did not predict lower or higher levels of internet use, specifically the communicative aspects of the internet (e.g., instant messaging). Despite this finding, the authors suggested that shy individuals likely find it easier to communicate via the internet and other technological tools given the absence of immediacy that can sometimes add pressure for those who struggle in social interactions.

Cheek and Buss (1981) explored the relationship between shyness and sociability, with shyness described as tension and inhibition in the company of others and sociability described as a preference for being with others rather than alone. They found that shyness and sociability contributed in unique ways to an individual's behavior in social exchanges. Four categorizations along these dimensions were proposed and included: (1) *unshy-sociable*; (2) *unshy-unsociable*; (3) *shy-sociable*; and (4) *shy-unsociable*. Sheeks and Birchmeier (2007) explored these four categorizations as related to internet use and

computer-mediated communication. Data suggested that those who scored higher both on measures of shyness and sociability also reported increased closeness and greater satisfaction with online relationships than those who reported lower levels of shyness and sociability. Later, Ward and Tracey (2004) found that shyness was not significantly related to involvement in online social relationships, however correlations of shyness with aspects of online relationship involvement were stronger than those with involvement in face-to-face relationships. Interestingly, though not surprisingly, shyness was associated with greater difficulties in face-to-face social interactions than in those occurring online. Further, the associations between shyness and three measures of online relationship involvement (e.g., online social support) were statistically significant but negative. Thus, shyness was still related to inhibition in relationships formed online though to a lesser extent than in non-mediated social interactions. Lastly, higher scores on duration and frequency of online relationship involvement were significant predictors of online social support, satisfaction with online relationships, and the number of online friendships formed and maintained.

Social anxiety. Social anxiety is another dimension of psychosocial well-being that has been linked to social relationships and the use of communication technologies. Social anxiety has been found to correlate highly with shyness and associate positively with depression and loneliness (Leary & Kowalski, 2003). Leary and Kowalski (2003) proposed that these associations are not surprising given that individuals who are concerned about social rejection are more prone to experiencing social anxiety when their interpersonal goals are not actualized in practice. Moreover, when the need to belong or to be included are unmet, loneliness and depression are more likely to emerge as

psychosocial stressors. Further, individuals who report high levels of social anxiety tend to engage in activities by themselves and tend to exhibit inhibited and reticent communication behaviors. In support of this, Leary and Kowalski found that social anxiety correlated negatively with measures of extraversion and sociability.

Riggio (1989) explained that “persons whose self-presentational skills are well developed are generally adept, tactful, and self-confident in social situations and can fit comfortably in just about any type of social situation” (p. 3). When individuals experience dissonance between the social skills required of a situation and their capacity to actualize the desired impression, social anxiety is likely experienced (Leary, 1983; Leary & Kowalski, 1995; Schlenker & Leary, 1982). Thus, social anxiety stems from a discrepancy between the motivation to make a desirable impression on others and the fear that one will not be able to do so. Social anxiety can be defined as “anxiety resulting from the prospect or presence of interpersonal evaluation in real or imagined social settings” (Schlenker & Leary, 1982, p. 642). Additionally, social anxiety potentially results from social exclusion (Baumeister & Tice, 1990) or separation from important others (Baumeister & Leary, 1995). The social exclusion theory of anxiety was supported by Barden, Garber, Leiman, Ford, and Masters (1985). Their research revealed that social anxiety results from social exclusion while social inclusion eradicates such feelings. This evidence points to the importance of social connectedness and belonging to social well-being and other indicators of psychological health.

How socially anxious individuals interact in their environment is of interest to researchers, and it is of importance to educators interested in the social lives of students. Socially anxious individuals have been found to engage in behaviors that will allow them

to avoid rejection or negative evaluation (Leary & Kowalski, 1995; Schlenker & Leary, 1982), which may result in students avoiding social situations that they perceive as a risk. Davila and Beck (2002) asserted that socially anxious individuals are likely to exhibit dysfunctional social behaviors (e.g., avoidance) that may heighten a subjective sense of safety in social interactions. Their research revealed that interpersonal styles associated with social anxiety correlated with the experience of stress and dysfunction in relationships. Interpersonal theories posit that individuals who experience social anxiety display ineffective and dysfunctional social behaviors to maintain intimacy in their social relationships (Alden, 2001; Schlenker & Leary, 1982). In a recent study, Grant and colleagues (2007) found that social anxiety was associated with interpersonal dependency, avoidance of emotional expression, and lack of assertive communication, behaviors that likely contribute to challenges in social relationships.

A growing corpus of literature on social anxiety has focused on the mediating influence of cultural differences in predicting social anxiety due in part to the diverse environments in which individuals are raised and taught about appropriate social practices relevant to their unique cultural contexts. Hong and Woody (2007) examined the relationship between social anxiety and self-perceptions of East Asian students and found that views of the self typically associated with Western culture (e.g., independent self-construal) mediated the ethnic differences on self-reported social anxiety. Lau and colleagues (2009) also found evidence of significant ethnic group differences in self-reported symptoms of social anxiety. Specifically, an elevated level of social anxiety was found among Asian American college students as opposed to European American college students. The effect size in this study was low compared to the study by Hong and

Woody which reported medium and large effect sizes in their comparisons of Asian American and European American college students. Lau and colleagues asserted that the observed differences in social anxiety symptoms could be attributed to differences in interpersonal attunement and social competencies. Specifically, these differences were related to concerns over loss of face, which includes sensitivity to negative social interactions and employment of strategies to avoid negative evaluation from others. More so than European American participants, Asian American students reported more shame socialization experiences wherein parents or caregivers induced guilt or used the withdrawal of love to aid in motivating compliance with demands. Although not a direct focus of this dissertation, cultural differences in social anxiety and other variables related to psychosocial well-being should be assessed prior to conclusive statements being made about the influence of technology use on students.

Despite cultural influences, individuals who experience social anxiety or other psychosocial stressors may turn to alternative forms of communication to connect socially and establish relationships with peers or to locate sources of social support. As referenced earlier in this chapter, Kraut and colleagues (1998) discovered that internet use among new users was associated with higher levels of depression and social anxiety, where Gross and colleagues (2002) found no evidence of a relationship between time spent using various internet functions and indicators of loneliness and social anxiety. Ward and Tracey (2004) found that socially anxious individuals reported greater difficulty on measures of relational involvement in face-to-face versus computer-mediated circumstances. These included measures of social support, relationship satisfaction, quantity of friends, and social or interpersonal competence. Valkenburg and

Peter (2007) reported that social anxiety was negatively associated with computer-mediated communication, though the internet has also been shown to benefit those who experience social anxiety by providing a venue to share their true selves (McKenna et al., 2002). Later, Caplan (2007) proposed social anxiety as a stronger predictor of the preference for online social interaction than loneliness, which had previously been found to predict negative outcomes related to internet use (Caplan, 2002; Morahan-Martin & Schumacher, 2000, 2003; Amichai-Hamburger & Ben-Artzi, 2003). It seems that those with social anxiety would be more likely than those who are not socially anxious to pursue online interactions over face-to-face interactions due to the benefits associated with this more self-protective medium. Similarly, those who experience shyness would also seem to benefit from the internet or other mediated forms of communication. Shyness will be discussed next, given the likelihood that shy individuals may struggle in the formation of social relationships.

Perceived social skill. Success in both personal and professional endeavors requires the possession of social skills. Students who possess social skills are more likely to exhibit social behaviors, increasing the likelihood of forming and maintaining friendships and social support networks with peers (Hawley, Little, & Pasupathi, 2002). The terms social competence, social skill, and social self-efficacy are often used interchangeably to describe an individual's capacity to engage in social interactions for the purpose of initiating and fostering social relationships (e.g., Nezlek, 2001; Riggio, Throckmorton, & DePaola, 1990). That said, social skill and social self-efficacy are distinct constructs in that social skill refers to actual social behavior or perceived social competence, whereas social self-efficacy is referred to as the belief that one can succeed

in a specific skill given a specified context. Social skill is defined as “the ability to interact with other people in a way that is both appropriate and effective” (Segrin & Givertz, 2003, p. 136). Further, social skill, or social competence, is complex and can be partitioned into a comprehensive evaluative framework that incorporates motivation, knowledge, skills, and context (Spitzberg & Cupach, 1989). According to Chickering and Reisser (1993), social or interpersonal competence includes “listening, asking questions, self-disclosing, giving feedback, and participating in dialogues that bring insight and enjoyment [and] involves broader abilities to work smoothly with a group, to facilitate others’ communication, to add to the overall direction of a conversation... and to be sensitive and empathic with others” (p. 72). Social skill is critical to the formation of social relationships, and a lack of competence in appropriate and effective social behaviors can lead to psychological distress and a lack of connectedness to others.

Several studies point to the importance of social skill or communication competence to students’ academic and social experiences in college. Rubin, Graham, and Mignerney (1990) found that students who reported more communication competence and less communication apprehension had greater levels of co-curricular activity and higher grade point averages. Almeida (2004) later found that college students conceived of communication competence as quality of performance, as both physical and intellectual, and as a form of sociality construed as interpersonal bondedness or alienation. Students’ self-consciousness was explicit in their discourse on communication competence. Results from this study revealed that students who saw communication competence as sociality desired tools that would enable them to talk to their peers, speak up in a group, start conversation with a stranger, and sustain social

interactions once initiated. As evidenced in these findings, social or interpersonal proficiency, if developed and refined, can strengthen students' confidence in initiating new relationships (Chickering & Reisser, 1993) and can assist students' social integration into campus life. As will be discussed next, social skills can also serve to buffer against psychosocial stressors (Segrin & Flora, 2000).

Scholars have sought to explain the relationship between social skill and psychological well-being through the social-skills-deficit vulnerability hypothesis, which suggests that psychosocial well-being is hindered by a lack of social competence (Segrin, 1990; Segrin & Flora, 2000). The perception of having social skill or social competence has been correlated with well-being and psychological health (Cohen & Wills, 1985; Riggio et al., 1990). Researchers suggest that those who experience psychological or social problems perceive their social competence more negatively than those without similar issues (Segrin, 2000; Segrin & Flora, 2000). Findings from Gable and Shean (2000) revealed that depressed individuals rated themselves and their conversation partners as less socially competent than did their non-depressed peers. Segrin and Flora (2000) sought to strengthen tenuous arguments in the literature that make causal associations between social skills and loneliness, depression and social anxiety. Their longitudinal study of high school seniors transitioning to college examined the direct relationship between social skills and psychosocial outcomes as mediated by stressful life events. Results of this study illustrated how stressful life events are associated with poor social adjustment in college for those with weak or deficient social skills. Further, results indicated that lower reported social skills were associated with an increase in depressive symptoms, loneliness, and social anxiety. Interestingly, strong social skills appeared to

play a protective role, reducing the strength of the relationship between stressful events and subsequent depression in predicting better social adjustment. Thus, social skills which serve to promote social behavior and contribute to more successful social relationships are likely to lead to improved psychological adjustment and mental health (Williams & Galliher, 2006).

Riggio (1986) presented a framework comprised of six subsets of social skills that aim to capture the ability to send, receive, control and decode both verbal and nonverbal messages. These subsets include emotional expressivity, emotional sensitivity, and emotional control along with social expressivity, social sensitivity, and social control. Emotional expressivity is the ability to communicate emotions, attitudes and status, where emotional sensitivity is more closely aligned with decoding cues related to a conversational partner's emotions, beliefs or attitudes. Social expressivity refers to verbal expression, fluency and the ability to initiate and maintain conversations, where social sensitivity is attuned to decoding verbal messages and possessing knowledge of social rules and norms that guide social interaction. Emotional control is an individual's capacity to regulate nonverbal expressions of emotion, where social control involves the ability to role-play, control verbal expressions, and present oneself appropriately based on context and on the nature of the relationship (e.g., professional). The combination of social expressivity and social control has been referred to as "savoir-faire," defined as the ability to know how to act in a variety of social situations (Eaton, Funder, & Riggio, 2007). If having basic social skills is related to effectiveness in social situations, we might expect socially skilled individuals to be more successful in social interactions than those with a social skills deficit (Riggio, 1986). Thus, the social adjustment or

integration of students into campus life is likely to be less stressful for students who possess the skills required for interacting socially.

As demonstrated in a previous discussion of technologically-mediated communication, social or interpersonal uses of the internet seem to appeal most to those who report negative outcomes related to internet use (Caplan, 2002, 2003; McKenna & Bargh, 2000; Morahan-Martin & Schumacher, 2000, 2003). Caplan (2005) proposed a model of problematic internet use and integrated research and perspectives on social skill and self-presentation, predicting that individuals who lack social or self-presentational skills will be more likely to prefer online social interaction versus face-to-face communication. The model also asserted that individuals with a preference for online social interaction would have a greater tendency to develop problematic patterns of usage, which would subsequently lead to negative psychological and social outcomes. According to Caplan (2003), preference for online social interaction (POSI) is “a cognitive individual-difference construct characterized by beliefs that one is safer, more efficacious, more confident, and more comfortable with online interpersonal interactions and relationships than with traditional face-to-face social activities” (p. 629). In a sample of college students, Caplan (2003) found that POSI mediated the relationship between psychosocial problems (e.g., loneliness) and negative outcomes associated with problematic internet use. The model proposed by Caplan (2005) predicted that individuals who perceive a lack in self-presentational skill would be drawn to online interactions over face-to-face social encounters. Further, the model predicted that POSI would lead to problematic use of the internet that would subsequently lead to negative outcomes.

Social self-confidence and social self-efficacy. Social self-efficacy is a construct similar to social self-confidence, yet the two are distinct in subtle ways. Self-efficacy has been a popular focus of inquiry for decades, and Bandura (1977) defined self-efficacy as whether a person feels able to utilize skills and produce desired effects, a construct influencing social self-confidence and perceptions related to one's own communication competence in social circumstances. Self-efficacy is concerned less with actual skill and more with perceptions of one's own capacity to exhibit desired behaviors in a given context (Bandura, 1986). The theoretical model of self-efficacy proposed by Bandura (1977) suggested that efficacy expectations would influence the behavioral outcomes of approach versus avoidance, persistence, and quality of performance. Further, Bandura asserted that self-efficacy is a malleable construct that would likely be enhanced by supplemental reinforcements, including successful performance of skills in past experiences, vicarious learning by modeling the actions of others, level of positive emotional arousal, and encouragement or persuasion from significant others. In recent years, Bandura (2001) has focused attention on the importance of self-efficacy to psychological adjustment, particularly self-efficacy in social domains.

The perception one has of themselves is considered a central determinant of behavior and psychological well-being (Shrauger & Schohn, 1995). A distinction has been made between self-evaluations related to perceived competence, skill, or ability and those related to one's perceived worth. Shrauger and Schohn (1995) suggested that self-confidence incorporates cognitive, affective, and behavioral components. Confident individuals should be able to "see themselves as meeting their performance standards, doing well relative to others, and continuing to perform effectively" (p. 258). Self-

confidence is also assumed to be marked by positive feelings and a lack of apprehension or anxiety and is thought to be evidenced by an individual's readiness to pursue novel situations or activities (Shrauger & Schohn, 1995). Self-confidence refers to "people's sense of their competence and skill, their perceived capability to deal effectively with various situations" (p. 256), and the construct can be conceptualized as an indicator of perceived skill or ability overall or as related to specific skills. Thus, social self-confidence relates specifically to one's perceived competence in social situations. Researchers have found that an individuals' confidence in their social skills affects indicators of adjustment (e.g., Fan & Mak, 1998). Similarly, college students who possess higher levels of self-efficacy for behaviors related to college success (e.g., forming social networks) are more likely to adjust well and benefit during their university experience (DeWitz, Woolsey, & Walsh, 2009). This points to the importance of assisting students in developing self-efficacy and self-confidence in behaviors that will help them adjust to campus life, including both academic and social skills.

Smith and Betz (2000) extended the work of Bandura (1977) through the development of a psychological construct referred to as *social self-efficacy*, defined as "an individual's confidence level in her/his ability to engage in the social interactional tasks necessary to initiate and maintain interpersonal relationships" (p. 286). Smith and Betz discussed the importance of social skills and social competence for both relationship formation and maintenance and for education and career development. One aspect of students' success in college is their level of social self-efficacy in achieving desired communication outcomes throughout their college experience (e.g., meeting new people), and many students are likely to either approach new social contacts or avoid social

interactions if they lack the confidence or efficacy to engage within the college environment. Research on social self-efficacy has revealed that confidence in social settings correlates strongly with variables related to psychological adjustment, including shyness and depression (e.g., Ehrenberg, Cox, & Koopman, 1991; Smith & Betz, 2000, 2002). Further, it has been suggested that social self-efficacy influences both social adjustment and academic performance among college students (e.g., Smith & Betz, 2002; Hermann & Betz, 2004).

Other findings on social self-efficacy and social self-confidence in college student populations are worthy of discussion. Ferrari and Parker (1992) found a positive correlation between social self-efficacy and academic performance. Shrauger and Shohn (1995) later reported that students were more likely to engage in a task if their confidence in the task was higher. Students who scored higher on academic self-confidence were more likely to choose an intellectual task, where students who scored higher on social self-confidence were more likely to choose a task that involved interacting with new people. Patterson and O'Brien (1997) reported a significant positive correlation between social self-efficacy and students' sense of social control, social adjustment, and global self-esteem and suggested the importance of self-efficacy expectations to students' transition to and retention in college. Social self-efficacy expectations may also be related to both shyness and social anxiety (Smith & Betz, 2000). Further, Anderson and Betz (2001) indicated a negative relationship between depression and social self-confidence, suggesting that social self-efficacy and social self-confidence are important variables in predicting psychosocial well-being among college students.

This section has reviewed numerous indicators of college students' psychosocial

well-being. Next, variables related to students' sense of community in university life will be discussed, including mattering to others, perceived social support from friends, social connectedness, and social adaptation to college.

Sense of Community in University Life

Community is a complex term to define given its widespread use in a vast array of cultures, contexts, and organizations, and a full review or analysis of these terms is beyond the scope of this dissertation. According to Willson (2006), a "concise, all-embracing definition that would adequately cover all views of community is not possible [as] there are numerous understandings of both community and of the individuals that community encompasses" (p. 22). Despite the polysemic nature of the term, Willson defines *community* as ways of being together given the association between community and a valued sense of belonging and social connectedness. Living in community with others requires that one be able to move through autonomy toward interdependence with others and develop mature interpersonal relationships that are reciprocal in nature (Chickering & Reisser, 1993). Given the significance of identity development among emerging adults, a consideration of how sense of community influences social relationships and identity development is imperative.

A recent focus of student persistence research has been to determine influences on social integration (Jacobs & Archie, 2008), with the decision to persist positively influenced by a students' sense of community on campus (Berger, 1997; Jacobs & Archie, 2008). Cheng (2004) discussed the emergence of scholarly attention on defining a sense of community for college students and what educators can do to strengthen this sense of community on campus. The findings from his study revealed that students'

feelings of being cared about, valued, and accepted as part of the campus community directly influenced their perceived sense of belonging. Also, the strongest predictor of campus community was students caring for one another. Loneliness was found to be the strongest negative influence on students' sense of community, and campus social life was found to enhance students' sense of community. This said, students who struggle to connect to the social life of the campus will likely fail to experience a sense of community within the college environment. For the purposes of this research agenda, sense of community in university life was explored by assessing several indicators that might provide greater insight into the experience of community within the social worlds of college students. The variables analyzed in this inquiry include mattering versus marginality, perceived social support from friends, social connectedness, and social adaptation to college. These concepts are reviewed in the following sections.

Mattering to others. The concepts of mattering to others and marginality are of critical importance to students' experience of community within the college environment. Despite this, mattering as a concept is only beginning to emerge in research on mental health and well-being (Dixon & Robinson Kurpius, 2008), and the relationship between perceived mattering to others and other psychosocial variables has not been adequately investigated in scholarship on college students.

The importance of students' social relationships to the process of development and maturation was discussed in the preceding chapter. Social relationships provide confirmation of belonging among peers or other social contacts, and these interpersonal connections likely offer a sense of mattering to others or, conversely, of being marginalized from the community. Erikson (1968) posited that recognition from others is

an important component of interpersonal development in young adulthood. Josselson (1994) extended the psychoanalytic perspectives of Kohut (1977) and conceptualized mattering as a relational process contributing to the formation of identity. Later, mattering was defined by Rosenberg and McCollough (1981) as “the feeling that others depend on us, are interested in us, are concerned with our fate, or experience us as an ego-extension” (p. 165). Rosenberg and McCullough posited four components of the construct mattering – *attention*, *importance*, *ego extension*, and *dependence*. Attention refers to the sense that one is noticed, and importance is students’ belief that others care about them. Ego extension is the sense that others will be proud of them or will sympathize with them when they fail, and dependence refers to the feeling of being needed by others. Schlossberg (1989) asserted that individuals who feel marginalized worry about whether or not they matter to others, with mattering defined as “our belief, whether right or wrong, that we matter to someone else” (p. 9). Schlossberg extended the work of Rosenberg and McCollough by adding a fifth dimension referred to as *appreciation*, or the feeling that one’s actions or efforts are appreciated by others. Based on phenomenological meanings of mattering and social psychological interpretations of the self-concept, Marshall (2001) defined perceived mattering or mattering to others as “the psychological tendency to evaluate the self as significant to specific other people” (p. 474). Conversely, marginality can be defined as “a sense of not fitting in and can lead to self-consciousness, irritability, and depression” (Evans et al., 1998, p. 27).

The perception of mattering to others emerges from interpersonal processes and is likely influenced by unique cultural practices (Marshall, 2001). This perception fosters identity confirmation and a sense of social connection to others, emanating from the

nonverbal validation exchanged through face-to-face interpersonal interaction.

Individuals select and attend to the interpretation of certain communicative behaviors as confirmation of mattering to others (Marshall, 2001). A sense of mattering to others has been suggested as an important component of psychosocial well-being (Rosenberg & McCullough, 1981), informing individuals of their sense of belonging within a social context (Baumeister & Leary, 1995). Alford (1998) found that when effective social integration into the college community occurs for a student by way of their perception of belonging, there is a direct positive impact on student retention. This demonstrates one outcome associated with the perception that one matters to others. On the other hand, the perception of not mattering to others leads to feeling peripheral or insignificant to others and heightens feelings of marginality (Schlossberg, 1989). Marshall (2001) explored the relationship of perceived mattering to individuals' sense of relatedness to others.

Findings revealed that females perceived themselves as mattering more to others than males, and undergraduate students reported higher levels of mattering to others than students in high school. Also, mattering to friends was positively associated with relatedness to friends and significantly positively related to social self-esteem. As expected, results indicated a positive association between receiving positive forms of attention and perceptions of mattering in peer relationships. As discussed earlier in this chapter, Dixon and Robinson Kurpius (2008) found that mattering, self-esteem and biological sex significantly enhanced the ability of stress to account for levels of depression in a college sample.

Perceived social support from friends. Sociological research has demonstrated that expectations of reliable behavior and reciprocal responses among community

members are critical to the creation of social support networks and to feelings of responsibility toward a community (Walker, Wasserman, & Wellman, 1993). Baumeister and Leary (1995) claimed that social support research “is relevant to the belongingness hypothesis because social support is based on relationships and positive interactions with others, and any benefits of such support would constitute further confirmation of the belongingness hypothesis” (pp. 509-510). Thus, a sense of connectedness is reinforced by the experience of attachment and mutual belonging and is reinforced through the process of reciprocity and recognition (Willson, 2006). Individuals may lack a feeling of significant attachment to a community unless the attachment is reciprocated in some form. As students’ sense of self strengthens through connections with others, they simultaneously grow in their capacity for engaging in mutually satisfying and reciprocal social relationships (Chickering & Reisser, 1993), relationships that can serve to provide social support in times of distress. Students’ social relationships, when reciprocal in nature, form a social support network and can provide either emotional or instrumental support (Duck, 1998). Although social support can stem from numerous sources, this dissertation focus on perceived social support from friends as one indicator of a students’ sense of community.

The research on social support is vast and a full review of findings is beyond the scope of this review. However, several studies revealed findings that point to the importance of social support to students’ adjustment to college and subsequent college experience. According to La Guardia (2008), deficient social support “leaves the person ill-equipped for developmental challenges such as identity formation and interpersonal regulatory challenges posed in relationships with others” (p. 34). Social support likely

contributes to a sense of belongingness, connectedness, and social integration into the campus community. In a qualitative study by Clark (2005), data from participant interviews revealed that students encountered specific challenges and devised unique strategies in adjusting to college during their first year. These challenges included overcoming an obstacle, seizing an opportunity, adapting to change, and pursuing a goal. Some participants in this study reported that they had identified deficient preparation in a particular skill or area they felt was important to their success (e.g., interpersonal skills), and devised strategies to help them manage these obstacles. One method for overcoming challenges was to access social support through their social relationships which included a network of peers, family members, and administrative staff or faculty on campus. Clark found that low confidence interfered with the ability to strategize mechanisms for coping with adjustment challenges during the first year of college and possibly inhibited students from attempting strategies that would help them manage obstacles. Later, Friedlander, Reid, Shupak, and Cribbie (2007) found that increased social support predicted improved social and emotional adjustment. Thus, a strong support network will likely contribute to a student's ability to cope with psychosocial stressors and better connect socially within the campus environment.

A key component to the provision of social support is the manner in which support is conveyed to a conversational partner. *Supportive communication*, or “the verbal and nonverbal behavior produced with the intention of providing assistance to others perceived as needing that aid” (Burleson & MacGeorge, 2002, p. 374), has emerged as a key component in the link between social support and psychosocial well-being (Burleson, 2009). Further, the heightened interest in this construct is due, in part,

to an emergent awareness of how social support networks and supportive social interactions serve to buffer against stress and enhance physical and mental health (Burleson, 2009). Burleson (2009) described several aspects of supportive communication that contribute to conversational outcomes, including the verbal, nonverbal, paraverbal and vocal (or non-content) features of the message, all aspects of social skill that serve to provide immediate confirmation of support in face-to-face interactions.

As suggested earlier in this chapter, communication technologies may serve to undermine the quality of social relationships due to the absence of nonverbal and vocal subtleties that convey authentic meaning and emotion in face-to-face interpersonal interactions. Thus, communication mediated by technology may tend to be less nuanced and offer less confirmation of support or belonging and may lead to a sense of being disconnected from peers.

Social connectedness. Social connectedness as a construct has not been widely researched by student affairs or higher education researchers. However, researchers in other disciplines have focused increasing attention on its applicability to students' college experience. College students are at a critical period in which the experience of social connectedness is paramount to their development and well-being (Kohut, 1984; Lee & Robbins, 1995). Traditional-aged students attend college for academic preparation but also arrive searching for a sense of belonging, and failure to establish this may lead to withdrawal from their institution or from their education (Brazzell, 2001). While most students can be classified as feeling socially connected, approximately 6-15% of students have been found to be more socially disconnected (Lee, Draper, & Lee, 2001). Social

connectedness, or social belonging, likely contributes to students' overall campus experience, affecting educational outcomes and the decision to persist or withdraw, as suggested in the literature on the importance of social integration to educational outcomes associated with college attendance.

Belongingness, or social connectedness, is central to this discussion given its emergence and critical importance during adolescence and into the adult years (Lee & Robbins, 1995). Belongingness was suggested by Maslow (1968) as a core need that emerges as a priority after basic needs have been met but prior to the development of esteem and the process of self-actualization. The human need for belongingness was a concept initially advanced by Kohut (1984), who theorized that individuals “seek to confirm a subjective sense of belongingness or *being a part of* in order to avoid feelings of loneliness and alienation” (Lee & Robbins, 1995, p. 232). Lee and Robbins (1995) later proposed that belongingness consists of companionship, affiliation, and connectedness, three factors that likely contribute to students' social integration into the college environment.

Social connectedness can be defined as an enduring and ubiquitous experience of relational closeness that provides individuals with a lens through which to perceive their social world collectively (Lee & Robbins, 1995, 1998). This lens, or *relational schema*, can be conceived as a “cognitive structure representing regularities in patterns of interpersonal relatedness” (Baldwin, 1992, p. 461). It is not an indicator of the quality or quantity of relationships necessarily, but rather a pervasive and subjective sense of being with others that guides our emotions, perceptions, and behaviors in social situations (Lee & Robbins, 1998). This said, it is the quality rather than the quantity of students' social

relationships that is most important in determining students' sense of connectedness and social belonging (Grosset, 1991). Lee and Robbins (1998) suggested that the experience of connectedness to one's social world is an aggregate of past and present relationships, both near and distant, and with family and friends, peers and acquaintances, strangers, community, and society at large. It is stable in that it is generally not vulnerable to occasional changes in social relationships (Lee et al., 2001).

A sense of social connectedness is in some ways unique from the need to belong. The terms social connectedness and belongingness have been used interchangeably, though social connectedness or belongingness and the need to belong are conceptually distinct. Baumeister and Leary (1995) proposed the belongingness hypothesis, which they characterized as "a pervasive drive to form and maintain at least a minimum quantity of lasting, positive, and significant interpersonal relationships" (p. 497). Satisfying this need requires that individuals experience frequent positive interactions with at least a few significant others, and that these interactions occur in an enduring environment where meaningful regard for others is manifest. The notion that belongingness needs *can* be fulfilled is counter to self psychology theory (Kohut, 1984), which suggests that even those who experience high levels of connectedness or belonging will continue to pursue new social relationships (Lee & Robbins, 1998). Thus, it seems, the belongingness hypothesis reflects the desire to satiate a human need for social connectedness, whereas social connectedness refers more to a subjective sense of togetherness with the world.

Empirical research findings have strengthened our understanding of social connectedness. Social connectedness has been found to be a salient experience for both

college men and women, though women have been shown to report higher levels of social connectedness than men (Lee & Robbins, 2000; Williams & Galliher, 2006). Lee, Keough, and Sexton (2002) found that the negative direct effect of social connectedness on perceived psychological distress was partially mediated by a negative appraisal of the campus climate among college women, consistent with earlier research on college adjustment (e.g., Berger, 1997; Hurtado & Carter, 1997; Pretty, 1990). Lee and colleagues (2002) found that the negative direct effect of social connectedness on perceived psychological distress was not mediated by a negative appraisal of the campus climate for college men. Men rated the campus climate more negatively than women, and social connectedness was more strongly and negatively related to perceived psychological distress for men than for women. These findings are consistent with previous findings on gender differences in social connectedness and the types of relationships that signify interpersonal closeness (Lee and Robbins, 2000). More recently, Williams and Galliher (2006) explored the direct and indirect influence of social support, social competence, and social connectedness on depression and self-esteem. Specifically, they hypothesized that social connectedness would mediate the direct effects of social competence and social support in social relationships on depressive symptoms and self-esteem. Strong relationships emerged among measures of social support, social competence, social connectedness, and psychological health, supporting the link between social functioning and psychosocial well-being (e.g., Baumeister & Leary, 1995). Williams and Galliher found a largely indirect relationship between indicators of psychological health and social support and social competence mediated by students' sense of social connectedness.

Building on self-psychology theory, Lee, Draper, and Lee (2001) theorized that the relationship between social connectedness and psychological adjustment would be mediated by interpersonal behaviors. The direct effect of social connectedness on psychological distress was not statistically significant when dysfunctional interpersonal behaviors were controlled, yet dysfunctional interpersonal behaviors accounted for 32% of the total variance in general psychological distress when entered as a mediator. Findings from Lee and colleagues (2001) provided support for the mediating effect of interpersonal skills on psychological distress. As such, individuals who report high levels of social connectedness or belonging are less likely to experience low self-esteem, anxiety, and depression (Kohut, 1984), and they are better able to identify with others easily, perceive others as approachable, and participate in social situations without discomfort (Lee, Draper, & Lee, 2001). A sense of social connectedness may serve as a psychological resource for well-being when adjusting to new or challenging situations (Lee & Robbins, 1998). Thus, those with high social connectedness will likely possess more appropriate interpersonal behaviors, and this enhanced capacity for engaging socially will contribute to less psychological distress and maladjustment.

Williams and Galliher (2006) suggested that a reciprocal relationship likely exists where individuals perceive their interpersonal relationships and social experiences from a subjective sense of connectedness, and yet this experience of connectedness might be influenced or altered by either positive or more challenging social environments or interactions. In contrast to those who maintain a high sense of social connectedness, individuals who report low on levels of social connectedness yearn for affiliation and seek identification with others, yet they perceive their relationships negatively and do not

possess or exhibit the interpersonal behaviors necessary or effective for given social situations. A low sense of connectedness is not inherently distressing, though inadequate interpersonal skills related to deficient levels of connectedness are related to negative psychological outcomes (Lee et al., 2001). Inadequate social behaviors, in turn, serve to keep others at a distance and heighten loneliness and other social and psychological stressors (Lee et al., 2001; Lee & Robbins, 1995). These individuals are more susceptible to low self-esteem, higher anxiety, and increased depression and are more likely to evade social gatherings that might otherwise serve to strengthen feelings of connectedness and belonging (Lee & Robbins, 1998). Thus, negative results (e.g., psychological distress) may result from a lack of belongingness, and individuals may “exhibit pathological consequences beyond mere temporary distress” (Baumeister & Leary, 1995, p. 498).

Research on related constructs, such as sense of belonging, social inclusion and exclusion, and loneliness, has empirically supported the negative effects of low social connectedness on a variety of psychological functions (e.g., Hagerty, Williams, Coyne, & Early, 1996; Leary, 1990). Hagerty and Williams (1999) found sense of belonging, more than social support, predicted depression among study participants. Sociologist Emile Durkheim (1897/1963) suggested a relationship between lack of social connection and suicide, claiming that suicide could be explained by a failure to connect socially and maintain intimate and supportive relationships with peers or close others. These findings have important implications for understanding the positive and negative outcomes associated with college students’ sense of social belonging. The role of technology in influencing this sense of connectedness has not been explored.

Social adaptation to college. Mattering to others, perceiving social support from

friends, and having a sense of being socially connected all seem to contribute in positive ways to a students' adaptation or adjustment to the social life of the campus. Social integration has been shown to contribute to the students' decision to persist or withdraw (Pascarella & Terenzini, 1980; Spady, 1979; Tinto, 1975). While this may be the case for some students, others experience difficulty adjusting socially to college life, feeling socially disconnected and unable to form relationships with other students (Rotenberg, 1998). Often times, students perceive this difficulty as a function of poor campus climate (Hurtado & Carter, 1997), though it may result from other social or psychological stressors experienced by the individual student.

The adjustment to college requires that students renegotiate their relationships with family and friends from home and peer relationships in the campus environment (Chickering, 1969). The transition to college and away from the family and friend unit at home may lead to students seeking social support from new contacts who can help navigate the life changes that accompany this stage of development (Fraley & Davis, 1997). Bean (1985) suggested that students who maintain close connections to friends and family members from home will not be as successful at adjusting socially to college, suggesting the importance of initiating new social relationships and making friends that can serve as a source of companionship and social support during the college years. This said, the ease of communicating with friends and family members from home has been heightened due to the emergence of technologically-mediated forms of communication that extend our ability to connect across time and space (Willson, 2006). The influence of technology on students' relationships and how these alternative forms of social interaction contribute to social adjustment and belonging are worthy of further analysis.

Both peers and family members can serve as a source of support in the adjustment to college. Martin, Swartz-Kulstad, and Madson (1999) found that perceived support from peers *and* family contributed to the college adjustment process over and above students' academic ability. Further, researchers studying emerging adults have suggested a significant relationship between the quality of students' peer relationships and their adjustment to college (Fass & Tubman, 2002; Lapsley & Edgerton, 2002). Findings from empirical studies have also revealed that students who withdraw from college often do so because of a failure to adjust to the campus environment (Kalsner & Pistole, 2003). Recently, Swenson, Nordstrom, and Hiester (2008) explored the link between relationship quality and adjustment among first-year college students and found support for the hypothesis that the quality of peer relationships would be positively associated with adjustment to college among first-year college students. Results demonstrated that greater exclusivity with a high school friend was significantly associated with poorer social and academic adjustment and poorer institutional attachment. Friendship quality was also significantly associated with academic and social adjustment but not with emotional or personal adjustment. Further, results revealed that peer trust, peer communication, and peer alienation together significantly predicted academic adjustment, social adjustment, emotional or personal adjustment, and institutional attachment. Interestingly, greater alienation from peers was associated with poorer adjustment overall and the quality of relationships was positively and significantly related to adjustment among emerging adults. As evidenced by these findings, the role of peer relationships in shaping students' social and overall college adjustment is an important association to understand. Research has increasingly focused attention on the influence of technology

on social relationships, and yet very little is known about how technology use indirectly influences other outcomes presumed to be significantly impacted by the quality of one's social relationships.

Conclusion

This review of literature has provided an overview of concepts central to understanding the potential direct and indirect relationships between students' use of technology, psychosocial well-being, and sense of community in university life. The aim was to provide a deeper understanding of how the constructs might be working in tandem to influence students' social relationships and overall college experience., thus contributing to a gap in the literature on college students. Next, the research design and methodology will be presented along with a discussion of the epistemological foundations that guide the research, the rationale for use of quantitative methodology, and an overview of the data collection procedures.

CHAPTER THREE

Research Design and Methodology

The research design and methods have been carefully considered to address the knowledge gap identified through the review of literature. The following is an overview of the epistemological foundations that frame the methodology and a detailed review of the procedures used to achieve the objectives of the research plan. The research design for the study draws from quantitative methods.

Epistemological Foundations

Postpositivist assumptions serve as the epistemological foundation for this quantitative research design. Postpositivism challenges the traditional positivist assertion that there exists an absolute truth of knowledge (Phillips & Burbules, 2000). This perspective recognizes that researchers cannot be absolute or “positive” about claims when studying human behavior (Creswell, 2003). Postpositivism recognizes that all methods of inquiry are imperfect and calls for the use of multiple methods to provide for more depth in the understanding of phenomena (Glesne, 1999). Further, this research foundation claims that the researcher cannot be separate from those being researched. As such, bias is inherent to the process of inquiry and evidence obtained through research is always limited (Phillips & Burbules, 2000). This framework supports the use of quantitative methodology to investigate the research phenomenon, and also suggests that alternative methods of inquiry be employed in future research to provide a greater depth in understanding the phenomenon being investigated.

Postpositivist research may employ both true experiments and less rigorous quasi-experiments and correlational studies (Campbell & Stanley, 1963), reflecting “a

deterministic philosophy in which causes probably determine effects or outcomes” (Creswell, 2003, p. 7). Creswell (2003) further describes postpositivism as a reductionistic framework that seeks to reduce ideas into a set of variables that can be tested as a means of responding to research questions and hypotheses. According to Philips and Burbules (2000), the researcher collects data on instruments completed by research participants. This involves numeric or quantitative measures to observe and study human behavior.

Rationale for Use of Quantitative Methodology

A quantitative research design guides this study in order to explore the relationships among a breadth of concepts related to the phenomenon being investigated. Given the range of variables and the complexity of analysis, a singular focus on quantitative methodology will provide insight on an initial set of direct and indirect relationships to be further explored in future quantitative and qualitative research studies. Regression analysis was selected as most appropriate for addressing the research questions and hypotheses as it allows for the estimation of the influence of predictor variables on the criterion variable in each model. This method of analysis was selected given the ability to incorporate numerous predictor variables.

Site Selection, Recruitment of Sample, and Overview of Survey Instrumentation

The selection of the site and sample and methods used for recruitment and data collection will be discussed first. This will be followed by a review of the measures used in the survey instrumentation and the psychometric properties of each. Last, methods for data analysis, the limitations and delimitations of the study, and the significance of this research will be presented.

Site selection. The site selected for this study was a large research university in the southwestern United States that consists of a unique undergraduate college system and a broad range of academic departments. The mission statement of the university espouses dedication to the advancement of knowledge through excellence in education and research and states its commitment to a climate of fairness, cooperation, and professionalism. The campus further promotes the importance of diversity, equity and inclusion as essential to academic excellence in higher education. Undergraduate enrollment is approximately 23,143 students. Of this enrollment, the majority of students are Asian (44%), followed by Caucasian (26%), Other/Undeclared (10%), Mexican-American (10%), Filipino (4%), Latino/Other Spanish (3%), African American (2%), and Native-American (<1%). Female students account for 52% and male students account for 48%. These numbers reflect the campus profile as of the 2009-2010 academic year.

Recruitment of sample. Participants for this study were recruited from the undergraduate student population at this large, four-year public research university in the southwestern United States. College students were chosen not because of convenience but because of the importance of social relationships to the developmental process associated with emerging adulthood as outlined in the opening chapter of this dissertation. Recruitment of participants occurred by email. Once approved by the Human Subjects Review Board at the research site and at the campus of the researcher's doctoral program, the first recruitment ad was distributed via email to all undergraduate students as part of a web-based campus event bulletin (see Appendix E). The recruitment ad was included in the online event bulletin for two consecutive weeks and highlighted the study as an opportunity for students to participate in important research on students'

use of technology. The recruitment notice was also distributed twice via email to the undergraduate student body. Each recruitment notice asked students to respond with their name, email address, and student identification number if they were interested in participating. All student volunteers ($n = 1,550$) were informed that the emails of research participants would be entered into a drawing for a 32GB iPod Touch and that all participants would receive a copy of survey results at the completion of the study.

Survey instrumentation. A web-based survey was used to assess students' use of communication technologies, perceived psychosocial well-being, and sense of community in university life. The survey was pilot tested on a small sample ($n = 3$) of college students to ensure comprehension of questions and minimal participant fatigue. Revisions were made to the survey based on feedback from pilot study participants.

First, demographic questions were asked in order to assess the profile of participants and whether the sample was representative of the population (see Appendix H). To form a more comprehensive understanding of students' technology use, attention was given to both time spent using communication technologies and motivations for use. Permission was granted by the authors to adapt items from the Internet Use Survey (Gordon et al., 2007) to assess time spent using and motivation for use of communication technologies. The scale to measure time spent using communication technologies incorporated the most current applications used by college students at the time of the dissertation study. Given the likelihood that college students engage in simultaneous use of different technologies throughout the course of a day, it was expected that the total sum of time across all items on the scale might exceed the number of hours in a week (Gross, 2004). The scale to measure students' use of technology included 28 questions

(see Appendix I).

The web-based survey also incorporated indicators of psychosocial well-being, including scales to measure loneliness (UCLA Loneliness Scale Version III; Russell, 1996), depression (Patient Health Questionnaire 9; Kroenke, Spitzer, & Williams, 2001), shyness (Revised Cheek & Buss Shyness Scale; Cheek, 1983), social anxiety (Interaction Anxiousness Scale; Leary, 1983), perceived social skill (Brief Social Skill Inventory – Social Expressivity and Social Control Subscale; Riggio, 1989), social self-confidence (Personal Evaluation Inventory – Social Subscale; Shrauger & Schohn, 1995), and perceived social self-efficacy (Perceived Social Self Efficacy Scale; Smith & Betz, 2000). Permission for use was granted by the author(s) of each scale prior to distribution. Full instruments or subscales were combined to form this portion of the survey. The scale to measure psychosocial well-being included 99 questions (see Appendix J).

Sense of community as a construct is quite broad and a full assessment of this subjective experience is beyond the scope of this research study. For the purposes of this investigation, students' sense of community was investigated by assessing perceived mattering to others (College Mattering Scale – Marginality versus Mattering Subscale; Tovar, Simon, & Lee, 2009), perceived social support from friends (Perceived Social Support Scale – Friends Subscale; Turner & Marino, 1994), and social connectedness (Social Connectedness Scale - Revised; Lee et al., 2001). Numerous surveys have been developed to explore students' social integration or adjustment to college. For this study, the Student Adaptation to College Questionnaire – Social Adjustment Subscale (SACQ-SAS; Baker & Syrkh, 1989) was used to assess students' social integration given that this scale is relevant to both incoming and continuing students. Permission for use was

granted by the author(s) of each scale prior to distribution. A copyright license was obtained for use of the SACQ and the notice of copyright was included with the scale items. Full instruments or subscales of each measure were combined to form this portion of the web-based survey. The scale to measure students' sense of community included 52 questions (see Appendix K). Including the demographic questions and 10 questions asked to assess students general campus experience, the full survey included 200 items.

Validity and Reliability of Measures

This section reviews the psychometric properties of the scales included in the web-based survey distributed to the student sample, including samples of questions from each scale. This is followed by a review of how the data was collected and prepared prior to analysis. Last, the scope of the study and limitations are addressed, followed by a discussion of researcher bias and the generalizability and validity of the study.

Time spent using communication technologies. The instrument to measure students' time spent using communication technologies was adapted by the researcher for the purposes of this study. The 21-item Internet Use Survey (Gordon et al., 2007) was referenced as a guide in the construction of a shorter 15-item scale that included the technologies commonly used by college students at the time of the dissertation study. The scale asked participants to indicate the amount of hours spent using various communication technologies (e.g., chatting on instant messenger or in a chat room) in a typical week. Each question provided a range of hours on an 8-point Likert-type scale (1 = *none* and 8 = *21 hours or more*). Items did not assess a common underlying construct and were treated as individual variables in the analysis of data.

Motivations for use of communication technologies. The 13-item scale to measure motivation for use of communication technologies was constructed by the researcher. The items asked participants to report on a 5-point Likert-type scale (1 = *never* and 5 = *very often*) how often they used the internet or other communication technologies for specific reasons (e.g., “Meet new people and make friends”). Similar to the scale measuring time spent using communication technologies, this scale did not measure a common underlying construct. Each item was treated as a unique variable in the analysis of data.

Loneliness. Loneliness was measured using the 20-item UCLA Loneliness Scale Version III (Russell, 1996) to measure the discrepancy between achieved and desired levels of social contact (e.g., “How often do you feel part of a group of friends?”) using a 4-point Likert-type scale (1 = *never* and 4 = *always*). After negatively-worded items are reverse coded, scores for each item are summed together with higher scores indicating greater degrees of loneliness. This scale has strong internal reliability ranging from $\alpha = .86$ to $\alpha = .92$ in a college student sample (Gorden et al., 2007; Russell, Kao, & Cutrona, 1987). Results from a college student sample ($n = 487$) also support the convergent validity of the scale and the construct and discriminant validity of the measure (Russell et al., 1987). A confirmatory factor analysis conducted by Russell and colleagues (1987) confirmed that loneliness and social support can be considered distinct constructs. Further, Russell (1996) reported the results of a factor analysis to support consideration of the scale as a unidimensional measure of loneliness, though strong correlations between loneliness and measures of depression and self-esteem have been found in previous studies (Russell, 1982; Russell et al., 1987). Further, Russell warned that

loneliness scores were not normally distributed and results from statistical tests should take into account this lack of normality. The scale has also been used to measure loneliness in college student populations as part of studies related to internet use (Amichai-Hamburger & Ben-Artzi, 2003; Gross, Juvonen, & Gable, 2002).

Depression. Depression was measured with the 9-item Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001). The PHQ-9 includes 9 items that align with the criteria for depression outlined in the fourth edition of the Diagnostic and Statistical Manual (DSM-IV). A 4-point Likert-type scale (1 = *not at all* and 4 = *nearly every day*) measures the frequency with which respondents felt bothered by the problems specified (e.g., “Feeling down, depressed, or hopeless”). The PHQ-9 has good construct and criterion validity, and has internal reliability ranging from $\alpha = .86$ to $\alpha = .89$ in clinical populations, and external and construct validity have been confirmed (Kroenke et al., 2001). Validity and reliability statistics have not been established in research on college student populations, although the instrument is used to diagnose clinical depression on college campuses. Items on the PHQ-9 scale are added together, with a higher total score indicating greater degrees of depression. Specifically, scores less than 5 indicate an absence of depressive symptoms, whereas scores greater than 15 indicate major depression (Kroenke et al., 2001).

Shyness. Shyness was assessed using the 13-item Revised Cheek & Buss Shyness Scale (RCBS; Cheek, 1983). A 5-point Likert-type scale (1 = *very uncharacteristic or untrue* and 5 = *very characteristic or true*) measured participants’ feelings of discomfort in various social situations (e.g., “I am often uncomfortable at parties and other social functions”). Hopko and colleagues (2005) reported strong

internal reliability ($\alpha = .86$) in a college sample. This same study reported the psychometric properties of the RCBS and concluded that the measure has moderate to strong convergent validity with other measures of shyness and social anxiety, and some support existed for discriminant validity with a measure of depression. An earlier version of the Cheek & Buss Shyness Scale (Cheek & Buss, 1980) was found to correlate highly with the Interaction Anxiousness Scale discussed next (Leary & Kowalski, 2003). After negatively-worded items are reverse coded, scores for each item are summed together with higher scores indicating greater degrees of shyness.

Social anxiety. Social anxiety was assessed using the 15-item Interaction Anxiousness Scale (IAS; Leary, 1983). The IAS was constructed to measure only the affective or emotional components of discomfort in social situations, and scores indicate an individual's concerns with how they are evaluated and perceived by social contacts (Leary & Kowalski, 1993). The instrument has high internal reliability in college populations ranging from $\alpha = .87$ to $\alpha = .89$ and strong evidence of construct and criterion-related validity (Leary & Kowalski, 1993). Items ask participants to indicate how closely the given statements apply to them (e.g., "I usually feel comfortable when I'm in a group of people I don't know") using a 5-point Likert-type scale (1 = *not at all characteristic of me* and 5 = *extremely characteristic of me*). After negatively-worded items are reverse coded, scores for each item are summed together with higher scores indicating greater degrees of social anxiety.

Perceived social skill. A 10-item subscale of the Brief Social Skill Inventory (SSI-Brief; Riggio, 1989) assessed students' social control and social expressivity using a 5-point Likert-type scale (1 = *not at all like me* and 5 = *very much like me*). The SSI was

developed as a means of exploring individual differences in social competence for the study of social interaction (Riggio, 1986). Items used to determine levels of social control (e.g., “I usually take the initiative to introduce myself to strangers”) and items used to determine levels of social expressivity (e.g., “At parties, I enjoy talking to a lot of different people”) are considered indicators of participants’ *savoir faire*. *Savoir faire* can be defined as the capacity to know how to act in a variety of social situations and contexts (Eaton et al., 2007). Caplan (2005) reported inter-item reliability of the SSI social control subscale ($\alpha = .87$) for a study conducted with a college student sample. After negatively-worded items are reverse coded, scores for each item are summed together with higher scores indicating greater degrees of perceived social skill.

Social self-confidence. Students’ perceived social self-confidence was assessed using the 7-item Social Self-Confidence Subscale of the Personal Evaluation Inventory (PEI; Shrauger & Schohn, 1995). The social self-confidence subscale reported adequate internal reliability ($\alpha = .82$) and strong convergent and discriminant validity in a college sample. Scores from the PEI reflect a relatively stable perception of self-confidence rather than a variable report, and the PEI has been found to be stable and resistant to the influences of current mood state or self-presentational needs (Shrauger & Schohn, 1995). The 4-point Likert-type scale asks students to indicate their level of agreement (1 = *strongly agree* and 4 = *strongly disagree*) on items that reflect common feelings, attitudes, and behaviors common in social situations (e.g., “I would like to know more people, but I am reluctant to go out and meet them”). After negatively-worded items on the scale are reverse coded, scores for each item are summed together with higher scores indicating greater degrees of perceived social self-confidence.

Social self-efficacy. The Scale of Perceived Social Self-Efficacy (PSSE; Smith & Betz, 2000) measures levels of perceived social self-efficacy, defined as an individual's self-efficacy exhibiting appropriate social behaviors required to meet interpersonal or relational goals. The scale measures a broad range of social behaviors and consists of 25 items that assess an individual's level of confidence in a variety of social situations. Responses to items are scored using a 5-point Likert-type scale (1 = *no confidence at all* and 5 = *complete confidence*). The scale consists of several areas of social interaction, including meeting new people, pursuing romantic relationships, exhibiting assertive communication, and performing or speaking in public settings (e.g., "Find someone to go to lunch with me"). A mean score is obtained by summing scores across items, with higher scores indicating greater perceived social self-efficacy. The PSSE (Smith & Betz, 2000) was found to have a high alpha coefficient ($\alpha = .94$) in a college sample ($n = 354$). Correlation analyses supported the construct and discriminant validity of the scale (Smith & Betz, 2000).

Mattering to others. The 6-item Mattering versus Marginality subscale of the College Mattering Inventory (CMI – MVM Subscale; Tovar et al., 2009) was used to assess students' perceived mattering to others. The scale has reported internal reliability of $\alpha = .83$ in a college sample. The 5-point Likert-type scale asks students to indicate their level of agreement (1 = *not at all* and 5 = *very much*) with items that assess perceived mattering to others versus marginality (e.g., "I often feel socially inadequate at college"). Mattering was found to be a related but conceptually distinct concept from sense of belonging (Tovar et al., 2009). Negatively-worded items on the scale are reverse coded. Then, scores for each item are summed together with higher scores indicating

greater degrees of perceived mattering to others.

Social connectedness. Students' sense of social connectedness was assessed using the 20-item Social Connectedness Scale – Revised (SCS-R; Lee et al., 2001). The SCS-R is a 6-point Likert-type scale (1 = *strongly agree* and 6 = *strongly disagree*) assessing experiences of interpersonal closeness in social contexts, as well as difficulties establishing and maintaining closeness in social relationships (e.g., “I am able to connect with other people.”). Ten items are positively worded, and 10 items are negatively worded. Negatively worded items are reversed scored and then summed, with a higher score indicates a greater degree of social connectedness. The reliability coefficient of the SCS-R in a college population is $\alpha = .92$ (Lee et al., 2001; Williams & Galliher, 2006), and convergent and discriminant validity has been established (Lee et al., 2001). The SCS-R was found to be significantly and negatively correlated with the UCLA Loneliness Scale ($r = -.80$), an expected finding given that loneliness is the emotional consequence of a lack of connectedness (Lee & Robbins, 2000; Marangoni & Ickes, 1989). Despite the association between these related constructs, social connectedness is considered conceptually distinct from loneliness (Lee et al., 2001). Negative correlations were also reported between the SCS-R and measures of depression, social discomfort, and dysfunctional interpersonal behaviors.

Perceived social support from friends. Social support from friends was assessed using the 8-item Friends Support Subscale of the Perceived Social Support Scale (PSS-Fr; Turner & Marino, 1994), with a strong alpha coefficient ($\alpha = .94$) for the subscale in an adult population. The scale asks respondents to indicate the extent to which each item is similar to their personal experience on a 4-point Likert-type scale (1 =

very much like my experience and 4 = *not at all like my experience*). The scale includes items that address perceived social support from friends (e.g., “No matter what happens I know that my friends will always be there for me should I need them.”). The scale score for this measure was determined by summing all scores across items, with higher scores indicating greater perceived social support from friends.

Social adaptation to college. Adjustment or adaptation to the social life of college was measured using the 20-item Social Adjustment Subscale of the Student Adaptation to College Questionnaire (SACQ; Baker & Syrkh, 1989). Two items were removed from the scale that asked students about their experience living on campus. Thus, the remaining 18 items served as the measure of students’ social adaption to college. The items on this scale pertain to various facets of the interpersonal and social demands inherent in the college experience (Baker, McNeil, & Syrkh, 1985). Internal reliability ranges from $\alpha = .90$ to $\alpha = .92$ for the social adjustment subscale in a college sample. Further, criterion validity has been established (Baker, McNeil, & Syrkh, 1985). The scale is structured as a 9-point continuum with each end anchored by two opposing statements (1 = *applies very closely to me* and 9 = *does not apply to me at all*). Respondents are asked to indicate the point on the continuum that best represents the degree to which the statement is true for them (Baker & Syrkh, 1984). Negatively-worded items on the scale are reverse coded. Then, scores for each item are summed together with higher scores indicating greater degrees of social adjustment to college.

Data Collection and Preparation of Data for Analysis

This section reviews the methods used for the collection of data and the specific techniques used to prepare the data for analysis, including a discussion of how missing

values were handled and how demographic and variable data was coded.

Data collection. An introductory notification was sent to all students who volunteered to participate (see Appendix F). The web-based survey was distributed with an informed consent form (see Appendix G) via *StudentVoice*, a web-based survey administration tool sponsored by the researcher's institution. Participants accessed the survey by clicking on a highlighted web address in the invitation email that transferred first to the informed consent. Once informed consent was obtained, participants were directed to the start of the web-based survey. Email addresses were maintained by the researcher and by *StudentVoice* to allow for reminders to be sent during the two week period allotted for data collection. The survey requested no direct identifying information other than email addresses and demographic data. Two reminder emails were sent following the initial distribution of the survey. The survey was available online for two full weeks, and participants were able to stop and restart the survey at any time during that period of time. At the end of the survey, respondents were asked to indicate their willingness to participate in a future qualitative study.

Preparation of data. Several steps were taken to prepare the data for analysis. The total number of respondents to the web-based survey ($n = 1,234$) included some records that were missing a significant quantity of data or did not meet the requirements for participation in the study. Records that were manually removed from the data set included (a) respondents who did not respond or gave a "no" response to the consent question, (b) respondents who indicated consent but filled out no additional questions, (c) respondents who indicated that they were not an undergraduate student, (d) respondents who only completed demographic questions, and (e) respondents who completed less

than 90% of the total survey questions (minus demographic questions and items related to non-essential variables, or those variables not used in analysis). The remaining sample ($n = 1,084$) was included in the final analysis, yielding a 70% response rate.

Demographic data were reviewed first. For ethnicity and academic major, participants were given the option of “Other.” Due to the number of students who entered Taiwanese/Taiwanese-American in the open-ended space provided, a separate category was created. A category was also created to reflect individuals who reported other ethnicities not reflected in the provided list and those who chose not to respond. For academic major, categories were created for “Linguistics” and for “Undeclared or Other.” Mathematics and economics majors were collapsed into one category, as was engineering and computer science. This technique ensured that all responses were included in the analysis of demographic data.

Missing values. Missing data presents a challenge that must be addressed, and scholars have identified numerous approaches and methods to manage data that is absent at both the item- or scale-level (Roth, Switzer, & Switzer, 1999). The most common methods for handling missing data include listwise deletion, pairwise deletion, mean imputation, and maximum likelihood. Listwise deletion provides the most rigorous method as it removes any case that includes missing data. Pairwise deletion for management of missing data provides an alternative to listwise deletion by using the maximum number of complete cases for each survey question, not for the survey as a whole. This method allows researchers to obtain the maximum value from any portion of the survey completed by participants. Using pairwise or listwise deletion would have greatly reduced the overall sample size for this study. The third method, mean

imputation, involves replacing missing values with the mean and is the least methodologically rigorous of the methods (Roth, Switzer, & Switzer, 1999). However, this method uses all cases in the sample by replacing any missing data with the mean response for that question. A variation to this approach is a person-mean imputation which involves determining the mean for the individual case on an instrument and imputing that mean for any missing values within the scale.

From the perspective of Roth, Switzer, and Switzer (1999), researchers often find that they have missing data from just a few items on a scale measuring the same underlying construct, and these items often have moderate to high intercorrelations due to a single-factor model underlying the responses to individual items. This supports the use of imputation approaches for dealing with item-level missing data as opposed to listwise or pairwise deletion. Listwise and pairwise deletion are both problematic because one missing item in a scale results in the entire record or scale being thrown out, resulting in a smaller sample and decreased statistical power. Roth and colleagues offer several alternative methods for handling missing values. Researchers can take the mean for all respondents and use that value to estimate the missing score, or they can take the mean of all items measuring the same construct within a record to estimate the missing value (e.g., person-mean).

Missing values occurred at both the scale level and at the item level in this study. A combination of item-mean and person-mean imputation were employed to address missing data. Mean imputation was not used on demographic variables. Instead, non-responses on ethnicity, gender, and major were included in the category “Other” or “I choose not to respond,” depending on the wording of the response options. Non-

responses on all other demographic variables were coded as “0” to represent “I choose not to respond.”

Two scales were used to assess students’ use of communication technologies. Each item on the scale to measure time spent using various communication technologies served as a unique independent variable and did not measure an underlying construct in conjunction with other items on the scale (e.g., *Using email on a computer or laptop* versus *Networking online via Facebook or other sites*). Thus, an item-level average of time spent was computed and used to replace missing data within each individual question across all respondents. On the scale to measure students’ motivations for use of various communication technologies, respondents were asked to indicate the frequency with which they use communication technologies for each motivation provided (e.g., *Meet new people and make friends*). Similarly, the items on this scale measure motivation for use of various communication technologies and do not measure an underlying construct in conjunction with other items on the scale. Thus, an item-level average of frequency was computed and used to replace missing data within each individual question across all survey respondents ($n = 1,084$).

For scales used to measure factors related to psychosocial well-being and sense of community, person-mean imputation was used to provide the most accurate assessment of the respondents’ pattern of responses within a given variable (Roth, Switzer, & Switzer, 1999). In some instances, a participant failed to respond to one whole instrument from the full survey. Given that the total percentage of missing data was under 10% across the sample ($n = 1,084$), these cases were kept and an item-level mean across all respondents was imputed for each missing value within the scale. For example,

if a respondent completed all questions on all measures in the survey but did not respond to any items on the scale measuring shyness, the mean for all respondents on each item within the shyness scale was calculated and imputed in place of the missing data. Thus, if only one variable was affected out of the 13 variables assessed, the entire case was included in the final sample and the absent data from the one scale was addressed by imputing the item-mean across all respondents for each missing value. As stated in the section on preparation of data, respondents who completed less than 90% of the total survey (minus demographic questions and items related to non-essential variables) were discarded. Missing data for any one respondent was under 10% of the total items completed from the total set of questions in the survey.

Coding of data. Several instruments included in the web-based survey contained items that required reverse coding prior to analysis. Once the specified items in each scale were reverse scored, responses were summed to form an overall scale score for each variable in accordance with scoring guidelines provided by the respective authors.

Analysis of Quantitative Data

Survey data was analyzed using statistical computations in PASW (formerly SPSS) GradPack 18 Software. Descriptive statistics were compiled followed by inferential analysis, and correlation matrices were created to describe the extent to which the sets of data were interrelated (Hinkle, Wiersma, & Jurs, 2003). To analyze the mediating processes between technology use, psychosocial well-being, and sense of community, both time spent using technology and motivation for technology use was presumed to have a direct influence on variables associated with psychosocial well-being and sense of community. First, the main effect of time spent using technology on

psychosocial well-being indicators and variables related to sense of community was explored using linear regression models. Next, the main effect of motivation for technology use on psychosocial well-being indicators and variables related to sense of community was explored using the same method. Then, the main effect of psychosocial well-being variables on indicators of sense of community and the main effect of sense of community variables on indicators of psychosocial well-being were assessed prior to exploring interaction effects to test the final two hypotheses. The following is a discussion of methods used in the analysis for each hypothesis.

Hypothesis one. The first hypothesis predicted that college students' time spent using communication technologies would be related to indicators of their perceived psychosocial well-being. In this study, psychosocial well-being as a construct included seven variables and time spent using communication technologies included 13 variables. To test this prediction, each of seven linear regression models included an indicator of psychosocial well-being as the dependent variable, and all variables related to time spent using communication technologies were included together as independent variables in each model. The stepwise function was used to determine which independent variables were the strongest predictors of the dependent variable.

Hypothesis two. The second hypothesis predicted college students' motivations for use of communication technologies would be related to indicators of their perceived psychosocial well-being. As mentioned in the preceding section, psychosocial well-being included seven variables. Motivation for use of communication technologies included 14 variables. To test this prediction, each of seven linear regression models included an indicator of psychosocial well-being as the dependent variable, and all variables related

to motivation for use of communication technologies were included together as independent variables in each model. The stepwise function was used to determine which independent variables were the strongest predictors of the dependent variable.

Hypothesis three. The third hypothesis predicted that college students' time spent using communication technologies would be related to indicators of perceived sense of community. In this study, perceived sense of community as a construct included four variables and time spent using communication technologies included 13 variables. To test this prediction, each of four linear regression models included an indicator of perceived sense of community as the dependent variable, and all variables related to time spent using communication technologies were included together as independent variables in each model. The stepwise function was used to determine which independent variables were the strongest predictors of the dependent variable.

Hypothesis four. The fourth hypothesis predicted college students' motivations for use of communication technologies would be related to indicators of perceived sense of community. As mentioned in the preceding section, sense of community included four variables. Motivation for use of communication technologies included 14 variables. To test this prediction, each of four linear regression models included an indicator of perceived sense of community as the dependent variable, and all variables related to motivations for use of communication technologies were included together as independent variables in each model. The stepwise function was used to determine which independent variables were the strongest predictors of the dependent variable.

Hypothesis five. The fifth hypothesis predicted a relationship between students' perceived psychosocial well-being and their perceived sense of community mediated by

time spent using communication technologies. First, the main effect of psychosocial well-being variables on indicators of sense of community and the main effect of sense of community variables on indicators of psychosocial well-being were assessed. To test the indirect effects predicted by this hypothesis, multiple regression models were first analyzed to assess the direct influence of variables related to time spent using communication technologies and indicators of psychosocial well-being on indicators of students' sense of community. Then, multiple regression models assessed the direct influence of variables related to time spent using communication technologies and indicators of students' sense of community on indicators of psychosocial well-being. If the models revealed significant main effects, a subsequent analysis was employed with the interaction term entered as the third predictor variable.

Hypothesis six. The sixth and final hypothesis predicted a relationship between students' perceived psychosocial well-being and their perceived sense of community mediated by motivations for use of communication technologies. To test the indirect effects predicted by this hypothesis, multiple regression models assessed the direct influence of variables related to motivations for use of communication technologies and indicators of psychosocial well-being on indicators of students' sense of community. Then, multiple regression models assessed the direct influence of variables related to motivations for use of communication technologies and indicators of students' sense of community on indicators of psychosocial well-being. If the models revealed significant main effects, a subsequent analysis was employed with the interaction term entered as the third predictor variable.

Scope of the Study and Limitations

This study was limited in scope in several ways. First, the study was conducted at one large four-year public research institution in the southwestern United States and undergraduate students served as the participants. The perspectives of administrative staff and faculty were not included in this research design. The investigation was also limited to only three broader constructs related to students' social integration – use of communication technologies, psychosocial well-being, and sense of community.

Limitations of the study must also be acknowledged. Given the type of institution and location, other studies conducted on smaller campuses or two-year institutions or in other regions of the country may produce alternative findings. Additionally, the campus is subdivided into six undergraduate colleges, each with general education requirements respective to each college's respective mission. Administration is housed centrally (e.g., financial aid) *and* within each of the colleges (e.g., academic advising). Further, the college system is intended to foster interactions among peers due to the small subdivided communities that make up the student body as a whole. The unique characteristics of the research site are likely related to students' perspectives and experiences and will be reflected in the data.

The current study employed a cross-sectional rather than a longitudinal design, and thus causality cannot be determined with the data yielded from this study. Further, it is expected that the relationships among constructs are multidirectional. Given this, the long-term impacts of students' use of technology on indicators of psychosocial wellness and perceived sense of community remain theoretical and speculative. Longitudinal research would begin to address the many remaining questions about the role of

technology in students' lives. Further, qualitative analysis would allow for a deeper exploration into the multidirectionality that likely exists among the variables included in this study. For example, case studies that capture students' lived experiences over time might allow for a richer perspective on the factors that contribute to technology use and the resulting consequences. Another limitation that must be addressed was failure to include demographic questions related to certain social identities (e.g., sexual orientation, religious affiliation, disability status). Specifically, several questions were asked in a manner that assumed a heteronormative experience and were ambiguous (e.g., "I have difficulty interacting with members of the opposite sex"). This item is ambiguous in that it insinuates a romantic attraction that is relevant only to students who identify as heterosexual. Several students who identified as gay or lesbian expressed difficulty responding to this question. Thus, the findings of this study cannot be interpreted as specifically representative of the gay or lesbian students or of students who identify as disabled or of a particular religious affiliation. Further, this study did not explore the combined influence of race, socioeconomic class, gender and sexual orientation in the understanding of these constructs and the relationships between them. The intersection of these identities cannot be ignored when considering students' psychosocial well-being and how students form community. Future research must probe further into the complex and nuanced stories of diverse student populations in order to more fully embrace how technology influences students' development and outcomes related to college attendance.

A final limitation was in the small number of students ($n = 3$) who participated in the focus group and pilot study for the web-based survey. The focus group was conducted as a means of identifying the full range of information and technologies

students use. Including more students in the focus group and pilot study would have provided greater insight into the variety of technologies students use in their daily lives. Focus groups with greater student involvement may have helped to correct this insufficient knowledge of the technologies used by students and strengthen the breadth of technologies included in the web-based survey. For example, the interactive technology Skype was thought to be subsumed under the category of instant messaging, though it would have been better categorized as a form of video conferencing. Other technologies (e.g., GPS devices, musical recording equipment) were also overlooked and emerged only in response to an open-ended question in the survey.

Researcher and respondent bias. Given the researcher's extensive professional background at the host institution, the lens through which the variables were selected and the research was designed was likely informed by previous experience with this population of students. Had the participants been the researcher's current or former students, the results might have been biased in that the participants would have been involved in a program designed to assist college students in building confidence in interpersonal communication and social relationships. In an effort to reduce bias, participants were recruited from the entire student population instead of the specific population with which the researcher works.

Despite this effort, it is possible that one or more of the participants may have had prior contact with the researcher through involvement in a co-curricular program on the campus where the research was conducted. Prior contact or familiarity with the researcher may have encouraged students to participate in the research study, thus increasing the overall sample. Students' familiarity with the researcher may have

enhanced the tendency for participants' to respond in a socially desirable manner. Further, participants self-selected to participate in the research study. As a result, volunteer bias may have been an issue in that participants may have volunteered to participate due to a particular interest in the topic.

Generalizability and external validity. This study employed only quantitative methodology, and findings and conclusions presented here are not necessarily generalizable to other student populations and may have limited application in other institutional settings. Similar research at a campus with more centralized administrative services may yield different results. The research study is further limited in that only one sample from one campus was used. Generalizations about how these findings may apply at small four-year institutions, private schools, and two-year or community colleges should be made with caution. However, results may be transferable to other contexts and may provide an initial perspective on the relationships between students' use of communication technologies, psychosocial well-being, and sense of community. Further, data was collected in the form of self-report survey instruments. It is possible that participants may have responded in a socially desirable manner (Tuckman, 1999). Moreover, this method of inquiry does not allow for the clarification of responses through open-ended interview questions or more qualitative inquiry. Thus, the study provides insight into a breadth of relationships among variables but does not provide depth in understanding the more nuanced experiences of students related to the phenomenon being investigated in this dissertation.

Significance of the Study

This investigation is significant given its potential implications for educators in primary, secondary and postsecondary institutions, policy makers, and employers of college graduates. The aim was to produce an initial model of the interrelationships among students' use of technology, psychosocial well-being, and sense of community that can be tested at other sites and in other contexts. Results from this study might provide key stakeholders with a better understanding of how the use of communication technologies might relate to psychosocial well-being and a sense of community in educational contexts. Further, the relationships among these constructs extend our understanding of social integration and connectedness to campus life. Educators in primary, secondary and postsecondary institutions might also utilize the findings to consider if a need exists for the implementation of individual, group and institutional approaches to promote the social and interpersonal development needs of students given the seemingly ubiquitous use of technology among young and emerging adults and the potential impact of this use.

The research on student development extends across multiple disciplines of academic inquiry (Evans et al., 1998). Thus, this work will provide faculty and practitioners in education and professionals in other disciplines an inclusive and comprehensive review of literature and research related to these constructs and will shed light on potential implications for policy and practice in education and for employers of college students. Moreover, it is expected that this inquiry will provide meaningful research and a rich source of information from which educators, policy makers and employers can draw upon to strengthen their own leadership potential in advancing

theory and research and professional practices that respond to these concerns. By drawing upon multiple disciplines, an integrated understanding of the relationship between each domain will be extended, thus filling a gap in the literature on college student development and students' social relationships.

Conclusion

This chapter reviewed the epistemological foundations for the selection of quantitative methodology and provided an overview of the site and sample selection and the validity and reliability of measures used in instrumentation of the web-based survey. Further, methods for data collection and analysis were discussed prior to a presentation of delimitations and limitations. The following chapter will review a profile of participants, descriptive statistics, and the results of regression analyses conducted to respond to the research questions and hypotheses.

CHAPTER FOUR

Presentation of Results

This chapter discusses characteristics of the sample and provides a profile of participants. Then, descriptive statistics are presented followed by the results of regression analyses conducted to respond to the research questions and hypotheses. The chapter will be followed by a final discussion of findings and implications for future theory, research, and professional practice.

Participant Profile

Participants were asked to respond to questions that would assist in providing a profile of the students who elected to complete the web-based survey. The demographics of respondents represented the demographics of the student population at the institution at which this study was conducted. Students who identified as Asian/Asian-American accounted for 53% of the sample ($n = 574$). White/Caucasian students accounted for 29% of the sample ($n = 315$). Mexican-American / Chicano(a) students accounted for 7% of the sample ($n = 78$), Middle Eastern students accounted for 2% ($n = 23$), other Spanish/Latino students accounted for 1.8% ($n = 19$), African/African-American accounted for 0.7% of the sample ($n = 8$), and Native American students accounted for .3% ($n = 3$). Approximately 5% ($n = 49$) of respondents identified as Multiethnic or Multiracial. Further, females represented 60% of the sample ($n = 653$) and males represented approximately 39% ($n = 420$). One student identified as transgender, and approximately 1% ($n = 10$) of respondents did not indicate gender. The undergraduate campus profile was presented in the preceding chapter, and this descriptive data closely aligns with the demographic data of the undergraduate student population.

Participants were next asked to indicate their international student status and their native language. Of the sample, only 46 students (4.2%) identified as international students; however, approximately 70% of respondents ($n = 756$) were native English speakers and 30% ($n = 326$) were non-native English speakers. Respondents were also asked to identify their class level, transfer status, and major among other characteristics. The sample included 290 freshmen (27%), 182 sophomores (17%), 261 juniors (24%), and 349 seniors (32%). Students who identified as seniors likely represented students in their fourth year and students who identified as seniors in their fifth year and beyond. Transfer students represented 17% ($n = 183$) of the sample. Respondents also identified their academic major. Students in biological sciences represented 19.4% ($n = 210$) of the sample. Engineering students accounted for 17.4% ($n = 189$), students in mathematics and economics accounted for approximately 10% ($n = 105$), and students in psychology represented just over 9% ($n = 101$) of the sample. Other majors represented by the respondents included anthropology ($n = 10$), business management ($n = 6$), chemistry or biochemistry ($n = 65$), cognitive and neuroscience ($n = 40$), communication ($n = 38$), critical gender studies ($n = 1$), dance/music/theatre/visual arts ($n = 18$), earth sciences and environmental systems ($n = 11$), education ($n = 1$), ethnic/cultural or international studies ($n = 24$), history ($n = 10$), human development ($n = 33$), pre-law/law ($n = 7$), pre-med/medicine ($n = 43$), literature/writing ($n = 17$), philosophy ($n = 1$), physics ($n = 7$), political science ($n = 57$), sociology ($n = 31$), urban studies and planning ($n = 10$), and linguistics ($n = 5$). Students who identified as other or undeclared accounted for 4% ($n = 44$) of the sample.

Participants also reported their living situation, highest degree objective,

estimated family income, and ownership of a computer or cell phone. Of the respondents, over half of the students ($n = 566$ or 52%) indicated that they lived with a roommate or roommates in an apartment or house. Approximately 24% of respondents ($n = 259$) reported living with roommates in a campus residence hall. Nearly 10% of respondents ($n = 104$) reported living with their parents or other relatives. The remaining 14% of respondents ($n = 155$) reported that they either lived alone in a residence hall or apartment/house, lived with a romantic partner, or did not respond. Respondents identified their highest degree objective, with 21% ($n = 227$) seeking an undergraduate degree, 32% ($n = 350$) seeking a graduate degree, 22% ($n = 237$) seeking a professional doctorate (e.g., MD or JD), and 25% ($n = 270$) seeking a doctorate as their highest degree objective. Estimated annual family income was reported as follows. Approximately 24% ($n = 261$) of respondents reported an estimated family income of over \$100,000, while 21% ($n = 231$) reported an estimated family income of under \$25,000, 21% ($n = 228$) reported an estimated family income of \$25,001 to \$50,000, 18% ($n = 197$) reported an estimated family income of \$50,001 to \$75,000, and 15% ($n = 167$) reported an estimated family income of \$75,001 to \$100,000. Of the total sample, over 98% ($n = 1,066$) reported owning a personal computer with internet access and nearly 36% ($n = 386$) reported owning a personal cell phone with internet access. Only 2% of respondents ($n = 16$) reported that they did not own a computer but had access to a computer with the internet, and approximately 64% of respondents ($n = 691$) reported owning a personal cell phone without internet access. Only two students reported that they did not own or have access to a computer with the internet, and 7 students indicated that they did not own a personal cell phone.

Additional questions were asked of participants related to their involvement outside the academic classroom in order to paint a richer profile of respondents. These items were not included in the analysis of data. Participants were asked to select any activities in which they were involved outside of their coursework at the time of the study. Dummy variables were used to code the responses to this question, with 1 coded as a positive response and 0 coded as a negative response or non-response. Nearly 70% of respondents ($n = 754$) reported being involved in community service or a service-learning program. Approximately 39% of respondents ($n = 417$) were employed on- or off-campus, 15% ($n = 163$) indicated that they participated in an internship on- or off-campus, and 13% ($n = 140$) reported volunteering in a research lab or on a research project. Thirty-four percent of respondents ($n = 363$) reported involvement in student organizations or committees. Almost 18% of respondents ($n = 191$) reported involvement in a religious organization, 17% of respondents ($n = 182$) reported involvement in intercollegiate athletics or intramurals, 12% of respondents ($n = 128$) reported involvement in a leadership or professional skill development program, 11% of respondents ($n = 117$) reported involvement in an ethnic or cultural organization, 7% ($n = 76$) reported involvement in Greek life (e.g., a sorority or fraternity), and only 4% ($n = 45$) reported involvement in student government. Of the total sample, only 16% of respondents ($n = 169$) indicated that they were not involved outside of their academics.

Descriptive Statistics

Numerous variables were subsumed under each of the broader constructs incorporated into the research design. Two scales were used to measure students' use of communication technologies. The first scale included 13 questions that asked

participants to indicate the amount of time spent using various communication technologies in a typical week with an 8-point scale (1 = *none* and 8 = *21 hours or more*). The items to assess time spent using communication technologies were those that most closely relate to students' social worlds and included: (a) using email on a computer or laptop ($M = 4.60$, $SD = 1.83$); (b) texting or emailing via cell phone or personal digital assistant ($M = 3.50$, $SD = 1.82$); (c) talking via cell phone or personal digital assistant ($M = 1.79$, $SD = 0.36$); (d) networking online via Facebook or other sites ($M = 4.11$, $SD = 1.67$); (e) chatting on instant messenger or in a chat room ($M = 3.14$, $SD = 1.90$); (f) watching television or movies ($M = 3.66$, $SD = 1.55$); (g) playing video games or computer games alone ($M = 1.34$, $SD = 0.44$); (h) playing video or computer games with others ($M = 1.33$, $SD = 0.46$); (i) listening to or using a personal Mp3 player or iPod ($M = 3.66$, $SD = 1.97$); (j) following Twitter, blogs, or newsfeeds ($M = 1.38$, $SD = 0.43$); (k) visiting YouTube or other video sites ($M = 1.65$, $SD = 0.39$); (l) building or enhancing personal website ($M = 1.14$, $SD = 0.30$); and (m) surfing the internet or visiting websites ($M = 3.99$, $SD = 1.72$). The correlation matrix for these variables is presented in Appendix A.

The scale to measure students' motivations for use of communication technologies included 14 items with a 5-point scale (1 = *never* and 5 = *very often*). These items included (a) meet new people and make friends ($M = 1.99$, $SD = 0.92$); (b) interact with friends or other social contacts ($M = 3.92$, $SD = 0.89$); (c) conduct research or seek information ($M = 1.35$, $SD = 0.34$); (d) work on school-related assignments ($M = 1.29$, $SD = 0.30$); (e) learn more about hobbies or interests ($M = 3.68$, $SD = 1.01$); (f) share photos, videos, or other personal updates ($M = 3.47$, $SD = 1.11$); (g) comment on blogs or

other news feeds ($M = 2.53$, $SD = 1.20$); (h) seek support for personal problems or issues ($M = 2.36$, $SD = 1.05$); (i) purchase or sell items ($M = 2.78$, $SD = 0.97$); (j) look for entertainment (e.g., music/video downloads) ($M = 3.75$, $SD = 1.00$); (k) waste time or procrastinate ($M = 3.99$, $SD = 0.97$); (l) play computer games alone or with other users ($M = 2.21$, $SD = 1.31$); (m) view pornography or adult content ($M = 1.29$, $SD = 0.36$); and (n) share “true” self with others ($M = 1.92$, $SD = 1.02$). The correlation matrix for these variables is presented in Appendix B.

For the purposes of this study, psychosocial well-being will include variables related to both mental health and social relationships. Measures of psychosocial well-being included self-reports of loneliness, depression, shyness, social anxiety, perceived social skill, social self-confidence, and social self-efficacy. Means, standard deviations, and intercorrelations among these variables are presented in Appendix C.

The term sense of community incorporated mattering to others versus marginality, perceived social support from friends, social connectedness, and social adaptation to college. Means, standard deviations, and intercorrelations among these variables are presented in Appendix D.

Assumptions of Regression Analysis

Prior to analysis, the three assumptions associated with regression analysis were tested. Tests of *multivariate normality*, *multicollinearity*, and *homoscedasticity* will be presented prior to a review of results for each hypothesis. First, tests of multivariate normality were conducted to ensure that skewness and kurtosis statistics were within acceptable standards of -1.0 to +1.0 (Hair, Anderson, Tatham, & Black, 1995). Skewness and kurtosis statistics for most variables in this study met the standard. The assumption

of normality was not met for the following variables included in this study: (a) depression (skewness = 1.159, kurtosis = 1.084); (b) talking via cell phone or personal digital assistant (skewness = .895, kurtosis = 1.335); (c) playing video or computer games alone (skewness = 1.652, kurtosis = 2.735); (d) playing video or computer games with others (skewness = 1.718, kurtosis = 2.612); (e) following Twitter, blogs, or other newsfeeds (skewness = 1.562, kurtosis = 2.679); (f) visiting YouTube or other video sites (skewness = 1.025, kurtosis = 1.254); (g) building or enhancing personal website (skewness = 3.392, kurtosis = 15.018); (h) conduct research or seek information (skewness = 1.083, kurtosis = .823); (i) work on school-related assignments (skewness = 1.022, kurtosis = .679); and (j) view pornography or adult content (skewness = 1.209, kurtosis = .693).

Square root transformations were conducted to force a normal distribution across variables with positively skewed non-normal distributions (Hair et al., 1995). The resulting statistics revealed that some of the variables normalized due to the square root transformation while other normality statistics still fell outside the acceptable standard of -1.0 to 1.0 (Hair et al., 1995). The following are resulting statistics of the transformed variables: (a) depression (skewness = -.016, kurtosis = -.104); (b) talking via cell phone or personal digital assistant (skewness = .230, kurtosis = .316); (c) playing video or computer games alone (skewness = 1.113, kurtosis = .386); (d) playing video or computer games with others (skewness = 1.226, kurtosis = .537); (e) following Twitter, blogs or other newsfeeds (skewness = .950, kurtosis = .229); (f) watching YouTube or other video sites (skewness = .391, kurtosis = .010); (g) building or enhancing a personal website (skewness = 2.465, kurtosis = 6.676); (h) conduct research or seek information (skewness = .623, kurtosis = -.379); (i) work on school-related assignments

(skewness = .630, kurtosis = -.524); and (h) view pornography or adult content (skewness = .865, kurtosis = -.414).

Due to the high number of variables related to technology use, psychosocial well-being and sense of community, tests for multicollinearity were employed for each regression to ensure that the variance accounted for was not inflated due to a high degree of overlap among scales. A variance inflation factor greater than 10 is a common criteria for evidence of multicollinearity (Cohen, Cohen, West, & Aiken, 2003). In this study, multicollinearity statistics for all independent variables in each equation met the standard (tolerance $\geq .20$; VIF ≤ 5.0). Thus, multicollinearity was not of concern in the results.

Last, a visual test of scatterplots was employed to test the assumption of homoscedasticity. A lack of homoscedasticity could mean that there is an interaction effect between a measured independent variable and another independent variable not included in the model. It could also mean that some independent variables are skewed while others are not (Tabachnick & Fidell, 2007). Further, Fox (2005) asserted that small to moderate evidence of homoscedasticity in regression analysis has only a minor impact on estimates. Homoscedasticity was not a concern in these results.

Hypothesis One

The first hypothesis predicted that college students' time spent using communication technologies would be related to indicators of their perceived psychosocial well-being. The stepwise command in multiple regression was used to determine which indicators of time spent using communication technologies significantly predicted psychosocial well-being. The significant findings from each regression are presented by the indicator of psychosocial well-being entered as the criterion variable.

Loneliness. First, loneliness was entered as the criterion variable and the 13 indicators of time spent using communication technologies were entered together as the predictor variables. The following variables related to time spent using communication technologies emerged as statistically significant predictors of loneliness: (a) playing video or computer games alone ($\beta = .218, p = .000$); (b) talking via cell phone or personal digital assistant ($\beta = -.133, p = .000$); (c) visiting YouTube or other video sites ($\beta = .114, p = .000$); (d) playing video or computer games with others ($\beta = -.152, p = .000$); (e) texting or emailing via cell phone or personal digital assistant ($\beta = -.096, p = .003$), and (f) surfing the internet or visiting websites ($\beta = .083, p = .010$). These results are presented in Table 1.1.

Table 1.1

Results of Multiple Regression Analysis with Loneliness as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	42.244	1.920		22.006	.000
Playing video or computer games alone	4.882	.821	.218	5.948	.000***
Talking via cell phone or personal digital assistant	-3.646	.876	-.133	-4.163	.000***
Visiting YouTube or other video sites	2.893	.813	.114	3.559	.000***
Playing video or computer games with others	-3.220	.768	-.152	-4.163	.000***
Texting or emailing via cell phone or PDA	-.516	.172	-.096	-3.007	.003**
Surfing the internet or visiting websites	.473	.184	.083	2.574	.010**

Note. $R^2 = .095$, Adjusted $R^2 = .090$, $F(6, 1077) = 18.795$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Depression. Next, depression was entered as the criterion variable and the 13 indicators of time spent using communication technologies were entered together as the predictor variables. The following variables related to time spent using communication technologies were statistically significant predictors of depression: (a) chatting on instant messenger or in a chat room ($\beta = .073, p = .023$); (2) texting or emailing via cell phone or personal digital assistant ($\beta = .087, p = .004$); (3) visiting YouTube or other video sites ($\beta = .079, p = .013$); (4) playing video or computer games with others

($\beta = -.125, p = .001$); and (5) playing video or computer games alone ($\beta = .104, p = .006$). The results of this analysis are presented in Table 1.2.

Table 1.2

Results of Multiple Regression Analysis with Depression as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	1.637	.165		9.897	.000
Chatting on instant messenger or in a chat room	.040	.018	.073	2.284	.023*
Texting or emailing via cell phone or PDA	.050	.018	.087	2.856	.004**
Visiting YouTube or other video sites	.214	.086	.079	2.487	.013*
Playing video or computer games with others	-.284	.085	-.125	-3.340	.001***
Playing video or computer games alone	.248	.090	.104	2.761	.006**

Note. $R^2 = .036$, Adjusted $R^2 = .031$, $F(5, 1078) = 8.020$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Shyness. Shyness was then entered as the criterion variable with the 13 indicators of time spent using communication technologies as the predictor variables. The following variables related to time spent using communication technologies were statistically significant predictors of shyness: (a) texting or emailing via cell phone or personal digital assistant ($\beta = -.197, p = .000$); (b) surfing the internet or visiting websites ($\beta = .072, p = .031$); (c) playing video or computer games alone ($\beta = .141, p = .000$); (d) playing video or computer games with others ($\beta = -.127, p = .000$); (e) talking via cell phone or personal digital assistant ($\beta = -.106, p = .001$); (f) watching television or movies ($\beta = .087, p = .005$); (g) visiting YouTube or other video sites ($\beta = .078, p = .016$); (h) chatting on instant messenger or in a chat room ($\beta = .072, p = .022$); and (i) building or enhancing personal website ($\beta = -.059, p = .049$). Results of this regression equation are presented in Table 1.3.

Table 1.3

Results of Multiple Regression Analysis with Shyness as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	37.235	1.966		18.937	.000
Texting or emailing via cell phone or PDA	-1.021	.168	-.197	-6.086	.000***
Surfing the internet or visiting websites	.395	.183	.072	2.154	.031*
Playing video or computer games alone	3.038	.793	.141	3.833	.000***
Playing video or computer games with others	-2.603	.740	-.127	-3.518	.000***
Talking via cell phone or PDA	-2.795	.844	-.106	-3.312	.001***
Watching television or movies	.532	.187	.087	2.842	.005**
Visiting YouTube or other video sites	1.907	.793	.078	2.404	.016*
Chatting on instant messenger or chat room	.358	.156	.072	2.293	.022*
Building or enhancing a personal website	-1.853	.940	-.059	-1.970	.049*

Note. $R^2 = .104$, Adjusted $R^2 = .097$, $F(9, 1074) = 13.859$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social anxiety. The next stepwise regression equation included social anxiety as the criterion variable and the 13 indicators of time spent using communication technologies entered together as the predictor variables. Results indicated that only the following variable related to time spent using communication technologies was a statistically significant predictor of social anxiety: (a) networking online via Facebook or other sites ($\beta = .094$, $p = .002$). The result of this equation is presented in Table 1.4.

Table 1.4

Results of Multiple Regression Analysis with Social Anxiety as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	38.603	.535		72.196	.000
Networking online via Facebook or other sites	.373	.121	.094	3.092	.002**

Note. $R^2 = .009$, Adjusted $R^2 = .008$, $F(1, 1082) = 9.558$, $p = .002$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Perceived social skill. Next, perceived social skill was entered into a multiple regression equation as the criterion variable with the 13 indicators of time spent using communication technologies as the predictor variables. The following variables related to time spent using communication technologies were statistically significant predictors of perceived social skill: (a) texting or emailing via cell phone or personal digital

assistant ($\beta = .206, p = .000$); (b) visiting YouTube or other video sites ($\beta = -.106, p = .001$); (c) playing computer or video games alone ($\beta = -.142, p = .000$); (d) talking via cell phone or personal digital assistant ($\beta = .103, p = .001$); (e) building or enhancing personal website ($\beta = .085, p = .005$); (f) surfing the internet or visiting websites ($\beta = -.078, p = .016$); and (g) playing video or computer games with others ($\beta = .077, p = .033$).

These results are presented in Table 1.5.

Table 1.5

Results of Multiple Regression Analysis with Perceived Social Skill as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	26.356	1.743		15.118	.000
Texting or emailing via cell phone or PDA	.959	.148	.206	6.499	.000***
Visiting YouTube or other video sites	-2.309	.701	-.106	-3.291	.001***
Playing video or computer games alone	-2.737	.706	-.142	-3.879	.000***
Talking via cell phone or PDA	2.435	.755	.103	3.227	.001***
Building or enhancing personal website	2.375	.841	.085	2.824	.005**
Surfing the internet or visiting websites	-.384	.159	-.078	-2.410	.016*
Playing video/computer games with others	1.408	.661	.077	2.130	.033*

Note. $R^2 = .107$, Adjusted $R^2 = .101$, $F(7, 1076) = 18.474$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social self-confidence. Social self-confidence was then entered in a multiple regression equation as the criterion variable with the 13 indicators of time spent using communication technologies entered together as the predictor variables. The following variables related to time spent using communication technologies were statistically significant predictors of social self-confidence: (a) texting or emailing via cell phone or personal digital assistant ($\beta = .159, p = .000$); (b) playing video or computer games alone ($\beta = -.174, p = .000$); (c) watching television or movies ($\beta = -.089, p = .004$); (d) chatting on instant messenger or in a chat room ($\beta = -.111, p = .001$); (e) talking via cell phone or personal digital assistant ($\beta = .099, p = .002$); (f) playing video games with others ($\beta = .099, p = .006$); (g) building or enhancing personal website ($\beta = .093, p = .003$); (h) surfing the internet or visiting websites ($\beta = -.078, p = .020$); (i) networking online via

Facebook or other sites ($\beta = .080, p = .029$); and (j) following Twitter, blogs, or other newsfeeds ($\beta = -.069, p = .037$). These results of this analysis are presented in Table 1.6.

Table 1.6

Results of Multiple Regression Analysis with Social Self-Confidence as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	17.320	.855		20.255	.000
Texting or emailing via cell phone or PDA	.379	.081	.159	4.683	.000***
Playing video or computer games alone	-1.720	.362	-.174	-4.753	.000***
Watching television or movies	-.250	.086	-.089	-2.913	.004**
Chatting on instant messenger or chat room	-.253	.076	-.111	-3.314	.001***
Talking via cell phone or PDA	1.204	.387	.099	3.115	.002**
Playing video or computer games with others	.927	.339	.099	2.734	.006**
Building or enhancing a personal website	1.327	.445	.093	2.980	.003**
Surfing the internet or visiting websites	-.195	.084	-.078	-2.335	.020*
Networking online via Facebook or other sites	.206	.094	.080	2.191	.029*
Following Twitter, blogs or other newsfeeds	-.681	.325	-.069	-2.093	.037*

Note. $R^2 = .111$, Adjusted $R^2 = .103$, $F(10, 1073) = 13.406$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social self-efficacy. Last, social self-efficacy was entered as the criterion variable and the 13 indicators of time spent using communication technologies were entered together as the predictor variables. The following variables related to time spent using communication technologies were statistically significant predictors of social self-efficacy: (a) texting or emailing via cell phone or personal digital assistant ($\beta = .154, p = .000$); (b) visiting YouTube or other video sites ($\beta = -.121, p = .000$); (c) talking via cell phone or personal digital assistant ($\beta = .145, p = .000$); (d) playing video or computer games alone ($\beta = -.170, p = .000$); (e) playing video or computer games with others ($\beta = .170, p = .000$); (f) building or enhancing personal website ($\beta = .089, p = .004$); (g) following Twitter, blogs, or other newsfeeds ($\beta = -.069, p = .029$); and (h) watching television or movies ($\beta = -.063, p = .039$). The results of this analysis are presented in Table 1.7.

Table 1.7

Results of Multiple Regression Analysis with Social Self-Efficacy as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables (n = 1,084)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	73.143	3.772		19.389	.000
Texting or emailing via cell phone or PDA	1.530	.318	.154	4.810	.000***
Visiting YouTube or other video sites	-5.667	1.451	-.121	-3.905	.000***
Talking via cell phone or PDA	7.359	1.614	.145	4.559	.000***
Playing video or computer games alone	-7.040	1.509	-.170	-4.667	.000***
Playing video or computer games with others	6.677	1.417	.170	4.713	.000***
Building or enhancing a personal website	5.353	1.863	.089	2.874	.004**
Following Twitter, blogs, or other newsfeeds	-2.894	1.328	-.069	-2.180	.029*
Watching television or movies	-.732	.354	-.063	-2.064	.039*

Note. $R^2 = .110$, Adjusted $R^2 = .103$, $F(8, 1075) = 16.560$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Overview of the results. In conclusion, the findings demonstrated that variables related to time spent using communication technologies emerged as both positive and negative predictors of indicators of students' perceived psychosocial well-being. The results are presented in Table 1.8 and will be discussed further in the following chapter.

Hypothesis Two

The second hypothesis predicted college students' motivations for use of communication technologies would be related to indicators of their perceived psychosocial well-being. The stepwise command in multiple regression was used to determine which variables related to motivation for use of communication technologies significantly predicted indicators of psychosocial well-being. The significant findings from each regression are presented by each indicator of psychosocial well-being entered as the criterion variable. Predictor variables are presented in the order in which they were displayed in the results of each stepwise regression.

Loneliness. First, loneliness was entered as the criterion variable and the 14 indicators of motivation for use of communication technologies were entered together as the predictor variables in a multiple regression equation. Using the stepwise command,

Table 1.8

Time Spent Using Communication Technologies as Predictors of Psychosocial Well-Being

Dependent Variable	Positive Predictors	Negative Predictors
Loneliness	Playing video/computer games alone Visiting YouTube or other video sites Surfing the internet or visiting websites	Talking via cell phone or PDA Playing video/computer games with others Texting/emailing via cell phone or PDA
Depression	Chatting on IM or in a chat room Texting/emailing via cell phone or PDA Visiting YouTube or other video sites Playing video/computer games alone	Playing video/computer games with others
Shyness	Surfing the internet or visiting websites Playing video/computer games alone Watching television or movies Visiting YouTube or other video sites Chatting on IM or in a chat room	Texting/emailing via cell phone or PDA Playing video/computer games with others Talking via cell phone or PDA Building or enhancing personal website
Social anxiety		Networking via Facebook/other websites
Social skill	Texting/emailing via cell phone or PDA Talking via cell phone or PDA Building or enhancing personal website Playing video/computer games with others	Visiting YouTube or other video sites Playing video/computer games alone Surfing the internet or visiting websites
Social self-confidence	Texting/emailing via cell phone or PDA Talking via cell phone or PDA Playing video/computer games with others Building or enhancing personal website Networking via Facebook/other websites	Playing video/computer games alone Watching television or movies Chatting on IM or in a chat room Surfing the internet or visiting websites Following Twitter, blogs, other newsfeeds
Social self-efficacy	Texting/emailing via cell phone or PDA Talking via cell phone or PDA Playing video/computer games with others Building or enhancing personal website	Visiting YouTube or other video sites Playing video/computer games alone Following Twitter, blogs, other newsfeeds Watching television or movies

results indicated that the following variables related to motivation for use of communication technologies were statistically significant predictors of loneliness: (a) seek support for personal problems or issues ($\beta = .174, p = .000$); (b) share photos, videos, or other personal updates ($\beta = -.202, p = .000$); (c) waste time or procrastinate ($\beta = .151, p = .000$); (d) play computer games alone or with other users ($\beta = .074, p = .019$); (e) comment on blogs or other news feeds ($\beta = .090, p = .007$); (f) view pornography or

adult content ($\beta = .064, p = .041$); and (g) interact with friends or other social contacts ($\beta = -.063, p = .048$). Results of this analysis are presented in Table 2.1.

Table 2.1

Results of Multiple Regression Analysis with Loneliness as the Criterion Variable and Motivations for Use of Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	36.493	1.835		19.882	.000
Seek support for personal problems or issues	1.620	.280	.174	5.776	.000***
Share photos, videos, or other personal updates	-1.777	.303	-.202	-5.865	.000***
Waste time or procrastinate	1.531	.317	.151	4.836	.000***
Play computer or video games alone or with others	.555	.235	.074	2.356	.019*
Comment on blogs or other newsfeeds	.738	.275	.090	2.686	.007**
View pornography or adult content	1.719	.838	.064	2.050	.041*
Interact with friends or other social contacts	-.696	.351	-.063	-1.982	.048*

Note. $R^2 = .104$, Adjusted $R^2 = .099$, $F(7, 1076) = 17.912$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Depression. Next, depression was entered as the criterion variable and the 14 indicators of motivation for use of communication technologies were entered together as the predictor variables. The following variables related to motivation for use of communication technologies emerged as statistically significant predictors of depression: (a) seek support for personal problems or issues ($\beta = .171, p = .001$); (b) waste time or procrastinate ($\beta = .161, p = .000$); (c) share “true” self with others ($\beta = .079, p = .009$); and (d) conduct research or seek information ($\beta = .075, p = .012$). Results are presented in Table 2.2.

Table 2.2

Results of Multiple Regression Analysis with Depression as the Criterion Variable and Motivations for Use of Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	.681	.203		3.354	.001
Seek support for personal problems or issues	.170	.031	.171	5.565	.000***
Waste time or procrastinate	.175	.032	.161	5.413	.000***
Share “true” self with others	.081	.031	.079	2.599	.009**
Conduct research or seek information	.231	.092	.075	2.510	.012*

Note. $R^2 = .078$, Adjusted $R^2 = .074$, $F(1, 1082) = 44.617$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Shyness. Shyness was then entered as the criterion variable with the 14 indicators of motivation for use of communication technologies as the predictor variables. The following variables related to motivation for use of communication technologies were statistically significant predictors of shyness: (a) play computer or video games alone or with other users ($\beta = .125, p = .000$); (b) waste time or procrastinate ($\beta = .155, p = .000$); (c) share photos, videos, or other personal updates ($\beta = -.125, p = .000$); (d) seek support for personal problems or issues ($\beta = .119, p = .000$); and (e) conduct research or seek information ($\beta = .110, p = .000$). Results of this analysis are presented in Table 2.3.

Table 2.3

Results of Multiple Regression Analysis with Shyness as the Criterion Variable and Motivations for Use of Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	24.017	1.953		12.300	.000
Play computer or video games alone or with others	.898	.218	.125	4.128	.000***
Waste time or procrastinate	1.507	.301	.155	5.009	.000***
Share photos, videos, or other personal updates	-1.061	.258	-.125	-4.106	.000***
Seek support for personal problems or issues	1.062	.271	.119	3.924	.000***
Conduct research or seek information	3.056	.830	.110	3.683	.000***

Note. $R^2 = .079$, Adjusted $R^2 = .075$, $F(5, 1078) = 18.524$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social anxiety. The next stepwise regression equation included social anxiety as the criterion variable and the 14 indicators of motivation for use of communication technologies entered together as the predictor variables. The following variables related to motivation for use of communication technologies were statistically significant predictors of social anxiety: (a) waste time or procrastinate ($\beta = .171, p = .000$); (b) conduct research or seek information ($\beta = .118, p = .000$); (c) seek support for personal problems or issues ($\beta = .082, p = .009$); (d) view pornography or adult content ($\beta = -.092, p = .003$); and (e) share “true” self with others ($\beta = .074, p = .019$). Results of this analysis are presented in Table 2.4.

Table 2.4

Results of Multiple Regression Analysis with Social Anxiety as the Criterion Variable and Motivations for Use of Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	32.382	1.448		22.361	.000
Waste time or procrastinate	1.173	.207	.171	5.655	.000***
Conduct research or seek information	2.312	.593	.118	3.902	.000***
Seek support for personal problems or issues	.515	.196	.082	2.626	.009**
View pornography or adult content	-1.695	.564	-.092	-2.990	.003**
Share "true" self with others	.481	.204	.074	2.358	.019**

Note. $R^2 = .060$, Adjusted $R^2 = .056$, $F(5, 1078) = 13.757$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Perceived social skill. Next, perceived social skill was entered as the criterion variable with the 14 indicators of motivation for use of communication technologies as the predictor variables. The following variables related to motivations for use of communication technologies were statistically significant predictors of perceived social skill: (a) share photos, videos, or other personal updates ($\beta = .220$, $p = .000$); (b) play video or computer games alone or with other users ($\beta = -.133$, $p = .000$); (c) look for entertainment (e.g., music/video downloads) ($\beta = -.078$, $p = .016$); (d) conduct research or seek information ($\beta = -.100$, $p = .001$); (e) waste time or procrastinate ($\beta = -.074$, $p = .020$); (f) seek support for personal problems or issues ($\beta = -.085$, $p = .006$); and (g) meet new people and make friends ($\beta = .071$, $p = .022$). Results are presented in Table 2.5.

Table 2.5

Results of Multiple Regression Analysis with Perceived Social Skill as the Criterion Variable and Motivations for Use of Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	34.453	1.840		18.725	.000
Share photos, videos, or other personal updates	1.677	.235	.220	7.140	.000***
Play computer or video games alone or with others	-.863	.199	-.133	-4.337	.000***
Look for entertainment (e.g., music/video)	-.657	.272	-.078	-2.415	.016*
Conduct research or seek information	-2.491	.745	-.100	-3.344	.001***
Waste time or procrastinate	-.648	.279	-.074	-2.325	.020*
Seek support for personal problems or issues	-.685	.251	-.085	-2.735	.006**
Meet new people and make friends	.651	.284	.071	2.290	.022

Note. $R^2 = .095$, Adjusted $R^2 = .089$, $F(7, 1076) = 16.181$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social self-confidence. Social self-confidence was then entered as the criterion variable with the 14 indicators of motivation for use of communication technologies entered together as the predictor variables. The following variables related to motivations for use of communication technologies were statistically significant predictors of social self-confidence: (a) play computer or video games alone or with other users ($\beta = -.146, p = .000$); (b) share photos, videos, or other personal updates ($\beta = .196, p = .000$); (c) waste time or procrastinate ($\beta = -.116, p = .000$); (d) seek support for personal problems or issues ($\beta = -.114, p = .000$); (e) look for entertainment (e.g., music/video downloads) ($\beta = -.078, p = .015$); (f) conduct research or seek information ($\beta = -.071, p = .018$); and (g) meet new people and make friends ($\beta = .064, p = .039$). Results of this analysis are presented in Table 2.6.

Table 2.6

Results of Multiple Regression Analysis with Social Self-Confidence as the Criterion Variable and Motivations for Use of Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	22.141	.937		23.622	.000
Play video or computer games alone or with others	-.481	.101	-.146	-4.749	.000***
Share photos, videos, or other personal updates	.762	.120	.196	6.366	.000***
Waste time or procrastinate	-.519	.142	-.116	-3.654	.000***
Seek support for personal problems or issues	-.468	.128	-.114	-3.670	.000***
Look for entertainment (e.g., music/video)	-.337	.139	-.078	-2.433	.015*
Conduct research or seek information	-.902	.379	-.071	-2.376	.018*
Meet new people and make friends	.300	.145	.064	2.069	.039*

Note. $R^2 = .100$, Adjusted $R^2 = .094$, $F(7, 1076) = 17.104, p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social self-efficacy. Last, social self-efficacy was entered as the criterion variable and the 14 indicators of motivation for use of communication technologies were entered together as the predictor variables in a stepwise regression equation. The following variables related to motivations for use of communication technologies were statistically significant predictors of social self-efficacy: (a) share photos, videos, or other personal updates ($\beta = .197, p = .000$); (b) conduct research or seek information ($\beta = -$

.160, $p = .000$); (c) waste time or procrastinate ($\beta = -.107$, $p = .001$); (d) seek support for personal problems or issues ($\beta = -.075$, $p = .014$); and (e) play computer or video games alone or with other users ($\beta = -.068$, $p = .024$). Results are presented in Table 2.7.

Table 2.7

Results of Multiple Regression Analysis with Social Self-Efficacy as the Criterion Variable and Motivation for Use of Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	94.715	3.757		25.213	.000
Share photos, videos, or other personal updates	3.212	.497	.197	6.463	.000***
Conduct research or seek information	-8.561	1.596	-.160	-5.364	.000***
Waste time or procrastinate	-2.012	.579	-.107	-3.477	.001***
Seek support for personal problems or issues	-1.284	.521	-.075	-2.466	.014*
Play computer or video games alone or with others	-.945	.419	-.068	-2.256	.024*

Note. $R^2 = .078$, Adjusted $R^2 = .074$, $F(5, 1078) = 18.196$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Overview of the results. The findings demonstrated that variables related to motivation for use of communication technologies emerged as both positive and negative predictors of indicators of students' perceived psychosocial well-being. The results are presented in Table 2.8 and will be discussed further in the following chapter.

Hypothesis Three

The third hypothesis predicted that college students' time spent using communication technologies would be related to indicators of their perceived sense of community. The stepwise regression in multiple regression was used to determine which variables related to time spent using communication technologies significantly predicted indicators of students' sense of community. The significant findings are presented by the indicator of students' sense of community entered as the criterion variable.

Table 2.8

Motivation for Use of Communication Technologies as Predictors of Psychosocial Well-Being

Dependent Variable	Positive Predictors	Negative Predictors
Loneliness	Seek support for personal problems/issues Waste time or procrastinate Play video/computer games alone/others Comment on blogs or other newsfeeds View pornography or adult content	Share photos, videos, other personal updates Interact with friends or other social contacts
Depression	Seek support for personal problems/issues Waste time or procrastinate Share “true” self with others Conduct research or seek information	
Shyness	Play video/computer games alone/others Waste time or procrastinate Seek support for personal problems/issues Conduct research or seek information	Share photos, videos, other personal updates
Social anxiety	Waste time or procrastinate Conduct research or seek information Seek support for personal problems/issues Share “true” self with others	View pornography or adult content
Perceived social skill	Share photos, videos, personal updates Meet new people and make friends	Playing video/computer games alone/others Look for entertainment (e.g., music/video) Conduct research or seek information Waste time or procrastinate Seek support for personal problems/issues
Social self-confidence	Share photos, videos, personal updates Meet new people and make friends	Play video/computer games alone/others Waste time or procrastinate Seek support for personal problems/issues Look for entertainment (e.g., music/video) Conduct research or seek information
Social self-efficacy	Share photos, videos, personal updates	Conduct research or seek information Waste time or procrastinate Seek support for personal problems/issues Play video/computer games alone/others

Mattering to others. First, mattering to others was entered as the criterion variable and the 13 indicators of time spent using communication technologies were entered together as the predictor variables in a multiple regression model. Results indicated that the following variables related to time spent using communication technologies were statistically significant predictors of mattering to others: (a) playing video or computer games alone ($\beta = -.192, p = .000$); (b) playing video or computer games with others ($\beta = .172, p = .000$); (c) surfing the internet or visiting websites ($\beta = -.077, p = .014$); (d) texting or emailing via cell phone or personal digital assistant ($\beta = .076, p = .012$); and (e) watching television or movies ($\beta = -.078, p = .014$). Results of this analysis are presented in Table 3.1.

Table 3.1

Results of Multiple Regression Analysis with Mattering to Others as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	24.240	.814		29.794	.000
Playing video or computer games alone	-2.755	.543	-.192	-5.077	.000***
Playing video or computer games with others	2.345	.506	.172	4.636	.000***
Surfing the internet or visiting websites	-.283	.115	-.077	-2.466	.014*
Texting or emailing via cell phone or PDA	.264	.105	.076	2.512	.012*
Watching television or movies	-.316	.128	-.078	-2.466	.014*

Note. $R^2 = .049$, Adjusted $R^2 = .045$, $F(5, 1078) = 11.108, p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Perceived social support from friends. Next, perceived social support from friends was entered as the criterion variable and the 13 indicators of time spent using communication technologies were entered together as the predictor variables in a stepwise regression equation. The following variables related to time spent using communication technologies were statistically significant predictors of perceived social support from friends: (a) talking via cell phone or personal digital assistant ($\beta = .160, p = .000$); (b) playing video or computer games alone ($\beta = -.187, p = .000$); (c) texting or

emailing via cell phone or personal digital assistant ($\beta = .077, p = .020$); (d) listening to or using a personal Mp3 player or iPod ($\beta = .082, p = .008$); (e) visiting YouTube or other video sites ($\beta = -.087, p = .005$); and (f) playing video or computer games with others ($\beta = .083, p = .024$). Results of this analysis are presented in Table 3.2.

Table 3.2

Results of Multiple Regression Analysis with Perceived Social Support from Friends as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	23.367	1.117		20.922	.000
Talking via cell phone or PDA	2.524	.509	.160	4.960	.000***
Playing video or computer games alone	-2.412	.474	-.187	-5.094	.000***
Texting or emailing via cell phone or PDA	.237	.102	.077	2.321	.020*
Listening to or using Mp3 player or iPod	.236	.089	.082	2.649	.008**
Visiting YouTube or other video sites	-1.274	.449	-.087	-2.840	.005**
Playing video or computer games with others	1.012	.446	.083	2.267	.024*

Note. $R^2 = .079$, Adjusted $R^2 = .074$, $F(6, 1077) = 15.494$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social connectedness. Social connectedness was then entered as the criterion variables and the 13 indicators of time spent using communication technologies were entered together as the predictor variables in a stepwise regression equation. The following variables related to time spent using communication technologies were statistically significant predictors of social connectedness: (a) texting or emailing via cell phone or personal digital assistant ($\beta = .150, p = .000$); (b) playing video or computer games alone ($\beta = -.239, p = .000$); (c) playing video or computer games with others ($\beta = .177, p = .000$); (d) talking via cell phone or personal digital assistant ($\beta = .134, p = .000$); (e) visiting YouTube or other video sites ($\beta = -.091, p = .005$); (f) watching television or movies ($\beta = -.084, p = .005$); (g) surfing the internet or visiting websites ($\beta = -.076, p = .022$); (h) networking online via Facebook or other sites ($\beta = .104, p = .004$); and (i) chatting on instant messenger or in a chat room ($\beta = -.088, p = .008$). Results are presented in Table 3.3.

Table 3.3

Results of Multiple Regression Analysis with Social Connectedness as the Criterion Variable and Time Spent Using Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	85.078	3.200		26.586	.000
Texting or emailing via cell phone or PDA	1.364	.303	.150	4.494	.000***
Playing video or computer games alone	-9.005	1.359	-.239	-6.625	.000***
Playing video or computer games with others	6.339	1.270	.177	4.991	.000***
Talking via cell phone or PDA	6.173	1.448	.134	4.263	.000***
Visiting YouTube or other video sites	-3.875	1.366	-.091	-2.836	.005**
Watching television or movies	-.896	.321	-.084	-2.791	.005**
Surfing the internet or visiting websites	-.728	.317	-.076	-2.294	.022*
Networking online via Facebook or other sites	1.030	.354	.104	2.910	.004**
Chatting on instant messenger or in a chat room	-.761	.286	-.088	-2.658	.008**

Note. $R^2 = .140$, Adjusted $R^2 = .132$, $F(9, 1074) = 19.350$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social adaptation to college. Last, social adaptation to college was entered in a stepwise regression equation as the criterion variable and the 13 indicators of time spent using communication technologies were entered together as the predictor variables. The following variables related to time spent using communication technologies were statistically significant predictors of social adaptation to college: (a) playing video or computer games alone ($\beta = -.223$, $p = .000$); (b) playing video or computer games with others ($\beta = .180$, $p = .000$); (c) texting or emailing via cell phone or personal digital assistant ($\beta = .083$, $p = .012$); (d) watching television or movies ($\beta = -.093$, $p = .003$); (e) visiting YouTube or other video sites ($\beta = -.084$, $p = .011$); (f) networking online via Facebook or other sites ($\beta = .095$, $p = .006$); (g) listening to or using a personal Mp3 player or iPod ($\beta = .073$, $p = .020$); and (h) surfing the internet or visiting websites ($\beta = -.072$, $p = .036$). Results of this analysis are presented in Table 3.4.

Table 3.4

Results of Multiple Regression Analysis with Social Adaptation to College as the Criterion Variable and Motivation for Use of Communication Technologies as the Predictor Variables (n = 1,084)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	119.417	4.276		27.927	.000
Playing video or computer games alone	-13.698	2.291	-.223	-5.980	.000***
Playing video or computer games with others	10.503	2.135	.180	4.920	.000***
Texting or emailing via cell phone or PDA	1.236	.492	.083	2.511	.012*
Watching television or movies	-1.621	.541	-.093	-2.994	.003**
Visiting YouTube or other video sites	-5.875	2.306	-.084	-2.548	.011*
Networking online via Facebook or other sites	1.541	.555	.095	2.776	.006
Listening to or using a personal Mp3 or iPod	1.001	.428	.073	2.336	.020
Surfing the internet or visiting websites	-1.120	.533	-.072	-2.102	.036

Note. $R^2 = .082$, Adjusted $R^2 = .076$, $F(8, 1075) = 12.071$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Overview of the results. The findings demonstrated that variables related to time spent using communication technologies emerged as both positive and negative predictors of indicators of students' sense of community. The results are presented in Table 3.5 and will be discussed further in the following chapter.

Table 3.5

Time Spent Using Communication Technologies as Predictors of Sense of Community

Dependent Variable	Positive Predictors	Negative Predictors
Mattering to others	Playing video/computer games with others Texting/emailing via cell phone or PDA	Playing video/computer games alone Surfing the internet/visiting websites Watching television or movies
Perceived social support	Talking via cell phone or PDA Texting/emailing via cell phone or PDA Listening to or using Mp3 player/iPod Playing video/computer games with others	Playing video/computer games alone Visiting YouTube or other video sites
Social connectedness	Texting/emailing via cell phone or PDA Playing video/computer games with others Talking via cell phone or PDA Networking via Facebook or other sites	Playing video/computer games alone Visiting YouTube or other video sites Watching television or movies Surfing the internet/visiting websites Chatting on IM or in a chat room
Social adaptation to college	Playing video/computer games with others Texting/emailing via cell phone or PDA Networking via Facebook or other sites Listening to or using Mp3 player/iPod	Playing video/computer games alone Watching television or movies Visiting YouTube or other video sites Surfing the internet/visiting websites

Hypothesis Four

The fourth hypothesis predicted college students' motivations for use of communication technologies would be related to indicators of their perceived sense of community. The stepwise command in multiple regression was used to determine which variables related to motivations for use of communication technologies significantly predicted indicators of students' sense of community. The significant findings from each regression are presented by the indicator of students' sense of community entered as the criterion variable.

Mattering to others. First, mattering to others was entered as the criterion variable and the 14 indicators of motivation for use of communication technologies were entered together as the predictor variables in a multiple regression model. Results indicated that the following variables related to motivations for use of communication technologies were statistically significant predictors of mattering to others: (a) seek support for personal problems or issues ($\beta = -.207, p = .000$); (b) waste time or procrastinate ($\beta = -.148, p = .000$); (c) share photos, videos, or other personal updates ($\beta = .148, p = .000$); (d) share "true" self with others ($\beta = -.084, p = .007$); and (e) conduct research or seek information ($\beta = -.065, p = .030$). Results are presented in Table 4.1.

Table 4.1

Results of Multiple Regression Analysis with Mattering to Others as the Criterion Variable and Motivation for Use of Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	28.759	1.286		22.362	.000
Seek support for personal problems or issues	-1.238	.184	-.207	-6.734	.000***
Waste time or procrastinate	-.962	.195	-.148	-4.922	.000***
Share photos, videos, or other personal updates	.841	.174	.148	4.828	.000***
Share "true" self with others	-.516	.190	-.084	-2.716	.007**
Conduct research or seek information	-1.202	.552	-.065	-2.178	.030*

Note. $R^2 = .088$, Adjusted $R^2 = .084$, $F(5, 1078) = 20.767$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Perceived social support from friends. Next, perceived social support from friends was entered as the criterion variable and the 14 indicators of motivation for use of communication technologies were entered together as the predictor variables in a stepwise regression equation. The following variables related to motivations for use of communication technologies were statistically significant predictors of perceived social support from friends: (a) share photos, videos, or other personal updates ($\beta = .098, p = .002$); (b) play computer games alone or with other users ($\beta = -.114, p = .000$); (c) interact with friends or other social contacts ($\beta = .098, p = .002$); and (4) seek support for personal problems or issues ($\beta = -.082, p = .008$). Results are presented in Table 4.2.

Table 4.2

Results of Multiple Regression Analysis with Perceived Social Support from Friends as the Criterion Variable and Motivation for Use of Communication Technologies as the Predictor Variables ($n = 1,084$)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	23.548	.873		26.984	.000
Share photos, videos, or other personal updates	.498	.163	.098	3.058	.002**
Play video or computer game alone or with others	-.490	.129	-.114	-3.790	.000***
Interact with friends or other social contacts	.619	.204	.098	3.041	.002**
Seek support for personal problems or issues	-.441	.165	-.082	-2.676	.008**

Note. $R^2 = .041$, Adjusted $R^2 = .037$, $F(4, 1079) = 11.479, p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social connectedness. Social connectedness was then entered as the criterion variables and the 14 indicators of motivation for use of communication technologies were entered together as the predictor variables in a stepwise regression equation. The following variables related to motivations for use of communication technologies were statistically significant predictors of social connectedness: (a) play computer or video games alone or with other users ($\beta = -.117, p = .000$); (b) share photos, videos, or other personal updates ($\beta = .203, p = .000$); (c) seek support for personal problems or issues ($\beta = -.163, p \leq .001$); (d) waste time or procrastinate ($\beta = -.130, p = .000$); (e) interact with

friends or other social contacts ($\beta = .106, p = .001$); and (f) share “true” self with others ($\beta = -.073, p = .019$). Results of this equation are presented in Table 4.3.

Table 4.3

Results of Multiple Regression Analysis with Social Connectedness as the Criterion Variable and Motivation for Use of Communication Technologies as the Predictor Variables (n = 1,084)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	88.737	2.729		32.511	.000
Play computer or video games along or with others	-1.473	.380	-.117	-3.879	.000***
Share photos, videos, or other personal updates	3.014	.469	.203	6.424	.000***
Seek support for personal problems for issues	-2.547	.473	-.163	-5.381	.000***
Waste time or procrastinate	-2.210	.530	-.130	-4.173	.000***
Interact with friends or other social contacts	1.955	.590	.106	3.312	.001***
Share “true” self with others	-1.179	.501	-.073	-2.355	.019***

Note. $R^2 = .110$, Adjusted $R^2 = .105$, $F(6, 1077) = 22.245$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Social adaptation to college. Last, social adaptation to college was entered in a stepwise regression equation as the criterion variable and the 14 indicators of motivation for use of communication technologies were entered together as the predictor variables. The following variables related to motivations for use of communication technologies were statistically significant predictors of social adaptation to college: (a) seek support for personal problems or issues ($\beta = -.172, p = .000$); (b) share photos, videos, or other personal updates ($\beta = .179, p = .000$); (c) play computer games alone or with other users ($\beta = -.085, p = .005$); (d) conduct research or seek information ($\beta = -.080, p = .008$); and (e) waste time or procrastinate ($\beta = -.080, p = .010$). Results of this analysis are presented in Table 4.4.

Table 4.4

Results of Multiple Regression Analysis with Social Adaptation to College as the Criterion Variable and Motivation for Use of Communication Technologies as the Predictor Variables (n = 1,084)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
(Constant)	125.913	5.605		22.462	.000
Seek support for personal problems or issues	-4.403	.777	-.172	-5.667	.000***
Share photos, videos, or other personal updates	4.357	.742	.179	5.875	.000***
Play video or computer games alone or with others	-1.748	.625	-.085	-2.797	.005**
Conduct research or seek information	-6.366	2.382	-.080	-2.673	.008**
Waste time or procrastinate	-2.238	.864	-.080	-2.592	.010**

Note. $R^2 = .072$, Adjusted $R^2 = .067$, $F(5, 1078) = 16.657$, $p = .000$.

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$.

Overview of the results. The findings demonstrated that variables related to motivations for using communication technologies emerged as both positive and negative predictors of indicators of students' sense of community. The results are presented in Table 4.5 and will be discussed further in the following chapter.

Table 4.5

Motivations for Use of Communication Technologies as Predictors of Sense of Community

Dependent Variable	Positive Predictors	Negative Predictors
Mattering to others	Share photos, videos, personal updates	Seek support for personal problems Waste time or procrastinate Share "true" self with others Conduct research or seek information
Perceived social support	Share photos, videos, personal updates Interact with friends or social contacts	Play video/computer games alone/others Seek support for personal problems
Social connectedness	Share photos, videos, personal updates Interact with friends or social contacts	Play video/computer games alone/others Seek support for personal problems Waste time or procrastinate Share "true" self with others
Social adaptation to college	Share photos, video, personal updates	Seek support for personal problems Play video/computer games alone/others Conduct research or seek information Waste time or procrastinate

Main Effects and Interaction Effects

The direct effects between indicators of psychosocial well-being and variables related to students' perceived sense of community are presented prior to a discussion of the interaction effects that emerged from tests of H5 and H6 (Aiken & West, 1991). Prior to an analysis of interaction effects, it was necessary to test for main effects with indicators of psychosocial well-being as the dependent variables and indicators of students' perceived sense of community as the independent variables. Conversely, main effects had to be assessed with indicators of students' perceived sense of community as the dependent variables and indicators of psychosocial well-being as the independent variables. The stepwise command in multiple regression was used to determine the most significant predictors of each set of indicators. Using the stepwise command, collinearity statistics were assessed for each model (tolerance ≥ 0.2 ; VIF ≤ 5.0) and did not emerge as a concern.

First, indicators of students' perceived psychosocial well-being were entered as the dependent variables and indicators of students' sense of community were entered into a stepwise regression equation as predictor variables. Loneliness was shown to be predicted by social connectedness ($\beta = -.588, p = .000$), mattering to others ($\beta = -.201, p = .000$), and perceived social support from friends ($\beta = -.140, p = .000$). Together social connectedness, mattering to others, and perceived social support from friends accounted for 69.8% of the variance in loneliness, $F(3, 1080) = 830.61, p = .000$. Social adaptation to college was not found to be a significant predictor of loneliness, though when entered as a single independent variable in a separate regression equation, social adaptation to college emerged as a significant predictor of loneliness ($\beta = -.665, p = .000$). Depression

was shown to be predicted by mattering to others ($\beta = -.352, p = .000$), social connectedness ($\beta = -.255, p = .000$), and perceived social support from friends ($\beta = .081, p = .015$). Mattering to others, social connectedness, and perceived social support from friends accounted for 27.1% of the variance in depression, $F(3, 1080) = 133.58, p = .000$. Social adaptation to college was not found to be a significant predictor of depression in this model, though social adaptation to college did emerge as a significant predictor of depression when entered as a single independent variable in a separate regression equation ($\beta = -.436, p = .000$).

Shyness was found to be predicted by social connectedness ($\beta = -.582, p = .000$), mattering to others ($\beta = -.152, p = .000$), and perceived social support from friends ($\beta = .067, p = .023$). Social connectedness, mattering to others, and perceived social support from friends accounted for 43.2% of the variance in shyness, $F(3, 1080) = 273.63, p = .000$. Social adaptation to college was not found to be a significant predictor of shyness in this model, though it did emerge as a significant predictor when entered as a single independent variable in a separate regression equation ($\beta = -.530, p = .000$). Social anxiety was predicted by mattering to others ($\beta = -.328, p = .000$). Social connectedness, perceived social support from friends, and social adaptation to college were not found to be significant predictors of social anxiety. However, when these three variables were re-entered in a separate regression equation, social connectedness ($\beta = -.318, p = .000$) and social support ($\beta = .082, p = .029$) were found to be significant predictors of social anxiety but only accounted for 7.5% of the variance in social anxiety, $F(2, 1081) = 43.930, p = .000$. Social adaptation to college was only significant when entered as a single independent variable ($\beta = -.218, p = .000$).

Perceived social skill was predicted by social connectedness ($\beta = .567, p = .000$), social adaptation to college ($\beta = .161, p = .000$), and mattering to others ($\beta = -.075, p = .039$). Social connectedness, social adaptation to college, and mattering to others together accounted for 41.3% of the variance in perceived social skill, $F(3, 1080) = 253.50, p = .000$. Perceived social support from friends was not found to be a significant predictor of perceived social skill, though when it was entered as a single independent variable in a separate regression equation it emerged as a significant predictor of perceived social skill ($\beta = .371, p = .000, R^2 = .137$). Social self-confidence was predicted by social connectedness ($\beta = .559, p = .000$), social adaptation to college ($\beta = .157, p = .000$), perceived social support from friends ($\beta = -.108, p = .000$), and mattering to others ($\beta = .074, p = .033$). These variables together accounted for 46.2% of the variance in perceived social skill, $F(4, 1079) = 231.87, p = .000$. Social self-efficacy was predicted by social connectedness ($\beta = .443, p = .000$), social adjustment to college ($\beta = .235, p = .000$), and perceived social support from friends ($\beta = .062, p = .030$). Together social connectedness, social adjustment to college, and perceived social support from friends accounted for 46.1% of the variance in social self-efficacy, $F(3, 1080) = 307.76, p = .000$. Mattering to others was not found to be a significant predictor of social self-efficacy, though when entered as a single independent variable, mattering to others emerged as a significant predictor of social self-efficacy ($\beta = .497, p = .000, R^2 = .247$).

Next, indicators of students' perceived sense of community were entered as the dependent variables and indicators of students' psychosocial well-being were entered into a stepwise regression equation as predictor variables. Mattering to others was found to be predicted by loneliness ($\beta = -.437, p = .000$), depression ($\beta = -.202, p = .000$), social

self-confidence ($\beta = .310, p = .000$), social anxiety ($\beta = -.069, p = .002$), and perceived social skill ($\beta = -.119, p = .006$). Together these variables accounted for 52.9% of the variance in mattering to others, $F(5, 1078) = 241.81, p = .000$. Shyness and social self-efficacy were not found to be significant predictors of mattering to others. When entered together as independent variables in a separate regression equation, shyness ($\beta = -.356, p = .000$) and social self-efficacy ($\beta = .229, p = .000$) emerged as significant predictors, accounting for 30.2% of the variance in mattering to others, $F(2, 1081) = 233.97, p = .000$. Perceived social support from friends was predicted by loneliness ($\beta = -.568, p = .000$), social self-efficacy ($\beta = .254, p = .000$), social anxiety ($\beta = .073, p = .005$), social self-confidence ($\beta = -.125, p = .001$), and depression ($\beta = .064, p = .021$). These variables accounted for 38.6% of the variance in perceived social support from friends, $F(5, 1078) = 135.69, p = .000$. Shyness and perceived social skill were not significant predictors of perceived social support from friends. When entered together in a separate regression, both perceived social skill ($\beta = .223, p = .000$) and shyness ($\beta = -.188, p = .000$) emerged as significant predictors, accounting for only 15.1% of the variance in perceived social support from friends, $F(2, 1081) = 96.121, p = .000$.

Social connectedness was predicted by loneliness ($\beta = -.582, p = .000$), perceived social skill ($\beta = .130, p = .000$), depression ($\beta = -.081, p = .000$), social self-confidence ($\beta = .122, p = .000$), and social self-efficacy ($\beta = .095, p = .001$). Together these variables accounted for 73.7% of the variance in social connectedness, $F(5, 1078) = 603.55, p = .000$. Shyness and social anxiety were not significant predictors of social connectedness. When shyness and social anxiety were entered together as independent variables in a separate regression, shyness emerged as a significant predictor of social connectedness (β

= -.646, $p = .000$, $R^2 = .417$) and social anxiety did not. Social anxiety was found to be a significant predictor of social connectedness only when entered as a single independent variable ($\beta = -.267$, $p = .000$, $R^2 = .071$). Lastly, social adaptation to college was predicted by loneliness ($\beta = -.387$, $p = .000$), social self-efficacy ($\beta = .243$, $p = .000$), depression ($\beta = -.163$, $p = .000$), social self-confidence ($\beta = .243$, $p = .000$), and shyness ($\beta = .141$, $p = .000$). These variables combined accounted for 54% of the variance in social adaptation to college, $F(5, 1078) = 253.19$, $p = .000$. Social anxiety and perceived social skill were not significant predictors of social adaptation to college in this model, but both were significant predictors of social adaptation to college when entered as independent variables in a separate equation. In this subsequent model, social adaptation to college was predicted by both perceived social skill ($\beta = .509$, $p = .000$) and social anxiety ($\beta = -.111$, $p = .000$). Together these variables accounted for 29.5% of the variance in social adaptation to college, $F(2, 1081) = 226.16$, $p = .000$.

Hypothesis Five

The fifth hypothesis predicted a relationship between students' perceived psychosocial well-being and their perceived sense of community mediated by time spent using communication technologies. To test the indirect effects predicted by this hypothesis, multiple regression analyses were performed to assess the direct influence of variables related to time spent using communication technologies and indicators of psychosocial well-being on indicators of students' sense of community. Then, multiple regression analyses were performed to assess the direct influence of variables related to time spent using communication technologies and indicators of students' sense of community on indicators of psychosocial well-being. If the initial analyses revealed

significant main effects, subsequent analyses were employed with the interaction term entered as the third predictor variable. Indicators of psychosocial well-being were entered as the dependent variables in the following analyses.

Loneliness. First, loneliness was entered as the criterion variable with indicators of sense of community and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of loneliness in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of loneliness are presented.

Results indicated that loneliness was predicted by the interaction between perceived social support from friends and the following indicators of time spent using communication technologies: (a) time spent texting or emailing via cell phone or personal digital assistant ($\beta = -.287, p = .028$); (b) watching television or movies ($\beta = -.254, p = .038$); (c) time spent listening to or using a personal Mp3 player or iPod ($\beta = -.421, p = .001$); and (d) time spent visiting YouTube or other video sites ($\beta = -.315, p = .027$). Loneliness was also predicted by the interaction between social adaptation to college and the following indicators of time spent using communication technologies: (a) talking via cell phone or personal digital assistant ($\beta = .458, p = .003$) and (b) building or enhancing a personal website ($\beta = .364, p = .004$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. The results of these analyses are presented in Table 5.1.

Table 5.1

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Sense of Community on Change in Loneliness

	Predictor Variable	R ²	ΔR ²	β	F
Step 1:	Perceived social support (PSS)	.355		-.588***	F(2, 1081) = 297.83
	Text/email via cell/PDA			-.041	
Step 2:	PSS x Text/email via cell/PDA	.358	.002	-.287*	F(3, 1080) = 200.87
Step 1:	Perceived social support (PSS)	.355		-.593***	F(2, 1081) = 297.51
	Watching TV/movies			.038	
Step 2:	PSS x Watching TV/movies	.358	.003	-.254*	F(3, 1080) = 200.38
Step 1:	Perceived social support (PSS)	.356		-.599***	F(2, 1081) = 298.54
	Listening to Mp3/iPod			.047	
Step 2:	PSS x Listening to Mp3/iPod	.363	.007	-.421***	F(3, 1080) = 205.04
Step 1:	Perceived social support (PSS)	.364		-.588***	F(2, 1081) = 309.55
	Watching YouTube/video			.103***	
Step 2:	PSS x Watching YouTube/video	.367	.003	-.315*	F(3, 1080) = 208.73
Step 1:	Social adaptation (SACQ)	.451		-.657***	F(2, 1081) = 443.73
	Talking via cell phone/PDA			-.096***	
Step 2:	SACQ x Talking via cell/PDA	.455	.004	.458**	F(3, 1080) = 301.02
Step 1:	Social adaptation (SACQ)	.443		-.665***	F(2, 1081) = 428.68
	Build/enhance personal site			.034	
Step 2:	SACQ x Build/enhance site	.447	.004	.364**	F(3, 1080) = 291.19

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

Depression. Then, depression was entered as the criterion variable with indicators of sense of community and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of depression in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of depression are presented.

Results from these analyses revealed that depression was predicted by the interaction between perceived social support from friends and the following indicators of time spent using communication technologies: (a) listening to or using a personal Mp3 player or iPod ($\beta = -.322, p = .029$) and (b) surfing the internet or visiting websites ($\beta = -.292, p = .047$). Depression was also predicted by the interaction between social

adaptation to college and time spent visiting YouTube or other video sites ($\beta = .308, p = .041$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. The results of these analyses are presented in Table 5.2.

Table 5.2

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Sense of Community on Change in Depression

	Predictor Variable	R ²	ΔR^2	β	F
Step 1:	Perceived social support (PSS)	.061		-.236***	$F(2, 1081) = 34.90$
	Listening to Mp3/iPod			.094**	
Step 2:	PSS x Listening to Mp3/iPod	.065	.004	-.322*	$F(3, 1080) = 24.93$
Step 1:	Perceived social support (PSS)	.056		-.224***	$F(2, 1081) = 31.79$
	Surfing the internet			.061*	
Step 2:	PSS x Surfing the internet	.059	.003	-.292*	$F(3, 1080) = 22.58$
Step 1:	Social adaptation (SACQ)	.194		-.430***	$F(2, 1081) = 130.45$
	Watching YouTube/videos			.066*	
Step 2:	SACQ x Watching YouTube	.198	.004	.308*	$F(3, 1080) = 88.61$

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

Shyness. Next, shyness was entered as the criterion variable with indicators of sense of community and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of shyness in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of shyness are presented.

Results indicated that shyness was predicted by the interaction between mattering to others and the following indicators of time spent using communication technologies: (a) talking via cell phone or personal digital assistant ($\beta = .310, p = .041$) and (b) building or enhancing a personal website ($\beta = .263, p = .037$). Shyness was also predicted by the interaction between perceived social support from friends and the following indicators of

time spent using communication technologies: (a) using email on a computer or laptop ($\beta = -.312, p = .037$) and (b) time spent surfing the internet or visiting websites ($\beta = -.517, p = .000$). Further, shyness was predicted by the interaction between social adaptation to college and time spent talking via cell phone or personal digital assistant ($\beta = .463, p = .008$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. The results of these analyses are presented in Table 5.3.

Table 5.3

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Sense of Community on Change in Shyness

	Predictor Variable	R ²	ΔR^2	β	F
Step 1:	Mattering to others (MO)	.300		-.525***	$F(2, 1081) = 231.16$
	Talking via cell phone/PDA			-.142***	
Step 2:	MO x Talking via cell/PDA	.302	.002	.310*	$F(3, 1080) = 155.96$
Step 1:	Mattering to others (MO)	.282		-.530***	$F(2, 1081) = 212.58$
	Build/enhance personal site			-.054*	
Step 2:	MO x Build/enhance personal site	.285	.003	.263*	$F(3, 1080) = 143.62$
Step 1:	Perceived social support (PSS)	.133		-.362***	$F(2, 1081) = 82.78$
	Email on computer/laptop			-.031	
Step 2:	PSS x Email on computer/laptop	.136	.003	-.312*	$F(3, 1080) = 56.81$
Step 1:	Perceived social support (PSS)	.140		-.358***	$F(2, 1081) = 87.99$
	Surfing the internet			.090***	
Step 2:	PSS x Surfing the internet	.151	.011	-.517***	$F(3, 1080) = 63.96$
Step 1:	Social adaptation to college (SACQ)	.294		-.521***	$F(2, 1081) = 224.73$
	Talking via cell phone/PDA			-.115***	
Step 2:	SACQ x Talking via cell/PDA	.298	.004	.463**	$F(3, 1080) = 153.05$

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

Social anxiety. Social anxiety was then entered as the criterion variable with indicators of sense of community and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of shyness in Step 1, the product of the two independent variables was

computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of social anxiety are presented.

Results indicated that social anxiety was predicted by the interaction between perceived social support from friends and the following indicators of time spent using communication technologies: (a) visiting YouTube or other video sites ($\beta = -.348, p = .050$) and (b) surfing the internet or visiting websites ($\beta = -.472, p = .002$). Social anxiety was also predicted by the interaction between social connectedness and the following indicators of time spent using communication technologies: (a) visiting YouTube or other video sites ($\beta = -.379, p = .039$) and (b) surfing the internet or visiting websites ($\beta = -.402, p = .012$). Last, social anxiety was predicted by the interaction between social adaptation to college and time spent watching television or movies ($\beta = -.336, p = .011$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results are presented in Table 5.4.

Table 5.4

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Sense of Community on Change in Social Anxiety

	Predictor Variable	R ²	ΔR^2	β	F
Step 1:	Perceived social support (PSS)	.019		-.113***	$F(2, 1081) = 10.54$
	Watching YouTube/video			.073*	
Step 2:	PSS x Watching YouTube/video	.023	.004	-.348*	$F(3, 1080) = 8.33$
Step 1:	Perceived social support (PSS)	.020		-.113***	$F(2, 1081) = 11.23$
	Surfing the internet			.081**	
Step 2:	PSS x Surfing the internet	.029	.009	-.472**	$F(3, 1080) = 10.91$
Step 1:	Social connectedness (SC)	.073		-.261***	$F(2, 1081) = 42.83$
	Watching YouTube/video			.049	
Step 2:	SC x Watching YouTube/video	.077	.004	-.379*	$F(3, 1080) = 30.06$
Step 1:	Social connectedness (SC)	.074		-.260***	$F(2, 1081) = 43.30$
	Surfing the internet			.056	
Step 2:	SC x Surfing the internet	.080	.006	-.402*	$F(3, 1080) = 31.10$
Step 1:	Social adaptation to college (SACQ)	.048		-.214***	$F(2, 1081) = 27.46$
	Watching TV/movies			.032	
Step 2:	SACQ x Watching TV/movies	.054	.006	-.336*	$F(3, 1080) = 20.57$

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

Perceived social skill. Next, perceived social skill was entered as the criterion Variable with indicators of sense of community and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of perceived social skill in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of perceived social skill are presented.

Results revealed that perceived social skill was predicted by the interaction between mattering to others and time spent networking online via Facebook or other sites ($\beta = .234, p = .042$). Perceived social skill was also predicted by the interaction between perceived social support from friends and the following indicators of time spent using communication technologies: (a) using email on a laptop or computer ($\beta = .323, p = .031$) and (b) surfing the internet or visiting websites ($\beta = .316, p = .024$). Lastly, perceived social skill was predicted by the interaction between social connectedness and time spent networking online via Facebook or other sites ($\beta = .343, p = .013$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. These results are presented in Table 5.5.

Social self-confidence. Social self-confidence was then entered as the criterion variable with indicators of sense of community and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of perceived social self-confidence in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that

Table 5.5

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Sense of Community on Change in Perceived Social Skill

	Predictor Variable	R ²	ΔR ²	β	F
Step 1:	Mattering to others (MO)	.201		.438***	F(2, 1081) = 135.57
	Networking via Facebook			.095***	
Step 2:	MO x Networking via Facebook	.204	.003	.234*	F(3, 1080) = 92.03
Step 1:	Perceived social support (PSS)	.139		.369***	F(2, 1081) = 87.32
	Email on laptop/computer			.040	
Step 2:	PSS x Email on laptop/computer	.143	.004	.323*	F(3, 1080) = 59.97
Step 1:	Perceived social support (PSS)	.142		.367***	F(2, 1081) = 89.39
	Surfing the internet			-.067*	
Step 2:	PSS x Surfing the internet	.146	.004	.316*	F(3, 1080) = 61.53
Step 1:	Social connectedness (SC)	.406		.632***	F(2, 1081) = 368.73
	Networking via Facebook			.037	
Step 2:	SC x Networking via Facebook	.409	.003	.343	F(3, 1080) = 249.07

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

emerged as significant predictors of social self-confidence are presented.

Results indicated that social self-confidence was predicted by the interaction between mattering and time spent playing computer or video games with others ($\beta = -.233, p = .045$). Social self-confidence was also predicted by the interaction between perceived social support from friends and the following indicators of time spent using communication technologies: (a) using email on a computer or laptop ($\beta = .358, p = .017$) and (b) surfing the internet or visiting websites ($\beta = .395, p = .005$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. The results of these analyses are presented in Table 5.6.

Social self-efficacy. Next, social self-confidence was entered as the criterion variable with indicators of sense of community and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of perceived social self-efficacy in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that

Table 5.6

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Sense of Community on Change in Social Self-Confidence

	Predictor Variable	R ²	ΔR ²	β	F
Step 1:	Mattering to others (MO)	.288		.535***	$F(2, 1081) = 218.50$
	Computer/video games with others			-.060*	
Step 2:	MO x Computer/video with others	.291	.003	-.233*	$F(3, 1080) = 147.41$
Step 1:	Perceived social support (PSS)	.126		.350***	$F(2, 1081) = 77.89$
	Email on computer/laptop			.046	
Step 2:	PSS x Email on computer/laptop	.131	.005	.358*	$F(3, 1080) = 54.05$
Step 1:	Perceived social support (PSS)	.131		.347***	$F(2, 1081) = 81.62$
	Surfing the internet			-.086**	
Step 2:	PSS x Surfing the internet	.138	.007	.395**	$F(3, 1080) = 57.40$

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

emerged as significant predictors of social self-efficacy are presented.

Results indicated that social self-efficacy was predicted by the interaction between mattering and time spent building or enhancing a personal website ($\beta = -.281, p = .028$). Social self-efficacy was also predicted by the interaction between perceived social support from friends and the following indicators of time spent using communication technologies: (a) using email on a computer or laptop ($\beta = .308, p = .031$); (b) watching television or movies ($\beta = .376, p = .006$); (c) time spent playing video or computer games alone ($\beta = .295, p = .030$); and (d) surfing the internet or visiting websites ($\beta = .411, p = .002$). Social self-efficacy was further predicted by the interaction between social connectedness and the following indicators of time spent using communication technologies: (a) networking online via Facebook or other sites ($\beta = .285, p = .034$) and (b) time spent watching television or movies ($\beta = .253, p = .043$). Last, social self-efficacy was predicted by the interaction between social adaptation to college and time spent watching television or movies ($\beta = .211, p = .050$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. These results are presented in Table 5.7. Indicators of

students' sense of community were entered next as the dependent variables, and these analyses will be discussed in the following sections.

Table 5.7

Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Sense of Community on Change in Social Self-Efficacy

	Predictor Variable	R ²	ΔR ²	β	F
Step 1:	Mattering to others (MO)	.254		.499***	F(2, 1081) = 183.97
	Build/enhance personal website			.083**	
Step 2:	MO x Build/enhance personal site	.257	.003	-.281*	F(3, 1080) = 124.70
Step 1:	Perceived social support (PSS)	.210		.455***	F(2, 1081) = 143.43
	Email on a computer/laptop			.039	
Step 2:	PSS x Email on a computer/laptop	.213	.003	.308*	F(3, 1080) = 97.49
Step 1:	Perceived social support (PSS)	.209		.455***	F(2, 1081) = 142.80
	Watching TV/movies			-.029	
Step 2:	PSS x Watching TV/movies	.215	.006	.376**	F(3, 1080) = 98.35
Step 1:	Perceived social support (PSS)	.210		.451***	F(2, 1081) = 143.37
	Video/computer games alone			-.039	
Step 2:	PSS x Video/computer games alone	.213	.003	.295*	F(3, 1080) = 97.48
Step 1:	Perceived social support (PSS)	.210		.454***	F(2, 1081) = 143.56
	Surfing the internet			-.041	
Step 2:	PSS x Surfing the internet	.217	.007	.411**	F(3, 1080) = 99.61
Step 1:	Social connectedness (SC)	.434		.660***	F(2, 1081) = 414.72
	Networking via Facebook			-.011	
Step 2:	SC x Networking via Facebook	.437	.003	.285*	F(3, 1080) = 278.88
Step 1:	Social connectedness (SC)	.434		.660***	F(2, 1081) = 414.62
	Watching TV/movies			.009	
Step 2:	SC x Watching TV/movies	.436	.002	.253	F(3, 1080) = 278.59
Step 1:	Social adaptation to college (SACQ)	.359		.600***	F(2, 1081) = 302.33
	Watching television/movies			.010	
Step 2:	SACQ x Watching television/movies	.361	.002	.211*	F(3, 1080) = 203.36

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

Mattering to others. First, mattering to others was entered as the criterion variable with indicators of psychosocial well-being and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of mattering to others in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of mattering to others are presented. Results indicated that mattering to others was predicted by the interaction between social anxiety and the following indicators of

time spent using communication technologies: (a) watching television or movies ($\beta = -.520, p = .006$) and (b) surfing the internet or visiting websites ($\beta = -.366, p = .050$).

Mattering to others was also predicted by the interaction between perceived social skill and time spent playing video or computer games with others ($\beta = -.265, p = .025$). Finally, mattering to others was predicted by the interaction between social self-confidence and time spent playing video or computer games with others ($\beta = -.305, p = .013$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. The results of these analyses are presented in Table 5.8.

Table 5.8

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Psychosocial Well-Being on Change in Mattering to Others

	Predictor Variable	R ²	ΔR^2	β	F
Step 1:	Social anxiety (SA)	.113		-.323***	F(2, 1081) = 68.96
	Watching television/movies			-.076**	
Step 2:	SA x Watching television/movies	.119	.006	-.520**	F(3, 1080) = 48.83
Step 1:	Social anxiety (SA)	.113		-.321***	F(2, 1081) = 68.80
	Surfing the internet			-.075**	
Step 2:	SA x Surfing the internet	.116	.003	-.366*	F(3, 1080) = 47.27
Step 1:	Perceived social skill (PSS)	.193		.439***	F(2, 1081) = 129.50
	Video/computer games with others			.042	
Step 2:	PSS x Video/computer with others	.197	.004	-.265*	F(3, 1080) = 88.34
Step 1:	Social self-confidence (SSC)	.287		.536***	F(2, 1081) = 217.77
	Video/computer games with others			.054*	
Step 2:	SSC x Video/computer with others	.291	.004	-.305*	F(3, 1080) = 147.94

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

Perceived social support from friends. Next, perceived social support from friends was entered as the criterion variable with indicators of psychosocial well-being and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of perceived social support from friends in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor

variable. Interaction terms that emerged as significant predictors of perceived social support from friends are presented.

Results indicated that perceived social support from friends was predicated by the interaction between shyness and time spent surfing the internet or visiting websites ($\beta = -.343, p = .009$). Perceived social support from friends was also predicted by the interaction between social anxiety and the following indicators of time spent using communication technologies: (a) visiting YouTube or other video sites ($\beta = -.456, p = .047$) and (b) surfing the internet or visiting websites ($\beta = -.606, p = .002$). Perceived social support from friends was further predicted by the interaction between perceived social skill and time spent talking via cell phone or personal digital assistant ($\beta = -.437, p = .014$). Also, perceived social support from friends was predicted by the interaction between social self-confidence and the following indicators of time spent using communication technologies: (a) talking via cell phone or personal digital assistant ($\beta = -.452, p = .002$) and (b) surfing the internet or visiting websites ($\beta = .270, p = .045$). Last, perceived social support from friends was predicted by the interaction between social self-efficacy and time spent talking via cell phone or personal digital assistant ($\beta = -.526, p = .006$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results from these analyses are presented in Table 5.9.

Social connectedness. Social connectedness was then entered as the criterion variable with indicators of psychosocial well-being and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of social connectedness in Step 1, the product of the two

Table 5.9

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Psychosocial Well-Being on Change in Perceived Social Support

	Predictor Variable	R ²	ΔR ²	B	F
Step 1:	Shyness (SH)	.132		-.361***	$F(2, 1081) = 82.30$
	Surfing the internet			-.017	
Step 2:	SH x Surfing the internet	.138	.004	-.343**	$F(3, 1080) = 57.42$
Step 1:	Social anxiety (SA)	.017		-.113***	$F(2, 1081) = 9.58$
	Watching YouTube/videos			-.060*	
Step 2:	SA x Watching YouTube/videos	.021	.004	-.456*	$F(3, 1080) = 7.72$
Step 1:	Social anxiety (SA)	.016		-.114***	$F(2, 1081) = 8.86$
	Surfing the internet			-.047	
Step 2:	SA x Surfing the internet	.025	.009	-.606**	$F(3, 1080) = 9.13$
Step 1:	Perceived social skill (PSS)	.153		.349***	$F(2, 1081) = 97.66$
	Talking via cell phone/PDA			.127***	
Step 2:	PSS x Talking via cell phone/PDA	.158	.005	-.437*	$F(3, 1080) = 67.44$
Step 1:	Social self-confidence (SSC)	.142		.331***	$F(2, 1081) = 89.54$
	Talking via cell phone/PDA			.137***	
Step 2:	SSC x Talking via cell phone/PDA	.146	.004	-.452*	$F(3, 1080) = 61.69$
Step 1:	Social self-confidence (SSC)	.124		.350***	$F(2, 1081) = 76.72$
	Surfing the internet			-.020	
Step 2:	SSC x Surfing the internet	.128	.004	.270*	$F(3, 1080) = 52.63$
Step 1:	Social self-efficacy (SSE)	.219		.436***	$F(2, 1081) = 151.30$
	Talking via cell phone/PDA			.105***	
Step 2:	SSE x Talking via cell phone/PDA	.224	.005	-.526**	$F(3, 1080) = 104.03$

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

independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of social connectedness are presented.

Results indicated that social connectedness was predicted by the interaction between depression and time spent using email on a computer or laptop ($\beta = .190, p = .049$). Social connectedness was also predicted by the interaction between shyness and the following indicators of time spent using communication technologies: (a) talking via cell phone or personal digital assistant ($\beta = .375, p = .004$) and (b) time spent playing video or computer games alone ($\beta = -.254, p = .035$). Social connectedness was further predicted by the interaction between social anxiety and the following indicators of time spent using communication technologies: (a) watching television or movies ($\beta = -.588, p$

= .002); (b) visiting YouTube or other video sites ($\beta = -.482, p = .030$); and (c) time spent surfing the internet or visiting websites ($\beta = -.591, p = .002$). In addition, social connectedness was predicted by the interaction between perceived social skill and the following variables related to time spent using communication technologies: (a) using email on a computer or laptop ($\beta = -.232, p = .030$); (b) texting or emailing via cell phone or personal digital assistant ($\beta = -.224, p = .031$); and (c) talking via cell phone or personal digital assistant ($\beta = -.477, p = .001$). Social connectedness was further predicted by the interaction between social self-confidence and time spent talking via cell phone or personal digital assistant ($\beta = -.478, p = .003$). Last, social connectedness was predicted by the interaction between social self-efficacy and the following indicators of time spent using communication technologies: (a) talking via cell phone or personal digital assistant ($\beta = -.479, p = .003$) and (b) building or enhancing a personal website ($\beta = -.325, p = .025$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results from these analyses are presented in Table 5.10.

Social adaptation to college. Last, social adaptation to college was entered as the criterion variable with indicators of psychosocial well-being and time spent using communication technologies entered as the predictor variables. If either independent variable was a significant predictor of social adaptation to college in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of social adaptation to college are presented. Results indicated that social adaptation to college was predicted by the interaction between

Table 5.10

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Psychosocial Well-Being on Change in Social Connectedness

	Predictor Variable	R ²	ΔR ²	β	F
Step 1:	Depression (DE)	.204		-.452***	$F(2, 1081) = 138.93$
	Email on computer/laptop			.053	
Step 2:	DE x Email on computer/laptop	.207	.003	.190*	$F(3, 1080) = 94.16$
Step 1:	Shyness (SH)	.423		-.633***	$F(2, 1081) = 396.22$
	Talking via cell phone/PDA			.079***	
Step 2:	SH x Talking via cell phone/PDA	.427	.004	.375**	$F(3, 1080) = 268.60$
Step 1:	Shyness (SH)	.431		-.631***	$F(2, 1081) = 408.98$
	Playing video/computer games alone			-.119***	
Step 2:	SH x Video/computer games alone	.433	.002	-.254*	$F(3, 1080) = 275.01$
Step 1:	Social anxiety (SA)	.077		-.263***	$F(2, 1081) = 44.93$
	Watching television or movies			-.075**	
Step 2:	SA x Watching television or movies	.085	.008	-.588**	$F(3, 1080) = 33.34$
Step 1:	Social anxiety (SA)	.081		-.259***	$F(2, 1081) = 47.56$
	Watching YouTube/videos			-.099***	
Step 2:	SA x Watching YouTube/videos	.085	.004	-.482*	$F(3, 1080) = 33.39$
Step 1:	Social anxiety (SA)	.080		-.258***	$F(2, 1081) = 47.20$
	Surfing the internet			-.097***	
Step 2:	SA x Surfing the internet	.089	.009	-.591**	$F(3, 1080) = 34.96$
Step 1:	Perceived social skill (PSS)	.404		.636***	$F(2, 1081) = 366.81$
	Email on computer/laptop			-.009	
Step 2:	PSS x Email on computer/laptop	.407	.003	-.232*	$F(3, 1080) = 246.96$
Step 1:	Perceived social skill (PSS)	.407		.622***	$F(2, 1081) = 371.11$
	Texting/emailing via cell phone/PDA			.055*	
Step 2:	PSS x Texting/emailing via cell/PDA	.410	.004	-.224*	$F(3, 1080) = 249.80$
Step 1:	Perceived social skill (PSS)	.409		.624***	$F(2, 1081) = 373.73$
	Talking via cell phone/PDA			.069**	
Step 2:	PSS x Talking via cell phone/PDA	.414	.005	-.477***	$F(3, 1080) = 254.82$
Step 1:	Social self-confidence (SSC)	.443		.649***	$F(2, 1081) = 427.84$
	Talking via cell phone/PDA			.078***	
Step 2:	SSC x Talking via cell phone/PDA	.448	.005	-.478**	$F(3, 1080) = 291.62$
Step 1:	Social self-efficacy (SSE)	.437		.649***	$F(2, 1081) = 419.28$
	Talking via cell phone/PDA			.054*	
Step 2:	SSE x Talking via cell phone/PDA	.441	.004	-.479**	$F(3, 1080) = 284.47$
Step 1:	Social self-efficacy (SSE)	.436		.662***	$F(2, 1081) = 417.00$
	Building/enhancing personal website			-.039	
Step 2:	SSE x Building/enhancing website	.438	.002	-.325*	$F(3, 1080) = 280.70$

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

depression and time spent texting or emailing via cell phone or personal digital assistant

($\beta = -.172, p = .046$). Social adaptation to college was predicted by the interaction

between shyness and time spent talking via cell phone or personal digital assistant ($\beta =$

.331, $p = .025$). Social adaptation to college was also predicted by the interaction

between social anxiety and the following indicators of time spent using communication

technologies: (a) watching television or movies ($\beta = -.659, p = .001$) and (b) surfing the internet or visiting websites ($\beta = -.441, p = .022$). Social adjustment to college was further predicted by the interaction between perceived social skill and the following variables related to time spent using communication technologies: (a) using email on a computer or laptop ($\beta = -.272, p = .020$) and (b) talking via cell phone or personal digital assistant ($\beta = -.321, p = .049$). In addition, social adaptation to college was predicted by the interaction between social self-confidence and time spent using email on a computer or laptop ($\beta = -.285, p = .029$). Last, social adaptation to college was predicted by the interaction between social self-efficacy and time spent talking via cell phone or personal digital assistant ($\beta = -.356, p = .040$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results of these analyses are presented in Table 5.11.

Hypothesis Six

The sixth and final hypothesis predicted a relationship between students' perceived psychosocial well-being and their perceived sense of community mediated by motivations for use of communication technologies. To test the indirect effects predicted by this hypothesis, multiple regression analyses were performed to assess the direct influence of variables related to motivations for use of communication technologies and indicators of psychosocial well-being on indicators of students' sense of community. Then, multiple regression analyses were performed to assess the direct influence of variables related to motivations for use of communication technologies and indicators of students' sense of community on indicators of psychosocial well-being. If the models revealed significant main effects, subsequent models were employed with the interaction

Table 5.11

Results of Multiple Regression Analyses Testing Interaction Effects of Time Spent Using Communication Technologies and Variables Related to Psychosocial Well-Being on Change in Social Adaptation to College

Predictor Variable	R ²	ΔR ²	β	F
Step 1: Depression (DE)	.216		-.453***	F(2, 1081) = 149.13
Texting/emailing via cell phone/PDA			.163***	
Step 2: DE x Texting/emailing via cell/PDA	.219	.003	-.172*	F(3, 1080) = 101.03
Step 1: Shyness (SH)	.281		-.531***	F(2, 1081) = 210.81
Talking via cell phone/PDA			-.007	
Step 2: SH x Talking via cell phone/PDA	.284	.003	.331*	F(3, 1080) = 142.76
Step 1: Social anxiety (SA)	.055		-.213***	F(2, 1081) = 31.69
Watching television or movies			-.090**	
Step 2: SA x Watching television or movies	.065	.010	-.659***	F(3, 1080) = 25.21
Step 1: Social anxiety (SA)	.053		-.211***	F(2, 1081) = 30.16
Surfing the internet			-.075*	
Step 2: SA x Surfing the internet	.057	.004	-.441*	F(3, 1080) = 21.93
Step 1: Perceived social skill (PSS)	.284		.531***	F(2, 1081) = 214.39
Email on a computer/laptop			.027	
Step 2: PSS x Email on a computer/laptop	.288	.004	-.272*	F(3, 1080) = 145.31
Step 1: Perceived social skill (PSS)	.284		.535***	F(2, 1081) = 213.96
Talking via cell phone/PDA			-.018	
Step 2: PSS x Talking via cell phone/PDA	.286	.002	-.321*	F(3, 1080) = 144.32
Step 1: Social self-confidence (SSC)	.336		.578***	F(2, 1081) = 274.02
Email on a computer or laptop			.022	
Step 2: SSC x Email on a computer or laptop	.339	.003	-.285*	F(3, 1080) = 184.92
Step 1: Social self-efficacy (SSE)	.360		.606***	F(2, 1081) = 304.22
Talking via cell phone/PDA			-.040	
Step 2: SSE x Talking via cell phone/PDA	.363	.003	-.356*	F(3, 1080) = 204.84

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

term entered as the third predictor variable. Next, indicators of psychosocial well-being as dependent variables, and these analyses are discussed in the following sections.

Loneliness. First, loneliness was entered as the criterion variable with indicators of students' sense of community and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of loneliness in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of loneliness are presented.

Results indicated that loneliness was predicted by the interaction between

matter to others and the motivation to comment on blogs and other newsfeeds ($\beta = .250, p = .007$), seek support for personal problems or issues ($\beta = .215, p = .010$), and share “true” self with others ($\beta = .221, p = .009$). Loneliness was also predicted by the interaction between perceived social support from friends and the motivation to learn more about hobbies or interests ($\beta = .309, p = .031$), seek support for personal problems or issues ($\beta = .259, p = .030$), and share “true” self with others ($\beta = .244, p = .048$). Further, loneliness was predicted by the interaction between social connectedness and the motivation to learn more about hobbies or interests ($\beta = .237, p = .028$) and to share “true” self with others ($\beta = .262, p = .004$). Lastly, loneliness was predicted by the interaction between social adaptation to college and the motivation to share photos, videos, or other personal updates ($\beta = .286, p = .016$), comment on blogs or other newsfeeds ($\beta = .336, p = .002$), and view pornography or adult content ($\beta = -.429, p = .000$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results presented in Table 6.1.

Depression. Depression was then entered as the criterion variable with indicators of students’ sense of community and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of depression in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of depression are presented.

Results indicated that depression was predicted by the interaction between mattering to others and the motivation to share “true” self with others using technology (β

Table 6.1

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Communication Technologies and Variables Related to Sense of Community on Change in Loneliness

	Predictor Variable	R ²	ΔR ²	β	F
Step 1:	Mattering to others (MO)	.448		-.669***	F(2, 1081) = 438.32
	Comment on blogs/newsfeeds			.006	
Step 2:	MO x Comment on blogs/newsfeeds	.451	.003	.250**	F(3, 1080) = 296.33
Step 1:	Mattering to others (MO)	.449		-.661***	F(2, 1081) = 440.93
	Seek support for personal problems			.040	
Step 2:	MO x Seek support for problems	.453	.004	.215**	F(3, 1080) = 297.73
Step 1:	Mattering to others (MO)	.448		-.667***	F(2, 1081) = 439.07
	Share "true" self with others			.022	
Step 2:	MO x Share "true" self with others	.452	.004	.221**	F(3, 1080) = 296.63
Step 1:	Perceived social support (PSS)	.357		-.593***	F(2, 1081) = 300.47
	Learn more about hobbies/interests			.061*	
Step 2:	PSS x Learn about hobbies/interests	.360	.003	.309*	F(3, 1080) = 202.55
Step 1:	Perceived social support (PSS)	.375		-.587***	F(2, 1081) = 323.97
	Seek support for personal problems			.146***	
Step 2:	PSS x Seek support for problems	.377	.002	.259*	F(3, 1080) = 218.30
Step 1:	Perceived social support (PSS)	.364		-.594***	F(2, 1081) = 308.75
	Share "true" self with others			.100***	
Step 2:	PSS x Share "true" self with others	.366	.002	.244*	F(3, 1080) = 207.69
Step 1:	Social connectedness (SC)	.666		-.814***	F(2, 1081) = 1078.89
	Learn about hobbies/interests			.021	
Step 2:	SC x Learn about hobbies/interests	.668	.002	.237*	F(3, 1080) = 723.45
Step 1:	Social connectedness (SC)	.667		-.813***	F(2, 1081) = 1082.37
	Share "true" self with others			.034	
Step 2:	SC x Share "true" self with others	.670	.003	.262**	F(3, 1080) = 729.47
Step 1:	Social adaptation to college (SACQ)	.442		-.661***	F(2, 1081) = 428.80
	Share photos, videos, other updates			-.026	
Step 2:	SACQ x Share photos/other updates	.445	.003	.286*	F(3, 1080) = 289.11
Step 1:	Social adaptation to college (SACQ)	.443		-.665***	F(2, 1081) = 430.39
	Comment on blogs/newsfeeds			.040	
Step 2:	SACQ x Comment on blogs/newsfeeds	.448	.005	.336**	F(3, 1080) = 292.64
Step 1:	Social adaptation to college (SACQ)	.455		-.661***	F(2, 1081) = 451.82
	View pornography or adult content			.117***	
Step 2:	SACQ x Pornography/adult content	.462	.007	-.429***	F(3, 1080) = 308.61

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

= .262, $p = .007$). Depression was also predicted by the interaction between social adaptation to college and the following indicators of motivation to use communication technologies: (a) interact with friends and social contacts ($\beta = .328$, $p = .047$) and (b) waste time or procrastinate ($\beta = .367$, $p = .016$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant.

Results of these analyses are presented in Table 6.2.

Table 6.2

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Communication Technologies and Variables Related to Sense of Community on Change in Depression

Predictor Variable	R ²	ΔR ²	β	F
Step 1: Mattering to others (MO)	.253		-.485***	F(2, 1081) = 150.04
Share "true" self with others			.085***	
Step 2: MO x Share "true" self with others	.258	.005	.262**	F(3, 1080) = 124.91
Step 1: Social adaptation to college (SACQ)	.198		-.441***	F(2, 1081) = 133.60
Interact with friends/social contacts			.090***	
Step 2: SACQ x Interact with friends/contacts	.201	.003	.328*	F(3, 1080) = 90.63
Step 1: Social adaptation to college (SACQ)	.214		-.424***	F(2, 1081) = 147.02
Waste time or procrastinate			.155***	
Step 2: SACQ x Waste time or procrastinate	.218	.004	.367*	F(3, 1080) = 100.37

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

Shyness. Next, shyness was entered as the criterion variable with indicators of students' sense of community and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of shyness in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of shyness are presented.

Results indicated that shyness was predicted by the interaction between mattering to others and the motivation to seek support for personal problems or issues using communication technologies ($\beta = .232, p = .015$). Shyness was also predicted by the interaction between social connectedness and the following motivations to use communication technologies: (a) interact with friends or other social contacts ($\beta = -.335, p = .036$) and (b) purchase or sell items ($\beta = -.284, p = .038$). Shyness was further predicted by the interaction between social adaptation to college and the following motivations related to use of communication technologies: (a) comment on blogs or other newsfeeds ($\beta = .266, p = .028$); (b) purchase or sell items ($\beta = -.301, p = .016$); and (c)

view pornography or adult content ($\beta = -.381, p = .006$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results of these analyses are presented in Table 6.3.

Table 6.3

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Communication Technologies and Variables Related to Sense of Community on Change in Shyness

	Predictor Variable	R ²	ΔR^2	β	F
Step 1:	Mattering to others (MO)	.279		-.529***	$F(2, 1081) = 209.57$
	Seek support for personal problems			-.002	
Step 2:	MO x Seek support for problems	.283	.004	.232*	$F(3, 1080) = 142.34$
Step 1:	Social connectedness (SC)	.421		-.651***	$F(2, 1081) = 392.61$
	Interact with friends/social contacts			.063**	
Step 2:	SC x Interact with friends/contacts	.423	.002	-.335*	$F(3, 1080) = 264.04$
Step 1:	Social connectedness (SC)	.417		-.646***	$F(2, 1081) = 386.44$
	Purchase or sell items			-.007	
Step 2:	SC x Purchase or sell items	.419	.002	-.284*	$F(3, 1080) = 259.86$
Step 1:	Social adaptation to college (SACQ)	.281		-.530***	$F(2, 1081) = 210.83$
	Comment on blogs/newsfeeds			-.008	
Step 2:	SACQ x Comment on blogs/newsfeeds	.284	.003	.266*	$F(3, 1080) = 142.67$
Step 1:	Social adaptation to college (SACQ)	.281		-.530***	$F(2, 1081) = 210.76$
	Purchase or sell items			.000	
Step 2:	SACQ x Purchase or sell items	.284	.003	-.301*	$F(3, 1080) = 143.09$
Step 1:	Social adaptation to college (SACQ)	.281		-.529***	$F(2, 1081) = 211.15$
	View pornography/adult content			.019	
Step 2:	SACQ x Pornography/adult content	.286	.005	-.381**	$F(3, 1080) = 144.10$

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

Social anxiety. Social anxiety was then entered as the criterion variable with indicators of students' sense of community and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of social anxiety in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of social anxiety are presented. Results indicated that social anxiety was predicted by the interaction between mattering to others and the following motivations related to use of communication technologies: (a) meet new people and make friends ($\beta =$

.213, $p = .045$); (b) interact with friends or other social contacts ($\beta = .389$, $p = .013$); (c) comment on blogs or other newsfeeds ($\beta = .327$, $p = .005$); (d) seek support for personal problems or issues ($\beta = .208$, $p = .050$); and (e) share “true” self with others ($\beta = .336$, $p = .002$). Social anxiety was also predicated by the interaction between perceived social support from friends and the following motivations related to use of communication technologies: (a) meet new people and make friends ($\beta = .324$, $p = .033$) and (b) share “true” self with others ($\beta = .369$, $p = .016$). Further, social anxiety was predicted by the interaction between social connectedness and the following motivation related to use of communication technologies: (a) purchase or sell items ($\beta = -.441$, $p = .011$); (b) look for entertainment (e.g., music/video downloads) ($\beta = -.456$, $p = .013$); and (c) waste time or procrastinate ($\beta = -.372$, $p = .046$). Last, social anxiety was predicted by the interaction between social adaptation to college and the following motivations for use of communication technologies: (a) purchase or sell items ($\beta = -.287$, $p = .046$) and (b) look for entertainment (e.g., music/video downloads) ($\beta = -.307$, $p = .049$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results are presented in Table 6.4.

Social skill. Social anxiety was entered as the criterion variable with indicators of students’ sense of community and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of perceived social skill in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of perceived social skill are presented.

Table 6.4

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Communication Technologies and Variables Related to Sense of Community on Change in Social Anxiety

Predictor Variable	R ²	ΔR ²	β	F
Step 1: Mattering to others (MO)	.108		-.324***	F(2, 1081) = 65.49
Meet new people and make friends			.028	
Step 2: MO x Meeting new people/friends	.111	.003	.213*	F(3, 1080) = 45.12
Step 1: Mattering to others (MO)	.112		-.326***	F(2, 1081) = 68.12
Interact with friends or social contacts			.068*	
Step 2: MO x Interact with friends/contacts	.117	.005	.389*	F(3, 1080) = 47.71
Step 1: Mattering to others (MO)	.114		-.324***	F(2, 1081) = 69.72
Comment on blogs/newsfeeds			.083**	
Step 2: MO x Comment on blogs/newsfeeds	.121	.007	.327**	F(3, 1080) = 49.36
Step 1: Mattering to others (MO)	.108		-.323***	F(2, 1081) = 65.32
Seek support for personal problems			.023	
Step 2: MO x Seek support for problems	.111	.003	.208*	F(3, 1080) = 44.95
Step 1: Mattering to others (MO)	.111		-.321***	F(2, 1081) = 67.16
Share "true" self with others			.057*	
Step 2: MO x Share "true" self with others	.119	.008	.336**	F(3, 1080) = 48.47
Step 1: Perceived social support (PSS)	.018		-.118***	F(2, 1081) = 9.96
Meet new people and make friends			.065*	
Step 2: PSS x Meet new people/make friends	.022	.004	.324*	F(3, 1080) = 8.174
Step 1: Perceived social support (PSS)	.023		-.117***	F(2, 1081) = 12.71
Share "true" self with others			.095**	
Step 2: PSS x Share "true" self with others	.028	.005	.369*	F(3, 1080) = 10.47
Step 1: Social connectedness (SC)	.071		-.266***	F(2, 1081) = 41.44
Purchase or sell items			.012	
Step 2: SC x Purchase or sell items	.077	.006	-.441*	F(3, 1080) = 29.95
Step 1: Social connectedness (SC)	.074		-.260***	F(2, 1081) = 43.43
Look for entertainment			.058*	
Step 2: SC x Look for entertainment	.080	.006	-.456*	F(3, 1080) = 31.15
Step 1: Social connectedness (SC)	.090		-.250***	F(2, 1081) = 53.55
Waste time or procrastinate			.139***	
Step 2: SC x Waste time or procrastinate	.094	.004	-.372	F(3, 1080) = 37.13
Step 1: Social adaptation to college (SACQ)	.048		-.217***	F(2, 1081) = 26.99
Purchase or sell items			.015	
Step 2: SACQ x Purchase or sell items	.051	.003	-.287*	F(3, 1080) = 19.37
Step 1: Social adaptation to college (SACQ)	.052		-.212***	F(2, 1081) = 29.66
Look for entertainment			.069*	
Step 2: SACQ x Look for entertainment	.055	.003	-.307*	F(3, 1080) = 21.12

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

Results indicated that perceived social skill was predicted by the interaction between mattering to others and the following motivations related to use of communication technologies: (a) interact with friends and other social contacts ($\beta = .324$, $p = .029$) and (b) share photos, videos, or other personal updates ($\beta = .286$, $p = .025$). Social skill was also predicted by the interaction between social connectedness and the

motivation to meet new people and make friends ($\beta = .246, p = .049$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results are presented in Table 6.5.

Table 6.5

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Communication Technologies and Variables Related to Sense of Community on Change in Perceived Social Skill

	Predictor Variable	R ²	ΔR^2	β	F
Step 1:	Mattering to others (MO)	.195		.439***	$F(2, 1081) = 130.82$
	Interact with friends/social contacts			.058*	
Step 2:	MO x Interact with friends/contacts	.198	.003	.324*	$F(3, 1080) = 89.10$
Step 1:	Mattering to others (MO)	.222		.426***	$F(2, 1081) = 154.54$
	Share photos, videos, and updates			.176***	
Step 2:	MO x Share photos, videos, updates	.226	.004	.286*	$F(3, 1080) = 105.09$
Step 1:	Social connectedness (SC)	.411		.640***	$F(2, 1081) = 377.82$
	Meet new people/make friends			.085***	
Step 2:	SC x Meet new people/friends	.414	.003	.246*	$F(3, 1080) = 253.85$

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

Social self-confidence. Next, social self-confidence was entered as the criterion variable with indicators of students' sense of community and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of social self-confidence in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of social self-confidence are presented.

Results indicated that social self-confidence was predicted by the interaction between mattering to others and the motivation to interact with friends and other social contacts ($\beta = .319, p = .023$). Social self-confidence was also predicted by the interaction between social connectedness and the following motivations related to use of communication technologies: (a) interact with friends and other social contacts ($\beta = .425, p = .007$) and (b) work on school-related assignments ($\beta = -.312, p = .039$). Further,

social self-confidence was predicted by the interaction between social adaptation to college and the following motivations related to use of communication technologies: (a) work on school-related assignments ($\beta = -.284, p = .041$); (b) play video or computer games alone or with others users ($\beta = .224, p = .030$); and (c) view pornography or adult content ($\beta = .325, p = .015$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results are presented in Table 6.6.

Table 6.6

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Communication Technologies and Variables Related to Sense of Community on Change in Social Self-Confidence

	Predictor Variable	R ²	ΔR^2	β	F
Step 1:	Mattering to others (MO)	.286		.534***	$F(2, 1081) = 216.44$
	Interact with friends/social contacts			.040	
Step 2:	MO x Interact with friends/contacts	.289	.003	.319*	$F(3, 1080) = 146.59$
Step 1:	Social connectedness (SC)	.438		.664***	$F(2, 1081) = 420.91$
	Interact with friends/social contacts			-.029	
Step 2:	SC x Interact with friends/contacts	.442	.004	.425**	$F(3, 1080) = 284.72$
Step 1:	Social connectedness (SC)	.437		.660***	$F(2, 1081) = 420.06$
	Work on school-related assignments			-.019	
Step 2:	SC x School-related assignments	.440	.003	-.312	$F(3, 1080) = 282.31$
Step 1:	Social adaptation to college (SACQ)	.336		.578***	$F(2, 1081) = 274.00$
	Work on school-related assignments			-.021	
Step 2:	SACQ x School-related assignments	.339	.003	-.284*	$F(3, 1080) = 184.60$
Step 1:	Social adaptation to college (SACQ)	.350		.565***	$F(2, 1081) = 291.42$
	Play games alone or with other users			-.121***	
Step 2:	SACQ x Play games alone/with others	.353	.003	.224*	$F(3, 1080) = 196.52$
Step 1:	Social adaptation to college (SACQ)	.336		.579***	$F(2, 1081) = 274.07$
	View pornography or adult content			-.023	
Step 2:	SACQ x Pornography/adult content	.340	.006	.325*	$F(3, 1080) = 185.50$

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

Social self-efficacy. Social self-efficacy was entered as the next criterion variable with indicators of students' sense of community and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of social self-efficacy in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the

interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of social self-efficacy are presented. Results indicated that social self-efficacy was predicted by the interaction between mattering to others and the following motivations related to use of communication technologies: (a) comment on blogs or other newsfeeds ($\beta = -.254, p = .018$) and (b) seek support for personal problems or issues ($\beta = -.272, p = .005$). Social self-efficacy was also predicted by the interaction between social adaptation to college and the motivation to view pornography or adult content ($\beta = .459, p = .000$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results of these analyses are presented in Table 6.7. Next, indicators of students' sense of community were entered as the dependent variables. The results of these analyses will be discussed in the following sections.

Table 6.7

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Communication Technologies and Variables Related to Sense of Community on Change in Social Self-Efficacy

	Predictor Variable	R ²	ΔR^2	β	F
Step 1:	Mattering to others (MO)	.256		.501***	$F(2, 1081) = 185.97$
	Comment on blogs or newsfeeds			.095***	
Step 2:	MO x Comment on blogs/newsfeeds	.260	.004	-.254*	$F(3, 1080) = 126.36$
Step 1:	Mattering to others (MO)	.253		.513***	$F(2, 1081) = 182.63$
	Seek support for personal problems			.076**	
Step 2:	MO x Seek support for problems	.258	.005	-.272**	$F(3, 1080) = 125.18$
Step 1:	Social adaptation to college (SACQ)	.360		.600***	$F(2, 1081) = 303.76$
	View pornography/adult content			.035	
Step 2:	SACQ x Pornography/adult content	.367	.007	.459***	$F(3, 1080) = 208.69$

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

Mattering to others. Mattering to others was entered as the next criterion variable with indicators of students' psychosocial well-being and motivations for use of communication technologies entered as the predictor variables. If either independent

variable was a significant predictor of mattering to others in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of mattering to others are presented.

Results indicated that mattering to others was predicted by the interaction between loneliness and the following motivations related to use of communication technologies: (a) meet new people and make friends ($\beta = -.274, p = .017$) and (b) seek support for personal problems or issues ($\beta = -.232, p = .043$). Mattering to others was also predicted by the interaction between social anxiety and the following motivations related to use of communication technologies: (a) meet new people and make friends ($\beta = .414, p = .015$); (b) interact with friends and social contacts ($\beta = .552, p = .011$); (c) share photos, videos, or other personal updates ($\beta = .540, p = .008$); (d) comment on blogs and other newsfeeds ($\beta = .612, p = .001$); (e) seek support for personal problems or issues ($\beta = .363, p = .035$); and (f) share “true” self with others ($\beta = .542, p = .003$). Last, mattering to others was predicted by the interaction between social self-efficacy and the motivation to waste time or procrastinate using communication technology ($\beta = .302, p = .050$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results are presented in Table 6.8.

Perceived social support from friends. Perceived social support from friends was entered as the next criterion variable with indicators of students’ psychosocial well-being and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of perceived social support from friends in Step 1, the product of the two independent variables was

Table 6.8

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Communication Technologies and Variables Related to Psychosocial Well-Being on Change in Mattering to Others

	Predictor Variable	R ²	ΔR ²	β	F
Step 1:	Loneliness (LO)	.450		-.664***	<i>F</i> (2, 1081) = 443.63
	Meet new people/make friends			-.055*	
Step 2:	LO x Meet new people/friends	.454	.004	-.274*	<i>F</i> (3, 1080) = 298.97
Step 1:	Loneliness (LO)	.456		-.653***	<i>F</i> (2, 1081) = 453.40
	Seek support for personal problems			-.093***	
Step 2:	LO x Seek support for problems	.458	.002	-.232*	<i>F</i> (3, 1080) = 304.52
Step 1:	Social anxiety (SA)	.116		-.322***	<i>F</i> (2, 1081) = 70.92
	Meet new people/make friends			-.093***	
Step 2:	SA x Meet new people/make friends	.121	.005	.414*	<i>F</i> (3, 1080) = 49.48
Step 1:	Social anxiety (SA)	.107		-.328***	<i>F</i> (2, 1081) = 64.98
	Interact with friends/social contacts			.002	
Step 2:	SA x Meet new people/make friends	.113	.004	.552*	<i>F</i> (3, 1080) = 45.67
Step 1:	Social anxiety (SA)	.116		-.334***	<i>F</i> (2, 1081) = 70.73
	Share photos, videos, personal updates			.092***	
Step 2:	SA x Share photos, videos, updates	.121	.005	.540**	<i>F</i> (3, 1080) = 49.78
Step 1:	Social anxiety (SA)	.108		-.326***	<i>F</i> (2, 1081) = 65.12
	Comment on blogs/newsfeeds			-.015	
Step 2:	SA x Comment on blogs/newsfeeds	.117	.009	.612***	<i>F</i> (3, 1080) = 47.48
Step 1:	Social anxiety (SA)	.140		-.311***	<i>F</i> (2, 1081) = 87.96
	Seek support for personal problems			-.181***	
Step 2:	SA x Seek support for problems	.143	.003	.363*	<i>F</i> (3, 1080) = 60.31
Step 1:	Social anxiety (SA)	.115		-.319***	<i>F</i> (2, 1081) = 70.50
	Share "true" self with others			-.090**	
Step 2:	SA x Share "true" self with others	.123	.007	.542**	<i>F</i> (3, 1080) = 50.32
Step 1:	Social self-efficacy (SSE)	.260		.488***	<i>F</i> (2, 1081) = 189.54
	Waste time or procrastinate			-.112***	
Step 2:	SSE x Waste time or procrastinate	.262	.002	.302*	<i>F</i> (3, 1080) = 127.98

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

computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of perceived social support from friends are presented.

Results indicated that perceived social support from friends was predicted by the interaction between loneliness and the motivation to view pornography or adult content using communication technologies ($\beta = .366, p = .012$). Perceived social support was also predicted by the interaction between depression and the motivation to seek support for personal problems or issues ($\beta = .204, p = .046$). Perceived social support from friends was further supported by the interaction between shyness and the motivation to

interact with friends or other social contacts ($\beta = .457, p = .008$). In addition, perceived social support from friends was predicted by the interaction between social anxiety and the following motivations related to use of communication technologies: (a) meet new people and make friends ($\beta = .414, p = .021$); (b) interact with friends or other social contacts ($\beta = .572, p = .012$); and (c) share “true” self with others ($\beta = .518, p = .007$). Last, perceived social support from friends was predicted by the interaction between social self-efficacy and the following indicators of motivation to use communication technologies: (a) interact with friends or other social contacts ($\beta = -.406, p = .020$) and (b) share photos, videos, or other personal updates ($\beta = -.346, p = .028$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results of these analyses are presented in Table 6.9.

Social connectedness. Social connectedness was entered as the next criterion variable with indicators of students’ psychosocial well-being and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of social connectedness in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of social connectedness are presented.

Social connectedness was predicted by the interaction between shyness and the following motivations related to use of communication technologies: (a) conduct research or seek information ($\beta = .279, p = .033$) and (b) view pornography or adult content ($\beta = -.297, p = .015$). Social connectedness was also predicted by the interaction between social anxiety and the motivation to look for entertainment (e.g., music/video downloads) ($\beta = -.433, p = .047$). Further, social connectedness was predicted by the interaction

Table 6.9

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Technology and Variables Related to Psychosocial Well-Being on Change in Perceived Social Support

	Predictor Variable	R ²	ΔR ²	β	F
Step 1:	Loneliness (LO)	.354		-.593***	$F(2, 1081) = 295.93$
	View pornography/adult content			-.015	
Step 2:	LO x Pornography/adult content	.358	.004	.366*	$F(3, 1080) = 200.34$
Step 1:	Depression (DE)	.052		-.226***	$F(2, 1081) = 29.63$
	Seek support for personal problems			-.011	
Step 2:	DE x Seek support for problems	.055	.003	.204*	$F(3, 1080) = 21.15$
Step 1:	Shyness (SH)	.145		-.364***	$F(2, 1081) = 91.33$
	Interact with friends/social contacts			.113***	
Step 2:	SH x Interact with friends/contacts	.150	.005	.457**	$F(3, 1080) = 63.60$
Step 1:	Social anxiety (SA)	.014		-.118***	$F(2, 1081) = 7.67$
	Meet new people/make friends			.010	
Step 2:	SA x Meet new people/make friends	.109	.095	.414*	$F(3, 1080) = 6.91$
Step 1:	Social anxiety (SA)	.028		-.127***	$F(2, 1081) = 15.68$
	Interact with friends/social contacts			.120***	
Step 2:	SA x Interact with friends/contacts	.034	.006	.572*	$F(3, 1080) = 12.61$
Step 1:	Social anxiety (SA)	.014		-.119***	$F(2, 1081) = 7.64$
	Share "true" self with others			.007	
Step 2:	SA x Share "true" self with others	.021	.007	.518**	$F(3, 1080) = 7.56$
Step 1:	Social self-efficacy (SSE)	.214		.451***	$F(2, 1081) = 147.38$
	Interact with friends/social contacts			.078**	
Step 2:	SSE x Interact with friends/contacts	.218	.004	-.406*	$F(3, 1080) = 100.45$
Step 1:	Social self-efficacy (SSE)	.210		.449***	$F(2, 1081) = 143.35$
	Share photos, videos, personal updates			.039	
Step 2:	SSE x Share photos, videos, updates	.213	.003	-.346*	$F(3, 1080) = 97.53$

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

between perceived social skill and the motivation to view pornography or adult content using communication technologies ($\beta = .239, p = .040$). In addition, social connectedness was predicted by the interaction between social self-confidence and the following motivations related to use of communication technologies: (a) comment on blogs or other newsfeeds ($\beta = .233, p = .050$) and (b) purchase or sell items ($\beta = -.324, p = .004$). Last, social connectedness was predicted by the interaction between social self-efficacy and the motivation to view pornography or adult content using communication technologies ($\beta = .257, p = .045$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results of these analyses are presented in Table 6.10.

Table 6.10

Results of Multiple Regression Analyses Testing Interaction Effects of Motivations for Use of Technology and Variables Related to Psychosocial Well-Being on Change in Social Connectedness

	Predictor Variable	R ²	ΔR ²	β	F
Step 1:	Shyness (SH)	.418		-.648***	$F(2, 1081) = 387.74$
	Conduct research or seek information			.029	
Step 2:	SH x Research/seek information	.420	.002	.279*	$F(3, 1080) = 260.85$
Step 1:	Shyness (SH)	.429		-.642***	$F(2, 1081) = 406.33$
	View pornography or adult content			-.111***	
Step 2:	SH x View pornography/adult content	.432	.003	-.297*	$F(3, 1080) = 274.09$
Step 1:	Social anxiety (SA)	.078		-.259***	$F(2, 1081) = 45.81$
	Look for entertainment			-.084**	
Step 2:	SA x Look for entertainment	.081	.003	-.433*	$F(3, 1080) = 31.94$
Step 1:	Social skill (SS)	.418		.633***	$F(2, 1081) = 388.87$
	View pornography or adult content			-.119***	
Step 2:	SS x View pornography/adult content	.421	.003	.239*	$F(3, 1080) = 261.42$
Step 1:	Social self-confidence (SSC)	.437		.662***	$F(2, 1081) = 419.96$
	Comment on blogs/newsfeeds			-.017	
Step 2:	SSC x Comment on blogs/newsfeeds	.439	.002	.233*	$F(3, 1080) = 282.00$
Step 1:	Social self-confidence (SSC)	.437		.661***	$F(2, 1081) = 419.51$
	Purchase or sell items			-.006	
Step 2:	SSC x Purchase or sell items	.441	.004	-.325**	$F(3, 1080) = 284.25$
Step 1:	Social self-efficacy (SSE)	.455		.661***	$F(2, 1081) = 451.10$
	View pornography or adult content			-.145***	
Step 2:	SSE x View pornography/adult content	.457	.002	.257*	$F(3, 1080) = 302.92$

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

Social adaptation to college. Social adaptation to college was entered as the next criterion variable with indicators of students' psychosocial well-being and motivations for use of communication technologies entered as the predictor variables. If either independent variable was a significant predictor of social adaptation to college in Step 1, the product of the two independent variables was computed to form the interaction term. In Step 2, the interaction term was entered as the third predictor variable. Interaction terms that emerged as significant predictors of social adaptation to college are presented.

Results indicated that social adaptation to college was predicted by the interaction between depression and the motivation to waste time or procrastinate using communication technologies ($\beta = .269, p = .045$). Social adaptation to college was also predicted by the interaction between shyness and the motivation to view pornography or

adult content using communication technologies ($\beta = -.290, p = .035$). Further, social adaptation to college was predicted by the interaction between social anxiety and the motivation to conduct research or seek information using communication technologies ($\beta = .481, p = .033$). Last, social adaptation to college was predicted by the interaction between social self-confidence and the motivation to work on school-related assignments using communication technologies ($\beta = .349, p = .025$). The ΔR^2 resulting from the addition of the interaction term to each regression equation was small but statistically significant. Results of these analyses are presented in Table 6.11.

Table 6.11

Results of Multiple Regression Analyses Testing d Interaction Effects of Motivations for Use of Communication Technologies and Variables Related to Psychosocial Well-Being on Change in Social Adaptation to College

	Predictor Variable	R ²	ΔR^2	β	F
Step 1:	Depression (DE)	.190		-.437***	$F(2, 1081) = 126.88$
	Waste time or procrastinate			.004	
Step 2:	DE x Waste time or procrastinate	.193	.003	.269*	$F(3, 1080) = 88.17$
Step 1:	Shyness (SH)	.281		-.529***	$F(2, 1081) = 210.86$
	View pornography or adult content			-.010	
Step 2:	SH x View pornography/adult content	.284	.003	-.290*	$F(3, 1080) = 142.52$
Step 1:	Social anxiety (SA)	.049		-.214***	$F(2, 1081) = 27.63$
	Conduct research or seek information			-.036	
Step 2:	SA x Research/seek information	.053	.004	.481*	$F(3, 1080) = 19.99$
Step 1:	Social self-confidence (SSC)	.336		.578***	$F(2, 1081) = 274.03$
	Work on school-related assignments			-.022	
Step 2:	SSC x Work on school assignments	.339	.003	.349*	$F(3, 1080) = 185.04$

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

Conclusion

The results presented in this chapter point to significant findings that respond directly to the research questions and hypotheses. The first four hypotheses together predicted that students use of technology would be related to their perceived psychosocial well-being and sense of community. These hypotheses were partially supported. Variables related to time spent using communication technologies and motivations for use of communication technologies emerged as either positive or negative predictors of

the variables that served as indicators of psychosocial well-being and sense of community. The final two hypotheses predicted a relationship between psychosocial well-being and sense of community mediated by students' use of technology. Though the results of these analyses revealed significant interaction effects, the actual change in the predictive capability of the final interaction models was trivial. The results of these analyses will be discussed further in the following chapter along with a discussion of theoretical implications, implications for future research, and considerations for professional practice in higher education.

CHAPTER FIVE

Discussion and Conclusions

Three broad research questions guided this dissertation study. The first research question asked to what extent the use of communication technologies supported or constrained students' perceived sense of community. The second question asked to what extent the use of communication technologies supported or constrained students' perceived psychosocial well-being. The third and final research question asked the extent to which the use of communication technologies mediated the relationship between students' perceived psychosocial well-being and sense of community. This chapter discusses how the predictions made in the research hypotheses responded to the research questions posed for this study. First, the findings that address each hypothesis will be discussed. The chapter will conclude with a discussion of theoretical implications, directions for future research, and considerations for professional practice.

Hypothesis One

The first hypothesis predicted that students' time spent using communication technologies would be related to their psychosocial well-being. Using the stepwise command in multiple regression, analyses revealed that numerous variables related to time spent using communication technologies either positively or negatively predicted indicators of psychosocial well-being. Although direct relationships emerged among the dependent and independent variables, it is important to note that causality cannot be interpreted from these results. Moreover, it is likely that multidirectionality exists among variables in that variables related to psychosocial well-being may contribute to trends in students' use of technology which, in turn, may contribute to indicators of students'

psychosocial well-being.

Loneliness. First, loneliness was entered as the dependent variable with variables related to time spent using communication technologies entered as independent variables. From this analysis, loneliness was shown to be positively predicted by students' time spent playing video or computer games alone, visiting YouTube or other video sites, and surfing the internet or visiting websites. Thus, increased time spent on each of these activities was associated with higher scores on loneliness. Time spent playing video or computer games alone was the strongest positive predictor of loneliness. If loneliness is more likely experienced when belongingness needs are not adequately met or when there exists a lack of frequent and intimate social connections (Baumeister & Leary, 1995; Cacioppo & Patrick, 2008), then it would make sense that more time spent engaged in solitary or individual activities would be related to the experience of loneliness if meaningful social relationships are not also formed and sustained.

Further, loneliness was negatively predicted by time spent talking via cell phone or personal digital assistant and texting or emailing via cell phone or personal digital assistant, indicating that increased time spent on each of these activities was associated with a decrease in loneliness. Interestingly, the strongest negative predictor of loneliness was time spent playing computer or video games with others, indicating a noteworthy distinction between playing video or computer games alone or playing video or computer games with others. These findings reveal that more time spent playing video games with others was associated with lower scores on loneliness. In fact, playing video or computer games with others was the strongest negative predictor of loneliness, followed by talking via cell phone or personal digital assistant.

One question that emerges from these results is where other gamers reside when engaged in multi-user play. Multi-user domains allow gamers to play with others across time and space. Thus, playing video or computer games with others does not necessarily mean that multiple users are occupying the same physical space. It is just as likely that playing video games *with others* refers to others who share virtual time and space (e.g., avatars), but who are physically located in any number of places throughout the world. Even so, gaming does not typically incorporate meaningful social interaction beyond the communication required for play. Therefore, gaming with others may temporarily reduce feelings of loneliness due to having company, though it may not necessarily be indicative of supportive or meaningful social relationships.

Also evident in these findings is the individual or solitary nature of the activities that emerged as positive predictors of loneliness (e.g., surfing the internet or visiting websites). While it is possible that a student might visit YouTube or other video sites or surf the internet in the company of others, these findings look specifically at the relationship between the amount of time one spends engaged in certain uses of communication technology and the impact of that time on indicators of psychosocial well-being. If increased time spent on these activities is associated with loneliness, it is likely that these activities are most often pursued in the absence of others. These findings point to a negative relationship between individual or solitary uses of communication technologies and loneliness. Conversely, the uses of communication technology that predicted decreased loneliness were those that involved interaction or communication with others (e.g., talking, texting, or emailing via cell phone or personal digital assistant). Thus, increased time using communication technologies for the purpose of social

interaction may actually help to decrease students' feelings of loneliness by connecting them with friends and other social contacts who can provide social support or confirmation of belonging or connectedness to others.

Depression. Depression was entered next as the dependent variable with indicators of time spent using communication technologies as the independent variables. Depression was shown to be positively predicted by time spent chatting on instant messenger or in a chat room, texting or emailing via cell phone or personal digital assistant, visiting YouTube or other video sites, and playing video or computer games alone. Thus, increased time spent on each of these activities was associated with an increase in depression among participants in this study. Time spent playing video or computer games alone was the strongest positive predictor of depression.

Interestingly, the only negative predictor of depression was the amount of time spent playing video or computer games with others. Therefore, increased time spent on this activity was associated with a decrease in scores on depression. In these findings, several uses of communication technologies that emerged as positive predictors of depression were those that involve communication with other individuals (e.g., chatting on instant messenger or in a chat room). While this interactive type of technology emerged as a negative predictor of loneliness, similar technologies emerged as positive predictors of depression. One explanation for this may be that loneliness is not necessarily associated with an individual's level of social contact or social activity (Morahan-Martin & Schumacher, 2003), and it is possible that interacting via technological media temporarily alleviates feelings of loneliness but does not provide for more meaningful social interactions that might serve to buffer against other psychological

stressors such as depression. Similar to the findings for loneliness, visiting YouTube and other video sites and playing video or computer games alone were both associated with an increase in depression among students.

Shyness. Shyness was entered next as the dependent variable with variables related to time spent using communication technologies entered as independent variables. From this analysis, shyness was shown to be positively predicted by time spent surfing the internet or visiting websites, playing video or computer games alone, watching television or movies, visiting YouTube or other video sites, and chatting on instant messenger or in a chat room. Thus, increased time spent on each of these activities was associated with higher scores on the measure of shyness. The strongest positive predictor of shyness was time spent playing video or computer games alone. These findings reveal that solitary or individual activities such as surfing the internet or visiting websites and watching television or movies may be more appealing to shy individuals than other activities that require face-to-face social interaction, particularly due to the tendency for shy individuals to feel anxious or worried in the company of other individuals who they may not know well (Cheek & Briggs, 1990). While one can spend time watching television or movies with other individuals, this is not typically an activity that promotes meaningful social interaction despite being in the company of others. Chatting on instant messenger or in a chat room was also found to be a positive predictor of shyness, providing support for the notion that shy individuals maintain a strong interest in forming social relationships (Baumeister & Leary, 1995) but may seek to interact via mediated forms of communication as these tools may provide a safer space to engage in or practice the social skills required to form meaningful relationships with peers. This medium for

social interaction allows the shy individual to protect against interpersonal rejection or fears about social competence (Arkin, Lake, & Baumgardner, 1986). Interestingly, playing video or computer games alone was also the most significant positive predictor of shyness, complimenting the association between this activity and students' experience of other psychological stressors such as loneliness and depression.

Shyness was also shown to be negatively predicted by texting or emailing via cell phone or personal digital assistant, talking via cell phone or personal digital assistant, playing video or computer games with others, and building or enhancing a personal website. Increased time spent on these activities was associated with decreased scores on the measure of shyness. Texting or emailing via cell phone or personal digital assistant was the strongest negative predictor of shyness, followed by playing video or computer games with others. Not surprisingly, the amount of time spent communicating via cell phone or personal digital assistant was predictive of lower scores on shyness. While these mediated forms of communication likely appeal to both shy and non-shy individuals, shy individuals might find these tools useful as they remove the risk sometimes associated with face-to-face social interactions. Similarly, the association between shyness and playing video or computer games with others aligns with findings addressed in the preceding sections on loneliness and depression. Less shy individuals may be more likely to spend time playing video games with others than more shy individuals who prefer playing video or computer games alone.

Social anxiety. Next, social anxiety was entered as the dependent variable with the variables related to time spent using communication technologies entered as independent variables. None of the variables related to time spent using communication

technologies emerged as positive predictors of social anxiety. However, social anxiety was found to be negatively predicted by one variable. Time spent networking via Facebook or other sites was found to be a significant negative predictor of social anxiety. Thus, increased time spent networking via Facebook or other sites was associated with lower scores on social anxiety. Leary and Kowalski (2003) suggested that socially anxious individuals are concerned about social rejection and tend to experience distress when interpersonal goals are not actualized in practice. Time spent networking via Facebook or other sites is indicative of a medium for social interaction better suited for intentional presentation of self and identity and avoidance of social rejection (Caplan, 2003; McKenna, Greene, & Gleason, 2002; Morahan-Martin & Schumacher, 2000, 2003; Shepherd & Edelman, 2005). Further, Caplan (2007) reported that social anxiety was a stronger predictor of the preference for online social interaction than loneliness. Thus, socially anxious individuals may be drawn to the interactive and connective capacity of Facebook and other networking sites as a means of connecting socially with peers in a low-risk environment

Perceived social skill. Next, perceived social skill was entered as the dependent variable with variables related to time spent using communication technologies entered as the independent variables. Perceived social skill was shown to be positively predicted by texting or emailing via cell phone or personal digital assistant, talking via cell phone or personal digital assistant, building or enhancing a personal website, and networking via Facebook or other websites. Thus, increased time spent on these activities was associated with higher scores on perceived social skill. Texting or emailing via cell phone or personal digital assistant was the strongest positive predictor of perceived social skill.

These findings make intuitive sense as individuals who perceive their social skills as strong likely have the confidence to engage in social interactions via whatever medium they deem most useful in a given social context. The association between time spent building or enhancing a personal website and increased perceptions of social skill may be attributed to a student's level of confidence in openly expressing information about the self in an online format (e.g., a Facebook profile). However, this is counter to the idea that individuals drawn to the internet are likely to be those who lack social or self-presentational skills in face-to-face settings (Caplan, 2005). Future research should attempt to explore this association further.

Perceived social skill was found to be negatively predicted by time spent visiting YouTube or other video sites, playing video or computer games alone, and surfing the internet or visiting websites. Increased time spent on these activities predicted lower scores on perceived social skill. Not surprisingly, uses of communication technologies that can be considered individual or solitary activities emerged as negative predictors of perceived social skill. Thus, students who spend more time engaged in individual or solitary activities may be drawn to these due to a lack of perceived social skill to engage in activities that require social interaction. Or, the time spent engaged in these types of activity may contribute to a decrease in social skill over time due to a lack of face-to-face social interactions that provide the context for practicing and refining social behaviors. The direction of this relationship has not been established, though Caplan (2003) has theorized that deficient social skills and increased exposure to the internet and other communication technologies predisposed individuals to prefer online rather than face-to-face communication which, in turn, leads to problematic internet use and an increase in

negative outcomes related to psychosocial well-being.

Social self-confidence. Social self-confidence was entered next as the dependent variable with variables related to time spent using communication technologies entered as the independent variables. Social self-confidence was shown to be positively predicted by texting or emailing via cell phone or personal digital assistant, talking via cell phone or personal digital assistant, playing video or computer games with others, building or enhancing a personal website, or networking via Facebook or other sites. Increased time spent on each of these activities was associated with higher scores on social self-confidence. Texting or emailing via cell phone or personal digital assistant was the strongest positive predictor of social self-confidence. Of these activities, four of the five involve social interaction of some sort with other individuals. Given that social self-confidence refers to one's perceived competence in social situations (Shrauger & Schohn, 1995), it is not surprising that individuals high in social self-confidence would spend time interacting socially. The strength of the association between social self-confidence and texting or emailing via cell phone or personal digital assistant points to this mediated form of social interaction as prevalent even for individuals who likely do not struggle in face-to-face social interactions. Increased time spent texting or emailing via cell phone or personal digital assistant may also point to the quantity of individuals within one's social network or the number of interactions one has via this form of communication.

Further, social self-confidence was negatively predicted by playing video or computer games alone, watching television or movies, chatting on instant messenger or in a chat room, surfing the internet or visiting websites, and following Twitter, blogs, or other newsfeeds. Increased time spent on these activities was associated with lower

scores on social self-confidence. Not surprisingly, playing video or computer games alone was the strongest negative predictor of social self-confidence. Each of these activities can be considered solitary or individual activities, and it is not surprising that students who report increased time spent on these activities would also report lower scores on social self-confidence, as social self-confidence is a necessary precursor to approaching novel situations or activities that require social interaction (Shrauger & Schohn, 1995). Further, given the negative relationship between depression and social self-confidence (Anderson & Betz, 2001), these findings may point to an underlying psychological health concern.

Similar to perceived social skill, the association between time spent building or enhancing a personal website and social self-confidence may be attributed to a student's level of confidence in expressing information about the self in an online format (e.g., a Facebook profile). Further, if a socially self-confident individual has a large social network via Facebook or another personal site, they may feel more compelled to build or enhance this site to reflect new information about their own life or related to the content of their personal website. On the other hand, it would seem that individuals lacking social self-confidence may be drawn to this activity given that it provides a space to express information about the self without interacting in a face-to-face context. Research of a qualitative nature would assist in probing deeper into this association.

Social self-efficacy. Last, social self-efficacy was entered as the dependent variable and variables related to time spent using communication technologies were entered as independent variables. Social self-efficacy was shown to be positively predicted by texting or emailing via cell phone or personal digital assistant, talking via

cell phone or personal digital assistant, playing video or computer games with others, and building or enhancing a personal website. Thus, increased time spent on these activities was associated with higher scores on social self-efficacy. Playing video or computer games with others emerged as the strongest positive predictor of social self-efficacy, followed by texting or emailing via cell phone or personal digital assistant. As suggested earlier, most of these activities are interactive and it is understandable that increased time spent communicating via these media would be predictive of social self-efficacy, particularly given that self-efficacy refers to an individual's perception of their own capacity to exhibit desired behaviors in a particular social context (Bandura, 1986). The association between social self-efficacy and time spent building or enhancing a personal website is likely explained in a similar manner to the same association between perceived social skill, social self-confidence, and time spent building or enhancing a personal website, with social self-efficacious individuals possessing the confidence to share information about the self via a personal profile or website.

Social self-efficacy was negatively predicted by visiting YouTube or other video sites, playing video or computer games alone, following Twitter, blogs, or other newsfeeds, and watching television or movies. Increased time spent on these activities was associated with lower scores on social self-efficacy. Playing video or computer games alone was the strongest negative predictor of social self-efficacy. As with perceived social skill and social self-confidence, time spent on solitary or individual activities may be indicative of a lack of skill or confidence in the ability to engage in activities that require the interpersonal skills needed for social interaction.

Hypothesis Two

The second hypothesis predicted students' motivations for use of communication technologies would be related to their perceived psychosocial well-being. Using the stepwise command in multiple regression, the analyses revealed that numerous variables related to motivation for use of communication technologies either positively or negatively predicted indicators of psychosocial well-being. Although direct relationships emerged among the dependent and independent variables, it is important to note that causality cannot be interpreted from these results. As discussed earlier in this chapter, it is likely that multidirectionality exists among variables in that variables related to psychosocial well-being may contribute to trends in students' use of technology which, in turn, may contribute to indicators of students' psychosocial well-being.

Loneliness. First, loneliness was entered as the dependent variable with variables related to motivations for use of communication technologies entered as the independent variables. Loneliness was shown to be positively predicted by the motivation to use communication technologies to seek support for personal problems or issues, waste time or procrastinate, play video or computer games alone or with other users, comment on blogs or other newsfeeds, and view pornography or adult content. Thus, more frequent use of communication technologies for these motivations was associated with higher scores on loneliness. Using communication technologies to seek support for personal problems or issues or to waste time or procrastinate were the strongest positive predictors of loneliness. Interestingly, Gordon and colleagues (2007) found no association between loneliness and motivations for technology use. The findings in this study provide further support for the association between loneliness and several motivations for use of

communication technologies.

The association between loneliness and the motivation to use communication technologies for seeking support for personal problems or issues aligns with earlier findings (Morahan-Martin & Schumacher, 2003), and it is indicative of a major issue in the lives of lonely students. Specifically, it points to the need for web-based interventions and other educational programming that will assist lonely individuals in learning and refining strategies for establishing the social connections they desire. If loneliness results from a discrepancy between desired and actual social relationships (Peplau & Perlman, 1982), then developing the confidence and competence to pursue desired social relationships should help to alleviate feelings of loneliness. The motivation to seek support for personal problems or issues via communication technologies indicates a potential lack of close or intimate social relationships that might serve to provide support in times of distress. Helping students develop these supportive social relationships will likely contribute to their social and psychological well-being and strengthen the likelihood that they will succeed academically.

Morahan-Martin and Schumacher (2003) also found that the internet behavior of lonely students was causing disruptions in their lives, providing support for the association between loneliness and the motivation to waste time or procrastinate using communication technologies. Lonely students' perceptions of their social skills as lower than their peers (Christensen & Kashy, 1998; Segrin & Flora, 2000) may result in students turning to non-social activities for entertainment or to waste time or procrastinate. Playing video games alone, commenting on blogs or other newsfeeds, and viewing pornography or adult content were also predictive of loneliness and are examples

of activities that may appeal to lonely students who perceive their social competence as inadequate for more social activities. This said, Caplan (2007) suggested that loneliness does not necessarily indicate an *actual* deficit in social skill or social self-confidence.

Conversely, loneliness was negatively predicted by the motivation to share photos, videos, or other personal updates and the motivation to interact with friends or other social contacts via communication technologies. More frequent use of communication technologies for these reasons was associated with lower scores on a measure of loneliness. Sharing photos, videos, or other personal updates was the strongest negative predictor of loneliness. Although sharing photos, videos, or other personal updates is an activity typically done individually, it does suggest that there are social contacts with whom to share. Thus, the motivation to engage in this activity is also a motivation to interact with friends or other social contacts, which also was predictive of lower scores on loneliness. It seems that the motivation to engage socially using communication technologies is a positive influence, where the motivation to use technology for individual or solitary activities is more of a negative influence on students' experience of loneliness.

Depression. Next, depression was entered as the dependent variable with variables related to motivations for use of communication technologies entered as the independent variables. Depression was shown to be positively predicted by the motivation to use communication technologies to seek support for personal problems or issues, waste time or procrastinate, share one's "true" self with others, and conduct research or seek information. Thus, more frequent use of communication technologies for these motivations was associated with higher scores on a measure of depression. The

connection between the motivation to seek support for personal problems or issues and depression aligns with findings from previous studies that point to the tendency for depressed individuals to use the internet and other technologies for coping and to avoid seeking social support through face-to-face interactions (Dyson & Renk, 2006; Gordon, Juang, & Syed, 2007). Baumeister and Leary (1995) suggested that depression may result from a failure to integrate socially into the environment in which one is most proximally situated. If students fail to form close and intimate social connections with others, the association between depression and the motivation to seek support from alternative sources (e.g., online support groups) and to share one's "true" self with others is not surprising. The internet may be the primary venue through which students feel most comfortable locating support and expressing themselves or their emotions freely. Similar to the findings on loneliness discussed earlier, these associations point to the need for both web-based sources of support for students to provide initial strategies for reducing or alleviating depressive symptoms, including engaging in positive and healthy behaviors, reaching out to peers for social support, and seeking assistance from a mental health professional or psychologist through an in-person support group or counseling.

Helping students identify hobbies and activities that interest them and help them connect with others may encourage them to balance their use of the internet with other more social activities. This is particularly important if depressed students are more likely to use communication technologies to waste time or procrastinate or to conduct research or seek information. The motivation to conduct research or seek information using communication technologies may be related to the frequency with which students use the internet and other technologies for their academic coursework, but it also may be

indicative of time spent surfing the web to waste time or procrastinate because of a lack of other options for engaging socially. Though use of the internet and other technologies for wasting time or procrastinating is likely a common motivation for many users, the significant association between this motivation and depression suggests that this motivation for use may be problematic.

No negative predictors of depression emerged from these results. Thus, none of the motivations for use of communication technologies emerged as significant indicators of depression among students in this sample. This is, in and of itself, an interesting finding. We might expect similar findings for depression as those found for loneliness, but not even the motivation to interact with friends or social contacts related to a decrease in scores on depression. This could be the result of a tendency for depressed individuals to withdraw and feel a lack of motivation to engage in any number of activities, including interact with others regardless of context. A qualitative inquiry into this lack of an association might either clarify this or provide an alternative explanation. In either case, additional research is needed to strengthen an understanding of this finding.

Shyness. Shyness was then entered as the dependent variable with variables related to motivations for use of communication technologies entered as the independent variables. Shyness was positively predicted by the motivation to use communication technologies to play video or computer games alone or with other users, waste time or procrastinate, seek support for personal problems or issues, and conduct research or seek information. Thus, more frequent use of communication technologies for these motivations was associated with higher scores on a measure of shyness. Using communication technologies to waste time or procrastinate was the strongest positive

predictor of shyness. These findings are expected given the similar findings on the association between the motivation to use communication technologies for individual or solitary activities and other psychosocial stressors such as loneliness and depression. Further, the association between shyness and the motivation to play video or computer games alone or with others is not surprising given that shyness was positively predicted by time spent playing video or computer games alone. This said, it is important to note that shyness was negatively predicted by time spent playing video or computer games with others. Given the limited interactive or communicative nature of gaming – with or without others – it is not surprising that shy individuals would be drawn to this activity.

Similar to the findings on loneliness, shyness was negatively predicted by the motivation to share photos, videos, or other personal updates. More frequent use of communication technologies for this reason was associated with lower scores on shyness. The motivation to engage in this activity may also be indicative of a motivation to interact with friends or other social contacts given that shy individuals do maintain an interest in forming meaningful social relationships (Baumeister & Leary, 1995). Using communication technologies to share photos, videos or other personal updates may be a safe way for shy individuals to communicate information about themselves without the risk sometimes associated with face-to-face social interactions. Shy individuals do not necessarily have an actual deficit in social skill but may feel that they are unable to make the contribution they might want to in social settings (Crozier, 2001). Further, shy individuals are more likely to be concerned with rejection and perceive their social competence as low (Jackson et al., 1997), and thus sharing information about the self in

an online format may allow shy individuals to feel as if they are connecting socially without having to actually interacting in a face-to-face context.

Social anxiety. Social anxiety was entered as the next dependent variable with variables related to motivations for use of communication technologies entered as the independent variables. Social anxiety was shown to be positively predicted by the motivation to use communication technologies to waste time or procrastinate, conduct research or seek information, seek support for personal problems or issues, and share one's true self with others. Thus, more frequent use of communication technologies for these motivations was associated with higher scores on social anxiety. The motivation to waste time or procrastinate was the strongest positive predictor of social anxiety. These findings are not surprising as socially anxious individuals are more likely to engage in activities by themselves and tend to exhibit inhibited and reticent communication behaviors (Leary & Kowalski, 2003). Also, social anxiety has been found to correlate highly with both depression and loneliness; the similar association between motivations for use of communication technologies and these three indicators of psychosocial distress makes sense intuitively.

Socially anxious individuals have been found to engage in behaviors that will allow them to avoid rejection and negative evaluation (Leary & Kowalski, 1995; Schlenker & Leary, 1982), and thus it is likely that students who suffer from social anxiety will pursue activities that do not require them to engage in social interactions that could be perceived as risky. This avoidance of face-to-face social interactions and the perceived inability to initiate and strengthen social relationships with peers likely contributes to feelings of social exclusion and disconnectedness, which in turn might lead

to further psychological distress or academic challenges. Social inclusion is likely to eradicate these feelings (Barden et al., 1985), and thus programs and events designed to provide a social space for students to interact should also attempt to foster connections between students who may feel some anxiety about socializing with unfamiliar peers. These findings also point to the need to offer web-based sources of support for students who experience social anxiety and may not feel comfortable seeking support from peers or social contacts through face-to-face interactions. These efforts can include strategies to help students reduce or alleviate their feelings of anxiety and take small steps to approach social situations with increased confidence and a greater sense of efficacy. For students who experience serious social anxiety, web-based resources may help students to learn about and gain the confidence to seek support from a counseling center or another program that helps students build social skills.

Interestingly, social anxiety was only negatively predicted by the motivation to view pornography or adult content via communication technologies. More frequent use of communication technologies for this motivation was related to lower scores on the measure of social anxiety among participants in this study.

Perceived social skill. Next, perceived social skill was entered as the dependent variable with variables related to motivations for use of communication technologies entered as the independent variables. Perceived social skill was shown to be positively predicted by the motivation to share photos, videos, or other personal updates and to meet new people and make friends. Thus, more frequent use of communication technologies for these motivations was associated with higher scores on perceived social skill. The motivation to share photos, videos, or other personal updates via communication

technologies was the strongest positive predictor of perceived social skill, and surprisingly, it was a stronger predictor of perceived social skill than the motivation to meet new people and make friends. One explanation for this could be the prevalence of social networking sites, personal websites, and blogs for interacting with others and sharing personal information in the form of photos, videos, or other updates. In this study, time spent building or enhancing a personal website was a significant positive predictor of perceived social skill though time spent networking online via Facebook or other sites was not associated with perceived social skill.

Further, perceived social skill was negatively predicted by the motivation to play video or computer games alone or with other users, look for entertainment (e.g., music/video), conduct research or seek information, waste time or procrastinate, and seek support for personal problems or issues. Thus, more frequent use of communication technologies for these motivations was associated with lower scores on perceived social skill. Interestingly, the motivation to play video or computer games alone or with other users was the strongest negative predictor of perceived social skill. Given previous findings, these associations are not surprising. Intuitively, it would make sense for individuals who are motivated to use communication technologies for mostly individual or solitary activities to report their social competence as lower than individuals who typically engage in uses of communication technology that are more social and interactive. Although time spent playing video or computer games with others was predictive of higher scores on perceived social skill in this study, the motivation to play video or computer games alone or with others is not necessarily indicative of the perception that one is socially competent. It would seem that individuals who are

socially confident and efficacious and who perceive themselves as possessing social skills would be more likely to spend time interacting with others in spaces or at events that promote the formation or strengthening of relationships through face-to-face communication. It is likely that, for those who perceive themselves as socially skilled, social relationships are formed and strengthened through both face-to-face interactions and via communication technologies (e.g., Facebook). Personal websites and social networking sites provide an avenue to share personal updates and maintain relationships with social contacts.

Social self-confidence. Social self-confidence was entered next as the dependent variable with variables related to motivations for use of communication technologies entered as the independent variables. Social self-confidence was found to be positively predicted by the motivation to share photos, videos, or other personal updates and meet new people and make friends. More frequent use of communication technologies for these motivations was associated with higher scores on social self-confidence. The motivation to share photos, videos, or other personal updates was the strongest positive predictor of social self-confidence, with this motivation as a stronger predictor of social self-confidence than the motivation to meet new people and make friends. Similar to the findings on perceived social skill, this association is indicative of the prevalence of social networking sites, personal websites, and blogs for connecting with social contacts. Socially confident individuals are likely to have a greater quantity of social contacts than less socially confident individuals, and social networking sites, personal websites, and blogs provide a relatively easy way to stay in contact with others through the sharing of photos, videos, or other personal updates. Further, the motivation to maintain connection

to already established social relationships through the sharing of personal updates may be more relevant to the socially skilled or socially confident individual than the motivation to meet new people and make friends.

Social self-confidence was negatively predicted by the motivation to play video or computer games alone or with other users, waste time or procrastinate, seek support for personal problems or issues, look for entertainment (e.g., music/video), and conduct research or seek information. Thus, more frequent use of communication technologies for these motivations was associated with lower scores on a measure of social self-confidence. The motivation to play video or computer games alone or with other users was the strongest negative predictor of social self-confidence. Again, each of these activities are predominantly enacted or pursued individually which further supports the idea that socially anxious or less socially confident individuals are likely to pursue activities they can do alone, thus avoiding social situations that require the social self-confidence to meet new people.

Social self-efficacy. Last, social self-efficacy was entered as the dependent variable with variables related to motivations for use of communication technologies entered as the independent variables. Social self-efficacy was found to be positively predicted by the motivation to share photos, videos, and other personal updates using communication technologies. More frequent use of communication technologies for this motivation was associated with higher scores on a measure of social self-efficacy. This finding is similar to the association between the motivation to share photos, videos, and other personal updates and students' perceived social skill and social self-confidence. Social self-efficacy refers to the belief that one will be successful enacting social

behaviors that will lead to the achievement of social and relational goals (Smith & Betz, 2000), thus increased social self-efficacy likely indicates a strong social network and a desire to stay in contact with this network through the sharing of personal updates.

Further, social self-efficacy was negatively predicted by the motivation to conduct research or seek information, waste time or procrastinate, seek support for personal problems or issues, and play video or computer games alone or with other users. More frequent use of communication technologies for these motivations was associated with lower scores on social self-efficacy. Interestingly, the strongest negative predictor of social self-efficacy was the motivation to conduct research or seek information using communication technologies. As with previous discussions in this chapter, these motivations point to use of communication technologies alone rather than with company. Other than playing video games with others, each activity is likely to be pursued individually and together suggest that students who experience low social self-efficacy will be less likely to approach situations where they feel unprepared to actualize their social or relational goals. Similar to other findings, these results have implications for the manner in which students seek and locate support for personal problems or issues.

Hypothesis Three

The third hypothesis predicted that students' time spent using communication technologies would be related to their perceived sense of community. Using the stepwise command in multiple regression, the analyses revealed that numerous variables related to time spent using communication technologies either positively or negatively predicted indicators of students' sense of community. Although direct relationships emerged among the dependent and independent variables, it is important to note that causality

cannot be interpreted from these results. Further, it is likely that multidirectionality exists among variables in that variables related to students' perceived sense of community may contribute to trends in students' use of technology which, in turn, may contribute to indicators of students' perceived sense of community.

Mattering to others. First, mattering to others was entered as the dependent variable with variables related to time spent using communication technologies entered as the independent variables. Mattering to others was found to be positively predicted by time spent playing video or computer games with others and texting or emailing via cell phone or personal digital assistant. Thus, increased time spent on each of these activities was associated with higher scores on a measure of mattering to others. Time spent playing video or computer games with others was the strongest positive predictor of mattering to others. These activities are social in that they involve interaction with other individuals and may provide students with confirmation of being part of a group of friends or having a connection to others. Being invited to play video or computer games with other individuals likely communicates to a student that they belong and that their companionship – or, their ability to play video or computer games – matters. Increased time spent texting or emailing via cell phone or personal digital assistant is indicative of either a large social network or frequent contact with a small number of contacts. In either case, the amount of time spent engaged in these activity likely contributes to the feeling that one is that one is noticed, cared for, and needed by others (Rosenberg & McCullough, 1981), factors that contribute to a sense of mattering.

Mattering to others was negatively predicted by time spent playing video or computer games alone, surfing the internet or visiting websites, and watching television

or movies. Increased time spent on these activities was associated with lower scores on a measure of mattering to others. Time spent playing video or computer games alone was the strongest negative predictor of mattering to others. Previous discussions in the chapter have pointed to the potential negative social or psychological effects of time spent engaged in activities that are predominantly individual or solitary. Similarly, this type of activity contributes to the perception that one does not matter to others. Without meaningful social interactions with others, students may not feel noticed, cared for, or needed by others. These findings point to the importance of social relationships to feeling a sense of mattering to others. It is possible that students are drawn to these uses of technology due to certain social or psychological stressors and subsequently feel that they do not matter to others as a result of engaging in mostly individual and non-social activities, including playing video or computer games alone, surfing the internet or visiting websites, and watching television or movies. The association between mattering to others and time spent watching television or movies indicates that students who feel they do not matter to others likely spend more time watching television or movies alone rather than in groups of peers. These findings support the hypothesis that students' time spent using communication technology influences their sense of community with others.

Perceived social support. Perceived social support was entered next as the dependent variable with variables related to time spent using communication technologies entered as the independent variables. Perceived social support was found to be positively predicted by time spent talking via cell phone or personal digital assistant, texting or emailing via cell phone or personal digital assistant, listening to or using a Mp3 player or iPod, and playing video or computer games with others. Thus, increased time

spent on these activities was associated with increased scores on a measure of perceived social support. Time spent talking via cell phone or personal digital assistant was the strongest positive predictor of perceived social support. It is likely that students use technological media to connect with friends and peers who can provide social support in times of distress, and thus the more time spent communicating via cell phone or personal digital assistant might confirm that one has access to a social support network. This finding might also point to students' lack of emotional well-being and need for continuous support from family and friends at a distance who are easiest to interact with via cell phone or personal digital assistant. The length of time one spends communicating in this manner may point to a student's ability to express their emotional needs and seek support from individuals who are able and willing to provide support. Given that support from both peers and parents contributes to college adjustment (Martin et al., 1999), this finding is positive in that it points to students seeking and receiving the support they need.

Another finding was the association between playing video or computer games with others and perceived social support. Playing video or computer games may provide a sense of perceived social support given that it is an activity done in the company of others. The quality of support provided in this context is an area that should be explored further through a qualitative inquiry. It is hard to imagine a quality exchange of social support while engaged in video or computer gaming, though it is possible that sharing an interest or activity with others (regardless of the nature of the social interaction) contributes to the perception that one has support. Or, it is possible that playing video or computer games with others communicates support by playing as part of a team and

pursing a common goal with teammates.

Perceived social support was negatively predicted by playing video or computer games alone and visiting YouTube or other video sites. Increased time spent on these activities contributed to lower scores on perceived social support. Playing video or computer games alone was the strongest negative predictor of perceived social support. These findings make sense as both activities likely occur in isolation, and increased time spent on these activities would point to less time spent in social interaction with others. This lack of contact with others would explain the perception that one does not have social support from friends. Locating and accessing social support requires that one has the social confidence and skills to form and establish social relationships that can serve as a source of support. Time spent engaged in individual activities may also be an indicator that students' are experiencing other social, academic, or psychological stressors. These stressors may cause a student to withdraw from potential sources of social support and engage in other non-social activities for entertainment or to waste time or procrastinate.

Social connectedness. Next, social connectedness was entered as the dependent variable with variables related to time spent using communication technologies entered as the independent variables. Social connectedness was found to be positively predicted by texting or emailing via cell phone or personal digital assistant, playing video or computer games with others, talking via cell phone or personal digital assistant, and networking via Facebook or other sites. Increased time spent on each of these activities was associated with increased scores on a measure of social connectedness. Playing video or computer games with others was the strongest positive predictor of social connectedness. Similar to previous findings, time spent on activities that are social or interact are more likely to

contribute to one's sense of mattering to others, to the perception of having social support from friends, and to feeling a sense of social connectedness. More time spent communicating via cell phone or personal digital assistant or networking via Facebook or other sites is indicative of an active social life and of having either a large social network or frequent contact with others. This social contact with others likely contributes to the sense that one belongs – the experience of *being a part of* (Lee & Robbins, 1995) – and is socially connected, both to their network of peers and to the social life of the campus.

Social connectedness was negatively predicted by playing video or computer games alone, visiting YouTube or other video sites, watching television or movies, surfing the internet or visiting websites, and chatting on instant messenger or in a chat room. Increased time spent on these activities was associated with lower scores on social connectedness. Playing video or computer games alone was the strongest negative predictor of social connectedness. Four of the five uses of communication technologies that emerged as negative predictors of social connectedness are individual or solitary activities, further supporting previous discussions on time spent using these types of technology. Interestingly, chatting on instant messenger or in a chat room emerged as a significant negative predictor of social connectedness. While chatting on instant messenger or in a chat room might connect us to others, this technological medium might also serve to distance us from more intimate social relationships due to the absence of nonverbal and vocal subtleties that convey authentic meaning and emotion present in face-to-face interpersonal interactions (La Guardia, 2008; Weiser, 2001). As Willson (2006) suggests, communication mediated by technology “becomes thinner” (p. 56). Thus, though chat users may feel connected to another individual during the interaction,

use of instant messenger or interaction in a chat room may be less likely to contribute to a more pervasive sense of connectedness or belonging. This, in turn, could lead to low self-esteem, anxiety, and depression (Kohut, 1984; Lee & Robbins, 1998). Even further, this lack of connectedness or belonging has been said to contribute to pathological consequences, severe distress, and even suicide (Baumeister & Leary, 1995; Durkheim, 1897/1963). Failure to connect to the social life of the campus and to feel a solid sense of social connectedness or belonging has dire consequences for students and can contribute to any number of academic, social, or psychological stressors, including an inability to form supportive relationships, ask for or provide assistance when needed, and difficulty adjusting to campus life and persisting to graduation.

Social adaptation to college. A students' sense of mattering to others and the perception of having social support from a network of social contacts likely contribute to the sense that one is connected and that they belong, all of which influence the success of the student in adapting to the social life of the campus. The importance of social integration, or social belonging, to student success has been demonstrated through empirical findings (Pascarella & Terenzini, 1980; Spady, 1970; Tinto, 1975, 1993), yet how students' use of technology influences this process is an emerging area of inquiry. Social adaptation to college was entered as the dependent variable with variables related to time spent using communication technologies entered as the independent variables. In this study, social adaptation to college was shown to be positively predicted by playing video or computer games with others, texting or emailing via cell phone or personal digital assistant, networking via Facebook or other sites, and listening to or using an Mp3 player or iPod. Increased time spent on these activities was associated with lower scores

on a measure of social adaptation to college. Interestingly, playing video or computer games with others was the strongest positive predictor of social adaptation to college. As has been explored in previous sections, there seems to be a solid association between time spent on interactive uses of technology and students' psychosocial well-being and students' sense of community. Again, these findings point to the value of interactive technologies to engaging in the social life of the campus.

Not surprisingly, social adaptation to college was found to be negatively predicted by playing video or computer games alone, watching television or movies, visiting YouTube or other video sites, and surfing the internet or visiting websites. Increased time spent on these activities was associated with lower scores on social adaptation to college. Playing video or computer games alone was the strongest negative predictor of social adaptation to college. Alongside other findings discussed in this chapter, time spent playing video games alone seems to be a significant and negative predictor of many indicators of psychosocial well-being and students' sense of community along the variables included in this study. These findings point to an alarming issue that must be addressed by educators and mental health professionals in higher education. The implications of these findings for theory, research, and professional practice will be discussed later in this chapter.

Hypothesis Four

The fourth hypothesis predicted that students' motivations for use of communication technologies would be related to their perceived sense of community. Using the stepwise command in multiple regression, the analyses revealed that numerous variables related to motivation for use of communication technologies either positively or

negatively predicted indicators of students' sense of community. Although direct relationships emerged among the dependent and independent variables, it is important to note that causality cannot be interpreted from these results. It is also likely that multidirectionality exists among variables in that variables related to students' perceived sense of community may contribute to trends in students' use of technology which, in turn, may contribute to indicators of students' perceived sense of community.

Mattering to others. First, mattering to others was entered as the dependent variable with variables related to motivations for use of communication technologies entered as the independent variables. Mattering to others was found to be positively predicted by the motivation to share photos, videos, or other personal updates using communication technologies. More frequent use of communication technologies for this motivation was associated with higher scores on a measure of mattering to others. Interestingly, the motivation to share photos, videos, or other personal updates emerged as a negative predictor of loneliness and shyness and a positive predictor of perceived social skill, social self-confidence, and social self-efficacy. Clearly, the motivation to share photos, videos, or personal updates via communication technologies is a positive influence on students' psychosocial well-being and sense of mattering to others. Students' who have a strong social support network and feel pulled to share updates about their personal life with this network likely feel as though they matter to others and that others care about them and their personal experiences.

Conversely, mattering to others was negatively predicted by the motivation to seek support for personal problems or issues, waste time or procrastinate, share one's "true" self with others, and conduct research or seek information. More frequent use of

communication technologies for these motivations was associated with lower scores on mattering to others. Using communication technologies to seek support for personal problems or issues was the strongest negative predictor of mattering to others. This finding is significant in that it points to the tendency for some students to use communication technologies for coping purposes instead of seeking support from friends or other contacts. The perception of being supported by peers likely contributes to the sense that one matters, and thus it makes sense that one would feel like they do not matter when they must turn to the internet or web-based sources of support instead of having a supportive network of friends to whom they can turn in times of distress. Further, the motivation to use communication technologies to waste time or procrastinate, share one's "true" self with others, and conduct research or seek information also suggest a lack of meaningful social relationships that can confirm for a student that they matter to others. In this case, more time spent engaged in these activities contributes to a increased sense of not matting to others, which likely results from insufficient contact with peers who can serve as a source of companionship and support.

Perceived social support from friends. Perceived social support from friends was entered next as the dependent variable with variables related to motivations for use of communication technologies entered as the independent variables. Similar to findings on mattering to others, perceived social support from friends was found to be positively predicted by the motivation to share photos, videos, or other personal updates, again suggesting that this motivation likely relates to the perception that they have a supportive network of social contacts who care about them and their personal updates. Also, perceived social support from friends was positively predicted by the motivation to

interact with friends or other social contacts using communication technologies. More frequent use of communication technologies for these motivations was associated with higher scores on a measure of perceived social support from friends. These motivations were equally predictive of perceived social support from friends. More frequent use of communication technologies for interacting with friends or other social contacts further suggests that students who perceive greater social support from friends likely have a strong social network and thus are motivated to use communication technologies to maintain contact with their social network.

Negative predictors of perceived social support from friends included the motivation to play video or computer games alone or with other users and to seek support for personal problems or issues using communication technologies. More frequent use of communication technologies for these motivations was associated with lower scores on a measure of perceived social support from friends. The motivation to use communication technologies to play video or computer games alone or with other users was the strongest negative predictor of perceived social support from friends. Similar to the findings discussed earlier in this chapter, playing video or computer games alone was a negative predictor of many variables related to psychosocial well-being and sense of community. Playing video or computer games with others was a positive predictor of variables related to psychosocial well-being and sense of community. Though findings related to motivation for use and these findings related to time spent playing may seem to conflict, the association between the motivation to use communication technologies for playing video or computer games alone or with other users and perceived social support is not necessarily surprising given the lack of supportive communication typically exchanged

during individual or multi-user play. Other than the communication required for engaging in play, video or computer games are not necessarily a conducive medium for expressing emotion or conveying support to peers.

Social connectedness. Next, social connectedness was entered as the dependent variable with variables related to motivation for use of communication technologies entered as independent variables. Social connectedness was found to be positively predicted by the motivation to share photos, videos, or other personal updates and interact with friends or other social contacts using communication technologies. More frequent use of communication technologies for these motivations was associated with higher scores on a measure of social connectedness. The motivation to share photos, videos, or other personal updates using communication technologies was the strongest positive predictor of social connectedness. These findings are similar to the variables that emerged as positive predictors of mattering to others and perceived social support from friends. Again, the motivation to share photos, videos, or other personal updates likely relates to the motivation to interact with friends or other social contacts, suggesting that individuals high in social connectedness have a network of social contacts who they perceived as caring for and supporting them. This sense of mattering and the perception that one has the social support of friends likely contributes to a more global sense of social connectedness, and it is this sense of social connectedness that might contribute to one's desire to share information about the self through photos, videos, or other personal updates through a social networking site, personal webpage, or blog.

Social connectedness was negatively predicted by the motivation to play video or computer games alone or with others users, seek support for personal problems or issues,

waste time or procrastinate, and share one's "true" self with others. More frequent use of communication technologies for these motivations was associated with lower social connectedness. The motivation to seek support for personal problems or issues using communication technologies was the strongest negative predictor of social connectedness. Similar to the findings for perceived social support from friends, the motivation to use communication technologies to seek support for personal problems or issues suggests that students who more frequently use communication technologies for this reason likely have insufficient social relationships that would otherwise serve as a source of support and might contribute to a sense of belonging and connectedness. Also, the association between social connectedness and the motivation to play computer or video games alone or with others suggests that communicative exchanges while engaged in individual or multi-user play do not necessarily contribute to a pervasive sense of social connectedness. Although multi-user play seems to positively influence various indicators of psychosocial well-being and sense of community, it is unlikely that this form of entertainment or social interaction contributes in profound ways to a students' sense of connectedness to others.

Similar to other findings from this study discussed earlier in this chapter, the motivation to use communication technologies for wasting time or procrastinating points to the importance of engaging in activities with others where social connection is fostered among students. Uses of communication technologies that are individual or solitary seem to prevent students from engaging in more social activities that could foster their sense of belonging and connectedness. Further, the motivation to share one's "true" self with others supports previous research that suggests that individuals who experience certain

stressors may be drawn to the internet or other communication technologies due to features afforded more so in this context than in face-to-face interactions (Caplan, 2003; Morahan-Martin & Schumacher, 2000, 2003; Shepherd & Edelmenn, 2005; Wallace, 1999). If students feel better able to express their “true” selves online rather than in face-to-face contexts, they may subsequently feel a lack of authentic social connection and belonging and may experience other personal or academic challenges.

Social adaptation to college. Social adaptation to college was positively predicted by the motivation to share photos, videos, or other personal updates using communication technologies. More frequent use of communication technologies for this motivation was associated with higher scores on social adaptation to college. Similar to other findings from this study, the motivation to share photos, videos, or other personal updates using communication technologies seems to positively relate to students’ psychosocial well-being and sense of community along the dimensions explored in this study. If a student feels motivated to share photos, videos, or other personal updates, they must also perceive they have the care and support of a social network who will want to hear what they have to share. This sense of mattering and the perception of support from others likely contributes in significant ways to the extent to which students adapt to the social life of the campus.

Social adaptation to college was negatively predicted by the motivation to seek support for personal problems or issues, play video or computer games alone or with other users, conduct research or seek information, and waste time or procrastinate. More frequent use of communication technologies for these motivations was associated with lower scores on social adaptation to college. The motivation to seek support for personal

problems or issues using communication technologies was the strongest negative predictor of social adaptation to college. Again, these findings point to the negative influence of individual or solitary motivations for use of communication technologies on indicators of students' sense of community. Increased time spent using communication technologies for seeking support for personal problems or issues point to a lack of social contacts who can serve as a source of support. The increased frequency of using communication technologies for conducting research, seeking information, and wasting time or procrastinating and the motivation to use communication technologies for playing video or computer games with others indicate an affinity for engaging in activities of an individual or non-social nature. Time spent engaged in these types of activities will not promote the formation of social relationships that can serve as a source of companionship and support, thus contributing to a sense of connectedness and belonging to others. As a result, it is unlikely that a student will successfully adjust to the social life of the campus.

Hypothesis Five and Six

The fifth hypothesis predicted that the relationship between students' perceived psychosocial well-being and perceived sense of community would be mediated by the amount of time spent using communication technologies. The final hypothesis predicted that the relationship between students' perceived psychosocial well-being and perceived sense of community would be mediated by their motivations for use of communication technologies. If the initial analyses revealed significant main effects, subsequent analyses were employed with interaction terms entered as the third predictor variable in each regression equation.

Results of these analyses revealed numerous significant findings, however the

ΔR^2 resulting from the addition of the interaction term to each regression equation was very small ($\Delta R^2 \leq .01$), perhaps due to the size of the sample ($n = 1,084$). The significance of the findings could point to the presence of support for the predictions made in H5 and H6, however the trivial ΔR^2 reported for each significant interaction effect makes interpretation of these findings challenging and not necessarily meaningful. Yet, it is possible that a more in depth analysis of these relationships could prove worthwhile in attempting to understand whether technology use intersects or mediates the relationship between students' psychosocial well-being and sense of community.

Review of Findings

The findings from this study collectively demonstrate support for the first four hypotheses. Significant associations emerged between students' time spent using communication technologies and indicators of psychosocial well-being and students' sense of community along the variables included in this study. Further, students' motivation for use of communication technologies was also associated with students' psychosocial well-being and perceived sense of community. It seems that time spent using communication technologies that are interactive or communicative are positively associated with indicators of students' psychosocial well-being and perceived sense of community, whereas time spent using communication technologies that are individual or solitary are negatively associated with indicators of students' psychosocial well-being and perceived sense of community. Similarly, increased frequency of using technology for motivations that are interactive or communicative seem to be more positively associated with indicators of students' psychosocial well-being and perceived sense of community than motivations to use communication technologies for activities that are

individual or solitary. Interactive technologies serve to connect students to one another, strengthening their social relationships and allowing them increased access to social support and confirmation of belonging to a network of peers. Conversely, increased time spent engaged in solitary or individual activities (e.g., playing video or computer games alone) removes students' from more social circumstances where they might be able to develop friendships that could serve as a source of support in times of distress and could provide confirmation that the student is cared for and needed by others. The following sections will further address the theoretical implications associated with these findings, directions for future research, and considerations for professional practice.

Theoretical Implications

The research and literature on college student development has focused attention on students' identity development, social integration, student peer environments, and factors that contribute to persistence and withdrawal decisions. Given the rise in technology use for the formation and maintenance of social relationships and the significance of social relationships to students' identity development and social integration, research on college student development must respond by reconceptualizing the foundational theoretical frameworks of student identity development and models related to social integration and academic persistence to account for new processes of relationship formation and the influence of mediated forms of communication on students' psychosocial well-being and sense of community.

Models of student or adult development might better account for the influence of social and interpersonal processes by considering the use of technology in forming social relationships and communities. Further, theoretical models that incorporate a discussion

of social relationships as a critical influence on outcomes related to college attendance (e.g., persistence) might also need to adapt to the changing nature of students' social lives and the power of these influences on student learning and success.

Directions for Future Research

It has been suggested that some individuals are drawn to mediated forms of communication due to the increased capacity for intentional construction of identity and greater control over self-presentation. The importance of social relationships to identity formation has been established (Chickering, 1969; Chickering & Reisser, 1993; Kegan, 1994), yet how technologically-mediated social interactions modify or transform these developmental processes is not yet known. If we can be who we aspire to be in any given moment or space via technological media, and these intentionally-constructed versions of the self are interacting with others (or intentionally-constructed others), how do we begin to understand the influence of these mediated social processes on identity formation and development? Future research into the influence of technology use on students' social relationships and the developmental process would help to clarify how these media are shaping students' lives and thus contributing to the college experience.

Further, a qualitative inquiry into the research questions posed for this study would assist in deepening an understanding of the relationship between the time students spend using communication technologies, their motivations for use of communication technologies, and indicators of their psychosocial well-being and sense of community. This research has provided a broad perspective on the numerous variables that are influenced by students' use of technology. Qualitative research would allow for more depth in our understanding of these associations as they relate to the lived experience of students. The

nuanced stories provided by students would help to clarify these associations and contribute meaningful data to this research agenda. Specifically, in-depth interviews with a diverse sample of students could serve as the foundation for the development of case studies which would highlight students' use of technology throughout their lives as it relates to psychosocial well-being and their sense of community and social connectedness (Creswell, 2003). Maximum variation sampling could be used to ensure that participants selected for interviews represent a broad spectrum of experiences and perspectives related to the phenomenon being investigated.

Qualitative interviews and case studies would assist in better understanding the potential multidirectionality of relationships between the variables included in this quantitative study. For example, it is possible that a research participant might reveal that feelings of loneliness or depression contribute to their motivation to use communication technologies to interact with others or for entertainment purposes which, in turn, contributes to their sense of community and connectedness (or lack thereof). Conversely, a participant might reveal that their lack of a sense of community and connectedness on campus contributes to their motivation to use technology for social interaction or entertainment purposes which, in turn, contributes to poorer social and psychological well-being. These multidirectional relationships are a rich avenue for future research that could further expand notions of social belonging and psychosocial well-being in the context of relationships often formed and maintained via technological means.

Last, future research should look at how the associations between students' use of technology, psychosocial well-being, and sense of community differ by gender, ethnicity, and academic major. Understanding these differences would aid in designing

educational interventions for specific groups of students who may be more likely to use certain communication technologies often or for particular reasons.

Recommendations for Professional Practice

This research has implications for educators and professionals who work with students in the context of higher education. Counselors and psychologists who attend to students in times of social, academic or psychological distress are in positions that enable them to learn about students' lives in depth through individual and small group sessions. In these interactions, indicators of poor psychosocial well-being or of a failed sense of community or belonging may be cause to question the nature of students' social relationships, how students spend their time alone or with peers, and how and where they seek support for personal problems or issues. If not already common practice, these professionals may need to revise the questions asked during counseling appointments to include inquiries into students' time spent using communication technologies and their motivations for use. Groups and seminars could be developed to respond to problematic uses of technology or as a means of educating students about the challenges and benefits of various technological media. Further, students can learn healthy internet or technology use behaviors that will enable them to connect via technological media but also disconnect in order to engage in face-to-face social interaction with peers. Mechanisms designed to provide support could include both web- or text-based and in-person interventions or programs, with web- or text-based methods intended for students who many not have the confidence or self-efficacy needed to seek help in-person from support professionals. For example, lonely students in this study were found to use communication technologies to seek support for personal problems or issues. Thus,

providing resources in a web-based format may provide an opportunity for students to learn strategies to overcome or alleviate certain psychological stressors and eventually develop the confidence to seek support in non-mediated contexts (e.g., in-person support groups) or from peers in supportive face-to-face interactions.

Findings from this study also point to a need for implementation of educational programs designed to help college students strengthen their social self-confidence and social self-efficacy, aspects of psychosocial well-being shown to contribute to pursuing new or novel social situations where relationships can be formed. Increased confidence and competence in appropriate and effective social behaviors can strengthen a students' desire and motivation to seek out new relationships and form friendships that can serve to bolster the size and strength of their social support network, increasing their sense of social belonging to the campus. These learned social behaviors, if practiced and refined, might lead to an increased sense of social self-efficacy that would enhance students' ability to engage in the social life of the campus and seek support from peers or administrative services when experiencing social or psychological distress. Further, social skills and the self-confidence or self-efficacy to enact social behaviors are important to the provision of social support to peers and significant others and contribute to the increased likelihood that a student will be able to express emotions or emotional needs to others. Reaching out to others for support or as a means of providing support is not necessarily a skill that students' possess prior to entering the college environment. Social skills are not typically taught in academic classrooms, and yet these skills are critical to both personal and professional success.

Often, educators and administrators on college campuses assess students' satisfaction with the social life of the campus through survey methodology and express surprise when students indicate they are unsatisfied with the social experience given the number of programs, events and activities administered by professional staff. However, if students lack the confidence to engage socially in the campus environment and turn to technologically-mediated forms of communication or entertainment instead, a greater number of social events will not necessarily contribute to increased satisfaction. Some students may need to strengthen their confidence to engage socially before attending social events or participating in opportunities for campus involvement. For some students, increased attention paid to the development of their social self-confidence and an associated sense of self-efficacy in enacting social behaviors might better prepare them to engage in the campus environment and connect socially with their peers. Perceptions of a campus climate as hostile or unfriendly may not be directly related to an overt or intentional display of negative or hurtful behaviors by students. Rather, these perceptions may be indicative of a lack of knowledge or application of positive and engaging behaviors that communicate openness, support, and a willingness to connect socially with other students. Attending to the social development of students requires more than the provision of social events and involvement opportunities. It requires intentional efforts in helping students learn, practice, and refine the social behaviors required to engage in the social life of the campus and contribute to a more positive community of peers. Efforts such as these might better prepare students to locate and request the support they need to succeed personally and academically.

Conclusion

The context and conceptual framework for this research was rooted in student and adult development theory and looked at the role of social integration, or social belonging, to student persistence and departure, the student peer environment on college campuses, and the influence of technology on students' social relationships and on the formation of community. Given the importance of students' social relationships to the experience of social belonging, and the importance of social belonging to students' academic success and persistence to graduation, the use of communication technologies was explored as a variable likely to have an influence on students' social relationships and well-being. Technology has emerged as a powerful force in the context of higher education, both as a tool to enhance students' learning and academic preparation but also as a means of social connection and the forming and strengthening of community. Findings from this study confirm and support the hypothesized relationship between students' use of communication technologies, their psychosocial well-being, and their perceived sense of community. These findings suggest a rich area of inquiry that will continue to illuminate the role of technology in shaping students' social lives and their connectedness and sense of social belonging on campus. Current theories of student development and models related to social integration and persistence are predicated on the assumption that students' social experiences are predominantly campus-based. This research provides an initial perspective on how a deeper understanding of the social and psychological influences of technology might serve to enhance the theoretical frameworks that guide professional practice in the context of higher education.

REFERENCES

- Alden, L. E. (2001). Interpersonal perspectives on social phobia. In R. Crozier & L. E. Alden (Eds.), *The international handbook of social anxiety: Concepts, research and interventions relating to the self and shyness* (pp. 381-404). Chichester, UK: Wiley.
- Alford, S. M. (1998). The impact of inner-city values on student social adjustment in commuter colleges. *National Association of Student Personnel Administrators Journal*, 35(3), 225-233.
- Almeida, E. P. (2004). A discourse analysis of student perceptions of their communication competence. *Communication Education*, 53(4), 357-364.
- Amichai-Hamburger, Y., & Ben-Artzi, E. (2003). Loneliness and internet use. *Computers in Human Behavior*, 19, 71-80.
- Anderson, B. (1991). *Imagined communities: Reflections on the origin and spread of nationalism*. London: Verso.
- Anderson, S. L., & Betz, N. E. (2001). Sources of social self-efficacy expectations: Their measurement and relation to career development. *Journal of Vocational Behavior*, 58(1), 98-117. doi: 10.1006/jvbe.2000.1753
- Anderson, K. J. (2001). Internet use among college students: An exploratory study. *Journal of American College Health*, 50(1), 21-26.
- Arkin, R., Lake, H., & Baumgardner, A. (1986). Shyness and self-presentation. In W. Jones, J. M. Cheek, & S. Briggs (Eds.), *Shyness: Perspectives on research and treatment*. New York, NY: Plenum.

- Arnett, J. J. (2004). *Emerging adulthood: The winding road from late teens through the twenties*. New York: Oxford University Press.
- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 25, 297-307.
- Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco, CA: Jossey-Bass.
- Baird, L. L., (2000). Campus climate and the Tinto model. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 62–80). Nashville, TN: Vanderbilt University Press.
- Baker, R. W., McNeil, O. V., & Syrkh, B. (1985). Expectation and reality in freshman adjustment to college. *Journal of Counseling Psychology*, 32(1), 94-103.
- Baker, R. W., & Syrkh, B. (1984). Measuring adjustment to college. *Journal of Counseling Psychology*, 31(2), 179-189.
- Baker, R. W., & Syrkh, B. (1989). *The Student Adaptation to College Questionnaire* (SACQ). Los Angeles: Western Psychological Services.
- Baldwin, M. W. (1992). Relational schemas and the processing of social information. *Psychological Bulletin*, 112(3), 461-484. doi: 10.1037/0033-2909.112.3.461
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84, 191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. New York, NY: Prentice Hall.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26. doi: 10.1146/annurev.psych.52.1.1

- Barden, R. C., Garber, J., Leiman, B., Ford, M. E., & Masters, J. C. (1985). Factors governing effective remediation of negative affect and its cognitive and behavioral consequences. *Journal of Personality and Social Psychology*, 49(4), 1040-1053.
- Bargh, J. A., & McKenna, K. Y. A. (2004). The internet and social life. *Annual Review of Psychology*, 55, 573-590. doi: 10.1146/annurev.psych.55.090902.141922
- Bargh, J. A., McKenna, K. Y. A., & Fitzsimons, G. M. (2002). Can you see the real me? Activation and expression of the “true self” on the internet. *Journal of Social Issues*, 58, 33-48.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497-529.
- Baumeister, R. F., & Tice, D. M. (1990). Anxiety and social exclusion. *Journal of Social and Clinical Psychology*, 9, 165-195.
- Baxter Magolda, M. B. (1999). Constructing adult identities. *Journal of College Student Development*, 40, 629-644.
- Baxter Magolda, M. B. (1999). *Creating contexts for learning and self-authorship: Constructive-developmental pedagogy*. Nashville, TN: Vanderbilt University Press.
- Baxter Magolda, M. B. (2001). *Making their own way: Narratives for transforming higher education to promote self-development*. Sterling, VA: Stylus.
- Baxter Magolda, M. B. (2008). Three elements of self-authorship. *Journal of College Student Development*, 49(4), 269-284.

- Baxter Magolda, M. B. (2009). The activity of meaning making: A holistic perspective on college student development. *Journal of College Student Development*, 50(6), 621-639.
- Baym, N. K., Zhang, Y. B., & Lin, M. C. (2004). Social interactions across media. *New Media & Society*, 6(3), 299-318. doi: 10.1177/1461444804041438
- Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research*, 55(4), 485-540.
- Berger, J. B. (1997). Students' sense of community in residence halls, social integration, and first-year persistence. *Journal of College Student Development*, 38, 441-452.
- Berger, J. B., & Milem, J. F. (2000). Organizational behavior in higher education and student outcomes. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. XV, pp. 268-338). New York, NY: Agathon.
- Bessière, K., Kiesler, S., Kraut, R., & Boneva, B. S. (2008). Effects of internet use and social resources on changes in depression. *Information, Communication & Society*, 11(1), 47-70. doi: 10.1080/13691180701858851
- Braxton, J. M., & Lee, S. D. (2005). Toward a reliable knowledge about college student departure. In A. Seidman (Ed.), *College student retention: Formula for student success* (pp. 107-127). Westport, CT: Praeger.
- Bronfenbrenner, U. (1989). Ecological systems theory. In R. Vasta (Ed.), *Six theories of development* (pp. 187-249). Greenwich, CT: JAI Press.

- Bronfenbrenner, U. (1993). The ecology of cognitive development: Research models and fugitive findings. In R. H. Wozniak & K. W. Fischer (Eds.), *Development in context: Acting and thinking in specific environments* (pp. 3–44). Hillsdale, NJ: Erlbaum.
- Bronfenbrenner, U. (1995). Developmental ecology through space and time: A future perspective. In P. Moen & G. H. Elder, Jr. (Eds.), *Examining lives in context: Perspectives on the ecology of human development* (pp. 619–647). Washington, DC: American Psychological Association.
- Burleson, B. R. (2009). Understanding the outcomes of supportive communication: A dual-process approach. *Journal of Social and Personal Relationships*, 26(1), 21–38. doi: 10.1177/0265407509105519
- Burleson, B. R., & MacGeorge, E. L. (2002). Supportive communication. In M. L. Knapp & J. A. Daly (Eds.), *Handbook of interpersonal communication* (3rd ed., pp. 374–424). Thousand Oaks, CA: Sage.
- Cacioppo, J. T., & Patrick, W. (2008). *Loneliness: Human nature and the need for social connection*. New York, NY: W. W. Norton.
- Calhoun, C. (1986). Computer technology, large-scale social integration, and the local community. *Urban Affairs Quarterly*, 22(2), 329–349.
- Campbell, A. J., Cumming, S. R., & Hughes, I. (2006). Internet use by the socially fearful: Addiction or therapy? *CyberPsychology & Behavior*, 9(1), 69–81.
- Campbell, D., & Stanley, J. (1963). *Experimental and quasi-experimental designs for research*. Chicago, IL: Rand-McNally.

- Caplan, S. E. (2002). Problematic internet use and psychosocial well-being: Development of a theory-based cognitive-behavioral measurement instrument. *Computers in Human Behavior, 18*, 553-575.
- Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic internet use and psychosocial well-being. *Communication Research, 30*(6), 625-648. doi: 10.1177/0093650203257842
- Caplan, S. E. (2005). A social skill account of problematic internet use. *Journal of Communication, 55*, 721-736.
- Caplan, S. E. (2007). Relations among loneliness, social anxiety, and problematic internet use. *CyberPsychology & Behavior, 10*(2), 234-242. doi: 10.1089/cpb.2006.9963
- Cheek, J. M. (1983). Revised Cheek and Buss Shyness Scale (RCBS). Unpublished manuscript. Wellesley, MA: Wellesley College.
- Cheek, J. M., & Briggs, S. R. (1990). Shyness as a personality trait. In W. R. Crozier (Ed.), *Shyness and embarrassment: Perspectives from social psychology* (pp. 315-337). New York, NY: Cambridge University Press.
- Cheek, J. M., & Buss, A. H. (1981). Shyness and sociability. *Journal of Personality and Social Psychology, 41*(2), 330-339.
- Cheng, D. (2004). Students' sense of campus community: What it means, and what to do about it. *National Association of Student Personnel Administrators Journal, 41*(2), 216-234.
- Chickering, A.W. (1969). *Education and identity*. San Francisco, CA: Jossey-Bass.
- Chickering, A. W., & Reisser, L. (1993). *Education and identity* (2nd ed.). San Francisco, CA: Jossey-Bass.

- Christensen, P. N., & Kashy, D. (1998). Perceptions of and by lonely people in initial social interaction. *Personality & Social Psychology Bulletin*, 24(3), 322-329.
- Clark, D. J., Frith, K. H., & Demi, A. S. (2004). The physical, behavioral, and psychosocial consequences of Internet use in college students. *Computers, Informatics & Nursing*, 22(3), 153-161.
- Clark, M. R. (2005). Negotiating the freshman year: Challenges and strategies among first-year college students. *Journal of College Student Development*, 46(3), 296-316.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression and correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98, 310-357.
- Cotten, S. R. (2008). Students' technology use and the impacts on well-being. *New Directions for Student Services*, 124, 55-70.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Crozier, W. R. (2001). *Understanding shyness*. Hampshire, UK: Palgrave.
- Cummings, J. N., Lee, J. B., & Kraut, R. (2006). Communication technology and friendship during the transition from high school to college. In R. Kraut, N. Brynin, & S. Kiesler (Eds.), *Computers, phones, and the internet: Domesticating information technology* (pp. 809-851). Oxford, UK: Oxford University Press.

- Cutrona, C. E. (1982). Transition to college: Loneliness and the process of social adjustment. In L. A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research and therapy* (pp. 291-309). New York, NY: Wiley.
- Davila, J., & Beck, J. G. (2002). Is social anxiety associated with impairment in close relationships? A preliminary investigation. *Behavior Therapy*, 33, 427-444.
- DeWitz, S. J., Woolsey, M. L., & Walsh, W. B. (2009). College student retention: An exploration of the relationship between self-efficacy beliefs and purpose in life among college students. *Journal of College Student Development*, 50(1), 19-34.
- Dill, J. C., & Anderson, C. (1999). Loneliness, shyness, and depression: The etiology and interrelationships of everyday problems in living. In T. Joiner & J. C. Coyne (Eds.), *The interactional nature of depression* (pp. 93-125). Washington, DC: American Psychological Association.
- Dixon, S. K., & Robinson Kurpius, S. E. (2008). Depression and college stress among university undergraduates: Do mattering and self-esteem make a difference? *Journal of College Student Development*, 49(5), 412-424.
- Duck, S. (1998). *Human relationships*. Thousand Oaks, CA: Sage.
- Durkheim, E. (1951). *Suicide: A study in sociology*. New York, NY: The Free Press of Glenco.
- Dyson, R., & Renk, K. (2006). Freshman adaptation to university life. *Journal of Clinical Psychology*, 62(10), 1231-1244. doi: 10.1002/jclp.20295
- Eaton, L. G., Funder, D. C., & Riggio, R. E. (2007). *Social effectiveness and the essence of savoir faire*. Manuscript in preparation.
- Ehrenberg, M. F., Cox, D. N., & Koopman, R. F. (1991). The relationship between self-efficacy and depression in adolescents. *Adolescence*, 26, 361-374.

- Emanuel, R., Adams, J., Baker, K., Daufin, E. K., Ellington, C., Fitts, E., Himself, J., Holladay, L., & Okeowo, D. (2008). How college students spend their time communicating. *Journal of Listening*, 22, 13-28. doi: 10.1080/10904010701802139
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York, NY: Norton.
- Evans, N. J., Forney, D. S., & Guido-DiBrito, F. (1998). *Student development in college: Theory, research, and practice*. San Francisco, CA: Jossey-Bass.
- Fan, C., & Mak, A. S. (1998). Measuring social self-efficacy in a culturally diverse student population. *Social Behavior and Personality*, 26(2), 131-144.
- Fass, M. E., & Tubman, J. G. (2002). The influence of parental and peer attachment on college students' academic achievement. *Psychology in the Schools*, 39(5), 561-573. doi: 10.1002/pits.10050
- Ferrari, J. R., & Parker, J. T. (1992). High school achievement, self-efficacy, and locus of control as predictors of freshman academic performance. *Psychological Reports*, 1, 515-518.
- Fox, J. (2005). Linear models and problems. In K. Kempf-Leonard (Ed.), *Encyclopedia of Social Measurement* (Vol. 2, pp. 515-522). Amsterdam: Elsevier.
- Fraley, R. C., & Davis, K. E. (1997). Attachment formation and transfer in young adults' close friendships and romantic relationships. *Personal Relationships*, 4, 131-144.
- Friedlander, L. J., Reid, G. J., Shupak, N., & Cribbie, R. (2007). Social support, self-esteem, and stress as predictors of adjustment to university among first-year undergraduates. *Journal of College Student Development*, 48(3), 259-274.

- Furr, S. R., Westefeld, J. S., McConnell, G. N., & Jenkins, J. M. (2001). Suicide and depression among college students: A decade later. *Professional Psychology: Research and Practice, 32*, 97-100.
- Gable, S. L., & Shean, G. D. (2000). Perceived social competence and depression. *Journal of Social and Personal Relationships, 17*(1), 139-150.
- Gatz, L. B., & Hirt, J. B. (2000). Academic and social integration in cyberspace: Students and e-mail. *Review of Higher Education, 23*(3), 299-318.
- Gemmill, E., & Peterson, M. (2006). Technology use among college students: Implications for student affairs professionals. *National Association of Student Personnel Administrators Journal, 43*(2), 280-300.
- Gerdes, H., & Mallinckrodt, B. (1994). Emotional, social, and academic adjustment of college students: A longitudinal study of retention. *Journal of Counseling and Development, 72*, 281-288.
- Glesne, C. (1999). *Becoming qualitative researchers* (2nd ed.). New York, NY: Longman.
- Gordon, C. F., Juang, L. P., & Syed, M. (2007). Internet use and well-being among college students: Beyond frequency of use. *Journal of College Student Development, 48*(6), 674-688.
- Gotlieb, I. H., & Meltzer, S. J. (1987). Depression and the perception of social skill in dyadic interaction. *Cognitive Therapy and Research, 11*, 41-54.
- Grant, D. M., Beck, J. G., Farrow, S. M., & Davila, J. (2007). Do interpersonal features of social anxiety influence development of depressive symptoms? *Cognition and Emotion, 21*(3), 646-663.

- Gross, E. F. (2004). Adolescent internet use: What we expect, what teens report. *Applied Developmental Psychology, 25*, 633-649. doi: 10.1016/j.appdev.2004.09.005
- Gross, E. F., Juvonen, J., & Gable, S. L. (2002). Internet use and well-being in adolescence. *Journal of Social Issues, 58*(1), 75-90.
- Grosset, J. M. (1991). Patterns of integration, commitment, student characteristics and retention among younger and older students. *Research in Higher Education, 32*(2), 159-178.
- Hagerty, B. M., & Williams, R. A. (1999). The effects of sense of belonging, social support, conflict, and loneliness on depression. *Nursing Research, 48*(4), 215-219.
- Hagerty, B. M., Williams, R. A., Coyne, J. C., & Early, M. R. (1996). Sense of belonging and indicators of social and psychological functioning. *Archives of Psychiatric Nursing, X*(4), 235-244.
- Hampton, K., & Wellman, B. (2001). Long distance community in the network society. *American Behavioral Scientist, 45*, 476-495. doi: 10.1177/00027640121957303
- Harper, S. R., & Quaye, S. J. (2008). *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations*. London, UK: Routledge.
- Hawken, L., Duran, R. L., & Kelly, L. (1991). The relationship of interpersonal communication variables to academic success and persistence in college. *Communication Quarterly, 39*(4), 297-308.
- Hawley, P. A., Little, T. D., & Pasupathi, M. (2002). Winning friends and influencing peers. *International Journal of Behavioral Development, 26*, 466-474.

- Hermann, K. S., & Betz, N. E. (2004). Path models of the relationships of instrumentality and expressiveness to social self-efficacy, shyness, and depressive symptoms. *Sex Roles, 51*, 55–66.
- Hermann, K. S., & Betz, N. E. (2006). Path models of the relationships of instrumentality and expressiveness, social self-efficacy, and self-esteem to depressive symptoms in college students. *Journal of Social and Clinical Psychology, 25*(10), 1086–1106.
- Hinkle, D. E., Wiersma, W., & Jurs, S. G. (2003). *Applied statistics for the behavioral sciences* (5th ed.). Boston, MA: Houghton Mifflin.
- Hong, J. J., & Woody, S. R. (2007). Cultural mediators of self-reported social anxiety. *Behaviour Research and Therapy, 45*, 1779–1789.
- Hopko, D. R., Stowell, J., Jones, W. H., & Armento, M. E. A. (2005). Psychometric properties of the Revised Cheek and Buss Shyness Scale. *Journal of Personality Assessment, 84*(2), 185–192.
- Hoyle, R. H., & Crawford, A. M. (1994). Use of individual-level data to investigate group phenomena issues and strategies. *Small Group Research, 25*(4), 464–485.
- Hurtado, S. (2007). The sociology of the study of college impact. In P. Gumport (Ed.), *The sociology of higher education: Contributions and their contexts* (pp. 94–112). Baltimore, MD: John Hopkins University Press.
- Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino students' sense of belonging. *Sociology of Education, 70*, 324–345.

- Jackson, T., Fritch, A., Nagasaka, T., & Gunderson, J. (2002). Towards explaining the association between shyness and loneliness: A path analysis with American college students. *Social Behavior and Personality*, 30(3), 263-270.
- Jackson, T., Soderlind, A., & Weiss, K. E. (2000). Personality traits and quality of relationships as predictors of future loneliness among American college students. *Social Behavior and Personality*, 28(5), 463-470.
- Jackson, T., Towson, S., & Narduzzi, K. (1997). Predictors of shyness: A test of variables associated with self-presentation models. *Social Behavior and Personality*, 25, 149-154.
- Jacobs, J., & Archie, T. (2008). Investigating sense of community in first-year college students. *Journal of Experiential Education*, 30(3), 282-285.
- James, P. (1992). Forms of abstract community: From tribe and kingdom to nation and state. *Philosophy of the Social Sciences*, 22(3), 313-336.
- Jones, S. (2002). *The internet goes to college: How students are living in the future with today's technology*. Washington, DC: Pew Internet & American Life Project.
- Jones, W. H., Rose, J., & Russell, D. (1990). Loneliness and social anxiety. In H. Leitenberg (Ed.), *Handbook of social and evaluation anxiety* (pp. 247-266). New York, NY: Plenum.
- Josselson, R. (1994). Identity and relatedness in the life cycle. In H. A. Bosma, T. L. G. Graafsma, H. D. Grotevant, & D. J. de Levita (Eds.), *Identity and development: An interdisciplinary approach* (pp. 81-102). Thousand Oaks, CA: Sage.
- Junco, R., & Mastrodicasa, J. (2007). *Connecting to the net.generation: What higher education professionals need to know about today's students*. Washington, DC:

National Association of Student Personnel Administrators.

Kadison, R. D., & DiGeronimo, T. F. (2004). *College of the overwhelmed: The campus mental health crisis and what to do about it*. San Francisco, CA: Jossey-Bass.

Kalsner, L., & Pistole, M. C. (2003). College adjustment in a multiethnic sample: Attachment, separation-individuation, and ethnic identity. *Journal of College Student Development*, 44(1), 92-109.

Kandell, J. J. (1998). Internet addiction on campus: The vulnerability of college students. *CyberPsychology & Behavior*, 1, 11-18.

Kanter, R. (1972). *Commitment and community: Communes and utopias in sociological perspective*. Cambridge, MA: Harvard University Press.

Kegan, R. (1982). *The evolving self: Problem and process in human development*. Cambridge, MA: Harvard University Press.

Kegan, R. (1994). *In over our heads: The mental demands of modern life*. Cambridge, MA: Harvard University Press.

Kegan, R., & Lahey, L. L. (2009). *Immunity to change: How to overcome it and unlock potential in yourself and your organization*. Boston, MA: Harvard Business Press.

King, S. A., & Poulos, S. T. (1998). Using the internet to treat generalized social phobia and avoidant personality disorder. *CyberPsychology & Behavior*, 1(1), 29-36.

Knefelkamp, L. L., Widick, C., & Parker, C. A. (1978). Editors' notes: Why bother with theory? In L. L. Knefelkamp, C. Widick, & C. A. Parker (Eds.), *Applying new developmental findings* (New Directions for Student Services, No. 4, pp. vii-xvi). San Francisco, CA: Jossey-Bass.

Kohut, H. (1984). *How does analysis cure?* New York: International Universities Press.

- Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet paradox revisited. *Journal of Social Issues, 58*, 49-74.
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukhopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist, 53*(9), 1017-1031.
- Kroenke, K., Spitzer, R., & Williams, W. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*, 606-613.
- Kubey, R. W., Lavin, M. J., & Barrows, J. R. (2001). Internet use and collegiate academic performance decrements: Early findings. *Journal of Communication, 366-382*.
- Kuh, G. D., & Love, P. G. (2000). A cultural perspective on student departure. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 196-212). Nashville, TN: Vanderbilt University Press.
- Kuh, G. D., & Vesper, N. (2001). Do computers enhance or detract from student learning? *Research in Higher Education, 42*(1), 87-102.
- La Guardia, J. G. (2008). On the role of psychological needs in healthy functioning: Integrating a self-determination theory perspective with traditional relationship theories. In J. V. Wood, A. Tesser, & J. G. Holmes (Eds.), *The self and social relationships* (pp. 27-48). New York, NY: Psychological Press.
- La Guardia, J. G., & Ryff, C. D. (2003). Self-esteem challenges. *Psychological Inquiry, 1*, 48-51.
- Lapsley, D. K., & Edgerton, J. (2002). Separation-individuation, adult attachment style, and college adjustment. *Journal of Counseling & Development, 80*(4), 484-492.

- Lau, A. S., Fung, J., Weng, S., & Kang, S. (2009). Explaining elevated social anxiety among Asian Americans: Emotional attunement and a cultural double bind. *Cultural Diversity and Ethnic Minority Psychology, 15*(1), 77-85. doi: 10.1037/a0012819
- Leary, M. R. (1983). Social anxiousness: The construct and its measurement. *Journal of Personality Assessment, 47*(1), 66-75. doi: 10.1207/s15327752jpa4701_8
- Leary, M. R. (1990). Responses to social exclusion: Social anxiety, jealousy, loneliness, depression, and low-self-esteem. *Journal of Social and Clinical Psychology, 9*, 221-229.
- Leary, M. R., Koch, E. J., & Hechenbleikner, N. R. (2001). Emotional responses to interpersonal rejection. In M. R. Leary (Ed.), *Interpersonal rejection* (pp. 145-166). New York, NY: Oxford University Press.
- Leary, M. R., & Kowalski, R. M. (1993). The Interaction Anxiousness Scale: Construct and criterion-related validity. *Journal of Personality Assessment, 61*(1), 136-146.
- Leary, M. R., & Kowalski, R. M. (1995). The self-presentation model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F. R. Schneier (Eds.), *Social phobia: Diagnosis, assessment, and treatment* (pp. 94-112). New York, NY: Guilford Press.
- Leary, M. R., & Kowalski, R. M. (2003). The Interaction Anxiousness Scale: Construct and criterion-related validity. *Journal of Personality Assessment, 61*(1) 136-146.
- Lee, R. M., Draper, M., & Lee, S. (2001). Social connectedness, dysfunctional interpersonal behaviors, and psychological distress: Testing a mediator model. *Journal of Counseling Psychology, 48*(3), 310-318. doi: 10.1037//0022-0167.48.3.310

- Lee, R. M., Keough, K. A., & Sexton, J. D. (2002). Social connectedness, social appraisal, and perceived stress in college women and men. *Journal of Counseling & Development, 80*, 355-361.
- Lee, R. M., & Robbins, S. B. (1995). Measuring belongingness: The Social Connectedness and Social Assurance Scales. *Journal of Counseling Psychology, 42*(2), 232-241.
- Lee, R. M., & Robbins, S. B. (1998). The relationship between social connectedness and anxiety, self-esteem, and social identity. *Journal of Counseling Psychology, 45*(3), 338-345.
- Lee, R. M., & Robbins, S. B. (2000). Understanding social connectedness in college women and men. *Journal of Counseling & Development, 78*, 484-491.
- Lewinsohn, P. M., Rohde P., & Seeley, J. R. (1998). Major depressive disorder in older adolescents: Prevalence, risk factors, and clinical implications. *Clinical Psychology Review, 18*(7), 765-794.
- Lloyd, J. M., Dean, L. A., & Cooper, D. L. (2007). Students' technology use and its effects on peer relationships, academic involvement, and healthy lifestyles. *National Association of Student Personnel Administrators Journal, 44*(3), 481-495.
- Marangoni, C. , & Ickes, W. (1989). Loneliness: A theoretical review with implications for measurement. *Journal of Social and Personal Relationships, 6*, 93-128.
- Marshall, S. K. (2001). Do I matter? Construct validation of adolescents' perceived mattering to parents and friends. *Journal of Adolescence, 24*, 473-490. doi: 10.1006/jado.2001.0384

- Martin, W. E., Swartz-Kulstad, J. L., & Madson, M. (1999). Psychosocial factors that predict the college adjustment of first-year undergraduate students: Implications for college counselors. *Journal of College Counseling, 2*, 121-133.
- Maslow, A. H. (1968). *Toward a psychology of being*. New York, NY: Van Nostrand.
- McKenna, K. Y. A., & Bargh, J. A. (1998). Coming out in the age of the internet: Identity de-marginalization through virtual group participation. *Journal of Personality and Social Psychology, 75*, 681-694.
- McKenna, K. Y. A., Green, A. S., & Gleason, M. E. J. (2002). Relationship formation on the internet: What's the big attraction? *Journal of Social Issues, 58*, 9-31.
- Morahan-Martin, J. (1999). The relationship between loneliness and internet use and abuse. *CyberPsychology & Behavior, 2*(5), 431-439.
- Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological internet use among college students. *Computers in Human Behavior, 16*, 13-29.
- Morahan-Martin, J., & Schumacher, P. (2003). Loneliness and social uses of the internet. *Computers in Human Behavior, 19*, 659-671. doi: 10.1016/S0747-5632(03)00040-2
- Morgan, C., & Cotten, S. R. (2003). The relationship between internet activities and depressive symptoms in a sample of college freshmen. *CyberPsychology & Behavior, 6*(2), 133-142.
- Nalwa, K., & Anand, A. P. (2003). Internet addiction in students: A cause of concern. *CyberPsychology & Behavior, 6*(6), 653-656.
- Newcomb, T. M., & Wilson, E. K. (Eds.). (1966). *College peer groups: Problems and prospects for research*. Chicago, IL: Aldine.

- Nezlek, J. B. (2001). Causal relationships between perceived social skills and day-to-day social interaction: Extending the sociometer hypothesis. *Journal of Social and Personal Relationships, 18*, 386-403.
- Nezlek, J. B., Imbrie, M., & Shean, G. D. (1994). Depression and everyday social interaction. *Journal of Personality and Social Psychology, 67*, 1101-1111.
- Nie, N. H., & Erbring, L. (2000). *Internet and society: A preliminary report*. Palo Alto, CA: Stanford Institute for the Quantitative Study of Society.
- Nicpon, M. F., Huser, L., Blanks, E. H., Sollenberger, S., Befort, C., & Robinson Kurpius, S. E. (2006-2007). The relationship of loneliness and social support with college freshmen's academic performance and persistence. *Journal of College Student Retention, 8*(3), 345-358.
- Pace, C. (1988). *Measuring the quality of college student experiences*. Los Angeles, CA: University of California, Center for the Study of Evaluation.
- Parks, S. D. (2000). *Big questions, worthy dreams: Mentoring young adults in their search for meaning, purpose, and faith*. San Francisco, CA: Jossey-Bass.
- Pascarella, E. T., & Terenzini, P. T. (1980). Predicting freshman persistence and voluntary dropout decisions from a theoretical model. *Journal of Higher Education, 51*(1), 60-75.
- Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco, CA: Jossey-Bass.
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. San Francisco, CA: Jossey-Bass.

- Patterson, R. M., & O'Brien, K. M. (1997). An analysis of social self-efficacy in college students: A test of theory and implications for counseling. Paper presented at the 105th annual convention of the American Psychological Association, Chicago, IL.
- Paul, E. L., & Brier, S. (2001). Friendsickness in the transition to college: Precollege predictors and college adjustment correlates. *Journal of Counseling & Development, 79*(1), 77-89.
- Peplau, L. A., & Perlman, D. (1982). Perspectives on loneliness. In L. A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research, and therapy* (pp. 1-18). New York, NY: Wiley-Interscience.
- Phillips, D. C., & Burbules, N. (2000). *Postpositivism and educational research*. Lanham, MD: Rowman & Littlefield.
- Phillips, S. D., & Bruch, M. A. (1988). Shyness and dysfunction in career development. *Journal of Counseling Psychology, 35*, 159-165.
- Quan-Haase, A. (2007). College students' local and distant communication: Blending online and offline media. *Information, Communication & Society, 10*(5), 671-693.
- Quan-Haase, A. (2008). Instant messaging on campus: Use and integration in university students' everyday communication. *The Information Society, 24*, 105-115. doi: 10.1080/01972240701883955
- Reason, R. D. (2009). An examination of persistence research through the lens of a comprehensive conceptual framework. *Journal of College Student Development, 50*(6), 659-682.

- Rendón, L. I., Jalomo, R., & Nora, A. (2000). Theoretical consideration in the study of minority student retention in higher education. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 127-156). Nashville, TN: Vanderbilt University Press.
- Renn, K. A., & Arnold, K. D. (2003). Reconceptualizing research on college student peer culture. *Journal of Higher Education*, 74(3), 261-291.
- Riggio, R. E. (1986). Assessment of basic social skills. *Journal of Personality and Social Psychology*, 51(3), 649-660.
- Riggio, R. E. (1989). *Manual for the Social Skills Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Riggio, R., Throckmorton, B., & DePaola, S. (1990). Social skills and self-esteem. *Personality & Individual Differences*, 11, 799-804.
- Rodgers, R. F. (1990). Recent theories and research underlying student development. In D. Creamer & Associates (Eds.), *College student development: Theory and practice in the 1990s*. Alexandria, VA: American College Personnel Association.
- Rosenberg, M., & McCullough, B. C. (1981). Mattering: Inferred significance and mental health among adolescence. *Research in Community and Mental Health*, 2, 163-182.
- Roth, P. L., Switzer, F. S. III, & Switzer, D. (1999). Missing data in multi-item scales: A Monte Carlo analysis of missing data techniques. *Organizational Research Methods*, 2, 211-232.
- Rottenberg, K. J., & Morrison, J. (1993). Loneliness and college achievement: Do loneliness scale scores predict college dropout? *Psychological Reports*, 73, 1283-

1288.

- Rubin, K. H., Bukowski, W. M., & Parker, J. G. (1998). Peer interactions, relationships and groups. In W. Damon (Ed.), *Handbook of child psychology* (Vol. 3, pp. 619–700). New York, NY: Wiley.
- Rubin, R. B., Graham, E. E., & Mignerey, J. T. (1990). A longitudinal study of college students' communication competence. *Communication Education*, 39, 1-14.
- Russell, D. W. (1982). The measurement of loneliness. In L. A. Peplau & D. Perlman (Eds.), *Loneliness: A sourcebook of current theory, research and therapy* (pp. 81-104). New York, NY: Wiley.
- Russell, D. W. (1996). UCLA Loneliness Scale (Version 3): Reliability, validity, and factor structure. *Journal of Personality Assessment*, 66(1), 20-40.
- Russell, D. W., Kao, C., & Cutrona, C. E. (1987). *Loneliness and social support: Same or different constructs?* Paper presented at the Iowa Conference on Personal Relationships. Iowa City, IA.
- Russell, D. W., Peplau, L. A., & Cutrona, L. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, 39, 472-480.
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52, 141-166.
- Scealy, M., Phillips, J. G., & Stevenson, R. (2002). Shyness and anxiety as predictors of patterns of internet usage. *CyberPsychology & Behavior*, 5(6), 507-515.
- Scherer, K. (1996). College life on-line: Healthy and unhealthy internet use. *Journal of College Student Development*, 38, 655–665.

- Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization and model. *Psychological Bulletin*, 92, 641-669.
- Schlossberg, N. K. (1989). Marginality and mattering: Key issues in building community. In D. C. Roberts (Ed.), *Designing campus activities to foster a sense of community* (New Directions for Student Services, No. 48, pp. 5-15). San Francisco, CA: Jossey-Bass.
- Schmidt, L. A., & Fox, N. A. (1995). Individual differences in young adults shyness and sociability: Personality and health correlates. *Personality and Individual Differences*, 19, 455-462.
- Segrin, C. (1990). A meta-analytic review of social skill deficits in depression. *Communication Monographs*, 57, 292-308.
- Segrin, C., & Flora, J. (2000). Poor social skills are a vulnerability factor in the development of psychosocial problems. *Human Communication Research*, 26(3), 489-514.
- Segrin, C., & Givertz, M. (2003). Methods of social skills training and development. In J. O. Greene & B. R. Burleson (Eds.), *Handbook of communication and social interaction skills* (pp. 135-176). Mahwah, NJ: Erlbaum.
- Shaw, L. H., & Gant, L. M. (2002). In defense of the internet: The relationship between internet communication and depression, loneliness, self-esteem, and perceived social support. *CyberPsychology & Behavior*, 5(2), 157-171.
- Sheeks, M. S., & Birchmeier, Z. P. (2007). Shyness, sociability, and the use of computer-mediated communication in relationship development. *CyberPsychology & Behavior*, 10(1), 64-70. doi: 10.1089/cpb.2006.9991

- Shepherd, R. M., & Edeleman, R. J. (2005). Reasons for internet use and social anxiety. *Personality and Individual Differences, 39*, 949-958.
- Shrauger, J. S., & Schohn, M. (1995). Self-confidence in college students: Conceptualization, measurement, and behavioral implications. *Assessment, 2*(3), 255-278. doi: 10.1177/1073191195002003006
- Smith, H. M., & Betz, N. E. (2000). Development and validation of a Scale of Perceived Social Self-Efficacy. *Journal of Career Assessment, 8*(3), 283-301.
- Smith, H. M., & Betz, N. E. (2002). An examination of efficacy and esteem pathways to depression in young adulthood. *Journal of Counseling Psychology, 49*(4), 438-448.
- Smith, S., Salaway, G., & Caruso, J. B. (2009). *The ECAR Study of Undergraduate Students and Information Technology* (Research Study, Vol. 6). Boulder, CO: EDUCAUSE Center for Applied Research. Retrieved from <http://www.educause.edu/ecar>.
- Spady, W. G. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange, 1*, 64-85.
- Spitzberg, B. H., & Cupach, W. R. (1989). *Handbook of interpersonal competence research*. New York, NY: Springer-Verlag.
- Swenson, L. M., Nordstrom, A., & Hiester, M. (2008). The role of peer relationships in adjustment to college. *Journal of College Student Development, 49*(6), 551-567.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Allyn & Bacon.

- Terenzini, P. T., & Reason, R. D. (2005). *Parsing the first year of college: Rethinking the effects of college on students*. Paper presented at the Annual Conference of the Association for the Study of Higher Education, Philadelphia, PA.
- Thomas, S. L. (2000). Ties that bind: A social network approach to understanding student integration and persistence. *Journal of Higher Education*, 71(5), 591–615.
- Tierney, W. G. (1992). An anthropological analysis of student participation in college. *Journal of Higher Education*, 63, 603-618.
- Tierney, W. G. (2000). Power, identity and the dilemma of college student departure. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. XX-XX). Nashville, TN: Vanderbilt University Press.
- Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research*, 45, 89-125.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago, IL: University of Chicago Press.
- Tovar, E., Simon, M. A., & Lee, H. B. (2009). Development and validation of the College Mattering Inventory with diverse urban college students. *Measurement and Evaluation in Counseling & Development*, 42(3), 154-178. doi: 10.1177/0748175609344091
- Tuckman, B. W. (1999). *Conducting educational research* (5th ed.). Orlando, FL: Harcourt.
- Turner, R. J., & Marino, F. (1994). Social support and social structure: A descriptive epidemiology. *Journal of Health and Social Behavior*, 35(3), 193-212.

- Valkenburg, P. M., & Peter, J. (2007). Online communication and adolescent well-being: Testing the stimulation versus the displacement hypothesis. *Journal of Computer-Mediated Communication*, 12(4), 1169-1182.
- VanGennep, A. (1960). *The rites of passage*. London, UK: Routledge.
- Vaux, A. (1988). Social and personal factors in loneliness. *Journal of Social and Clinical Psychology*, 6, 462-471.
- Wallace, P. M. (1999). *The psychology of the internet*. Cambridge, UK: Press Syndicate of the University of Cambridge.
- Walker, M. E., Wasserman, S., & Wellman, B. (1994). Statistical models for social support networks. In S. Wasserman & J. Galaskiewicz (Eds.), *Advances in social network analysis* (pp. 53-78). Thousand Oaks, CA: Sage.
- Walther, J. B., & Parks, M. R. (2002). Cues filtered out, cues filtered in: Computer-mediated communication and relationships. In M. L. Knapp & J. A. Daly (Eds.), *Handbook of interpersonal communication* (3rd ed., pp. 529-563). Thousand Oaks, CA: Sage.
- Ward, C. C., & Tracey, T. J. G. (2004). Relation of shyness with aspects of online relationship involvement. *Journal of Social and Personal Relationships*, 21(5), 611-623. doi: 10.1177/0265407504045890
- Weidman, J. C. (1989). Undergraduate socialization: A conceptual approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5, pp. 289-322). New York, NY: Agathon.
- Weiser, E. B. (2001). The functions of Internet use and their social and psychological consequences. *CyberPsychology & Behavior*, 4, 723-743.

Weiss, R. S. (1973/1995). *Loneliness: The experience of emotional and social isolation*. Cambridge, MA: MIT Press.

Wellman, B. (2001). Physical place and cyberplace: The rise of personalized networking. *International Journal of Urban and Regional Research*, 25(2), 227-252.

Williams, K. L., & Galliher, R. V. (2006). Predicting depression and self-esteem from social connectedness, support, and competence. *Journal of Social and Clinical Psychology*, 25(8) 855-874.

Willson, M. A. (2006). *Technically together: Rethinking community within technosociety*. New York, NY: Peter Lang.

Wolf-Wendel, L., Ward, K., & Kinzie, J. (2009). A tangled web of terms: The overlap and unique contribution of involvement, engagement, and integration to understanding college student success. *Journal of College Student Development*, 50(4), 407-428.

Zakahi, W. R., & Duran, R. L. (1985). Loneliness, communication competence, and communication apprehension: Extension and replication. *Communication Quarterly*, 33(1), 50-60. doi: 10.1080/01463378509369578

Appendix A
Correlation Matrix for Time Spent Using Technology Variables

Correlation matrix for variables related to time spent using communication technologies

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Email on computer or laptop	—	.30**	.23**	.29**	.22**	.08**	-.04	-.08*	.15**	.14**	.17**	.13**	.19**
2. Texting/emailing via cell phone or PDA		—	.41**	.41**	.19**	.17**	-.01	.01	.26**	.06	.08**	.10**	.11**
3. Talking via cell phone or PDA			—	.27**	.15**	.11**	.03	.02	.13**	.10**	.12**	.13**	.11**
4. Networking online via Facebook				—	.46**	.11**	.06*	.03	.19**	.25**	.28**	.15**	.33**
5. Chatting on IM or in a chat room					—	.05	.15**	.15**	.17**	.26**	.28**	.16**	.30**
6. Watching television or movies						—	.22**	.18**	.18**	.16**	.16**	.08*	.24**
7. Playing video/computer games alone							—	.59**	.13**	.15**	.22**	.14**	.24**
8. Playing video/computer w/ others								—	.11**	.15**	.18**	.14**	.18**
9. Listening to/using personal MP3 or iPod									—	.17**	.22**	.10**	.21**
10. Following Twitter, blogs, or newsfeeds										—	.30**	.34**	.35**
11. Visiting YouTube or other video sites											—	.19**	.40**
12. Building or enhancing personal website												—	.22**
13. Surfing the internet or visiting web sites													—

Note. * $p \leq .05$ ** $p \leq .01$ (two-tailed)

Appendix B
Correlation Matrix for Motivations for Technology Use Variables

Correlation Matrix for Variables Related to Motivations for Technology Use

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Meet new people/make friends	—	.18**	-.00	-.03	.09**	.20**	.27**	.26**	.14**	.15**	.10**	.19**	.18**	.29**
2. Interact with friends or social contacts		—	-.13**	-.14**	.14**	.34**	.27**	.20**	.08*	.21**	.28**	.04	.00	.21**
3. Conduct research or seek information			—	.54**	-.41**	-.11**	.00	-.17**	-.11**	-.16**	-.09*	-.06*	-.12**	-.02
4. Work on school-related assignments				—	-.29**	-.19**	-.08*	-.14**	-.14**	-.16**	-.11**	.02	-.03	-.04
5. Learn more about hobbies or interests					—	.21**	.10**	.23**	.24**	.30**	.20**	.21**	.20**	.14**
6. Share photos, videos, personal updates						—	.49**	.18**	.16**	.18**	.20**	-.03	-.02	.24**
7. Comment on blogs or other news feeds							—	.21**	.11**	.16**	.18**	-.00	-.01	.27**
8. Seek support for personal problems								—	.24**	.24**	.13**	.09**	.12**	.25**
9. Purchase or sell items									—	.29**	.14**	.12**	.17**	.12**
10. Download entertainment (e.g., music)										—	.35**	.21**	.18**	.21**
11. Waste time or procrastinate											—	.23**	.14**	.15**
12. Play computer/video games alone/others												—	.35**	.18**
13. View pornography or adult content													—	.23**
14. Share "true" self with others														—

Note. * $p \leq .05$ ** $p \leq .01$ (two-tailed)

Appendix C
Descriptive Statistics and Correlation Matrix for Psychosocial Variables

Descriptive Statistics and Correlation Matrix for Variables Related to Psychosocial Well-Being

Variable	M	SD	1	2	3	4	5	6	7
1. Loneliness	42.85	9.78	—	.48**	.60**	.30**	-.53**	-.57**	-.59**
2. Depression	2.25	1.05		—	.37**	.29**	-.20**	-.28**	-.29**
3. Shyness	34.96	9.41			—	.43**	-.79**	-.81**	-.75**
4. Social anxiety	40.13	6.64				—	-.21**	-.30**	-.30**
5. Social skill	29.63	8.46					—	.87**	.79**
6. Self-Confidence	18.66	4.32						—	.76**
7. Self-Efficacy	81.17	18.09							—

Note. ** $p \leq .01$ (two-tailed)

Appendix D
Descriptive Statistics and Correlations for Sense of Community Variables

Descriptive Statistics and Correlations for Variables Related to Sense of Community

Variable	M	SD	1	2	3	4
1. Mattering	22.31	6.29	—	.42**	.70**	.74**
2. Social support	25.58	5.64		—	.63**	.49**
3. Social connectedness	86.50	16.48			—	.75**
4. Social adaptation to college	109.27	26.91				—

Note. ** $p \leq .01$ (two-tailed)

Appendix E
Advertisement to Solicit Student Participation

StudentFlyers Advertisement to Solicit Student Participation

Win a new iPhone 3GS!

Sara Henry, Director of the UCSD Express to Success Programs, is a doctoral candidate for a Ph.D. in Leadership Studies/Higher Education Administration at the University of San Diego. Her dissertation research is focused on college students' use of technology, psychosocial well-being, and sense of community in university life. You are invited to be a part of this unique and important research project!

If you are interested in assisting with this research, please send your name, email and PID to Sara Henry at sara@ucsd.edu no later than Wednesday, September 30, 2009 at 4pm. You will receive an email with a link to the web-based survey via StudentVoice. The survey will take approximately 30 minutes to complete.

If you successfully complete the full survey, your name will be entered into a drawing for a new iPhone 3GS!

Thank you in advance for your participation.

Appendix F
Initial Notification and Invitation for Study

Initial Notification and Invitation for Study

You are invited to participate in an important dissertation research project on the college student experience. This study is being conducted by Sara Kathleen Henry, an administrator at the University of California San Diego and a Ph.D. candidate at the University of San Diego in the School of Leadership and Education Sciences. In a few days, an email will be sent to you from *StudentVoice* requesting your participation in a web-based survey.

The survey will take approximately 30 minutes to complete. If you successfully complete the survey, your email address will be entered into a drawing for a new iPhone 3GS.

Your participation in this study is extremely valuable and will allow the researcher to make conclusions and recommendations to help improve the quality of students' college experience.

Appendix G
Consent to Act as a Research Subject

Consent to Act as a Research Subject

Extending Our Understanding of Social Integration: Students' Use of Technology, Psychosocial Well-Being, and Sense of Community in University Life

Sara Kathleen Henry, an administrator at the University of California, San Diego and a doctoral candidate in the School of Leadership and Education Sciences at the University of San Diego, is conducting a research study to find out more about students' use of technology. You have been asked to take part because you are an undergraduate student at the University of California, San Diego. The purpose of this research is to explore the relationships between students' use of information and communication technologies, psychosocial well-being, and sense of community on campus. The information gathered will offer insights to faculty and administrators who work with the college student population.

- Below are the procedures under which participants of this study agree to:
- This research is part of a dissertation in fulfillment of the Ph.D. Degree at the University of San Diego.
- No risks are anticipated other than those ordinarily encountered in daily life.
- There may or may not be any direct benefit to you from these procedures. However, it is anticipated that the subjects will find reflecting upon the questions to be both interesting and beneficial.
- Participation in the study is completely voluntary and the subject may withdraw at any time.
- Participants have the right to refuse to answer any question or skip any question they choose not to answer.
- Participants who successfully complete the full survey will be entered into a drawing to win a new iPhone 3GS.
- Each subject will have had an opportunity to ask questions and seek clarification before he/she agrees to participate.
- There is no agreement, written or verbal, beyond that expressed on this consent form.

- Email addresses will be kept secure in order to distribute reminders for completion of the survey or to contact participants who indicate willingness to take part on the second phase of the study.
- The survey will take approximately 30 minutes to complete.
- Research records will be kept confidential to the extent allowed by law.
- You will be told if any important new information is found during the course of this study that may affect your wanting to continue.
- You have received a copy of this consent document to keep and the *"Experimental Subjects Bill of Rights"* accessible online at <http://irb.ucsd.edu/forms>

If the participant would like to contact the dissertation chair, Dr. Athena Perrakis, for any reason, s/he may do so at (619) 260-8896 or by email at athena@sandiego.edu. The participant may also contact the researcher Sara Henry at (858) 822-0181 or by email at sara@ucsd.edu.

I, the undersigned, understand the above explanation and consent to voluntary participation in this study. By clicking the button below, I indicate my consent for participation.

Appendix H

Student Profile Questions

Student Profile Questions

I most strongly identify with the following ethnicity:

- ☐ African/African-American
- ☐ Mexican-American/Chicano
- ☐ Other Spanish-American/Latino
- ☐ Native American
- ☐ Filipino/Filipino-American
- ☐ Vietnamese/Vietnamese-American
- ☐ Chinese/Chinese-American
- ☐ East Indian/Pakistani
- ☐ Japanese/Japanese-American
- ☐ Korean/Korean-American
- ☐ Pacific Islander
- ☐ Thai/Other Asian
- ☐ White/Caucasian
- ☐ Middle Eastern
- ☐ Other _____

The estimated total annual income of my family is:

- ☐ Under \$25,000
- ☐ \$25,001 to \$50,000
- ☐ \$50,001 to \$75,000
- ☐ \$75,001 to \$100,000
- ☐ Over \$100,000

I most strongly identify with the following gender:

- ☐ Female
- ☐ Male
- ☐ Transgender
- ☐ I choose not to respond.

Are you an international student studying in the United States?

- ☐ Yes
- ☐ No

Is English your native language?

- ☐ Yes
- ☐ No

What is your class level?

- ☐ Freshman
- ☐ Sophomore
- ☐ Junior
- ☐ Senior

If you are an undergraduate, did you transfer to UCSD from another university, junior or community college?

- ☐ Yes
- ☐ No

I most strongly identify with the following major:

- ☐ Anthropology
- ☐ Biological Sciences
- ☐ Business Management
- ☐ Chemistry/Biochemistry
- ☐ Cognitive Sciences
- ☐ Communication
- ☐ Computer Science
- ☐ Critical Gender Studies
- ☐ Dance/Music/Theatre/Visual Arts
- ☐ Earth Science
- ☐ Economics
- ☐ Education
- ☐ Engineering
- ☐ Environmental Systems
- ☐ Ethnic or International Studies
- ☐ History
- ☐ Human Development
- ☐ Pre-Law/Law
- ☐ Pre-Med/Medicine
- ☐ Literature/Writing
- ☐ Mathematics
- ☐ Philosophy
- ☐ Physics
- ☐ Political Science
- ☐ Psychology
- ☐ Religion
- ☐ Sociology
- ☐ Psychology
- ☐ Religion
- ☐ Sociology
- ☐ Undeclared
- ☐ Urban Studies and Planning
- ☐ Other _____

What is your highest degree objective?

- ☐ Bachelor's Degree (e.g., B.A., B.S.)
- ☐ Master's Degree (e.g., M.A., M.S., M.B.A.)
- ☐ Professional Doctorate (e.g., M.D., J.D.)
- ☐ Doctorate (e.g., Ph.D., Ed.D.)

Do you own a personal computer or have access to a computer that has the Internet?

- ☐ I own a personal computer with the Internet.
- ☐ I do not own a personal computer, but I have access to a computer with the Internet.
- ☐ I do not own or have access to a computer with the Internet.

Do you own or have access to a cell phone?

- ☐ I own a personal cell phone with the Internet.
- ☐ I own a personal cell phone, but it does not have the Internet.
- ☐ I do not own a personal cell phone.

How are you involved on campus outside of your academic coursework? (check all that apply)

- ☐ Student organization or committee
- ☐ Student government
- ☐ Greek life
- ☐ Leadership or professional skill development program
- ☐ Community service or service-learning program
- ☐ Internship (on- or off-campus)
- ☐ Employment (on- or off-campus)
- ☐ Religious organization
- ☐ I am not involved outside of my academic coursework.

Appendix I
Instruments to Measure Use of Communication Technologies

Instruments to Measure Use of Communication Technologies

In a typical week, how much time do you spend using the following technologies?

Using email on a computer or laptop

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Texting or emailing via cell phone or personal digital assistant

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Talking via cell phone or personal digital assistant

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Networking online via Facebook or other sites

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Chatting on instant messenger or in a chat room

- ☐ None

- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Watching television or movies

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Playing video or computer games alone

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Playing video or computer games with others

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Listening to an iPod or Mp3 player

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours

- ☐ 21 hours or more

Following Twitter, blogs, or newsfeeds

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Visiting YouTube or other video sites

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Building or enhancing a personal website

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Surfing the Internet or visiting websites

- ☐ None
- ☐ Less than 1 hour
- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

Other _____

- ☐ None
- ☐ Less than 1 hour

- ☐ 1 to 2 hours
- ☐ 3 to 5 hours
- ☐ 6 to 10 hours
- ☐ 11 to 15 hours
- ☐ 16 to 20 hours
- ☐ 21 hours or more

14-Item Adapted Scale for Motivations to Use Internet/Technology

In a typical week, how often do you use the internet or other technologies for the following reasons? (5-point Likert-type scale; 1 = *Never* to 5 = *Very often*)

Meet new people and make friends	1	2	3	4	5
Interact with friends or other social contacts	1	2	3	4	5
Conduct research or seek information	1	2	3	4	5
Work on school-related assignments	1	2	3	4	5
Learn more about hobbies or interests	1	2	3	4	5
Share photos, videos, or other personal updates	1	2	3	4	5
Comment on blogs or other news feeds	1	2	3	4	5
Seek support for personal problems or issues	1	2	3	4	5
Purchase or sell items	1	2	3	4	5
Look for entertainment (music/video downloads)	1	2	3	4	5
Waste time or procrastinate	1	2	3	4	5
Play computer games alone or with other users	1	2	3	4	5
View pornography or adult content	1	2	3	4	5
Share “true” self with others	1	2	3	4	5

Appendix J
Instruments to Measure Psychosocial Well-Being

Instruments to Measure Psychosocial Well-Being

20-Item UCLA Loneliness Scale

(4-point Likert-type scale; 1=*Never* to 4=*Always*)

- How often do you feel that you are “in tune” with the people around you?
- How often do you feel that you lack companionship?
- How often do you feel that there is no one you can turn to?
- How often do you feel alone?
- How often do you feel part of a group of friends?
- How often do you feel that you have a lot in common with the people around you?
- How often do you feel that you are no longer close to anyone?
- How often do you feel that your interests and ideas are not shared by those around you?
- How often do you feel outgoing and friendly?
- How often do you feel close to people?
- How often do you feel left out?
- How often do you feel that your relationships with others are not meaningful?
- How often do you feel that no one really knows you well?
- How often do you feel isolated from others?
- How often do you feel you can find companionship when you want it?
- How often do you feel that there are people who really understand you?
- How often do you feel shy?
- How often do you feel that people are around you but not with you?
- How often do you feel that there are people you can talk to?
- How often do you feel that there are people you can turn to?

9-Item PHQ-9 Scale for Depression

(4-point Likert-type scale; 0=*Not at all* to 3=*Nearly every day*)

Over the last 2 weeks, how often have you been bothered by any of the following problems?

- Little interest or pleasure in doing things
- Feeling down, depressed, or hopeless
- Trouble falling or staying asleep, or sleeping too much
- Feeling tired or having little energy
- Poor appetite or overeating
- Feeling bad about yourself—or that you are a failure or have let yourself or your family down
- Trouble concentrating on things, such as reading the newspaper or watching television

Moving or speaking so slowly that other people could have noticed. Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual
Thoughts that you would be better off dead, or of hurting yourself in some way

13-Item Revised Cheek and Buss Shyness Scale

(5-point Likert-type scale; 1 = *Very uncharacteristic or untrue* to 5 = *Very characteristic or true*)

I feel tense when I'm with people I don't know well.
I am socially somewhat awkward.
I do not find it difficult to ask other people for information.
I am often uncomfortable at parties and other social functions.
When in a group of people, I have trouble thinking of the right things to talk about.
It does not take me long to overcome my shyness in new situations.
It is hard for me to act natural when I am meeting new people.
I feel nervous when speaking to someone in authority.
I have no doubts about my social competence.
I have trouble looking someone right in the eye.
I feel inhibited in social situations.
I do not find it hard to talk to strangers.
I am more shy with members of the opposite sex.

15-Item Interaction Anxiousness Scale

(5-point Likert-type scale; 1 = *Not at all characteristic of me* to 5 = *Extremely characteristic of me*)

I often feel nervous even in casual get-togethers.
I usually feel comfortable when I'm in a group of people I don't know.
I am usually at ease when speaking to a member of the other sex.
I get nervous when I must talk to a teacher or a boss.
Parties often make me feel anxious and uncomfortable.
I am probably less shy in social interactions than most people.
I sometimes feel tense when talking to people of my own sex if I don't know them very well.
I would be nervous if I was being interviewed for a job.
I wish I had more confidence in social situations.
I seldom feel anxious in social situations.
In general, I am a shy person.
I often feel nervous when talking to an attractive member of the opposite sex.
I often feel nervous when calling someone I don't know very well on the telephone.

I get nervous when I speak to someone in a position of authority.
 I usually feel relaxed around other people, even people who are quite different from me.

10-Item Social Skill Inventory – Social Expressivity and Social Control Subscales
 (5-point Likert-type scale; 1 = *Not at all like me* to 5 = *Very much like me*)

I love to socialize.
 I can be comfortable with all types of people – young and old, rich and poor.
 I always mingle at parties.
 When in a group of people, I have trouble thinking of the right things to talk about.
 I usually take the initiative to introduce myself to strangers.
 I would feel out of place at a party attended by a lot of very important people.
 At parties, I enjoy talking to a lot of different people.
 I am often chosen to be the leader of a group.
 I enjoy going to large parties and meeting new people.
 I can easily adjust to being in just about any social situation.

7-Item Personal Evaluation Inventory – Social Self-Confidence Subscale
 (4-point Likert-type scale; 1 = *Strongly agree* to 4 = *Strongly disagree*)

I am a good mixer.
 I would like to know more people, but I am reluctant to go out and meet them.
 For me, meeting new people is an enjoyable experience that I look forward to.
 I almost always feel comfortable at parties or social gatherings.
 When I go to social gatherings, I frequently feel awkward and ill at ease.
 I am better at meeting new people than most people seem to be.
 I don't feel as comfortable in groups as most people seem to.

25-Item Scale of Perceived Social Self-Efficacy
 (5-point Likert-type scale; 1 = *No confidence at all* to 5 = *Complete confidence*)

Start a conversation with someone you do not know very well.
 Express your opinion to a group of people discussing a subject that is of interest to you.
 Work on a school, work, community or other project with people you do not know very well.
 Help to make someone you've recently met feel comfortable with your group of friends.
 Share with a group of people an interesting experience you once had.
 Put yourself in a new and different social situation.
 Volunteer to help organize an event.

Ask a group of people who are planning to engage in a social activity (e.g., go to a movie) if you can join them.

Get invited to a party that is being given by a prominent or popular individual.

Volunteer to help lead a group or organization.

Keep your side of the conversation.

Be involved in group activities.

Find someone to spend a weekend afternoon with.

Express your feelings to another person.

Find someone to go to lunch with.

Ask someone out on a date.

Go to a party or social function where you probably won't know anyone.

Ask someone for help when you need it.

Make friends with a member of your peer group.

Join a lunch or dinner table where people are already sitting and talking.

Make friends in a group where everyone else knows each other.

Ask someone out after s/he was busy the first time you asked.

Get a date to a dance that your friends are going to.

Call someone you've met and would like to know better.

Ask a potential friend out for coffee.

Appendix K
Instruments to Measure Students' Sense of Community on Campus

Instruments to Measure Students' Sense of Community on Campus

6-Item Mattering versus Marginality Scale

(4-point scale; 1 = *Not at all* to 5 = *very much*)

Sometimes I feel alone at the college.

Sometimes I feel that no one at the college notices me.

I often feel socially inadequate at school.

Sometimes I feel that I am not interesting to anyone at the college.

Sometimes I get so wrapped up in my personal problems that I isolate myself from others at the college.

I often feel isolated when involved in student activities (e.g., clubs, events).

8-Item Perceived Social Support – Friends Support Subscale

(4-point Likert-type scale; 1 = *Very much like my experience* to 4 = *Not at all like my experience*)

I feel very close to my friends.

I have friends who would always take the time to talk over my problems, should I want to.

My friends often let me know that they think I'm a worthwhile person.

When I am with my friends I feel completely able to relax and be myself.

No matter what happens, I know that my friends will always be there for me should I need them.

I know that my friends have confidence in me.

I feel that my friends really care about me.

I often feel really appreciated by my friends.

20-Item Social Connectedness Scale

(6-item Likert-type scale; 1 = *Strongly agree* to 6 = *Strongly disagree*)

I feel distant from people.

I don't feel related to most people.

I feel like an outsider.

I see myself as a loner.

I feel disconnected from the world around me.

I don't feel I participate with anyone or any group.

I feel close to people.

Even around people I know, I don't feel that I really belong.

I am able to relate to my peers.

I catch myself losing a sense of connectedness with society.

I am able to connect with other people.

I feel understood by the people I know.
 I see people as friendly and approachable.
 I fit in well in new situations.
 I have little sense of togetherness with my peers.
 My friends feel like family.
 I find myself actively involved in people's lives.
 Even among my friends, there is no sense of brother/sisterhood.
 I am in tune with the world.
 I feel comfortable in the presence of strangers.

18-Item Student Adaptation to College Questionnaire – Social Adjustment Scale

(9-point Likert-type scale; 1 = *Doesn't apply to me at all* to 9 = *Applies very closely to me*)

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I feel that I fit in well as part of the college environment.
 I am meeting as many people and making as many friends as I would like at college.
 I am very involved with social activities in college.
 I am adjusting well to college.
 I have had informal, personal contacts with college professors.
 I am pleased now about my decision to attend this college in particular.
 I have several close social ties at college.
 Lonesomeness for home is a source of difficulty for me right now.
 I am satisfied with the extracurricular activities available at college.
 I feel that I have enough social skills to get along well in the college setting.
 I am having difficulty feeling at ease with other people at college.
 I am satisfied with the extent to which I am participating in social activities at college.
 I haven't been mixing too well with the opposite sex lately.
 I have been feeling lonely a lot at college lately.
 I feel I am very different from other students at college in ways that I don't like.
 On balance, I would rather be home than here.
 I have some good friends or acquaintances at college with whom I can talk about any
 problems I may have.
 I am quite satisfied with my social life at college.

UNIVERSITY OF CALIFORNIA, SAN DIEGO
HUMAN RESEARCH PROTECTIONS PROGRAM

TO: Ms. Sara Kathleen Henry Mailcode: 0078

RE: Project #091364S Extending Our Understanding of Social Integration: Students' Use
of Technology, Psychosocial Well-Being, and Sense of Community in University Life

Dear Ms. Henry:

The above-referenced project was reviewed and approved by one of this institution's Institutional Review Boards in accordance with the requirements of the Code of Federal Regulations on the Protection of Human Subjects (45 CFR 46 and 21 CFR 50 and 56), including its relevant Subparts. This approval, based on the degree of risk, is for 365 days from the date of **IRB review and approval** unless otherwise stated in this letter. The regulations require that continuing review be conducted on or before the 1-year anniversary date of the IRB approval, even though the research activity may not begin until some time after the IRB has given approval.

Date of IRB review and approval: 9/30/2009

On behalf of the Institutional Review Board,

/la

Michael Caligiuri, Ph.D.
Director, Human Research Protections Program
(858) 455-5050

Note: All Human Subject research conducted at the VA facility and/or utilizing VA/VMRF funds MUST BE APPROVED by the VA Research and Development Committee prior to commencing any research. In addition, please ensure that the clinical trial agreement or other funding is appropriately in place prior to conducting any research activities.

IRB approval does not constitute funding or other institutional required approvals. Should your studies involve other review committees such as Conflict of Interest (COI), Protocol Review Monitoring Committee (PRMC), and committees under Environmental Health & Safety (EH&S) such as Institutional Biosafety Committee (IBC), Human Exposure Committee (HERC), and RSSC (Radiation Safety and Surveillance Committee), it is the researchers responsibility to ensure that all approvals are in place prior to conducting research involving human subjects or their related specimens.

Approval release date: 10/14/2009