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The Role of Electronic Communication Processes Across the College Transition: Relations to the Maintenance and Formation of Friendships, Psychological Well-Being, and College Adjustment

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THE ROLE OF ELECTRONIC COMMUNICATION PROCESSES ACROSS THE COLLEGE TRANSITION: RELATIONS TO THE MAINTENANCE AND FORMATION OF FRIENDSHIPS, PSYCHOLOGICAL WELL-BEING, AND COLLEGE ADJUSTMENT

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A DISSERTATION

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DISSERTATION ACCEPTANCE STATEMENT

On behalf of the Graduate Committee for Patricia Dieter I affirm that this manuscript is

the final and accepted dissertation. Signatures of all committee members are on file with

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THE ROLE OF ELECTRONIC COMMUNICATION PROCESSES ACROSS

THE COLLEGE TRANSITION: RELATIONS TO THE MAINTENANCE

AND FORMATION OF FRIENDSHIPS, PSYCHOLOGICAL

WELL-BEING, AND COLLEGE ADJUSTMENT

By Patricia E. Dieter

Dissertation Advisor: Cynthia Erdley, Ph.D.

Friendship experiences play a vital role in the adjustment of adolescents. Late adolescents transitioning to college negotiate the important developmental tasks of both maintaining close hometown friendships and developing new college friendships. Electronic communication has become a prevalent way to quickly and easily communicate, and friendships that incorporate electronic communication with in-person communication are higher in quality (Baiocco et al., 2011). For some adolescents, however, Internet use becomes excessive and problematic (Ha et al., 2007).

The purpose of this investigation was to examine how individuals use different communication technologies with their existing hometown friends and their newer college friends, and how this relates to their friendship quality with both types of friends. The current study also explored how friendship quality relates to students' college adjustment, whether social anxiety and depressive symptoms moderate the relationship

between communication modality and friendship quality, how these psychological factors are related to problematic Internet use, and whether there are gender differences in these associations.

Participants included 469 first-year undergraduate students (mean age 18.20 years, 48% male). Participants completed self-report measures online including measures of social anxiety and depressive symptoms, college adjustment, friendship quality, loneliness, and problematic Internet use.

The current study revealed key findings, including that phone and in-person communication predicted college friendship quality for both genders. For males, texting and social networking site communication predicted hometown and college friendship quality, and for females, these modes of communication predicted college friendship quality. For females, college friendship quality significantly moderated the relationship between depressive symptoms and problematic Internet use, and hometown friendship quality marginally significantly moderated the relationship between social anxiety symptoms and problematic Internet use. For males, hometown friendship quality significantly moderated the relationship between depressive symptoms and problematic Internet use. Also, for the overall sample, college friendship quality marginally significantly moderated the relationship between loneliness and problematic Internet use. These findings indicate that different friendship experiences can have a protective effect in different situations. The results also reveal which types of communication may be most effective in strengthening friendships and facilitating students' adjustment to college. Study limitations and future directions for research are discussed.

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Chapter 1: Introduction

Overview

Friendship experiences play a vital and influential role in the adjustment of

adolescents. For example, positive friendship experiences have been found to protect

against aversive social experiences such as rejection, loneliness, and depression (Nangle,

Erdley, Neman, Mason, & Carpenter, 2003). Individuals with more negative qualities in

their friendship (e.g., exclusion, conflict) are more socially anxious and depressed (La

Greca & Harrison, 2005). Friendship experiences are also associated with school

achievement, with positive friendship qualities being related to greater engagement in

school (Berndt & Keefe, 1995).

It is clear that friendship processes change during adolescence, particularly as

involvement in opposite-sex friendships increases (Bukowski, Sippola, & Hoza, 1999),

and intimacy in friendship interactions intensifies (Furman & Buhrmester, 1992). In

addition, late adolescents who transition to college must negotiate the important

developmental tasks of both maintaining close hometown friendships and developing

new college friendships. Research has shown that high school friendships tend to

deteriorate over the first year of college, but that this deterioration is moderated by level

of communication with the high school friend (Oswald & Clark, 2003). Furthermore,

individuals who successfully maintained these relationships in college were protected

from social loneliness. Forming new friendships in college is also critical, with one study

of Canadian first-year students finding a significant positive relationship between the

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quality of new college friendships and college adjustment (Buote, Pancer, Pratt, Adams, Birnie-Lefcovitch, Polivy, & Wintre, 2007).

With the advent of the Internet and electronic communication, friendship processes have evolved significantly. For example, among younger adolescents, Internet use has been linked to differences in friendship quality, with more online communication being related to a greater degree of closeness with friends (Valkenburg & Peter, 2007). Other research has shown that this relationship varies as a function of gender (Desjarlais & Willoughby, 2010). Specifically, for girls, electronic communication was directly and positively related to friendship quality. However, for boys, the relationship between electronic communication and friendship quality was moderated by social anxiety such that boys with social anxiety who used more electronic communication reported higher friendship quality. There is some research to suggest, however, that socially anxious individuals may become attached to the social benefits that Internet and electronic communication can provide, and that success in the electronic communication realm may perpetuate avoidance of in-person communication situations (Lee & Stapinski, 2012). The relationship between communication modalities and adjustment (e.g., college adjustment, social anxiety symptoms, depressive symptoms, loneliness) needs to be further clarified, and this was one goal of the current study.

Past research indicates that the relationships amongst different forms of communication technologies and friendship experiences are likely to vary as a function of gender. Buhrmester and Furman (1987) examined changes in intimacy across development and found that for girls, intimacy, especially with same-sex friends, increases significantly. For boys, however, same-sex peers are only moderately important

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providers of intimacy, and male-male friendships never achieve levels of intimacy that are comparable to levels in female-female friendships. Therefore, different communication modalities may be preferred by each gender, with females favoring communication modalities that foster intimacy (e.g., in person, phone, email), and males perhaps selecting communication modalities that promote functionality (e.g., text message, social networking sites).

Despite some quality research that has been conducted on the role of Internet communication in adolescents' friendships, a number of limitations remain. Given that new Internet communication technologies are emerging at such a rapid pace, existing results are generally outdated. Thus, it is important to conduct research that assesses adolescents' use of the most recent technological advances (e.g., smartphones). Additionally, many of the studies on this topic have been conducted outside of the United States (e.g., Taiwan, Hong Kong, Israel, Italy), and currently there is limited information regarding whether American adolescents use the Internet in the same way in their friendships, and with the same consequences, as adolescents from other cultures. Finally, the greatest limitation is that much of the existing research has been conducted within academic fields that have not considered a psychological perspective. Indeed, there is preliminary evidence (Brendgen, Vitaro, Bukowski, Dionne, Tremblay, & Boivin, 2013; Erath, Flanagan, Bierman, & Tu, 2010) that there are differences in the relationships amongst specific aspects of friendship experiences and certain aspects of adjustment (e.g., social anxiety symptoms, depressive symptoms), but these need to be investigated in more depth. Furthermore, limited research has examined Internet communication

technologies within the context of the transition to college and maintenance of high school friendships and development of new college friendships.

The purpose of the current investigation was to extend past research, while addressing some of these critical limitations in the field. This study examined how individuals use different communication technologies both with their existing hometown friends and their newer college friends, and how use patterns relate to their friendship quality with both types of friends. The transition to college marks a major developmental milestone in the lives of many adolescents, when they leave hometown friends behind and make new friends in a new place. An individual's level of success at maintaining close hometown friendships and developing close college friendships is likely influenced by his or her skill at navigating and utilizing different communication modalities in different social situations.

The current study also explored how friendship quality relates to students' college adjustment, as well as whether social anxiety and depressive symptoms moderate the relationship between communication modality and friendship quality, and how these psychological factors are related to problematic Internet use (i.e., excessive, maladaptive Internet use that interferes with an individual's functioning). Furthermore, the present study tested whether there are gender differences in these associations. Clarifying these relationships helps to provide information about which individuals, upon high school graduation, may be at greatest risk of having difficulty forming friendships and adjusting to college. Exploring which communication modalities are most successful for promoting positive friendship experiences will allow interventions to be developed to help these adolescents as they transition to college.

Adolescence

Biological transitions

Adolescence represents a transition period in a number of domains for an individual. This period of development is typically defined as beginning with the onset of the physical changes of puberty (Peper & Dahl, 2013). Both girls and boys experience changes to their physical body including increases in height and weight, skeletal growth, hormonal changes, and the beginning of reproductive functions. Although a key event in puberty for girls is menarche, which occurs at an average age of 12.5 years in the United States, puberty truly starts before this. Girls generally begin the pubertal process about two years earlier than boys, around age 9 to 10 years (versus boys at ages 10 to 12 years). At this time, hormonal changes begin to occur, signaling the onset of puberty. These changes result in dramatic physical growth and include the development of secondary sexual characteristics. For girls, the secondary sexual characteristics include breast development, development of pubic hair, increase in body fat, and menstruation. For boys, these secondary sexual characteristics include the development of body, facial, and pubic hair, as well as voice change.

Research has revealed a number of negative outcomes for individuals who experience puberty at an atypical time (i.e., early maturing girls and late maturing boys). For example, one study found that girls who experienced puberty early were more likely to smoke and drink at a younger age (Arim, Tramonte, Shapka, Dahinten, & Willms, 2011). Girls who mature early also tend to have a more negative body image, lower self-esteem, and are more likely to develop an eating disorder and to become involved in sexual activity at younger ages (Arim et al., 2011). Additionally, they are more apt to be

victimized by both male and female peers. For boys, early puberty is often viewed as desirable, as these boys are developing more muscular and athletic bodies earlier, which is seen as more masculine by society, and is related to higher self-esteem and popularity. However, some researchers have demonstrated that boys who are off-time (i.e., either early or late) for puberty engage in higher rates of delinquency, compared to boys who experienced puberty on time (Williams & Dunlop, 1999). Generally, boys who go through puberty late (and thus are less "masculine" than peers who have already reached puberty) experience poor body image, lower self-esteem, and difficulties with peers including less popularity. Another study found that early puberty for girls and early or late puberty for boys was associated with increased depressive symptoms for individuals with a vulnerability to emotional problems in late childhood (Benoit, LaCourse, & Claes, 2013).

Cognitive transitions

In addition to external physical changes, adolescents experience further development of the brain. Researchers have found widespread reorganization of the brain during adolescence (Konrad, Firk, & Uhlhaas, 2013). Specifically, white matter increases, extraneous synapses are pruned, and the neurotransmitter systems are changed. Gray matter matures in the brain from the back to the front, and so, as individuals enter adolescence the gray matter in their frontal lobes is maturing. This part of the brain is responsible for higher order cognitive processing such as behavioral control and planning.

These changes in brain structure result in advances in cognitive development during this period. Specifically, with the maturation of the frontal lobes, adolescents are

able to more fully understand the relationship between actions and their consequences (Steinberg, 2005), which is crucial as they experience more autonomy from adult supervision. These developmental changes in the brain also result in adolescents' increased ability to take the perspective of others (Van der Graaff, Branje, De Wied, Hawk, Van Lier, & Meeus, 2013). In a six-year longitudinal study of 497 adolescents (age 13 to 18 years), Van der Graaff and colleagues found that these cognitive changes occurred differently across age and gender. Specifically, there was no gender difference in perspective taking at age 13 in early adolescence. However, by middle adolescence (age 15), girls' perspective taking was significantly increased, while boys' perspective taking was only starting to increase. These results are consistent with the observation that boys tend to experience puberty two years later on average than girls. Overall, the findings showed that perspective taking increases for both genders across adolescence, though later for males than females, and these advances coincide with adolescents becoming increasingly interested in social relationships.

Social transitions

The nature of adolescents' relationships with their family changes as they experience these biological and cognitive changes and become more oriented towards peers. Adolescents increasingly pursue autonomy, and this typically leads to a decline in closeness with their parents. A study of 1,918 adolescents found that before age 16, adolescents perceived a significant decline in parental support, while at the same time, perceived an increase in support from friends (Helsen, Vollebergh, & Meeus, 2000). Other research has demonstrated an increase in negativity in the parent-child relationship. McGue and colleagues found that across early adolescence (from age 11 to 14 years),

parent-child relationship quality, including warmth, declined, while conflicts between adolescents and their parents increased (McGue, Elkins, Walden, & Iacono, 2005). They also reported that adolescents had less positive regard towards their parents and perceived that their parents had less positive regard towards them.

As closeness to the family declines in adolescence, the importance of peers increases. Indeed, adolescents experience friends as the most satisfying of all companions, and spend more time talking to peers than in any other single activity (Berndt, 1982). Across adolescence, relationships with peers become more intimate (Furman & Buhrmester, 1992), and individuals begin to form cross-sex friendships (Bukowski et al., 1999). Finally, adolescents also begin to form romantic, dating relationships. Research has shown, however, that adolescent involvement in a romantic relationship, without the establishment of supportive same-sex friends, can lead to difficulties in adjustment (Brendgen, Vitaro, Doyle, Markiewicz, & Bukowski, 2002). This finding points to the primary importance of friendship during adolescence. The literature on friendship will be explored more extensively in a later section.

An additional social change most adolescents experience is within the school context. The majority of adolescents must navigate up to three school transitions (i.e., to middle school, to high school, and to college). With each school transition, adolescents are granted increasing autonomy, and are faced with greater responsibilities and academic demands. A review by Benner (2011) describes how different adolescents respond to these transitions in varying ways: some experience them as a stressor, others become excited by the increased opportunities, and still others do not experience discontinuity in their lives. Despite these individual differences, some generalities exist. The transition

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from elementary school to middle school has been noted as a particularly challenging time for early adolescents. Researchers have found that peer acceptance status (including peer rejection) remains stable across this transition period, but that the number of mutual friendships an individual has declines (Kingery & Erdley, 2007). Children with negative peer experiences in fifth grade experienced difficulties in adjustment, such as loneliness and lower academic performance, following the transition. Similarly, during the transition from middle to high school, on average, academic grades decline. Students are also less engaged in high school than they were in middle school, as measured by variables such as involvement in extracurricular activities and school absences (Benner, 2011).

Research has also explored adolescents' transition to college. Individuals are thought to adjust to college on four different dimensions, including academic adjustment, social adjustment, personal-emotional adjustment, and institutional attachment (Crede & Niehorster, 2011). Factors such as gender and living environment are significantly related to the quality of students' adjustment to college (Enochs & Roland, 2006). Specifically, males were found to have better adjustment to college overall than females. Other factors such as personal adjustment and integration into the social aspects of the college campus have also been shown to be important (Gerdes & Mallinckrodt, 1994). This literature will be reviewed extensively in a later section.

History and future of adolescence

As described above, there are clearly significant changes in individuals' physical, cognitive, and social development that occur during adolescence. Interestingly, until the early part of the twentieth century, society generally viewed children as making a

transition directly from childhood into adulthood. However, certain societal changes

shifted views on this matter, including a lack of fulltime employment for teenagers and

increased demands for schooling. In 1904, G. Stanley Hall published his seminal book:

Adolescence: Its Psychology and Its Relations to Physiology, Anthropology, Sociology,

Sex, Crime, Religion, and Education. Thus, with this work, he both delineated

adolescence as a developmental period, and created a new scientific field to study it

(Cravens, 2006).

Recently, Jeffrey Arnett has proposed another shift in our understanding of

development. He posits that a new developmental period called *Emerging Adulthood*

(2000) needs to be acknowledged, a suggestion that has been responded to with some

degree of controversy. According the Arnett, emerging adulthood occurs from

approximately age 18 until age 25 years and is, he argues, distinct from both adolescence

and young adulthood. This period is, essentially, defined by attendance in college.

Specifically, he describes this period as one in which the individual is independent (i.e.,

different from dependency in adolescence), and yet not fully responsible for his or her

livelihood (i.e., as in adulthood).

The current study did not adopt the perspective of emerging adulthood for several

reasons. As described by Arnett, emerging adulthood is not experienced universally, but

only in cultures that delay entry into adulthood (i.e., as in college life). Emerging

adulthood is not experienced by all young people around the world, and indeed not even

by everyone within the United States. Therefore, many have argued that it cannot truly be

considered a developmental period. Additionally, as described above, adolescence is a

period defined by increasing autonomy, and yet, connection to and assistance from

parents. The present study investigated individuals as they transitioned from high school to their first semester of college. These first-year students are very dependent on adult support (whether it be parents, professors, administrative personnel, etc.). Adolescence is the developmental period that most accurately describes first-year college students, and the current study, therefore, considered this population to be late adolescents.

Friendship

As noted above, peer relations take on an added level of importance during adolescence. Research in the field of peer relations typically encompasses areas such as acceptance, dyadic friendship, and friendship quality. Acceptance (or popularity) describes the opinions of the peer group as a whole regarding how much a particular child is liked. Friendship, in contrast, is a dyadic construct defined by peers reporting reciprocated positive feelings. Research has consistently indicated that friendships vary in quality on dimensions such as validation, intimacy, and conflict (e.g., Parker & Asher, 1993). Moreover, friendship experiences change across the transition to adolescence in that they become more intimate and begin to be forged with opposite-sex peers. Forming, and failing to form, a close friendship has far reaching consequences for children and adolescents.

Definition, function, and assessment

Friendship is defined as a relationship in which dyad members have reciprocated positive feelings for one another (Bukowski & Hoza, 1989). Newcomb and Bagwell (1995) conducted a meta-analysis in which they sought to define the hallmark features of friendship (versus non-friendship) relationships. They found that an important aspect of friendship is companionship. That is, friends spend more time with one another and

participate in more social activity than non-friends do. Friends also engage in more conversation than individuals without a friendship tie and have more extensive knowledge about one another's interests. In addition, because friendship is based on mutual affection, compared to non-friends, friends are more likely to seek to resolve disagreements fairly and equitably when they occur.

Friendship relationships serve a variety of functions for children and adolescents (Asher & Parker, 1989). Friendship fosters the growth of social competence, as well as offers companionship and stimulation. Friends give guidance and assistance to one another, and engage in a reliable alliance, or loyal relationship. In addition, friends provide one another with intimacy and affection, as well as ego support and self-validation. Furthermore, friends can offer a sense of emotional security, particularly in threatening or novel situations. Similarly, Gottman and Parker (1987) have outlined six specific functions of friends. For adolescents, friends provide stimulation and companionship. They offer intimacy and ego support, as well as physical, instrumental support. Finally, friends can provide social comparison. That is, they can give a marker of how the adolescent measures up to peers and if he or she is doing well in comparison.

Friendship is traditionally assessed using nomination procedures (Bukowski, Hoza, & Newcomb, 1994). Typically, the procedure involves giving a student a class roster list of all (research participating) children of the same-sex. The student is asked to nominate those peers that he or she views as best friends. A friendship is identified if the nomination is reciprocal (i.e., each student nominated the other as a best friend). This procedure is sometimes modified to include same- and other-sex peers, or to limit the

number of nominations that can be made in each category (e.g., nominate three best friends).

An important aspect of friendship is the quality of the friendship (i.e., the extent to which the friendship offers, or fails to offer, certain provisions). Several measures of friendship quality have been developed over time. One of these, the Friendship Quality Questionnaire-Revised (FQQ-R; Parker & Asher,1993), focuses on friendship quality in childhood friendships. This questionnaire assesses friendships in six domains: validation and caring, conflict and betrayal, companionship and recreation, help and guidance, intimate exchange, and conflict resolution. The 40 items (e.g., My friend makes me feel good about my ideas) are evaluated on a five-point scale (1= *not at all true*, 3= *somewhat true*, 5- *really true*). The Network of Relationships Inventory (NRI; Furman & Buhrmester, 1985) is typically used to assess relationship quality in adolescents. The Social Provision Version of this questionnaire (NRI-SPV; Furman & Buhrmester, 1985) assesses seven support features (e.g., companionship, instrumental aid, intimate disclosure), two negative interaction features (i.e., conflict, antagonism), and relative power.

Brengden and colleagues (Brendgen, Markievicz, Doyle, & Bukowski, 2001) investigated adolescent friendship quality and its consequences. They found that the way adolescents perceived their friendship quality was related to their own behavior toward their friend. In other words, if they behaved positively towards their friend, they viewed the friendship quality as positive, and vice versa. Additionally, they perceived the friendship quality as negative if their friend was hostile, criticized them more, and displayed more negative affect toward them.

Overall, Brengden et al. (2001) found that girls perceived more positive and less negative qualities in their friendships than boys did. Also, compared to boys, girls exhibited more positive behaviors and less negative behaviors in their friendships. Interestingly, friendship quality and ranking were not associated with self-disclosure for girls. These variables were related for boys, however, indicating that boys seem to self-disclose only to their very closest friends. Overall, girls' friendships tend to more centrally involve intimate disclosure, whereas boys have larger friend groups, but are less intimate generally with these friends.

Developmental issues in friendship

In 1953, Sullivan introduced an influential theory of social development. He hypothesized that there are five basic social needs: tenderness, companionship, acceptance, intimacy, and sexuality. Each of these needs emerge during a different developmental period. Over time, peers become increasingly relied upon to satisfy these social needs. Sullivan hypothesized that intimacy needs emerge in preadolescence (which he defined as ages 9-12 years) and are satisfied by close, same-sex friendships through self-disclosure. He stated that the defining feature of intimacy is consensual validation. He believed that if adolescents failed to forge close friendships, they would experience loneliness and have lower self-esteem. Sullivan also hypothesized that sexuality needs emerge in early adolescence (which he defined as ages 12-16 years) and are fulfilled by opposite-sex friendships and affiliation with heterosexual crowds. Furthermore, he believed that opposite-sex friends become increasingly relied upon to provide intimacy across development. Therefore, according to Sullivan, two defining features of friendship experiences in adolescence are intimacy and the emergence of opposite-sex friendships.

Buhrmester and Furman (1987) examined the development of companionship and intimacy in friendship across development. They found that early adolescents feel that same-sex peers are the most satisfying companions. In contrast, children described parents as the most satisfying companions. Inconsistent with Sullivan's theory, Burhmester and Furman found that a general desire for intimacy emerges in early adolescence, not in preadolescence. Girls reported that from preadolescence to early adolescence, intimacy with friends increases a great deal, particularly with their same-sex friends. For boys, however, same-sex peers are moderately important providers of intimacy throughout development. Notably, male-male friendships never achieve levels of intimacy that are comparable to female-female friendships. Burhmester and Furman also found that from fifth to eighth grade, intimacy in opposite-sex friendships increases dramatically.

In a follow-up study, Furman and Buhrmester (1992) obtained similar results. By grades seven and ten, individuals view peers as providing the most support. This is compared to parents who provided the greatest amount of support in grade four. The amount of support in same-sex friendships increases from childhood to early adolescence with an increase in intimacy and affection. Girls also view their same-sex friendships as more supportive than boys do. By late adolescence (college students in their sample), males report that romantic partners are the most supportive relationships, whereas females report romantic partners, mothers, siblings, and friends all as the most supportive relationships for them. Though they found timing slightly different from Sullivan in their two studies, Buhrmester and Furman revealed a similar pattern. Specifically, in childhood, parents satisfy social needs. By adolescence, same-sex peers are fulfilling

intimacy needs, followed by opposite-sex peers, and by late adolescence, romantic partners are increasingly providing support, especially for males.

Berndt (1982) also investigated the emergence and development of intimacy in friendships. He found that comments about intimate sharing of thoughts and feelings with friends increased from middle childhood to early adolescence. Eighth graders in the study knew more intimate information about their friends than fourth graders did. When asked directly, girls referred to intimate sharing with friends more often than boys did. However, Berndt found no gender differences in the self-disclosure of intimate information or in the amount of intimate information the adolescents knew about their best friend. The study also revealed that the development of intimacy in friendships appears to be related to cognitive development. Interestingly, early adolescents with greater cognitive ability know more intimate information about their friends.

Research shows that intimacy seems to emerge in early adolescence, first with same-sex friends, then with opposite-sex friends. There are two hypothesized pathways to explain the influence of opposite-sex friendships on adolescent development. In the first pathway, opposite-sex friendships are viewed as a parallel system to the same-sex friendship domain. Therefore, an adolescent's well being will be derived from participation in both the same-sex and opposite-sex domains. In the other pathway, cross-sex friendships are a compensatory system. Adolescents who fail to make same-sex friends seek to compensate by making opposite-sex friends.

Bukowski and colleagues (Bukowski, Gauze, Hoza, & Newcomb, 1993) found that in early adolescence (i.e., sixth and seventh grade), there is still a preference for same-sex peers. This preference for same-sex peers is more closely linked to the

dimension of liking (same-sex friends), rather than disliking (opposite-sex peers). Preference for same-sex friendships is a relatively stable characteristic of each individual child, and it is closely related to activity preferences, particularly level of interest in rough and tumble activities. Additionally, those children with a stronger preference for same-sex peers are the children least liked by opposite-sex peers.

In a later study, Bukowski and colleagues (1999) again found that early adolescent girls, and to a lesser extent, boys, prefer same-sex friendships. Indeed, most friendships in early adolescence are with same-sex peers, and close, best friendships are also more likely to be same-sex than opposite-sex peers. However, Bukowski et al. found that children who are generally friendly towards their peers are likely to have equal numbers of both same- and opposite-sex friendships. With regard to the two pathways, it seems that children fall onto different pathways. Bukowski and colleagues found that for both genders, adolescents who were very popular or very unpopular were more likely to have opposite-sex friends. For those adolescents without a same-sex friend, having an opposite-sex friend was associated with greater well being for boys, but worse well being for girls. The pathways therefore seem to have differential effects for each gender.

Richards and colleagues (Richards, Crowe, Larson, & Swarr, 1998) also investigated the developmental sequence of opposite-sex friendship. They had a sample of adolescents record throughout the day both when they were thinking about peers and when they were with their peers. They found that same-sex peers remain important throughout adolescence. This was evident in the fact that the time spent with same-sex peers and thinking about them remained steady and did not decline across adolescence. In early adolescence, individuals spent more time thinking about the opposite-sex than they

actually spent in their company. However, by high school, this had shifted and adolescents spent more time in the actual company of opposite-sex peers.

In terms of the nature of social interaction, Richards and colleagues reported that girls give greater intrapsychic attention to their peers than boys. Girls spent more time both with and thinking about boys, and they devoted more time to thinking about girls. On the other hand, when boys were not with their peers, they spent little time thinking about them. The adolescents were also asked to describe their feelings when they were with peers. Adolescents described the time when they were with opposite-sex peers as more exciting than when they were with same-sex peers, and they felt more attractive, competent and happy. This research shows that, consistent with Sullivan's theory, social needs in adolescence are first met by same-sex peers, and then are increasingly satisfied by opposite-sex peers.

Friendship and adjustment

Friendship experiences can have far-reaching impacts on adjustment. Parker and Asher's (1993) seminal study examined the consequences of friendship participation on children (third through fifth graders). They found that friendship status influences well-being above and beyond the effects of peer acceptance. Specifically, at all levels of peer acceptance, children without a best friend were lonelier than children with a friend. This important study, therefore, demonstrated that having even one high quality friend could be a very important protective factor against aversive social experiences such as peer rejection.

Other researchers have explored the role of friendship experiences in both network and dyadic loneliness (Hoza, Bukowski, & Beery, 2000). Peer network

loneliness refers to an individual's feeling of loneliness due to isolation by the peer group as a whole. Peer dyadic loneliness is defined as an individual's feeling of loneliness due to lacking a close, high quality friendship. In a large study of fifth through seventh graders, Hoza et al. found the children who lacked a close, dyadic friendship experienced a specific type of distress (i.e., dyadic loneliness) that was different from feeling ostracized by the peer group as a whole (i.e., network loneliness). Results from a study of third through sixth graders (Nangle et al., 2003) indicated that popularity and friendship variables (i.e., quantity, quality) accounted for approximately one-third of the variance in loneliness scores. Although popularity was related to friendship in that it seemed to provide a foundation for friendships to develop, it was dyadic friendships that had the strongest associations with loneliness.

Importantly, in a study of 8- to 14-year-old children, researchers found that low social skills, as measured by the Social Skills Rating System, are related to lower quality friendships, which in turn, are a risk factor for victimization (Crawford & Manassis, 2011). In addition to finding a link between friendship quality and social skill level, this study established that these factors contribute to an increased likelihood of a child being bullied.

Another aspect of psychological adjustment that friendship is related to is social anxiety. Erath and colleagues revealed that friendship can protect against social anxiety in adolescence (Erath et al., 2010). In their study, socially anxious individuals reported less loneliness when they had more close friendships. When fewer close friendships were present, social anxiety was strongly related to loneliness for these individuals. Erath and colleagues found that close friendships moderated the relationship between social anxiety

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and both loneliness and self-reported victimization. The association with victimization was particularly true for boys. Therefore, having a close friend may mitigate some of the negative social experiences associated with social anxiety (e.g., victimization).

La Greca and Harrison (2005) also investigated the relationship between friendship and social anxiety in adolescence. They found that individuals who had more positive features in their friendships were less socially anxious, although these positive friendship features did not appear to protect against depression. Individuals with more negative qualities in their best friendship (e.g., exclusion, conflict) were both more socially anxious and depressed. Despite these observed associations, it is not clear whether negative friendship quality contributes to more social anxiety, or if greater social anxiety contributes to poorer friendship quality.

Researchers have also examined the relationship between friendship experiences and symptoms of depression. A recent study compared monozygotic and dizygotic twin pairs in fourth grade to examine whether having a reciprocal friendship could influence a genetic vulnerability to depression (Brendgen et al., 2013). Results indicated that for girls with a high genetic vulnerability, having at least one close, reciprocated friendship reduced depressive symptoms. However, there was not an interaction effect for boys. Another large study of adolescents indicated that for girls, being in a disengaged friendship (i.e., a friendship with less closeness, less awareness of each other's needs) was associated with higher levels of depression (Selfhout, Branje, & Meeus, 2009). Therefore, the relationship between friendship experiences and symptoms of depression seems to be moderated by gender. Nangle and colleagues (2003) found that the relationship between friendship experiences (rather than peer acceptance) and depression

was mediated by loneliness. Thus, although popularity was related to friendship quantity and friendship quality, which was in turn related to loneliness, it was loneliness that provided the mediation for these variables to depression.

Friendship experiences have also been shown to influence school achievement. For example, Berndt and Keefe (1995) found that individuals with more positive qualities in their friendships were more engaged in school. The converse was also true; individuals with more negative qualities were less engaged in school and more disruptive. Another study followed adolescents as they progressed from sixth to eighth grade in middle school (Wentzel, Barry, & Caldwell, 2004). Results of this study indicated that students without a reciprocated friendship engaged in less prosocial behavior, had higher levels of emotional distress, and had lower academic achievement (as measured by grade-point average) than did adolescents with at least one reciprocated friendship. This was especially true during the transition period (i.e., during the first year of middle school).

Adolescents in particular experience numerous school transitions (i.e., to middle school, to high school, and often to college), and the relationship between friendship experiences and adjustment across school transitions has been well documented. For example, one study examined early adolescents as they transitioned from fifth grade in elementary school to sixth grade in middle school (Kingery, Erdley, & Marshall, 2011). Kingery et al. demonstrated that friendship experiences played a significant role in an individual's post-transition adjustment. Specifically, they found that positive academic achievement was particularly influenced by an individual's friendship experiences during the first assessment in fifth grade. In addition, peer acceptance in fifth grade significantly predicted loneliness following the transition to sixth grade. Self-esteem in sixth grade

was also significantly predicted by friendship quality. Gender differences were not observed in these patterns. Overall, this study supported the importance of positive peer relations for an adolescent transitioning into middle school.

Research on the role of friendship experiences across the transition to high school has been much more limited. There is some evidence that as adolescents transition into larger high schools with more same-age, and older peers, friendships become more fleeting (Benner, 2011). This may be representative of adolescents choosing a core group of close friends, as research has also suggested that friendships provide increased support and negative peer affiliations decline during this time. Extensive research has also been conducted on the relationship between friendship experiences and college adjustment across the transition to college. This literature will be reviewed in the following section.

College Adjustment

Many late adolescents will navigate the transition from high school to a college or university. According to government statistics, the immediate college enrollment rate (i.e., "the annual percentage of high school completers of a given year who enroll in 2- or 4-year colleges in the fall immediately after completing high school") increased to 68 percent between 2001 and 2011 (National Center for Education Statistics, 2013, p. 1). Although rates increased for both males and females, patterns shifted to indicate higher enrollment rates for females overall.

Educational researchers have reached consensus on the broad construct of college adjustment (Crede & Niehorster, 2011). Specifically, it is widely accepted in that field that college adjustment contains four broad categories: academic adjustment, social adjustment, personal-emotional adjustment, and institutional attachment. These four

categories of adjustment have been shown to have both direct and mediated effects on retention (Crede & Niehorster, 2011). Poor institutional attachment, social adjustment, and personal-emotional adjustment are directly related to an increased likelihood that a student will leave college for non-academic reasons. Indirectly, poor adjustment can also harm academic performance, which can result in a student leaving college for academic reasons (Crede & Niehorster, 2011).

As the rate of late adolescents going directly from high school to college continues to rise, the challenges students face will be increasingly important to understand. These challenges can complicate the transition process and make adjustment (as defined above) more difficult. Specifically, certain demographic factors influence adjustment, and students transitioning to college also typically deal with multiple stressors simultaneously, including challenges to physical and mental health, a changing relationship with parents, handling more demanding academics, and coping with social transitions including a changing social context with peers, and maintaining and forming friendships.

Demographic factors influencing adjustment

Students who are the first in their family to attend college (first-generation college students) face challenges to adjustment that may include less familial support (including financial support) than second-generation college students (Hertel, 2010). First-generation students often know less about college life and academics, and lack the benefit of a parent who can provide that knowledge from personal experience. These factors are thought to lead to increased attrition rates. In a study of 130 first-year students of varying majors at a large university, researchers found second-generation college students had

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significantly better social adjustment than the first-generation students (Hertel, 2010).

Additionally, whereas second-generation students placed high value on the social and

extracurricular activities in college, first-generation students tended to value intellectual

activities, and this predicted to their college adjustment. Support from on-campus friends

was a stronger predictor of overall college adjustment for second-generation students

compared to first-generation students. These findings highlight the need for first-

generation students to become socially involved on the college campus to help with

adjustment and retention.

Racial and ethnic minority students also face additional challenges to college

adjustment, including that they are often first-generation college students. These students

sometimes make up small percentages of the overall student body, and they may face

discrimination from staff and fellow students. They also may struggle with cultural

differences, such as family involvement, which may hinder college adjustment. A large

(N= 515) study of participants from four different ethnic backgrounds (East Asian

American, Southeast Asian American, Filipino/Pacific Islander American, and European

American) sought to investigate how shared agency with parents (i.e., the extent to which

parents accommodate, collaborate or support the student's goals) differed by ethnic group

(Chang, Heckhausen, Greenberger, & Chen, 2010). Alternatively, non-shared agency

involves parents who either take over and direct the student's education, or are

uninvolved. Results indicated that among participants in all ethnic groups, parental

noninvolvement was the least endorsed strategy, and parental accommodation was the

most highly endorsed. The strongest cultural difference that emerged in the study was

that students of Asian ethnicity perceived more parental directing of education goals (i.e.,

non-shared agency) than European American students. Parental directing was also negatively associated with college adjustment.

Sexual orientation and gender minority students (e.g., LGBT) also often face discrimination and harassment on college campuses, and sometimes hide this part of their identity to remain safe (Schmidt, Miles, & Welsh, 2011). A study of 189 LGBT undergraduate students found that students who had high levels of perceived discrimination, but also high levels of social support, had the lowest levels of vocational indecision and were able to maintain their career development (Schmidt et al., 2011). It is hypothesized that these individuals have developed a competency in overcoming difficulties and maintaining social networks. College adjustment was uniquely predicted by both perceived discrimination and social support, but not their interaction. Overall, this study highlights the importance of creating and maintaining networks of support for LGBT students who may be experiencing discrimination on the college campus.

Challenges to physical and mental health

Although many individuals experience a smooth transition to college, others have difficulty adjusting. Pritchard, Wilson, and Yamnitz (2007) conducted a large, longitudinal study of college adjustment focusing on coping, self-esteem, school participation, and physical health-related issues. First-year students were followed from orientation week before the start of classes to the end of the second semester. Pritchard and colleagues found that students experienced an increase in physical health problems over the first year. This was significantly predicted by higher levels of perfectionism and lower levels of self-esteem and optimism. These findings may indicate that the stressful college transition, along with certain cognitive styles (i.e., perfectionism, low self-

esteem), weakened the immune system of these students and left them vulnerable to physical illness.

Alcohol use patterns also changed, with students increasing their frequency of drinking over time, especially the quantity they drink on weekends. This was predicted by lower levels of perfectionism, and alcohol use was often reported as a coping mechanism. Interestingly, Pritchard and colleagues found that stress levels did not increase over the first year. They hypothesize that this was due to the timing of their measurement. Specifically, they assessed stress first during orientation, when stress levels may already be high. They note that stress levels may have been lower prior to orientation, which may have then shown an increase over the first year. Negative mood, which they defined as "a combination of anxiety, tension, depression, anger, confusion, fatigue and lack of vigor" (Pritchard et al., 2007, p. 17), did increase over the first year. The students who experienced an increase in negative mood reported coping by criticizing themselves and also had lower levels of self-esteem and optimism.

Adolescents who transition to college may also be at risk for feeling lonely, especially if they are shy, not very sociable, and have low levels of parental support (Mounts, Valentiner, Anderson, & Boswell, 2006). Researchers found that this loneliness, and not the students' friendship quality, was further related to levels of anxiety and depression. Other researchers exploring factors related to the college transition found that lower self-criticism and higher efficacy were related to a reduction in loneliness from the beginning to the middle of the students' first year at university (Wiseman, 1997). Those students who remained lonely mid-year were less satisfied with themselves, and seemed

to more strongly attribute their loneliness to their own unchangeable personality traits rather than to the situational college transition.

Other researchers in Australia found that students who relocated to a metropolitan university from a rural area had a poorer diet, poorer sleep quality and greater increases in negative health-related behaviors such as alcohol and caffeine consumption, smoking, and sun exposure, compared to students who had not relocated (King, Garrett, Wrench, & Lewis, 2011). Students who relocated also demonstrated a significant decline in mental health compared to non-relocators, especially relating to feelings of loneliness, alienation, support, anxiety and depression. Specifically, 55% of relocating students reported feeling significant amounts of loneliness, compared to only 6% of non-relocating students.

Changing relationship with parents

In cases in which first-year college students move onto campus, they leave both the supervision and the immediate social support of their parents. However, parents continue to play an integral role in a student's adjustment to college, despite this physical distance. In a study comparing the experiences of first-year students with upperclassmen, researchers found that first-year students had more psychological (i.e., functional, attitudinal, and emotional) dependencies on their parents (Lapsley, Rice, & Shadid, 1989). Psychological separation from parents on these various dimensions was also somewhat predictive of college adjustment, particularly personal-emotional adjustment.

In a study of first- and second-year college students, Agliata and Renk (2008) found that although mothers and fathers reported that their college student was exceeding their high expectations, the students did not feel that they were living up to their parents' expectations. Indeed, higher expectation discrepancies (between the student's perceived

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parental expectation and perceived self-performance) were related to lower levels of self-worth and lower levels of college adjustment. Additionally, this study found that college students' perceptions of communication reciprocity with their parents (rather than actual level of communication reciprocity) was predictive of college adjustment.

Living away from parents provides first-year college students with the opportunity to engage in behavioral risks that may have been previously monitored and prevented by their parents. In a large study of incoming students at the University of Texas at Austin, researchers found that from the summer prior to the start of college through the spring semester, alcohol use, marijuana use, and sex with multiple partners increased over time (Fromme, Corbin, & Kruse, 2008). They also discovered that some risky behaviors declined across the transition to college. Specifically, they found decreases in driving after drinking, aggressive behaviors, and property crimes. Some continuity existed, however, with individuals who engaged in behavioral risks during their senior year of high school being more likely to continue participating in these behaviors during their first-year in college. Similarly, those students who engaged in fewer behavioral risks in high school continued to be less likely to be involved in these behavioral risks in college. Therefore, even though many college students have transitioned to college living, their parents continue to have a lasting influence on their college adjustment.

Academic demands

One of the most significant stressors of the college transition is the increase in academic demands from high school level work to college level work. Chemers, Hu, and Garcia (2001) examined the relationships amongst students' academic self-efficacy,

academic performance, and personal adjustment. Academic self-efficacy was significantly and directly related to college academic performance, in that students who had confidence in their ability to perform had higher levels of academic success. Perceptions of higher self-efficacy, along with the view that college posed a challenge rather than a threat, were also related to reduced stress, less illness, and more positive personal adjustment and satisfaction with college.

Pittman and Richmond (2007) found that school belongingness (i.e., a sense of belonging both at the university currently and high school retrospectively) was positively related to academic performance. Additionally, those students with greater school belongingness felt more scholastically competent and had higher self-esteem. This association was significant even when considering social relationships with friends and parents. However, friendship quality was more predictive of internalizing behaviors than was university belongingness, with lower friendship quality being associated with feeling less connected to the university and experiencing more internalizing problems such as anxiety, depression and withdrawal.

The social context of college

When students begin college, they are exposed to a wider social network including many different types of individuals. This larger group of individuals to potentially affiliate with can lead to positive changes such as friendship formation and the formation of romantic relationships. It can also expose first-year college students to the potential negative effects of peer pressure, including pressure to use alcohol and to become involved in hazing.

One study sought to examine whether diversity on campus promoted interracial friendship. Specifically, Fischer (2008) proposed that, consistent with the contact hypothesis, individuals are more likely to develop negative stereotypes of members of other racial groups because they have limited personal interactions with these individuals. However, if a campus were diverse, individuals from minority and majority groups would interact more frequently, contributing to the breaking down of these stereotypes. Using a sample of approximately 4,000 first-time college students from the National Longitudinal Survey of Freshmen, Fischer found support for her hypothesis. Overall, as school diversity increased, friendship diversity also increased. These results suggest that exposure to larger networks of peers may result in more diverse friendship experiences than students had in high school.

Exposure to a large group of new and diverse peers also helps facilitate romantic relationship formation in college. For example, research has shown that adolescents in larger peer networks are more likely to be in a romantic relationship (Cavanagh, 2007). These romantic relationships in college are also apt to differ from the fleeting, more casual romantic relationships of early adolescence and high school. Older adolescents are more likely to maintain their romantic relationships for a longer period of time (Meier & Allen, 2009). Furthermore, these relationships tend to involve higher levels of sexual and emotional intimacy.

Although, as described above, the more expansive social networks of college can lead to positive social relationships, they can contribute to negative consequences for college students as well. For example, Borsari and Carey (2006) conducted a literature review to examine how peer relationships influence drinking behaviors in college. These

authors propose three pathways in which peer relationships affect alcohol use. The first

pathway involves a lack or breakdown of peer relationships, in which students drink due

to feelings of alienation, emotional pain and conflict with others. Another pathway, in

which peers disapprove of alcohol use or do not drink, may lead a student to be less likely

to abuse alcohol. The final pathway, which contributes to excessive drinking in college,

results when alcohol use is an integral part of the peer interactions. This pathway appears

to be more common for men (Borsari & Carey, 2006).

In college, some social groups use hazing practices to initiate new members into

the group. These groups often include sororities and fraternities, athletic teams, and a

capella groups (Keating, Pomerantz, Pommer, Ritt, Miller, & McCormick, 2005). Over

half of college students who are involved in these types of organizations experience

hazing activities that humiliate, degrade, abuse and endanger them (Allan & Madden,

2012). Almost all of these individuals (95%) do not report these hazing activities to an

authority figure.

These hazing practices are thought to promote group attitudes, reinforce the

power structure of the group, and foster dependency in group members. In a study of 138

male and 131 female college students who were members of a same-gender social group,

support was found for these functions of induction activities. That is, hazing (as opposed

to innocuous induction activities) yielded members who conformed to group pressure,

and, especially for men, led to dependence on the group and elevated perceptions of the

group's power (Keating et al., 2005).

Social adjustment: Balancing hometown and college friendships

Late adolescents who transition to college must negotiate the important developmental tasks of both maintaining close hometown friendships and developing new college friendships. One study examined the relationship between friendship quality and college adjustment, as well as the social support provided by old high school friends and new college friends during the first year of college (Swenson, Nordstrom, & Hiester 2008). Results indicated that the relationship with the student's best high school friend was especially important during the first few weeks of the first semester, and was significantly related to the emotional-personal adjustment and institutional attachment categories of college adjustment. The results further showed that the significance of the high school friendship relationship deteriorated over time, as relationships with new college friends increased in importance and were more strongly related to college adjustment. Best college friendships were particularly associated with the academic adjustment, social adjustment and institutional attachment categories of college adjustment during this time period. Although this investigation found differences in high school and college friendships, it did not take into account other factors, such as social anxiety symptoms, which may influence how an individual's friendships are experienced across the college transition. The current study therefore examined the influence of social anxiety symptoms on these processes.

The role of high school friends, it seems, changes across the transition to college. For example, research has shown that high school friendships tend to deteriorate over the first year of college, but that this deterioration is moderated by the level of communication with the high school friend (Oswald & Clark, 2003). Specifically, by the

end of the first year of college, approximately half of high school best friendships are downgraded to close or casual friendships, and individuals report that these relationships become more costly to maintain with decreasing rewards. Oswald and Clark found that the likelihood of the high school best friendship declining did not vary as a function of the physical proximity to the student's high school best friend.

However, those individuals who communicated frequently with their high school best friend did not experience a decrease in satisfaction or commitment to the relationship, and they were more likely to remain best friends. Furthermore, individuals who successfully maintained these relationships in college were less lonely in the spring compared to those whose high school friendship became only a close or casual friendship (Oswald & Clark, 2003). Although the Oswald and Clark (2003) study found that communication is important in maintaining the high school friendship, the current study sought to elucidate which specific electronic communication modalities contribute most to this friendship maintenance.

This process of modifying high school friendships to successfully fit in the first-year college student's new routine is delicate. Indeed, some researchers describe "Friendsickness," defined as "preoccupation with and concern for the loss of or change in precollege friendships" (Paul & Brier, 2001, p. 77). Paul and Brier (2001) found that over half of their sample expressed moderate to high friendsickness, with higher levels of friendsickness being related to poorer college adjustment (measured as loneliness, self-esteem, discrepancy between college expectation and reality, and number of precollege and college friends). Friendsick first-year students also had more doubt about their ability

to make close, trustworthy friends in college, and were likely to find their actual social experiences in college to be different from their precollege expectations.

Forming new friendships in college is also critical, with one study of Canadian first-year students reporting a significant positive relationship between the quality of new college friendships and college adjustment (Buote et al., 2007). Furthermore, these researchers found that although both friendship quality and friendship quantity were predictors of college adjustment, friendship quality was a stronger predictor. Additionally, the correlation between friendship quality and college adjustment was higher for those students who resided on campus versus commuter students.

These changing social contexts for college students are related to their college adjustment, and also to their well being more generally. Specifically, across the college transition, individuals are more likely to experience physical health problems, engage in excessive alcohol use, and may experience negative peer experiences such as hazing. These individuals are also negotiating the demands of maintaining their close hometown friendships, while forming new, close college friendships. College students are increasingly using electronic communication technologies to tackle these various social challenges, and the current study looked specifically at what role these communication modalities play in the navigation of these challenges.

Electronic Communication

The Internet is an international and nationwide phenomenon with most Americans using the Internet for many different aspects of life. Ninety-five percent of teenagers use the Internet, and this percentage has remained consistent since 2006 (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013). Seventy-three percent of teenagers have access to a

smartphone, and among these teens, 91% go online daily or more frequently than once a day (Lenhart, Duggan, Perrin, Stepler, Rainie, & Parker, 2015). This has increased dramatically even since 2011, when 23% of teenagers owned smartphones (Madden et al., 2013). Technology use is truly changing at a rapid pace.

At least half of preschoolers under age 6 years have experience using computers, with their first experience often being on their mothers' lap (Calvert, Rideout, Woolard, Barr, & Strouse, 2005). This number continues to increase with the introduction of tablet computers and smartphones (Holloway, Green, & Livingstone, 2013). For example, in the United Kingdom, it is estimated that 66% of 3-4 year olds and as many as 87% of 5-7 year olds use the Internet. Very early use of computers is impacted by developmental factors such as fine motor control and language development; however, it was found that children typically began using computers around age 2 years, with mouse control emerging around age 3.5 years (Calvert et al., 2005). Despite the fact that even very young children use computers, adolescents have been called the "defining users on the Internet" because they have historically used it more than other age groups for interpersonal communication (Lenhart et al., 2015; Madden & Rainie, 2003; Peter, Valkenburg, & Schouten, 2005).

Numerous types of online communication are currently in use with new types emerging frequently. Some of these include email, instant messaging, text messaging, chat rooms, bulletin boards, blogs, social networking utilities, video or photo sharing, massively multiplayer online computer games (MMOG), and virtual worlds (Subrahmanyam & Greenfield, 2008). These various communication methods can be utilized on different types of electronic devices (e.g., computers, cell phones) and can

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serve different functions. As technology advances (e.g., the invention of the iPad and smartphones), the online communication possibilities change as well.

There are certain features that are characteristic of all types of electronic communication. Boase and Wellman (2006) described the social affordances of the Internet (i.e., how its technical characteristics affect its impact and possibilities for connecting individuals). They explain that the Internet is largely distance independent in use and cost and can connect individuals from vast geographic regions. Internet communication is also very rapid; one can send messages that will be received very quickly. A user can also send messages to many users at once. Furthermore, Internet communication is asynchronous in that users can send and receive messages at different times. Finally, the text-based nature of Internet communication can reduce hierarchies based on physical characteristics such as gender, age, and physical appearance.

Social networking sites are a form of electronic communication that has increasingly gained popularity. Seventy-three percent of online adults use social networking sites, and 42% use multiple social networking sites (Duggan & Smith, 2013). Indeed, college students seem to log-on to social networking sites daily, despite how busy they are (Pempek, Yermolayeva, & Calvert, 2009). However, the change has occurred at such a rapid pace (and indeed may decline at an equally rapid pace), making it very difficult for research to be current. Even within the realm of social networking a change has occurred from popularity of MySpace to a greater popularity of Facebook (Patchin & Hinduja, 2010). The present study sought to investigate current patterns of social networking site usage and their relationship with factors such as friendship quality and socioemotional adjustment.

The role of the Internet in social life

Electronic communication differs from in-person communication in key ways that impact social interactions. Two theories, the Social Presence Theory and the Social Information Processing Theory, attempt to explain the nature of these electronic communication processes. Social Presence Theory posits that individuals formulate feelings about interaction partners based on a number of different communication channels. Electronic communication (here referred to as computer-mediated communication) eliminates nonverbal cues like physical appearance and facial expressions, and thus has lower social presence, which can impede relationship formation (Cheng, Chan & Tong, 2006). On the other hand, the Social Information Processing Theory states that without nonverbal cues such as facial expressions, people will adapt and create new context clues. For example, in July 2014, 250 new emojis (i.e., pictographs that illustrate both emotions and a variety of other objects such as a camera or a cat) were released, both showing the popularity of this electronic communication tool, and expanding it (Vella, 2014). Therefore, individuals will continue to change the ways in which they communicate to fit the context of their online social lives.

A number of theories have been proposed to explain the influence of electronic communication on sociability and well-being. Research indicates that these theories may work together to describe how Internet use differentially affects different types of individuals. One of the first of these theories, the Displacement Hypothesis, argues that because time is a zero-sum construct, time on the Internet necessarily detracts from offline social relationships and therefore has a negative effect on the individual because online relationships are not as enriching as offline ones. In a longitudinal study of

children and adolescents, Lee (2009) found partial support for this model. There was a negative correlation between computer use and time spent with parents, although this did not affect the quality of the relationship with parents. Computer use did not, however, impact time spent with friends. This makes sense developmentally as adolescents begin to spend less time with parents and more time with peers (Berndt, 1982). This is evidently happening in adolescents' online interactions as well.

The Increase Hypothesis argues that the Internet expands and broadens the social network of individuals. A more recent adaptation of this idea, the communitarian hypothesis, explains that the Internet allows individuals from diverse geographic areas to communicate and become connected. Communities, therefore, become diffuse and virtual. Alternatively, the Rich-Get-Richer Hypothesis states that those people who are already very socially skilled and connected will become even more so with the use of the Internet. The opposite is true for those who are less socially skilled and less successful in the peer group, who would be likely to feel left out in online communication. Lee (2009) found support for the Rich-Get-Richer Hypothesis with those higher on initial sociability becoming even more sociable with Internet use. The current study examined the Rich-Get-Richer Hypothesis within the context of the college transition. Specifically, it explored whether hours of electronic communication use moderates the relationship between hometown friendship quality and college friendship quality, such that individuals who are socially skilled (i.e., high hometown friendship quality), and who use electronic communication more, will become even more socially skilled (i.e., high college friendship quality).

Other theorists believe that the anonymity of the Internet allows some individuals who would not be able to form relationships face-to-face to self-disclose with less risk: the Social Compensation Hypothesis. This model indicates that those individuals with social anxiety or who are part of a stigmatized group may benefit from the ambiguity created by the Internet. In addition to these theories, some authors have argued that electronic communication does not have a main effect on any variables but instead mediates other factors (Peter et al., 2005). For example, instead of a direct influence of sociability on online friendships, Peter and colleagues propose that this relationship is mediated by type and frequency of electronic communication use.

A large study of Dutch preadolescents and adolescents sought to examine the Rich-Get-Richer and Social Compensation Hypotheses (Valkenburg & Peter, 2007). Generally, these researchers found some support for the Rich-Get-Richer Hypothesis in that socially anxious adolescents used the Internet less than nonsocially anxious adolescents. However, the socially anxious adolescents in their sample were more likely to report that the Internet is a more effective medium for disclosing intimate information than in-person communication. This, therefore, led these anxious adolescents to be more likely to use Internet communication, and was related to an increase in their closeness to friends, which lends some support for the Social Compensation Hypothesis. The current study investigated the Social Compensation Hypothesis by exploring whether hours of electronic communication use mediates the relationship between social anxiety symptoms and college adjustment.

The relationship between Internet use and psychological well-being may also differ for undergraduate students depending on what year they are in college. In a study

of undergraduate students (35 first-year students and 35 junior and senior students), researchers explored the relationships amongst Facebook use, self-esteem, and college adjustment (Kalpidou, Costin, & Morris, 2011). First-year students with a greater number of Facebook friends reported lower emotional adjustment in college. First-year students also reported having a stronger emotional connection to Facebook than upper-class students did. For upper-class students, having an emotional connection to Facebook was related to lower self-esteem. The authors posit that first-year students may use Facebook as a stress coping mechanism, while most upper-class students are using Facebook to strengthen their social networks.

Benefits of electronic communication use

A major benefit of the Internet is that it can be used as a communication tool to supplement existing offline friendships. Using the Internet, individuals can quickly and easily communicate with friends, regardless of time or location. A study of Italian early adolescents examined students' daily communications with their friends and various outcomes (Baiocco, Laghi, Schneider, Dalessio, Amichai-Hamburger, Coplan, Koszycki & Flament, 2011). The investigation involved 622 adolescents (314 boys) ages 11-16 years (mean age=13.16 years) who completed daily logs of their contacts with their friends such as via school, after school, online, telephone, or chat room. The researchers also had the adolescents complete measures of friendship quality regarding their best friendships. They found that boys had less daily contact with their friends than girls did overall. There was a significant difference in friendship quality for friendships that were a combination of in-person and electronic contact. Specifically, these relationships were of higher quality than those that utilized in-person or electronic contact only. However, the

direction of this effect remains unclear. It is possible that closer friends have greater

motivation to use a variety of communication channels. Alternatively, friends that use

many communication channels may become closer. To further examine these findings,

the current study investigated how different types of communication (including in person

and electronic) are related to both friendship maintenance (i.e., hometown friendships)

and friendship formation (i.e., college friendships) in a sample of American late

adolescents.

Valkenburg and Peter (2009), in study with Dutch adolescents, found that instant

messaging use between friends was related to higher friendship quality. This relationship

was mediated by intimate self-disclosure. However, friendship quality did not predict

instant messaging use, indicating that it was not a necessary process for positive

friendship quality. Overall, adolescents who used instant messaging more, and self-

disclosed intimate information to their friends more, had higher friendship quality. A

large, short-term longitudinal study of Canadian adolescents also revealed that using

instant messaging was related to increased friendship quality (Blais, Craig, Pepler, &

Connolly, 2008). Interestingly, these researchers found that Internet use at the beginning

of the study predicted friendship quality one year later but the reverse direction was not

significant. In other words, the choices that adolescents made regarding Internet use

preceded changes in their relationship quality.

In a study involving adolescents, ages 12 to 18 years, Lee (2009) obtained some

support for the Displacement Hypothesis. Specifically, time that adolescents spent online

for recreation or studying was negatively related to time spent with friends. However,

contrary to the Displacement Hypothesis, time spent online specifically for

communicating with friends had no impact on time spent with friends in face-to-face interaction. Consistent with the Rich-Get-Richer Hypothesis, those individuals with strong interpersonal ties spent more time communicating online, and this increased the strength of their friendship ties.

A large study of Dutch adolescents explored the relationship between Internet communication and well-being overall (Valkenburg & Peter, 2007). Initially, these researchers found that Internet communication (measured by reported frequency of using chat or IM) was related to a decrease in well-being (measured by a 5-item Satisfaction with Life scale). However, Valkenburg and Peter explored their data further using structural equation modeling to examine whether mediating effects were present. They found that with the inclusion of closeness to friends (measured by a 4-item peer attachment inventory) and frequency of taking with strangers online, the direct negative relationship was no longer significant. Closeness to friends also mediated the relationship such that Internet communication showed a positive relationship with well-being. Therefore, it appears that friendship characteristics may play an instrumental role in how adolescent mental health is related to Internet use. This study did not consider problematic Internet use, which is defined as excessive, maladaptive Internet use that interferes with an individual's functioning. The current study explored whether friendship experiences play a moderating role in associations of well-being with problematic Internet use.

Using instant messaging may also provide a protective function against psychopathology. Selfhout, Branje, Delsing, Bogt, and Meeus (2009), in a large sample of Dutch adolescents, found that adolescents with low quality friendships who used the

Internet for non-communication purposes became more depressed over time. However, individuals with low quality friendships who used the Internet for instant messaging decreased their depressive symptoms over time. Instant messaging may help them feel more connected and reduce their depressive feelings. Unfortunately, no protective effect was found for social anxiety symptoms. That is, instant messaging did not predict a decrease in social anxiety symptoms over time.

Desjarlais and Willoughby (2010) also examined the role of Internet communication in friendships. They found that girls who used the computer more with friends [this computer use was defined as computer activities with friends either in person (i.e., sitting side-by-side) or online, and could include playing computer games, instant messaging, or social networking sites] demonstrated higher friendship quality than girls who rarely used the computer with friends. No direct effect was found for boys. Boys who were socially anxious, on the other hand, and used the computer more with friends, had higher friendship quality than socially anxious boys who rarely used the computer with friends. Perhaps use of the computer with friends can help facilitate social interaction for socially anxious boys, and therefore increase their friendship quality. In this study, computer use with friends was poorly defined and included both recreation activities (e.g., playing computer games) and social electronic communication (e.g., instant messaging). These different types of activities may lead to varying outcomes. The current study specifically focused on electronic communication to examine the relationship between online social interaction and friendship quality more concisely.

In addition to instant messaging, adolescents use social networking sites to communicate with existing friends. Social networking sites are characterized by a "one to

many" communication style in which messages reach many "viewers" at one time. Social networking sites recognize non-anonymous connections between individuals. Hsu, Wang, and Tai (2011) investigated Facebook (one of the largest social networking sites) use among university students in Asia. They found that users gain the most familiarity with new friends and acquaintances. Students tend to interact with new friends and acquaintances on Facebook through more superficial means such as playing games together. On the other hand, users tend to interact with average and close friends in more personal ways such as through messages or sharing photos. Therefore, most students seem to use Facebook to communicate with friends from their offline world and to solidify what might otherwise be ephemeral, temporary acquaintanceships. One limitation of the Hsu et al. (2011) investigation is that it did not examine gender differences. Thus, the current study explored whether males and females prefer different types of electronic communication modalities (e.g., more superficial social networking site usage vs. more intimate messaging communication), and whether these modalities are differentially related to friendship quality.

A recent study of eighty-eight undergraduate students (ages 18-28 years) explored the role of Facebook, electronic communication and well-being (Manago, Taylor, & Greenfield, 2012). Results indicated that participants in this investigation had an average of 440 Facebook friends (range= 29 to 1,200 friends; median= 370), with many of these individuals being acquaintances and activity-based friends. Participants often updated their status to describe their current emotional state, and there was a positive relationship between the estimated audience size for these updates and self-esteem. Finally, Manago and colleagues found that participants who more strongly believed that Facebook was a

useful tool for obtaining social support were more likely to have a higher proportion of Facebook connections that they maintained. In seems, therefore, that undergraduate students strive to have large Facebook networks, and that many individuals view these Facebook networks as a source of social support and esteem.

Subrahmanyam, Reich, Waechter, and Espinoza (2008) obtained similar results in their study of university student social networking site use. These researchers found that most students reported using social networking sites to keep in touch with friends they do not see often, or they had a profile because all of their friends did. About one-third of the sample reported that they used social networking sites to make plans with friends they see often. For those adolescents in the sample with a social networking site profile, the majority reported that it had had no impact on their friendships. Only about one-fifth reported that it had made them feel closer to their friends. For those adolescents in the sample without a social networking site profile, the majority reported that it had not made any difference in their life. However, about one-fifth felt somewhat cut off from their face-to-face friends because they did not have a social networking site profile. The current study sought to extend these results by exploring how college students differentially use social networking sites (and other forms of electronic communication) with friends they do not see often (i.e., hometown friendships) and friends they do see often (i.e., college friends), and how this is related to friendship quality.

Consistent with the findings of the Manago et al. (2012) and the Subrahmanyam et al. (2008) studies, Pempek and colleagues (2009) found that the most frequently cited use for Facebook in a sample of undergraduates was to keep in touch with friends. They reported that 65% of freshmen and sophomores at a university used Facebook to

communicate with friends from high school or friends at another school. However, this dropped dramatically to 39% for junior and senior year students. It seems that as students progress through college, the relationships they have with their high school friends begins to shift.

Another study sought to investigate the potential protective role that electronic communication with hometown friends could play for first-year college students (Ranney & Troop-Gordon, 2012). Participants reported how many distant friends (i.e., friends not seen in person regularly, but with whom they communicate regularly online) they had, and how often they communicated with them. They also rated friendship quality, depression, anxiety, and college adjustment. Results provided support for the Social Compensation Hypothesis in that students with face-to-face friendships that were low in positive qualities and high in conflict were protected from psychological distress if they frequently used electronic communication with distant friends. Students who lacked high-quality face-to-face friendships and were more depressed also used electronic communication with distant friends more over time. Therefore, it appears that electronic communication can help maintain distant friendships and bolster well-being. Results also indicated, however, that when distant friendships maintained by electronic communication were low in quality (i.e., unsupportive or high in conflict), psychological well-being and college adjustment were lower. It is unclear from this study how this compensation of electronic communication for in person (e.g., college friendships) may be related to problematic Internet use. Therefore, the current study investigated similar factors, but extended these findings to examine which of these variables may lead a

student towards problematic use, and which may be protective against this maladaptive pattern of Internet use.

The way in which university students use electronic communication with peers on campus is also influential in adjustment. A study of 338 first-year college students examined how different aspects of Facebook use related to college adjustment across the college transition (Gray, Vitak, Easton, & Ellison, 2013). Results showed that the number of Facebook friends a participant rated as a "fellow student" predicted social adjustment, while the number of friends rated as "actual friends" did not predict social adjustment. Interestingly, these researchers found that using Facebook to coordinate academic work (e.g., group projects, discuss class) did not directly predict social adjustment, but was rather indirectly related through the students' perception of bonding social capital at the college (i.e., access to emotional and social support). These results indicate that in-person, college friendships play a unique and important role in the adjustment of first-year college students.

Negative effects of electronic communication use

Although use of the Internet affords individuals extensive opportunities for interpersonal communication and information gathering, many studies indicate negative outcomes associated with Internet use. Generally, there are mixed findings on the relationship between Internet use and psychological well-being. To clarify this relationship, Huang (2010) conducted a meta-analysis to examine the Displacement versus Augmentation (i.e., Rich-Get-Richer) Hypotheses. The meta-analysis also sought to investigate the possible moderating effects of participant age and gender. Overall, when considering 40 studies (with a total of 21, 258 participants), high Internet use was

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associated with a reduction in psychological well-being (Fixed effects model: -.0504, random-effects model: -.0385). There was no moderating effect of age or gender, although this may have been due to the small number of studies included that specified these variables.

Several investigations have examined the mechanisms that may contribute to findings that greater Internet use is associated with lower psychological well-being. For example, Chou and Edge (2012) found that the Internet, and social networking sites (e.g., Facebook) in particular, can lead late adolescents into misconceptions about the quality of their peers' lives. In addition, computer-mediated communication lacks many of the subtle cues that people use in face-to-face communications to form impressions of those around them (e.g., nonverbal expressions). Since networks of "friends" on Facebook expand faster than friendship networks in real-life, users cannot interact closely with all of their Facebook friends. This leads users to employ heuristics when assessing friends' profiles. For example, with the availability heuristic, some users may get a distorted view of their peers' lives, especially compared to their own reality, because most people post positive life events, smiling photographs, and other media that give their network the impression that they are having a good life. The correspondence bias is utilized when an individual assumes that actions and words reflect personality or stable factors, instead of transient environmental factors. When combined with the availability heuristic, the correspondence bias can lead users to assume that their friends are steadily happy.

To assess this possibility, Chou and Edge (2012) asked 425 undergraduate students if they thought that others had a better life, if others were happier, and if life is fair. They found that those individuals who spent more hours on Facebook, and had more

Facebook friends that they did not personally know, thought that others had a better life than them. The longer individuals had used Facebook, the more likely they were to agree that others were happier than them, and they disagreed more with the idea that life is fair. Conversely, those individuals who spent more time with their friends in-person agreed less that others had better lives. Both the availability heuristic and the correspondence bias seem to have reduced effects (i.e., they agreed less that others have a better life and are happier) when individuals spent more time going out with their friends in-person. Presumably, this is because they know more about both the positive and negative events of others' lives in these situations.

A 2006 study of Dutch adolescents who used a social networking site investigated the relationship between Internet use and well-being (Valkenburg, Peter, & Schouten, 2006). These researchers found that when the teens received positive feedback on their profile their self-esteem increased. While 78% of their sample always or predominantly got positive feedback, 7% of their sample always or predominantly received negative feedback, and this was linked to a decrease in self-esteem.

Another study of undergraduate students sought to determine the relationship between electronic media use and academic and social outcomes (Jacobsen & Forste, 2011). Specifically, these researchers were interested in the function of electronic media in multi-tasking, since use of electronic media is no longer solely a leisure activity as it once was. The average age of their participants was 19 years, with an average GPA of 3.28. Jacobsen and Forste asked participants to complete a daily activity log for three days. Results indicated that students spent an average of 52 minutes per day on social networking sites such as Facebook, about 30 minutes emailing, and about 10 minutes

chatting or IMing. Approximately two-thirds of the students reported using electronic media while in class, studying, or while completing homework. For every hour of electronic media use, GPA declined between .05 and .07 points. However, for every hour of offline social interaction, GPA also declined about .02 points. These findings were statistically significant, but represent a small decline in GPA. Contrary to the Displacement Hypothesis, for every hour of social networking site usage, in-person social interactions were increased between 10 and 15 minutes. It seems that Internet use may facilitate social contact, but it may also negatively impact academic performance in college. However, the data for this study were collected in 2008, and it is likely that time spent using the Internet has increased dramatically for college students. Although the current study did not focus on the relationship between electronic communication use and academic performance, it did collect updated, current information on time spent using electronic communication.

Another study investigating Internet use and academic grades and psychosocial adjustment obtained similar results (Chen & Tzeng, 2010). These researchers found that heavy Internet users spent an average of 53.59 hours per week on the Internet with the top uses being to make friends and chat (12.73 hours), search for academic information (9.96), and play online games (9.83). Non-heavy users spent an average of 12.30 hours per week using the Internet, with their top uses being to make friends and chat (2.91 hours), search for academic information (1.8 hours), and search for nonacademic information (2.32 hours). The differences between heavy and non-heavy users in hours spent on these activities on the Internet were all significant.

Chen and Tzeng subsequently created profiles of the different users based on time use and activity use. Group FH1 was female heavy users who spent a lot of their time seeking information and chatting. These individuals had the highest average academic grades of the female profiles, but also had higher depression scores than the FNH group (female non-heavy users). Group FH2 was female heavy users who spent a great deal of time seeking information and chatting, as well as a lot of time shopping online. They had higher average depression scores than the FNH group, but there were no significant differences in their academic grades, loneliness, or physical illness. The final female profile group (FH3) consisted of heavy users that liked to seek information and chat, but also played a lot of online games. They had the lowest average academic grades (lower than FNH, as well as both FH1 and FH2) and the highest average scores on loneliness, physical illness, and depression.

The profiles for the males were somewhat similar to the female profiles discussed above. Group MH1 consisted of male heavy users who spent a great deal of time playing games online. They had the lowest average academic grades [lower than both MNH (male non-heavy users) and MH2], but there were no significant differences in their psychological adjustment. Group MH2 was male heavy users who spent a lot of time information seeking and chatting. They had the highest average academic grades among the male profiles, but their grades were not significantly different from the MNH group. The final male profile group (MH3) spent a great deal of time seeking information and chatting, as well as playing online games. They had the most hours spent online overall. There were no significant differences in their academic grades, but they had higher scores on physical illness and depression than individuals in the MNH group. It therefore seems

that heavy Internet use relates to psychosocial outcomes differently depending on activity preference and gender.

Social networking sites can also put a strain on already existing relationships due to the vast amount of information that is available about friends (Tokunaga, 2011). Three characteristics of social networking sites that can make negative events particularly likely are the equivocal nature of context-specific norms, the ambiguous notion of friends, and reduced social presence. A descriptive, qualitative study of 197 undergraduate students (112 females) who had experienced a negative social networking site interaction that strained a relationship was conducted by Tokunaga (2011). Participants were asked, in an open-ended manner, to describe what had happened in a real-life negative social networking site interaction, and responses were coded. The top three negative events that occurred were a friend request being declined or ignored, a public message or ID tag being deleted, or a person not appearing, or being ranked lower than expected, on a Top Friends application. These negative events, along with others that occur on social networking sites, can spill over into in-person interactions with friends and damage the quality of the friendship.

Another research group was interested in exploring the role that college students' use of electronic communication with their parents had on their loneliness, attachment, and relationship quality (Gentzler, Oberhauser, Westerman & Nadorff, 2011). To do this, these researchers had 211 students (75% women) between the ages of 18-22 years (mean age= 19.46 years) report on their communication technology (e.g., email, text, phone) use, loneliness, attachment, and relationship quality. They found that all of the students in their sample communicated with their parent in-person or by phone, and two-thirds also

reported using email and text. Only about one-quarter of their sample used social networking sites to communicate with their parent. However, higher use of social networking sites to communicate with a parent was related to greater loneliness and more anxious attachment. On the other hand, more frequent phone communication was linked with positive qualities of the relationship such as intimacy, support, instrumental aid, and greater satisfaction. It may be, therefore, that college students who use social networking sites with parents (which appears to be non-normative) communicate this way because they are lonely or because they do not have friends to communicate with in this way.

Problematic Internet use

For some adolescents, Internet use becomes excessive and has negative consequences for their psychosocial functioning. Researchers have proposed that a general Internet Addiction (IA) or Problematic Internet Use exists and has serious psychological consequences for individuals, although research has not yielded conclusive information at this point (Beard, 2005; Moreno, Jelenchick, Cox, Young, & Christakis, 2011; Young, 1998).

When Internet-addicted teenagers use the Internet for many hours each day it can lead to both social and physical health problems. Some research has indicated that heavy Internet use is associated with an overall reduction in well-being (Huang, 2010). Specifically, these teens can become more isolated from friends and may have conflict at home if their parents attempt to set limits on their Internet use. The potential health problems associated with sitting in front of a computer for many hours include neck strain, backaches, and more serious problems such as obesity from lack of activity.

Some studies in the United States have found overall prevalence rates of 6% for Internet addiction (Greenfield, 1999). University students have been found to have a prevalence rate of approximately 50% for Internet abuse (defined as at least one major life impairment) and 25% for Internet dependence (defined as at least three major life impairments; Fortson, Scotti, Chen, Malone, & Del Ben, 2007). In a large study of adolescents in 11 European countries, the prevalence rate was revealed to be 4.4% overall (Durkee, Kaess, Carlie, Parzer, Wasserman, et al., 2012). This prevalence rate varies by country, however, highlighting the importance of investigating Internet addiction specifically in the United States. Overall, this research has shown that Internet addiction is clearly a widespread and increasing problem.

Despite the growing problem of Internet addiction amongst adolescents, research has failed to clarify which individuals are most at risk for developing it (Fioravanti, Dettore, & Casale, 2012). Some researchers have been very interested in the relationship between heavy Internet use and social anxiety (Lee & Stapinski, 2012). The cognitive-behavioral model of problematic Internet use describes how individuals use the Internet to regulate their negative mood. They then find themselves attached to the social benefits the Internet can provide, especially perceiving more control online than offline in their interpersonal relationships. This can lead to excessive use, compulsions to use, withdrawal symptoms, and negative consequences for the individual offline in the social, psychological, or occupational realms. Online communication may be a safety behavior for individuals with social anxiety in that there is reduced threat and anxiety in communicating through this medium. Additionally, success in the online communication realm may perpetuate avoidance of in-person communication situations.

A 2012 study by Lee and Stapinski examined factors that may lead individuals to problematic Internet use, including loneliness, depression, substance addiction, shyness, and aggression, that may isolate these individuals in their everyday lives so that they search even more for connectedness online. The participants in this study were 338 adults in Australia (134 men) with a mean age of 29.75 years (range 18-74 years). These individuals reported on their Internet use, depression, anxiety, stress, social anxiety, fear of negative evaluation, relationship quality, problematic Internet use, preference for online social interaction, safety behaviors, and perceived probability and consequences of threat.

Results of the study indicated that social anxiety was associated with problematic Internet use, and this relationship was linear (i.e., the greater the social anxiety, the more problematic Internet use). This relationship was significant even when controlling for general anxiety and depression. Lee and Stapinski also found that those with higher social anxiety reported communicating more online than in-person, but they did not perceive better quality for these online relationships. Social anxiety was associated with lower quality relationships overall, however, with low levels of breadth, depth, predictability, and commitment for in-person relationships. This study did not take into account the potential protective factor of having a high-quality friendship, which is one way that the current study extended these findings.

Individuals with higher social anxiety perceived more control and less threat in their online interactions versus their in-person interactions. The perceived probability of threat for in-person interactions significantly mediated the relationship between social anxiety and problematic Internet use. An individual's tendency to use safety behaviors

partially mediated the relationship between social anxiety and preference for online social interactions. In-person communication avoidance in the past week was also significantly associated with preference for online social interactions, even after controlling for the level of avoidance explained by fear of negative evaluation. It appears that socially anxious individuals perceive that they have more control over online communication, and that this is safer than their in-person interactions; however, this aids in their avoidance and can lead to problematic Internet use.

A study using a large sample of Korean adolescents revealed an association between depression and Internet addiction (Ha, Kim, Bae, Bae, Kim, Sim, Lyoo, & Cho, 2007), and others have found that males are more likely to become addicted than females (Lam, Peng, Mai, & Jing, 2009). Adolescents may be at particularly high risk for developing Internet addiction as they have been shown to be at elevated risk for behavior addictions (Christakis, Moreno, Jelenchick, Myaing, & Zhoud, 2011). A large study in the United Kingdom (participants ages 16-51 years) obtained similar results (Morrison & Gore, 2010). Specifically, Internet-addicted participants were more depressed (direction of effects unclear), males were more likely to be classified as addicted, and the younger participants were also more likely to be classified as addicted. Although the relationships between Internet addiction (i.e., problematic use) and depression, gender, and developmental period have been established, they have not been explored in depth. Examining these relationships more closely, with a sample of late adolescents, was a primary goal of the current investigation.

Certain types of Internet use have also been linked to loneliness (Morahan-Martin & Schumacher, 2003). In a study using a sample of undergraduate students, the authors

wished to examine two contrary hypotheses: the first that excessive Internet use causes loneliness, and the second that lonely individuals are more apt to use the Internet excessively. Results of the study indicated that individuals who reported higher levels of loneliness used the Internet more, and were also more likely to use it for emotional support. They reported enjoying the anonymity of Internet communication, and preferred it to in-person communication. They also used the Internet to help regulate their moods. Specifically, highly lonely individuals were likely to spend time online when they felt isolated, depressed, or anxious. Consequently, these individuals were also most apt to report that Internet use was causing disturbances in their real-life functioning, including interfering with social activities and work, and increasing feelings of guilt.

A study was conducted to investigate the relationship between developing Internet addiction and cognitive functioning in adolescents (Park, Park, Choi, Chai, Lee, Lee & Kim, 2011). The researchers hypothesized that since adolescents have an immature frontal cortex, they may be more likely to become addicted to the Internet. Additionally, those individuals with Attention-Deficit Hyperactivity Disorder, or other frontal lobe control dysfunction, may have a higher probability of developing an Internet addiction. To explore this relationship, Park and colleagues used intelligence tests (the Korean versions of the WISC and WAIS) with 13 female middle school students and 46 male technical high school students who met Internet Addiction criteria (via Young's Diagnostic Questionnaire for Internet addiction).

Park and colleagues found that the average age at which their Internet-addicted participants began to display problematic Internet use was age 9.72 years. In the Internet-addicted group, the largest proportion was addicted to gaming. Interestingly, those who

were Internet-addicted scored significantly lower on the Comprehension subtest than the non-addicted control group. This may indicate that, similar to the previous study, these individuals were impacted in their socio-emotional development including their ability for reality testing, handling social problems, and their moral development. Additionally, for the middle school girls, the Internet-addicted individuals had significantly worse performance on Vocabulary. It seems, therefore, that Internet addiction is related to various aspects of cognitive functioning in adolescents although the direction of these effects remains unclear.

Electronic communication technologies are playing an increasingly central role in adolescents' social lives. It is critical to consider how these communication technologies might impact adolescents' friendship experiences (i.e., maintaining hometown friendships and developing new college friendships), adjustment to college, and their psychological well-being more generally, including problematic Internet use.

The Current Study

Almost all teenagers use the Internet, and an increasing number are using smartphones to communicate (Madden et al., 2013). It is therefore a crucial task for developmental psychology researchers to determine how adolescents are using these technologies with their friends, and what impact such use may have on an individual's psychological well-being. It is also important to understand the conditions that are related to non-normative, problematic Internet use, and what the consequences of this are for an individual.

Despite some quality research that has been conducted on the role of electronic communication technologies in late adolescents' friendships, the rapid pace at which

technologies are advancing creates an environment in which research becomes quickly outdated. Additionally, many of the studies on this topic have been conducted outside of the United States (e.g., Baiocco et al., 2011; Valkenburg & Peter, 2009), and currently there is limited information regarding whether American adolescents use the Internet in the same way in their friendships, and with the same consequences, as adolescents from other cultures. Furthermore, much of the existing research has been conducted within academic fields that have not considered a psychological perspective, for example, the communications field (Lee, 2009; Valkenburg & Peter, 2009) and the education field (Chemers et al., 2001; Swenson et al., 2008). Thus, a program of research (Dieter, 2014; Dieter, Hord, Baroni, & Erdley, 2013; Dieter, Hord, Baroni, & Erdley, 2012) was conducted to help establish current indexes of these behaviors within the field of psychology, using an American sample, and to shape the current study.

Program of research

In preparation for the execution of the present investigation, preliminary research was carried out to explore the role of electronic communication processes in college students' friendships, adjustment, and well-being. These studies examined how hometown and college friendship experiences were related to college adjustment, depressive symptoms, and social anxiety symptoms, as well as whether there are gender differences in the use of electronic communication modalities and how use patterns relate to friendship quality.

<u>Study 1</u>

In the initial study (Dieter et al., 2012) 254 undergraduate participants ages 18-30 years completed the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996),

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the College Freshman Adjustment Scales (Brazziel, 1981), the Friendship Quality Questionnaire-Revised (FQQ-R; Parker & Asher, 1993), the Social Anxiety Scale for Adolescents (SAS-A; La Greca & Lopez, 1998), and a questionnaire assessing reported frequency (in hours per week) of communicating with friends via various communication methods. These measures were completed online at both the beginning and the end of the fall semester. The study was run for two consecutive years to yield a larger sample.

Given previous research that found that forming new friendships at college can positively impact adjustment, particularly if the student lives on campus rather than commutes (Buote et al., 2007), one set of analyses utilized only participants who reported traveling to their hometown once a month or less (n= 95, 67 females), and only one time point (Time 1). Four different groups of students were created based on scores above ("High") or below ("Low") the mean for friendship quality of hometown and college friends (i.e., HighCollege/HighHome, HighCollege/LowHome, LowCollege/LowHome, LowCollege/HighHome).

The HighCollege/HighHome ($p<.01$) and the HighCollege/LowHome ($p<.05$) groups were significantly better adjusted to college than the LowCollege/LowHome group. These findings suggest that having a high quality college friendship, regardless of hometown friendship status, can aid with college adjustment. The LowCollege/LowHome group was significantly more depressed than the HighCollege/HighHome group ($p<.05$) and had higher levels of general social anxiety symptoms ($p<.05$) and fear of negative evaluation ($p<.05$). These results suggest that greater general social anxiety symptoms and fear of negative evaluation make it difficult to form high quality friendships regardless of context.

The LowCollege/HighHome group was significantly more socially anxious about new situations than students in both the HighCollege/HighHome ($p<.05$) and HighCollege/LowHome ($p<.05$) groups. Thus, it appears that regardless of friendship status at home, social anxiety symptoms play a key role in whether students are able to develop high quality friendships in college. The results of this study were expanded upon in the current study, in that electronic communication patterns were explored as the process that may enable students with poor hometown college friendship quality to form high quality friendships in college (i.e., the HighCollege/LowHome group).

Other analyses utilized the larger data set (n=254, 187 females), and both time points. The purpose of this short-term longitudinal study (Dieter et al., 2013) was to examine gender differences in the relations between the types of communication late adolescents use as they begin college and the quality of their hometown and college friendships several months later. A series of ANOVA's examined the relations of frequency of use of each communication modality at Time 1 (T1) to the quality of hometown vs. college friendships at Time 2 (T2).

With regard to hometown friendships, results indicated that greater social networking site usage was significantly related to higher hometown friendship quality for males ($p<.05$) but not females. Greater phone usage was significantly related to higher hometown friendship quality for females ($p<.01$) but not males. Greater text communication at T1 was significantly related to higher hometown friendship quality at T2 for both males and females ($p<.05$). Finally, email and in-person communication at T1 were not significantly related to hometown friendship quality at T2 for either males or females.

With regard to college friendships, greater social networking site usage at T1 was significantly related to higher college friendship quality at T2 for both males and females ($p<.05$). The greater use of text ($p<.05$) and in-person communication ($p<.05$) were significantly related to higher college friendship quality for females only. Email and phone communication at T1 were not significantly related to college friendship quality at T2 for either gender.

Taken together, results suggest that different communication modalities may be more important for males versus females when maintaining high quality hometown friendships versus developing new college friendships. Female friendships tend to be characterized by higher intimacy (Buhrmester & Furman, 1987), and greater use of modes of communication that support intimate exchanges was positively related to females' friendship quality, specifically phone communication with hometown friends (who are likely some distance away) and face-to-face communication with college friends. Interestingly, it appears that texting may play an important role in helping individuals maintain existing hometown friendships, whereas social networking site use may play a key role in helping students develop new friendships. Understanding the role that different methods of communication play in the development and maintenance of friendships can help inform interventions.

The results of this study are important in providing insights regarding how different electronic communication methods can support friendship maintenance and development. That these methods seem to function differently in the friendships of males versus females highlights the need for a more in depth exploration of this gender difference, which was done in the current study. In Study 1, frequency of use of various

communication methods was measured as a categorical variable. These categories were artificial and limited the types of analyses that could be performed. The present study asked participants to rate frequency of use of various communication methods in a continuous manner, in order to replicate and expand on these findings using more precise measurement.

Study 2

Additional pilot work was conducted in the Fall of 2013 (Dieter, 2014). In this study, 285 first-year undergraduate students at the University of Maine (186 females) completed online questionnaires via SurveyMonkey. The measures included the Beck Depression Inventory (BDI-II; Beck et al., 1996), the Friendship Quality Questionnaire-Revised (FQQ-R; Parker & Asher, 1993), the Social Anxiety Scale for Adolescents (SAS-A; LaGreca & Lopez, 1998), the College Freshman Adjustment Scales (Brazziel, 1981), the College Adjustment Test (Pennebaker, Colder, & Sharp, 1990), the Pathological Use Scale (Morahan-Martin & Schumacher, 2000), the Internet Behavior and Attitudes Scale (IBAS; Morahan-Martin & Schumacher, 2000), the Facebook Questionnaire (Ross, Orr, Sisic, Arseneault, Simmering, & Orr, 2009), and a questionnaire assessing reported frequency (in hours per week) of communicating with friends via various communication methods.

Upon further investigation, it was determined that the Internet Behavior and Attitudes Scale (IBAS) and the Facebook Questionnaire were not useful instruments to include in the current study. Specifically, the IBAS contained many overlapping items with the Pathological Use Scale, and so it was concluded that it was not providing a general measure of Internet use as was desired. Because many questions in the Facebook

Questionnaire were understandably geared to Facebook use specifically, and as technology has evolved students are utilizing a wide variety of social networking sites, it was determined that this measure was not appropriate for assessing general Internet use. Instead, it was decided that the questionnaire created for this study assessing frequency of communication methods would be the most suitable measure.

Initial correlation analyses were conducted with the remaining measures. Problematic Internet use was positively associated with depressive symptoms and social anxiety symptoms, and negatively related to college adjustment for both males and females. This is consistent with previous research, which found that heavy Internet use was related to a reduction in psychological well-being (Huang, 2010), and a decrease in undergraduate GPA (Jacobsen & Forste, 2011). Prior research has also established links between problematic Internet use and social anxiety (Lee & Stapinski, 2012), and with depression (Ha et al., 2007).

College friendship quality was positively associated with hometown friendship quality and with college adjustment, and negatively associated with social anxiety symptoms for males and females. For males, college friendship quality was also negatively associated with depressive symptoms. Hometown friendship quality was positively associated with college friendship quality. For males, one of the measures of college adjustment (i.e., the CFAS) was also positively associated with hometown friendship quality. The overall lack of significant associations of hometown friendship quality with adjustment was surprising, given that previous research has found that a first-year student's relationship with his or her high school best friend was significantly related to college adjustment (Swenson et al., 2008).

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In considering the unexpected results regarding friendship quality, it is important to acknowledge that the FQQ-R was designed and validated for use with elementary school-aged children (Parker & Asher, 1993). Although the FQQ-R was modified for the preliminary studies to make the items more appropriate for adolescents, this measure did not yield results consistent with previous research. Thus, during development of the current study, other friendship quality measures were considered to identify a friendship quality measure that is more appropriate for use with the intended population (i.e., college students). As a result, for the present study, a decision was made to assess friendship quality using the Network of Relationships Inventory: Social Provision Version (NRI-SPV; Furman & Buhrmester, 1985). This measure assesses seven friendship support features (e.g., companionship, instrumental aid), two negative friendship interaction features (i.e., conflict, antagonism), and relative power, and has been used extensively with older adolescents (Furman & Buhrmester, 1992; Lopes, Salovey, & Straus, 2003).

Given past research that indicates a protective influence of friendships against anxiety and depression, a model of friendship quality moderating the relationship between social anxiety symptoms and problematic Internet use was tested. This model (see Figure 1) was evaluated for both hometown and college friendship quality, and for both males and females. For hometown friendship quality, the moderation model was not significant for either males (R^2= .248, $F(3, 95)$= 10.13, p= .264) or females (R^2= .079, $F(3, 184)$= 5.14, p=.860). For college friendship quality, the moderation model was also not significant for either males (R^2= .216, $F(3, 94)$= 8.34, p=.602) or females (R^2= .087, $F(3, 183)$= 5.74, p= .184). These results were surprising, given past research (e.g., Lee &

Stapinski, 2012) that suggests a relationship between social anxiety symptoms and problematic Internet use, and research (e.g., Erath et al., 2010) that shows friendship as a protective factor.

Figure 1. Tested model for the moderating effect of friendship quality on the relationship between social anxiety symptoms and problematic Internet use.
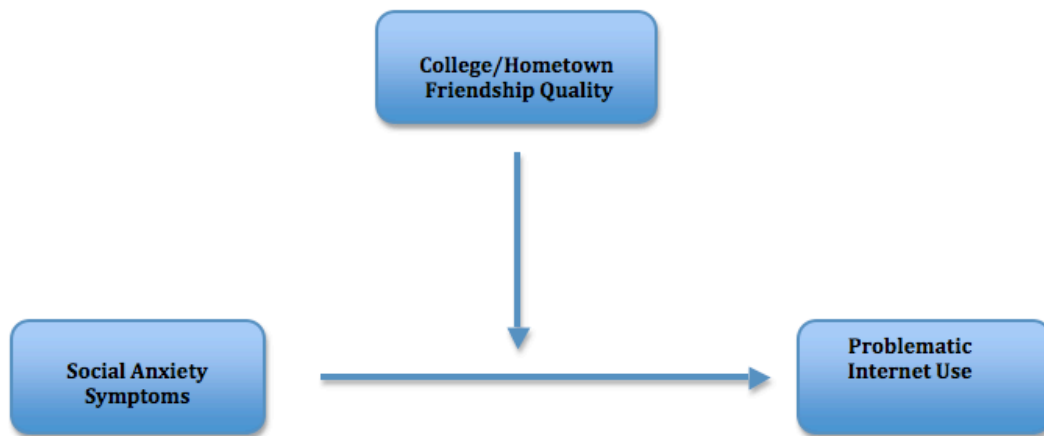
The Social Anxiety Scale for Adolescents (SAS-A) contains three subscales, including Fear of Negative Evaluation (FNE). A similar model to the one presented above was investigated using this subscale (see Figure 2). Results indicated that college friendship quality moderated the relationship between fear of negative evaluation and problematic Internet use for males (R^2= .203, $F(3, 96)$= 7.898, p= .011). This model was not significant for females (R^2= .086, $F(3, 183)$= 5.643, p= .128). For hometown friendship quality, the model was not significant for males (R^2= .162, $F(3, 97)$= 6.079, p=

.441) or females (R^2= .079, F(3, 184)= 5.146, p= .543). Past research has highlighted the relationship between social anxiety and problematic Internet use (Lee & Stapinski, 2012), but these results suggest that problematic Internet use may be more related to specific components of social anxiety. The SAS-A is a broader measure of social anxiety symptoms that was designed for use with younger adolescents. Thus, a search was done to identify a better measure to assess social anxiety symptoms in college students. Based on this search, the current study utilized the SAD and FNE scales, which are more appropriate for older adolescents (Watson & Friend, 1969).

Figure 2. Tested model for the moderating effect of friendship quality on the relationship between fear of negative evaluation and problematic Internet use.
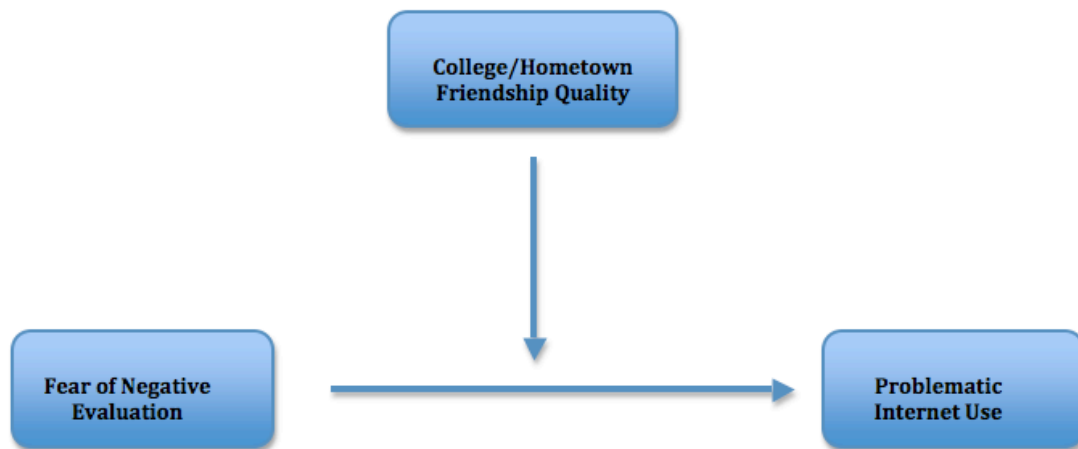
A similar model was also tested, examining whether friendship quality moderated the relationship between depressive and problematic Internet use (see Figure 3). For hometown friendship quality, the model was significant for males (R^2= .135, F(3, 96)= 4.857, p= .047), but not for females (R^2= .093, F(3, 95)= 6.051, p= .655). For college

friendship quality, the model was also significant for males (R^2= .144, $F(3, 95)$= 5.173, p= .014), but not for females (R^2= .086, $F(3, 179)$= 5.510, p= .910). This finding is consistent with the literature, which indicates that males are more likely to become addicted to the Internet in general (Morrison & Gore, 2010). They may also experience more protection from a high quality friendship (Erath et al., 2010).

Figure 3. Tested model for the moderating effect of friendship quality on the relationship between depressive symptoms and problematic Internet use.
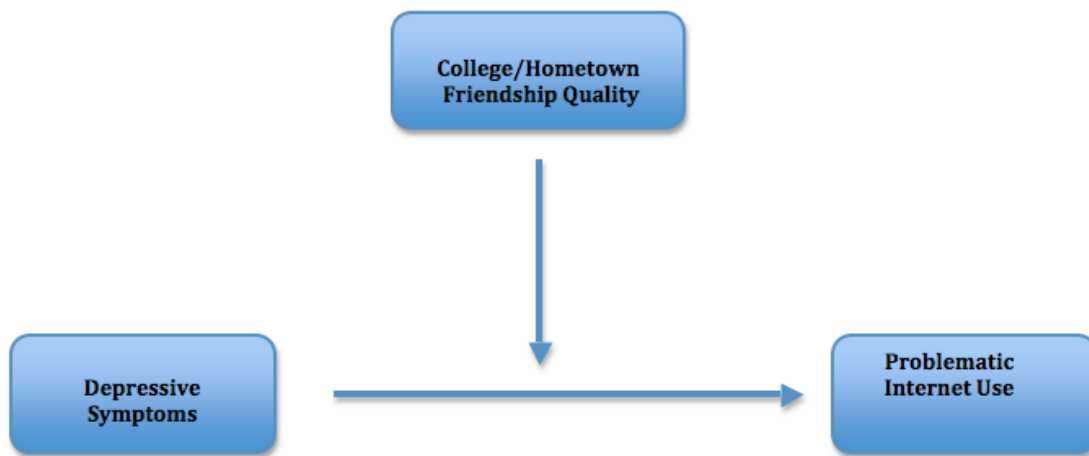
Overall, this pilot work shaped the current study immensely. First, the friendship quality and social anxiety symptoms measures were changed for the present investigation, based on existing literature, which highlights different measures that are more appropriate for use with late adolescents. In the pilot research, two measures of college adjustment were utilized. The CFAS, because it contains subscales and yielded results consistent with prior literature, was used in the current study. Additionally, a large gender imbalance was present in the pilot work, with many more females than males

responding to the survey. Therefore, for this investigation, males and females were recruited separately in order to obtain a more gender-balanced sample, particularly as gender differences were of interest.

Overall, the program of research conducted thus far has informed the current study in several ways. In addition to highlighting necessary methodological changes (e.g., changing some of the measures for the present investigation), several findings expanding on previous research emerged. Although there are individuals who experience continuity in their friendship experiences across the college transition (those who have consistently high or low college and hometown friendship quality), some individuals experience discontinuity (those who have high hometown, but low college friendship quality, or vice versa). These individuals may differ on variables such as social anxiety symptoms. Additionally, females' use of more intimate communication methods (e.g., phone, in person) is related to their friendship quality, whereas more casual communication methods (e.g., social networking sites) are related to friendship quality for males. Finally, for males, college friendship quality moderated the relationship between fear of negative evaluation and problematic Internet use, and college and hometown friendship quality moderated the relationship between depressive symptoms and problematic Internet use. These results, along with findings from existing literature, have informed the models that were tested in the present study.

<center>Hypotheses for the Present Study</center>

The following hypotheses were tested in the current study. These hypotheses are based on the literature previously presented, and on pilot work completed.

Friendship quality and communication modalities

Hypothesis 1a and 1b. The Rich-Get-Richer Hypothesis proposes that individuals who are socially skilled and use the Internet for social interaction will become even more socially skilled (Lee, 2009). Notably, previous research has established a link between social skills and friendship quality (Crawford & Manassis, 2011). It was hypothesized that hours spent communicating online in general would moderate the relationship between hometown friendship quality and college friendship quality, such that individuals with higher hometown friendship quality would have a higher college friendship quality with increased hours of electronic communication (Hypothesis 1a).

Furthermore, pilot work showed that males and females use electronic communication technologies differently. Therefore, in addition to the overall model described above, sub-models exploring gender differences were also proposed. Specifically, it was hypothesized that females' friendship quality (both hometown and college) would be significantly predicted by more intimate communication methods (e.g., phone, in-person), and males' friendship quality would be significantly predicted by more casual communication methods (e.g., texting, social networking sites) (Hypothesis 1b).

College adjustment and electronic communication use

Hypothesis 2. The Social Compensation Hypothesis posits that anxious individuals who have difficulty forming relationships may be more successful in developing relationships online due to the anonymity of the Internet (Lee, 2009). It was hypothesized that the relationship between social anxiety symptoms and college adjustment, in particular, social adjustment, would be moderated by hours of electronic communication use with college friends, such that those individuals with higher social

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anxiety symptoms who frequently use electronic communication technologies would have better college social adjustment.

Problematic Internet use

    Hypothesis 3a, 3b, 3c, 3d, 3e, and 3f. Although pilot work yielded some surprisingly non-significant results, it did indicate that, for males, college friendship quality moderated the relationship between fear of negative evaluation and problematic Internet use. Also for males, both hometown and college friendship quality moderated the relationship between depressive symptoms and problematic Internet use.

    It was hypothesized that hometown friendship quality would moderate the relationship between social anxiety symptoms and problematic Internet use, such that individuals with higher social anxiety symptoms, but also higher hometown friendship quality, would demonstrate less problematic Internet use (Hypothesis 3a). It was also predicted that hometown friendship quality would moderate the relationship between depressive symptoms and problematic Internet use, such that individuals with higher levels of depressive symptoms, but also higher hometown friendship quality, would demonstrate less problematic Internet use (Hypothesis 3b). Additionally, it was predicted that hometown friendship quality would moderate the relationship between loneliness and problematic Internet use, such that individuals with higher levels of loneliness, but also higher hometown friendship quality, would demonstrate less problematic Internet use (Hypothesis 3c).

    Similarly, it was expected that college friendship quality would moderate the relationship between social anxiety symptoms and problematic Internet use, such that individuals with higher social anxiety symptoms, but also higher college friendship

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quality, would demonstrate less problematic Internet use (Hypothesis 3d). Furthermore, it was hypothesized that college friendship quality would moderate the relationship between depressive symptoms and problematic Internet use, such that individuals with higher levels of depressive symptoms, but also higher college friendship quality, would demonstrate less problematic Internet use (Hypothesis 3e). Additionally, it was predicted that college friendship quality would moderate the relationship between loneliness and problematic Internet use, such that individuals with higher levels of loneliness, but also higher college friendship quality, would demonstrate less problematic Internet use (Hypothesis 3f).

Chapter 2: Method

Participants

Participants consisted of 469 first-year undergraduate students, ages 18 (78%) or 19 (20%) years old (2% unreported), at the University of Maine. With regard to gender, participants in the current study self-identified as male (48%), female (50%), transgender (<1%), and other (<1%). With regard to ethnicity, participants self-identified as Caucasian (88%), Asian (3%), Hispanic (3%), African American (2%), American Indian (2%), and other (<1%). Additionally, approximately 30% of participants reported that they were a first-generation college student.

Procedure

Participants were recruited through the University of Maine Psychology Department's research pool, and through the general University population. To recruit through the Psychology Department's research pool the principal investigator posted a description of the study on the Sona website (See Appendix A). Sona is used by the Psychology Department to recruit students for participation in research projects in which students can earn research credits for psychology classes. On this website, students viewed a brief description of the study method, inclusion criteria, and contact information for the principal investigator. Students then clicked on an electronic link in Sona that directed them to the consent form (See Appendix B) and questionnaires on Qualtrics. At this time, students made a check to indicate that they agreed to participate or chose not participate. If they clicked the box to participate, participants then viewed a series of questionnaires. Students were asked to click the "continue" button at the end of each questionnaire to move on to subsequent questionnaires. Participants could choose to exit

the website and withdraw their participation at any time. Participants' responses to the

questionnaires were anonymous, as no personally identifying information was asked for

on Qualtrics. Following completion of the questionnaires, or exit from the study,

participants viewed a thank you message (See Appendix L).

Recruitment of male participants through the general University population was

done in response to a lower male than female respondent rate in the Sona system. As

gender differences are a focus of the current study, male participants from outside the

psychology department were recruited and offered a financial incentive to participate.

The principal investigator posted a study description link to the Announcements folder on

FirstClass, the University of Maine's email system (see Appendix A). When students

clicked the link to participate, they followed the same procedure on Qualtrics as above,

including consent and questionnaire procedures. At the conclusion of the session, these

participants were provided with a thank you statement for their participation (See

Appendix L), as well as a link to a separate survey where they provided their identifying

information for payment. The information in the two surveys was not linked, and the

identifying information was never matched to the survey responses. Participants were

then emailed a $10 Amazon gift card for their participation.

Measures

Demographic questionnaire (see Appendix C). Information about participant

characteristics (e.g., age, sex, ethnicity, living situation, hometown characteristics) was

collected using a self-report questionnaire designed specifically for this project.

Depressive symptoms (see Appendix D). In order to assess self-reported

depressive symptoms, the students completed the Beck Depression Inventory (BDI-II,

Beck et al., 1996). This scale is a 21-item self-report screening questionnaire designed to assess the severity of depressive symptoms. Each item is rated on a four-point scale ranging from 0-3 where 0 reflects no symptoms and 3 reflects severe symptoms. Consistent with other studies assessing depression in adolescents (see Williams, Connolly, & Segal, 2001), the item assessing suicidality was dropped from the measure, resulting in a total of 20 items. The BDI-II has been tested for validity and reliability and has demonstrated adequate psychometric properties (Beck et al., 1996). It is one of the most widely used measures to assess symptoms of depression.

Adjustment to college (see Appendix E). Participants were asked to assess their perception of their preparedness and abilities for college using the College Freshman Adjustment Scales (Brazziel, 1981). This 14-item self-report measure was designed as a screening tool for use by college counseling centers throughout students' first year(s) at college. This questionnaire has four subscales: academic adjustment (e.g., "I believe I have chosen the right major"), social adjustment (e.g., "I am awkward at meeting people"), personal adjustment (e.g., "Sometimes I have feelings of inferiority"), and college match (e.g., "I am as happy here as I would be at another college"). The original questionnaire asked participants to rate the items as T (true, a feeling they are having these days) or F (false, do not have the given feeling), with items scored either 1 (reflecting poor adjustment) or 0 (reflecting positive adjustment). Total scores above 6 indicate difficulty adjusting to college. This questionnaire has been used with college populations, and the internal consistency for the four scales has Cronbach's alphas ranging from .54 to .87 (Brazziel, 1981). The present study modified this measure to

allow for more variability. Specifically, participants were asked to rate the items on a 4-point scale ranging from 1 (*really false*) to 4 (*really true*).

Social anxiety symptoms (see Appendix F). To assess social anxiety symptoms, participants completed the Social Avoidance and Distress (SAD) and the Fear of Negative Evaluation (FNE) scales (Watson & Friend, 1969). These two measures consist of 58 true/false statements. Participants were asked to indicate whether a statement is true for them. Sample items include, "I feel relaxed even in unfamiliar social situations," and "If someone is evaluating me, I tend to expect the worst." Total scores range from 0 to 58, and higher scores indicate greater social avoidance and distress and fear of negative evaluation. These measures have been shown to have excellent reliability, with Cronbach's alphas of .94 and .96 (Watson & Friend, 1969).

Social experiences questionnaire (see Appendix G). Information about participants' friendships at college and in their hometown, their college grades, and their communication frequency were collected using a self-report questionnaire designed specifically for this project. Participants were asked questions related to how many friends they have at home and at school, the length of time and types of communications used to stay in touch with friends, and what devices they communicate on.

Friendship quality (See Appendices H and J). Participants were asked to assess the quality of their perceived closest hometown and University of Maine friendships using The Network of Relationships Inventory: Social Provision Version (NRI-SPV; Furman & Buhrmester, 1985). This questionnaire has ten scales, with three items for each scale. It assesses seven support features (e.g., companionship, instrumental aid, intimate disclosure), two negative interaction features (i.e., conflict, antagonism), and relative

power. Each participant was asked to think about his/her closest University of Maine friend (Appendix H) and then his/her closest hometown friend (Appendix J) when rating each of 30 items on a 5-point scale, ranging from 1 (*little or none*) to 5 (*the most*). The questions in the relative power subscale are rated on a 5-point scale, ranging from 1 (*s/he always does*) to 5 (*I always do)*. For each questionnaire, the phrase "this person" was replaced with either "your closest college friend," or "your closest hometown friend." Additionally, whereas the original questionnaire asked about feelings of liking or loving (given that a variety of relationships, including relationship with mother and romantic partner, were assessed), the NRI was used in the present study to examine only friendships, so the response options were modified to ask only about feelings of liking. Questions were added to the end of the hometown questionnaire to identify if the college friend is the same as the hometown friend and to determine the current travel time between the participant and his/her closet hometown friend.

Pathological use of the Internet (see Appendix I). Participants were asked to indicate how strongly they agree or disagree with statements related to problematic Internet use employing the Pathological Use Scale (Morahan-Martin & Schumacher, 2000). This scale assesses evidence that the individual's Internet use is causing problems with academics, work, interpersonal relationships, and mood. Example items include, "I have been told I spend too much time online," "I feel guilty about the amount of time I spend online," and "I have missed classes or work because of online activities." Participants were asked to rate the 13 items using a four-point scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*).

Loneliness (see Appendix K). Participants were asked to rate subjective feelings of loneliness and social isolation using the UCLA Loneliness Scale-Version 3 (UCLA-LSV3; Russell, 1996). This questionnaire has 20 items that assess how often each statement applies to them rated on a 4-point scale ranging from 1 (*never)* to 4 (*always*). Eleven items on the questionnaire are worded negatively (e.g., "How often do you feel alone?") and nine items are worded positively ("How often do you feel close to people?). Total scores range from 20 to 80, with higher scores indicating greater feelings of loneliness. This measure has demonstrated excellent internal reliability in a college sample, with a Cronbach's alpha of .92 (Russell, 1996).

Chapter 3: Results

Preliminary analyses

Preliminary analyses were performed prior to the primary analyses that tested the proposed models and hypotheses, including the identification and removal of outliers, and the identification and correction by transformation of non-normally distributed data. Descriptive statistics were also calculated for each measure to determine means and standard deviations for all measures (see Table 1, Table 3, Table 4, and Table 5). Correlations between measures were also calculated (see Table 2).

Table 1. Means and standard deviations for measures

Measure	Total Sample		Females		Males	
	M	*SD*	*M*	*SD*	*M*	*SD*
Beck Depression Inventory	9.31	8.43	10.32*	8.72	8.35*	8.02
College Freshman Adjustment Scales	23.22	5.59	23.34	5.60	23.17	5.60
Social Anxiety Symptoms (Social Avoidance and Distress/Fear of Negative Evaluation)	22.77	13.42	24.02*	13.76	21.27*	12.94
Network of Relationships Inventory-Hometown Friend	99.82	18.03	104.17**	16.49	94.86**	18.17
Network of Relationships Inventory-College Friend	93.94	17.57	98.77**	18.25	89.24**	15.39
Pathological Use Scale	25.40	5.87	25.06	5.59	25.68	6.17
UCLA Loneliness Questionnaire	41.19	10.61	40.65	10.87	41.68	10.41

Note: Asterisks denote that the mean scores for females and males were statistically significantly different (* $p<.05$, ** $p<.01$).

Table 2. Correlations between measures

	Depressive Symptoms	Social Anxiety Symptoms	Loneliness	Problematic Internet Use	College Adjustment	College Friendship Quality	Home Friendship quality
Depressive Symptoms		.410**	.501**	.408**	-.514**	-.156*	-.115
Social Anxiety Symptoms	.427**		.606**	.306**	-.659**	-.223**	-.289**
Loneliness	.539**	.565**		.314**	-.691**	-.487**	-.337**
Problematic Internet Use	.218**	.446**	.347**		-.296**	-.107	-.192**
College Adjustment	-.528**	-.598**	-.669**	-.456**		.343**	.331**
College Friendship quality	-.176*	-.133	-.363**	-.131	.206**		.275**
Home Friendship Quality	-.031	-.067	-.219**	-.147*	.151*	.342**	

Note: Correlations for females are exhibited above the diagonal, and correlations for males are exhibited below the diagonal. Asterisks denote that the correlations were statistically significantly (* $p<.05$, **$p <.01$).

Table 3. Means and standard deviations of communication methods with hometown friend

Method	With Hometown Friend					
	Total Sample		**Females**		**Males**	
	M	*SD*	*M*	*SD*	*M*	*SD*
Facebook	1.42	3.13	1.38	2.65	1.33	2.82
Twitter	1.06	3.83	1.2	4.85	0.84	2.13
Instagram	1.42	4.56	1.83**	5.22	0.71**	2.2
Tumblr	0.23	1.45	0.29	1.91	0.16	0.73
Snapchat	3.34	7.27	4.11**	8.89	2.17**	3.12
Emailing	0.16	1.13	0.07*	0.39	0.25*	1.57
Text	7.24	12.87	8.07*	14.98	6.0*	9.08
Messenger	1.96	4.65	1.72	3.43	2.01	5.1
Video Messaging	1.07	2.89	1.09	2.69	0.98	3.03
Telephone	1.61	5.44	1.83	6.81	1.22	2.92
In Person	4.93	14.10	5.01	15.06	4.96	13.28

Note: Numbers represent hours per week participants use different communication methods with a hometown friend. Asterisks denote that the mean scores for females and males were statistically significantly different (* $p<.10$, ** $p<.05$, ***$p <.01$).

Table 4. Means and standard deviations of communication methods with college friend

Method	With College Friend					
	Total Sample		Females		Males	
	M	*SD*	*M*	*SD*	*M*	*SD*
Facebook	1.11	2.99	1.16	3.43	1.07	2.51
Twitter	0.84	3.58	1.04	4.75	0.65	1.77
Instagram	1.24	4.29	1.69**	5.06	0.61**	2.05
Tumblr	0.10	0.60	0.08	0.47	0.12	0.72
Snapchat	2.90	5.84	3.36**	6.01	2.25**	5.08
Emailing	0.17	0.91	0.13	0.64	0.21	1.13
Text	5.61	8.57	6.14	7.81	4.94	8.86
Messenger	1.29	3.67	1.16	2.84	1.37	4.22
Video Messaging	0.36	2.16	0.29	1.55	0.38	2.55
Telephone	0.90	2.18	0.82	1.63	0.87	1.81
In Person	24.59	25.76	26.62*	28.27	22.0*	22.34

Note: Numbers represent hours per week participants use different communication methods with a college friend. Asterisks denote that the mean scores for females and males were statistically significantly different (* $p<.10$, ** $p<.05$, *** $p<.01$).

Table 5. Means and standard deviations for: How close do you feel to your friends when you communicate via:

Method	Total Sample		Females		Males	
	M	*SD*	*M*	*SD*	*M*	*SD*
Facebook	2.36	0.75	2.42	0.77	2.31	0.72
Twitter	2.06	0.87	2.12	0.87	2.0	0.86
Instagram	2.17	0.89	2.39**	0.88	1.95**	0.85
Tumblr	1.54	0.72	1.58	0.78	1.51	0.67
Snapchat	2.94	0.82	3.15**	0.76	2.73**	0.81
Emailing	1.85	0.80	1.93*	0.83	1.78*	0.77
Text	3.10	0.71	3.28**	0.62	2.91**	0.75
Messenger	2.46	0.88	2.57**	0.85	2.35**	0.88
Video Messaging	2.87	1.05	3.07**	0.1	2.66**	1.07
Telephone	3.13	0.83	3.27**	0.78	2.99**	0.86
In Person	3.77	0.59	3.87**	0.46	3.67**	0.67

Note: Participants responded on a 1 to 4 scale (1= distant, 2= not close, 3= close, 4= very close). Asterisks denote that the mean scores for females and males were statistically significantly different (* $p<.05$, ** $p<.01$).

Friendship quality and communication modalities (Hypothesis 1a and 1b)

To examine the hypothesis that hours spent communicating online would moderate the relationship between hometown friendship quality and college friendship quality, a summary score was first calculated from the Social Experiences Questionnaire for each participant, taking into account his or her total hours of all online communication. This was computed by summing the number of hours participants reporting using Facebook, Twitter, Instagram, Tumblr, Snapchat, email, text, messenger, and video messenger per week with both their hometown and college friends. Descriptive statistics for this variable are shown in Table 6.

Table 6. Total hours of online communication

	Total Sample		Females		Males	
	M	*SD*	*M*	*SD*	*M*	*SD*
Total hours of online communication	28.20	32.29	31.05	34.04	25.58	30.45

Note: The mean for females was marginally significantly higher than the mean for males (*p*=.08).

A stepwise, moderated regression was then conducted by entering this summary score (hours of online communication; centered at the mean) and hometown friendship quality (centered at the mean) on Step 1 and the interaction (the product of the centered hours of online communication and centered hometown friendship quality) on Step 2 predicting college friendship quality. Hypothesis 1a was not supported, as hours of online communication did not moderate the effect of hometown friendship quality on college friendship ($F(1, 436)$= .018, *p*=.894). This model was also not significant when tested with only females ($F(1, 216)$= .788, *p*= .376), or only males ($F(1, 212)$= .124, *p*= .725).

Table 7. Summary of regression analyses for hypothesis 1a

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Online Communication	.132	.094	.064	.033	.151	.014	.103	.114	.059
Hometown FQ	-.187	.026	-.335	-.185	.040	-.304	-.167	.033	-.330
Online Communication X Hometown FQ	.007	.056	.006	.093	.104	.058	-.023	.064	-.023
R^2	.122			.095			.120		
F	.018			.788			.124		

Note: Online communication and hometown friendship quality were centered at their means.
* $p < .05$ ** $p < .01$

To examine the hypothesis that females' friendship quality would be significantly predicted by intimate communication methods such as phone and in person, and males' friendship quality would be significantly predicted by casual communication methods like texting and social networking sites, regression analyses were performed. Specifically, a regression was conducted for females with phone and in-person communication predicting hometown friendship quality, and again for college friendship quality. Phone and in person communication did not significantly predict hometown friendship quality for females ($F(2, 224)= .807, p=.448$). This relationship was also not significant for males ($F(2, 219)= .370, p= .691$). However, phone and in person communication statistically significantly predicted college friendship quality for females ($F(2, 223)= 5.847, p=.003$) and for males ($F(2, 216)= 9.466, p<.001$). The effect sizes for results pertaining to females (Cohen's $d= .324$) and for males (Cohen's $d= .419$) were both small.

A regression was also conducted for males with texting and social networking site (i.e., Facebook, Twitter, Instagram, Tumblr, Snapchat) communication predicting hometown friendship quality, and again for college friendship quality. For males, texting and social networking site communication statistically significantly predicted hometown friendship quality ($F(6, 215)= 3.177, p=.005$), but this relationship was not significant for females ($F(6, 227)= 1.435, p= .202$). The effect size for males was small (Cohen's $d=$ .243). For males, texting and social networking site communication also statistically significantly predicted college friendship quality ($F(6, 212)=3.674, p=.002$), and this relationship was significant for females as well ($F(6, 228)= 2.873, p=.01$). The effect sizes for results pertaining to males (Cohen's $d= .263$) and to females (Cohen's $d= .225$) were both small. Overall, partial support was found for Hypothesis 1b.

Table 8. Summary of regression analyses for hypothesis 1b

Hometown Friendship Quality						
	Females			**Males**		
	B	**SE B**	β	**B**	**SE B**	β
Phone	-.011	.015	-.049	-.027	.037	-.051
In Person	.007	.007	.070	.004	.008	.032
R^2	.007			.003		
F	.807			.370		

College Friendship Quality						
	Females			**Males**		
	B	**SE B**	β	**B**	**SE B**	β
Phone	.093	.038	.161	-.054	.029	-.122
In Person	.005	.002	.158	.010	.002	.266
R^2	.050			.081		
F	5.847**			9.466**		

Hometown Friendship Quality						
	Females			**Males**		
	B	**SE B**	β	**B**	**SE B**	β
Facebook	-.042	.049	-.072	.032	.042	.057
Twitter	.000	.050	.000	-.029	.060	-.037
Instagram	-.018	.047	-.059	-.031	.060	-.042
Tumblr	.022	.057	.028	.389	.159	.181
Snapchat	.007	.016	.040	-.002	.042	-.005
Text	-.018	.009	-.173	-.040	.013	-.229
R^2	.037			.081		
F	1.435			3.177**		

College Friendship Quality						
	Females			**Males**		
	B	**SE B**	β	**B**	**SE B**	β
Facebook	-.013	.028	-.047	-.031	.022	-.096
Twitter	.013	.035	.068	.035	.033	.079
Instagram	-.015	.037	-.078	-.022	.035	-.057
Tumblr	.004	.130	.002	-.161	.097	-.144
Snapchat	.004	.019	.028	-.007	.011	-.042
Text	.033	.010	.274	.023	.006	.250
R^2	.072			.094		
F	2.873*			3.674**		

* $p < .05$ ** $p < .01$

College adjustment and electronic communication use (Hypothesis 2)

To examine the hypothesis that the relationship between social anxiety symptoms and college social adjustment would be moderated by hours of electronic communication use with a college friend, a stepwise, moderated regression was performed by entering social anxiety symptoms (centered at the mean) and hours of electronic communication use with a college friend (centered at the mean) on Step 1 and the interaction (the product of centered social anxiety symptoms and centered hours of communication) on Step 2 predicting college social adjustment. Hours of electronic communication use with a college friend was calculated by summing the number of hours participants reporting using Facebook, Twitter, Instagram, Tumblr, Snapchat, email, text, messenger, and video messenger per week with their college friend. See Table 9 for descriptive statistics of this variable and college social adjustment. Hypothesis 2 was not supported, as hours of online communication with a college friend did not moderate the effect of social anxiety symptoms on college social adjustment ($F(1, 391)= .048$, $p=.826$). This relationship was also not significant when only females were included ($F(1, 199)= .68$, $p= .411$), or when only males were included ($F(1, 185)= .846$, $p= .359$).

Table 9. Descriptive statistics for Hypothesis 2

Measure	Total Sample		Females		Males	
	M	*SD*	*M*	*SD*	*M*	*SD*
College Social Adjustment	8.32	2.72	8.45	2.74	8.24	2.67
Hours of electronic communication use with a college friend	11.90	13.61	12.73	12.83	11.21	14.45

Note: The means for females and males were not statistically significantly different for these measures.

Table 10. Summary of regression analyses for hypothesis 2

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
College Online Communication	.569	.254	.089	.670	.369	.098	.296	.368	.048
Social Anxiety Symptoms	-1.15	.071	-.064	-1.17	.099	-.642	-1.14	.107	-.628
College Online Communication X Social Anxiety Symptoms	-.036	.163	-.009	.208	.252	.045	-.210	.228	-.053
R^2	.399			.421			.385		
F	.048			.68			.846		

Note: Online communication and hometown friendship quality were centered at their means.
* $p< .05$ ** $p< .01$

Problematic Internet use (Hypothesis 3a, 3b, 3c, 3d, 3e, and 3f)

To examine the hypothesis that hometown friendship quality would moderate the relationship between social anxiety symptoms and problematic Internet use, a moderated regression was performed by entering hometown friendship quality (centered at the mean) and social anxiety symptoms (centered at the mean) on Step 1 and the interaction (the product of centered hometown friendship quality and centered social anxiety symptoms) on Step 2 predicting problematic Internet use. For the total sample, this relationship was marginally significant ($F(1, 410)= 3.129$, $p=.078$), with a small effect size (Cohen's $d= .175$). This relationship was also marginally significant for females ($F(1, 207)=3.548$, $p=.061$), but was not significant for males ($F(1, 194)= .886$, $p= .348$). The effect size for females was also small (Cohen's d= .262). Hypothesis 3a was partially supported, with the females appearing to be the group accounting for the trend toward significance of the moderation model.

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Figure 4. Tested model for the moderating effect of hometown friendship quality on the relationship between social anxiety symptoms and problematic Internet use for females.

For females: $F(1, 207)=3.548, p=.061$

Table 11. Summary of regression analyses for hypothesis 3a

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Hometown FQ	.400	.163	.113	.417	.242	.117	.417	.238	.111
Social Anxiety Symptoms	1.326	.176	.348	.965	.247	.267	1.783	.261	.439
Hometown FQ X Social Anxiety Symptoms	-.186	.105	-.081	-.303	.161	-.123	-.140	.149	-.060
R^2	.160			.127			.226		
F	3.129			3.548			.886		

Note: Hometown friendship quality and social anxiety symptoms were centered at their means.
* $p< .05$ ** $p< .01$

To examine the prediction that hometown friendship quality would moderate the relationship between depressive symptoms and problematic Internet use, a moderated regression was performed by entering hometown friendship quality (centered at the mean) and depressive symptoms (centered at the mean) on Step 1 and the interaction (the product of centered hometown friendship quality and centered depressive symptoms) on Step 2 predicting problematic Internet use. This relationship was significant for the total sample ($F(1, 424)=4.099$, $p=.044$), and the effect size was small (Cohen's $d= .197$). This relationship was also significant for males ($F(1, 205)=4.315$, $p=.039$), but was not significant for females ($F(1, 210)=.630$, $p=.428$). The effect size for males was also small (Cohen's $d= .290$). Thus, Hypothesis 3b was supported, with males accounting for the significance of the moderation model.

Figure 5. Tested model for the moderating effect of hometown friendship quality on the relationship between depressive symptoms and problematic Internet use for males.
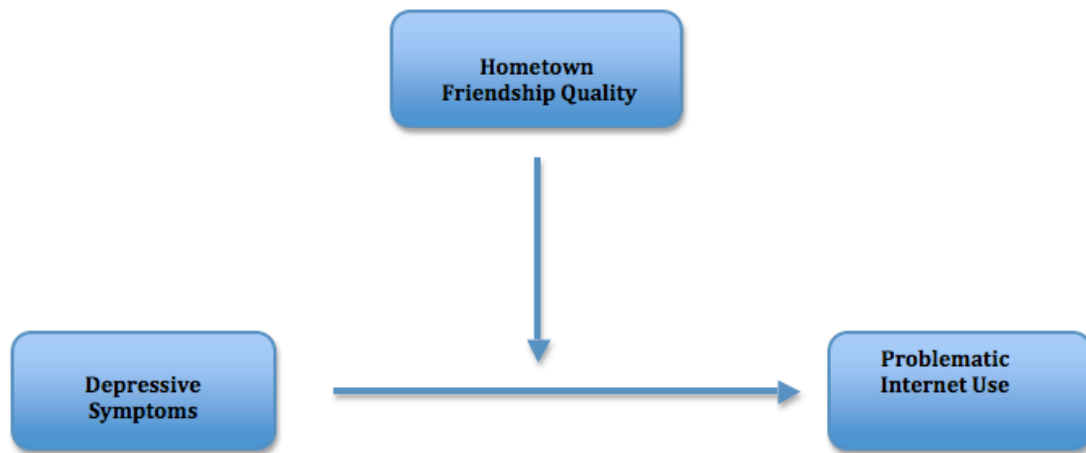
For males: $F(1, 205)=4.315$, $p=.039$

Table 12. Summary of regression analyses for hypothesis 3b

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Hometown FQ	.490	.166	.137	.387	.228	.108	.629	.259	.163
Depressive Symptoms	1.257	.213	.275	1.589	.273	.372	1.099	.340	.220
Hometown FQ X Depressive Symptoms	-.262	.129	-.094	-.145	.182	-.051	-.428	.206	-.142
R²	.099			.158			.079		
F	4.099*			.630			4.315*		

Note: Hometown friendship quality and depressive symptoms were centered at their means.
* *p*< .05 ** *p*< .01

To examine the hypothesis that hometown friendship quality would moderate the relationship between loneliness and problematic Internet use, a moderated regression was performed by entering hometown friendship quality (centered at the mean) and loneliness (centered at the mean) on Step 1 and the interaction (the product of centered hometown friendship quality and centered loneliness) on Step 2 predicting problematic Internet use. This relationship was not significant for the total sample ($F(1, 433)= .405$, $p= .525$), for females only ($F(1, 213)= .835$, $p= .362$), or for males only ($F(1, 210)= 1.986$, $p= .16$). Thus, hypothesis 3c was not supported.

Table 13. Summary of regression analyses for hypothesis 3c

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Hometown FQ	.290	.170	.080	.295	.253	.081	.356	.251	.093
Loneliness	.171	.026	.309	.141	.036	.270	.204	.039	.347
Hometown FQ X Loneliness	.010	.015	.029	-.019	.021	-.060	.033	.024	.091
R²	.115			.100			.142		
F	.405			.835			1.986		

Note: Hometown friendship quality and loneliness were centered at their means.
* $p< .05$ ** $p< .01$

Similar analyses were performed using college friendship quality. To examine the hypothesis that college friendship quality would moderate the relationship between social anxiety symptoms and problematic Internet use, a moderated regression was performed by entering college friendship quality (centered at the mean) and social anxiety symptoms (centered at the mean) on Step 1 and the interaction (the product of centered college friendship quality and centered social anxiety symptoms) on Step 2 predicting

problematic Internet use. Hypothesis 3d was not supported for the total sample ($F(1,$

$410)= .371$, $p=.543$), for females only ($F(1, 209)= .429$, $p= .513$), or for males only ($F(1,$

$192)= .00$, $p= .994$).

Table 14. Summary of regression analyses for hypothesis 3d

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
College FQ	-.417	.293	-.066	-.324	.394	-.056	-.461	.484	-.062
Social Anxiety Symptoms	1.432	.177	.373	1.130	.241	.314	1.909	.271	.462
College FQ X Social Anxiety Symptoms	.111	.183	.028	.155	.236	.044	.002	.308	.000
R^2	.153			.108			.227		
F	.371			.429			.000		

Note: College friendship quality and social anxiety symptoms were centered at their means.
* *p*< .05 ** *p*< .01

To examine the prediction that college friendship quality would moderate the

relationship between depressive symptoms and problematic Internet use, a moderated

regression was performed by entering college friendship quality (centered at the mean)

and depressive symptoms (centered at the mean) on Step 1 and the interaction (the

product of centered college friendship quality and centered depressive symptoms) on

Step 2 predicting problematic Internet use. This relationship was significant for the total

sample ($F(1, 424)= 5.686$, $p=.018$), and the effect size was small (Cohen's $d= .232$). This

relationship was also significant for females ($F(1, 212)= 3.975$, $p=.047$), but was not

significant for males ($F(1, 203)= .750$, $p= .388$). The effect size for females was also

small (Cohen's *d*= .274). Thus, Hypothesis 3e was supported, with females accounting

for the significance of the moderation model.

Figure 6. Tested model for the moderating effect of college friendship quality on the

relationship between depressive symptoms and problematic Internet use for females.
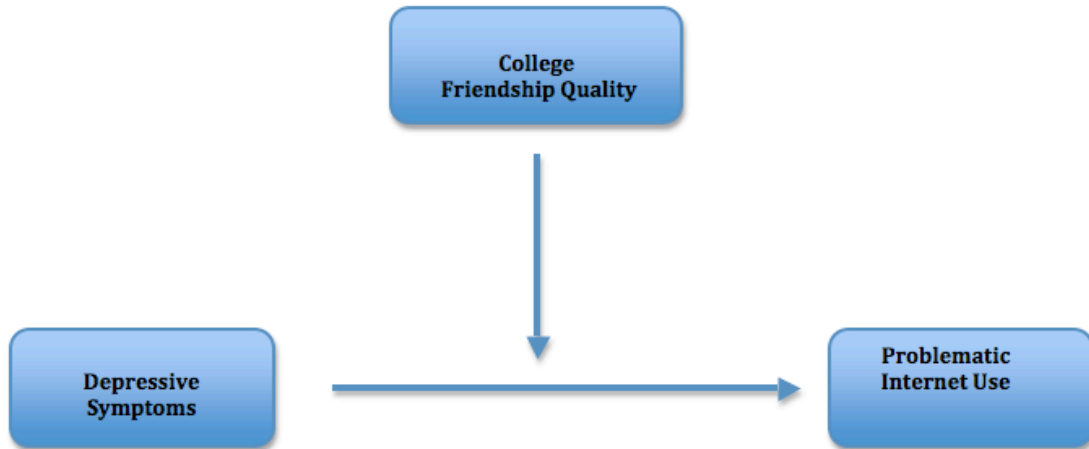
For Females: $F(1, 212)= 3.975, p=.047$

Table 15. Summary of regression analyses for hypothesis 3e

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
College FQ	-.563	.300	-.088	-.300	.366	-.052	-.556	.542	-.072
Depressive Symptoms	1.325	.216	.287	1.718	.273	.402	1.039	.355	.206
College FQ X Depressive Symptoms	.560	.235	.112	.577	.289	.127	.367	.424	.060
R^2	.097			.169			.052		
F	5.686*			3.975*			.750		

Note: College friendship quality and depressive symptoms were centered at their means.
* *p*< .05 ** *p*< .01

Finally, to examine the hypothesis that college friendship quality would moderate the relationship between loneliness and problematic Internet use, a moderated regression was performed by entering college friendship quality (centered at the mean) and loneliness (centered at the mean) on Step 1 and the interaction (the product of centered college friendship quality and centered loneliness) on Step 2 predicting problematic Internet use. This relationship was marginally significant for the total sample ($F(1, 432)=$ 2.741, $p= .099$), and the effect size was small (Cohen's $d= .159$). However, this relationship was not significant for either only females ($F(1, 214)= .98, p= .323$), or only males ($F(1, 208)= 1.973, p= .162$). Therefore, hypothesis 3f was partially supported.

Figure 7. Tested model for the moderating effect of college friendship quality on the relationship between loneliness and problematic Internet use for the total sample.
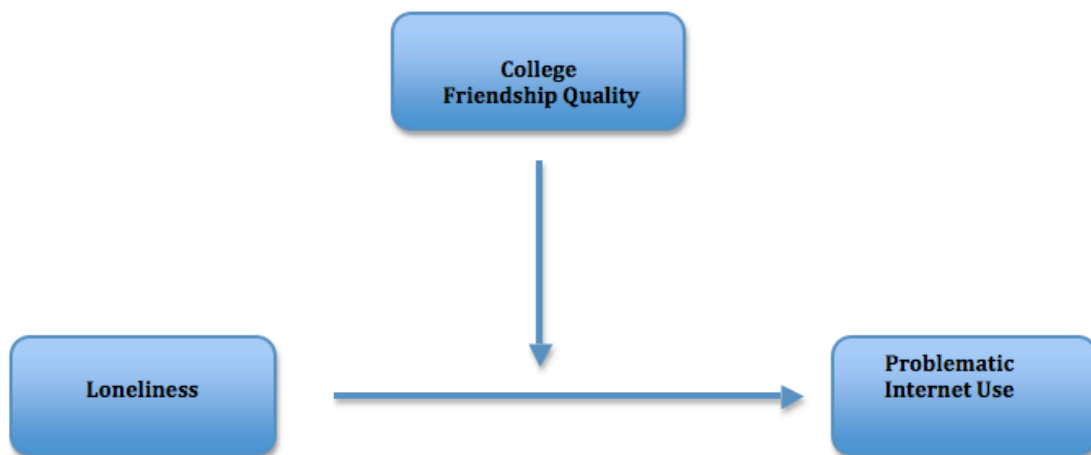
For the Total Sample: $F(1, 432)= 2.741, p= .099$

Table 16. Summary of regression analyses for hypothesis 3f

	Total Sample			Females			Males		
	B	**SE B**	β	**B**	**SE B**	β	**B**	**SE B**	β
College FQ	.212	.325	.033	.365	.447	.062	.087	.538	.011
Loneliness	.195	.028	.350	.184	.039	.354	.208	.042	.349
College FQ X Loneliness	.045	.027	.075	.034	.035	.066	.067	.047	.091
R^2	.117			.106			.130		
F	2.741			.98			1.973		

Note: College friendship quality and loneliness were centered at their means.
* *p*< .05 ** *p*< .01

Supplementary analyses

Some supplementary analyses were performed in addition to those reported

above. Specifically, certain measures (e.g., friendship quality, social anxiety symptoms,

college adjustment) contain multiple subscales that were explored to determine more

precise relationships. For example, social anxiety symptoms can be divided into social

avoidance and distress and fear of negative evaluation symptoms, which may contribute

differently to the above relationships. To explore whether, such as in pilot work, the

relationship between fear of negative evaluation specifically and problematic Internet use

is moderated by friendship quality, a series of moderated regressions was performed.

To examine whether hometown friendship quality would moderate the

relationship between fear of negative evaluation and problematic Internet use, a

moderated regression was performed by entering hometown friendship quality (centered

at the mean) and fear of negative evaluation (centered at the mean) on Step 1 and the

interaction (the product of centered hometown friendship quality and centered fear of

negative evaluation) on Step 2 predicting problematic Internet use. This relationship was

significant for the total sample ($F(1, 423)= 3.944$, *p*= .048), and the effect size was small

(Cohen's *d*= .193). This relationship was marginally significant for females (*F*(1, 212)= 3.711, *p*= .055), but was not significant for males (*F*(, 202)= 1.305, *p*= .255). The effect size for females was also small (Cohen's *d*= .265).

Table 17. Summary of regression analyses for supplementary analyses with hometown friendship quality and fear of negative evaluation

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Homwtown FQ	.546	.162	.150	.559	.237	.155	.566	.242	.146
Fear of Negative Evaluation	.222	.030	.337	.163	.040	.268	.306	.046	.421
Hometown FQ X Fear of Negative Evaluation	-.035	.018	-.089	-.049	.026	-.124	-.031	.027	-.072
R^2	.161			.127			.222		
F	3.944*			3.711			1.305		

Note: Hometown friendship quality and fear of negative evaluation were centered at their means.
* *p*< .05 ** *p*< .01

Similarly, to investigate whether college friendship quality would moderate the relationship between fear of negative evaluation and problematic Internet use, a moderated regression was performed by entering college friendship quality (centered at the mean) and fear of negative evaluation (centered at the mean) on Step 1 and the interaction (the product of centered college friendship quality and centered fear of negative evaluation) on Step 2 predicting problematic Internet use. This relationship was not significant for the total sample (*F*(1, 423)= 2.044, *p*= .154). This relationship was

marginally significant for females ($F(1, 214)= 2.834$, $p= .094$), but was not significant for males ($F(1, 200)= .013$, $p= .911$). The effect size for females was small (Cohen's $d= .230$).

Table 18. Summary of regression analyses for supplementary analyses with college friendship quality and fear of negative evaluation

	Total Sample			Females			Males		
	B	**SE B**	**β**	**B**	**SE B**	**β**	**B**	**SE B**	**β**
College FQ	-.645	.290	-.100	-.529	.391	-.091	-.784	.483	-.102
Fear of Negative Evaluation	.237	.030	.359	.186	.040	.306	.326	.047	.444
College FQ X Fear of Negative Evaluation	.043	.030	.065	.063	.037	.112	.006	.052	.007
R^2	.149			.111			.215		
F	2.044			2.834			.013		

Note: College friendship quality and fear of negative evaluation were centered at their means.
* $p< .05$ ** $p< .01$

A similar set of analyses was conducted using the other subscale of the social anxiety symptoms measure, social avoidance and distress. To examine whether hometown friendship quality would moderate the relationship between social avoidance and distress and problematic Internet use, a moderated regression was performed by entering hometown friendship quality (centered at the mean) and social avoidance and distress (centered at the mean) on Step 1 and the interaction (the product of centered hometown friendship quality and centered social avoidance and distress) on Step 2 predicting problematic Internet use. This relationship was not significant for the total

sample ($F(1, 429)= .448, p= .504$), for females only ($F(1, 214)= .706, p= .402$), or for males only ($F(1, 205)= .178, p= .674$).

Table 19. Summary of regression analyses for supplementary analyses with hometown friendship quality and social avoidance and distress

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Hometown FQ	.402	.167	.114	.489	.251	.137	.410	.248	.109
Social Avoidance and Distress	.204	.042	.229	.145	.061	.169	.285	.062	.304
Hometown FQ X Social Avoidance and Distress	-.018	.027	-.031	-.034	.040	-.056	-.016	.039	-.028
R^2	.075			.063			.110		
F	.448			.706			.178		

Note: Hometown friendship quality and social avoidance and distress were centered at their means.
* $p< .05$ ** $p< .01$

To explore whether college friendship quality would moderate the relationship between social avoidance and distress and problematic Internet use, a moderated regression was performed by entering college friendship quality (centered at the mean) and social avoidance and distress (centered at the mean) on Step 1 and the interaction (the product of centered college friendship quality and centered social avoidance and distress) on Step 2 predicting problematic Internet use. This relationship was not significant for the total sample ($F(1, 429)= .327), p= .568$), for females only ($F(1, 216)= .255), p= .614$), or for males only ($F(1, 203)= 1.81, p= .18$).

Table 20. Summary of regression analyses for supplementary analyses with college friendship quality and social avoidance and distress

	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
College FQ	-.478	.308	-.075	-.281	.416	-.048	-.575	.509	-.077
Social Avoidance and Distress	.218	.043	.245	.171	.059	.201	.300	.065	.317
College FQ X Social Avoidance and Distress	.024	.041	.027	-.026	.052	-.035	.098	.073	.091
R^2	.072			.041			.113		
F	.327			.255			1.81		

Note: College friendship quality and social avoidance and distress were centered at their means.
* *p*< .05 ** *p*< .01

Analyses were conducted to explore whether college adjustment scores significantly differed for first-generation college students versus non-first-generation college students (see Table 7). There was a statistically significant difference in overall college adjustment scores between first-generation college students and non-first-generation college students, with non-first-generation college students having better overall college adjustment (*t*(224.928)= -2.435, *p*= .016). The effect size for this finding was small (Cohen's *d*= .325). Mean scores were also compared for the four subscales of the college adjustment measure (i.e., social, academic, personal, and college match). The significant difference in overall adjustment scores appears to be driven by the significant difference observed in the subscale that assessed college social adjustment scores, with non-first-generation college students having better college social adjustment than first-generation college students (t*(218.257) = -3.013,* p= .003). The effect size for this finding was also small (Cohen's *d*= .408). First-generation college students and non-first-

generation college students did not differ significantly on college academic adjustment (t(246.753)= -1.015, p=.311), college personal adjustment (t(251.292)= -1.187, p= .236), or college match (t(263.905)= -.29, p= .772).

Table 21. College adjustment for first-generation and non-first-generation students

	First-Generation Students		Non-First-Generation Students	
	M	*SD*	*M*	*SD*
Overall College Adjustment	22.16*	5.49	23.59*	5.58
Social Adjustment	7.67*	2.80	8.55*	2.66
Academic Adjustment	4.41	1.80	4.59	1.76
Personal Adjustment	6.77	2.33	7.05	2.34
College Match	3.39	1.09	3.43	1.14

Note: Higher scores indicate better adjustment. Asterisks denote that the mean scores for first-generation students and non-first-generation students were statistically significantly different (*p<.05).

Analyses were also conducted to explore whether how close a participant feels to a friend when using a particular type of electronic communication method moderates the relationship between the use of that communication method and friendship quality. For both hometown and college friendship, the top three most used electronic communication methods were text, Snapchat, and messenger. Participants reported that the top three electronic communication methods that made them feel close to their friends were telephone, text, and Snapchat. Therefore, text, Snapchat, messenger, and telephone were explored in these analyses.

To examine whether how close participants feel while texting would moderate the relationship between text use with hometown friend and hometown friendship quality, a

moderated regression was performed by entering how close participants feel while

texting (centered at the mean) and text use with hometown friend (centered at the mean)

on Step 1 and the interaction (the product of centered texting closeness and centered

texting use) on Step 2 predicting hometown friendship quality. This relationship was not

significant for the total sample ($F(1, 452)$= 2.1, p= .148), for females only ($F(1, 224)$=

1.73, p= .189), or for males only ($F(1, 218)$= .97, p= .326). Similar analyses investigating

use of text with college friend and college friendship quality were also not significant for

the total sample ($F(1, 451)$= .87, p= .352), for females only ($F(1, 226)$= 1.11, p= .293), or

for males only ($F(1, 215)$= .06, p= .809).

Table 22. Summary of regression analyses for supplementary analyses with texting
and friendship quality

	Hometown Friendship Quality								
	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Text	-.028	.007	-.221	-.018	.007	-.175	-.044	.016	-.251
Texting Closeness	-.373	.108	-.163	-.422	.164	-.170	-.084	.148	-.040
Text X Texting Closeness	.015	.010	.083	.017	.013	.093	.018	.018	.087
R^2	.077			.066			.049		
F	2.1			1.73			.97		

	College Friendship Quality								
	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Text	.025	.005	.236	.033	.008	.273	.015	.007	.169
Texting Closeness	.239	.059	.188	.217	.097	.143	.160	.073	.150
Text X Texting Closeness	-.008	.009	-.046	-.014	.014	-.070	.003	.012	.019
R^2	.102			.097			.067		
F	.87			1.11			.06		

Note: Text and texting closeness were centered at their means.
* p< .05 ** p< .01

To examine whether how close participants feel while using Snapchat would moderate the relationship between Snapchat use with hometown friend and hometown friendship quality, a moderated regression was performed by entering how close participants feel while using Snapchat (centered at the mean) and Snapchat use with hometown friend (centered at the mean) on Step 1 and the interaction (the product of centered Snapchat closeness and centered Snapchat use) on Step 2 predicting hometown friendship quality. This relationship was not significant for the total sample ($F(1, 443)=$ .23, $p= .632$), for females only ($F(1, 222)= 1.39$, $p= .24$), or for males only ($F(1, 210)= 2.37$, $p= .125$). Similar analyses examining use of Snapchat with college friend and college friendship quality were also not significant for the total sample ($F(1, 442)= .46$, $p= .496$), for females only ($F(1, 224)= .07$, $p= .792$), or for males only ($F(1, 207)= .05$, $p= .825$).

Table 23. Summary of regression analyses for supplementary analyses with Snapchat and friendship quality

Hometown Friendship Quality									
	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Snapchat	-.037	.020	-.166	-.045	.026	-.260	.000	.040	-.001
Snapchat Closeness	-.206	.105	-.103	.094	.159	.046	-.320	.145	-.165
Snapchat X Snapchat Closeness	.010	.021	.042	.037	.031	.171	-.088	.057	-.117
R^2	.037			.017			.037		
F	.23			1.39			2.37		

College Friendship Quality									
	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Snapchat	.001	.022	.009	.027	.019	.176	.004	.015	.024
Snapchat Closeness	.115	.057	.103	-.030	.099	-.024	.048	.073	.048
Snapchat X Snapchat Closeness	.008	.012	.093	-.006	.023	-.031	-.004	.019	-.020
R^2	.023			.022			.003		
F	.46			.07			.05		

Note: Snapchat and Snapchat closeness were centered at their means.
* $p< .05$ ** $p< .01$

To test whether how close participants feel while using messenger would moderate the relationship between messenger use with hometown friend and hometown friendship quality, a moderated regression was performed by entering how close participants feel while using messenger (centered at the mean) and messenger use with hometown friend (centered at the mean) on Step 1 and the interaction (the product of centered messenger closeness and centered messenger use) on Step 2 predicting hometown friendship quality. This relationship was significant for the total sample (F(1,

439)= 6.93, p=.009), and for females only ($F(1, 220)$= 7.18, p= .008). The effect sizes for

both the total sample (Cohen's d= .251) and for females (Cohen's d= .361) were small.

This relationship was not significant for males only ($F(1, 209)$= 1.59, p= .209). Similar

analyses looking at use of messenger with college friend and college friendship quality

were marginally significant for the total sample ($F(1, 435)$= 3.32, p= .069), and for males

only ($F(1, 205)$= 3.31, p= .07). The effect sizes for both the total sample (Cohen's d=

.175) and for males (d= .245) were small. The relationship was not significant for females

only ($F(1, 220)$= .1, p= .758).

Table 24. Summary of regression analyses for supplementary analyses with messenger and friendship quality

Hometown Friendship Quality									
	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Messenger	-.003	.022	-.009	.029	.036	.065	-.023	.028	-.075
Messenger Closeness	-.087	.092	-.046	-.092	.129	-.050	.012	.127	.007
Messenger X Messenger Closeness	-.049	.019	-.164	-.137	.051	-.208	-.027	.021	-.113
R^2	.033			.034			.029		
F	6.93**			7.18**			1.59		

College Friendship Quality									
	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Messenger	.000	.012	.002	.028	.024	.087	-.007	.013	-.036
Messenger Closeness	.087	.050	.084	.044	.076	.040	.023	.065	.025
Messenger X Messenger Closeness	.025	.014	.088	.011	.034	.022	.029	.016	.126
R^2	.015			.012			.018		
F	3.32			.1			3.31		

Note: Messenger and messenger closeness were centered at their means.
* p< .05 ** p< .01

To examine whether how close participants feel while using the phone would moderate the relationship between phone use with hometown friend and hometown friendship quality, a moderated regression was performed by entering how close participants feel while using the phone (centered at the mean) and phone use with hometown friend (centered at the mean) on Step 1 and the interaction (the product of centered phone closeness and centered phone use) on Step 2 predicting hometown friendship quality. This relationship was marginally significant for the total sample ($F(1, 448)= 2.92$, $p= .088$), and was significant for males only ($F(1, 214)= 5.2$, $p= .024$). The effect sizes for both the total sample (Cohen's $d= .161$) and for males (Cohen's $d= .312$) were small. The relationship was not significant for females only ($F(1, 224)= .002$, $p= .968$). Similar analyses looking at use of the phone with college friend and college friendship quality were significant for the total sample ($F(1, 446)= 9.08$, $p= .003$), and marginally significant for males only ($F(1, 211)= 2.87$, $p= .092$). The effect sizes for both the total sample (Cohen's $d= .285$) and for males (Cohen's $d= .233$) were small. This relationship was not significant for females only ($F(1, 225)= .927$, $p= .337$).

Table 25. Summary of regression analyses for supplementary analyses with phone and friendship quality

Hometown Friendship Quality									
	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Phone	.035	.035	.119	-.010	.046	-.043	.066	.050	.123
Phone Closeness	-.274	.103	-.139	.072	.159	.036	-.332	.128	-.182
Phone X Phone Closeness	-.070	.041	-.199	-.003	.063	-.008	-.138	.061	-.210
*R*²	.022			.004			.044		
F	2.92			.002			5.2*		

College Friendship Quality									
	Total Sample			Females			Males		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Phone	-.034	.025	-.081	.060	.050	.103	-.065	.032	-.142
Phone Closeness	.134	.054	.120	.025	.091	.020	.102	.066	.108
Phone X Phone Closeness	.096	.032	.180	.073	.076	.083	.075	.044	.117
*R*²	.029			.027			.034		
F	9.08**			.927			2.87		

Note: Phone and Phone closeness were centered at their means.
* *p*< .05 ** *p*< .01

Chapter 4: Discussion

Overview

The purpose of the present study was to investigate the role that electronic communication processes play in the friendship experiences of first-year college students, as well as the relations to psychological well-being and college adjustment. Given the importance of electronic communication in today's society, it is crucial that developmental psychology research examines how adolescents are using these technologies with their friends, and what associations this has with their psychosocial functioning.

The present study attempted to update and address gaps in the existing literature related to this topic. For example, due to the rapid pace at which electronic communication technologies are changing, existing research becomes outdated quickly. Additionally, many of the studies in this literature have been conducted outside of the United States (e.g., Baiocco et al., 2011; Valkenburg & Peter, 2009), or outside of the field of psychology (e.g., Chemers et al., 2001; Lee, 2009; Swenson et al., 2008).

The following discussion will explore the present study's findings, including moderation models and gender differences. All significant results yielded effect sizes in the small range. This indicates that the relationships amongst these variables are more complicated than presented here, and likely involve other variables not studied. Additionally, the discussion will offer possible explanations for the support or lack of support of the initial hypotheses and existing literature, limitations of the present study, and directions for future research.

Generally, the current study's primary aim of identifying relationships amongst friendship, mental health, and communication variables was achieved. For both males and females, there was a positive relationship between college friendship quality and hometown friendship quality. Also for both males and females, college adjustment was strongly, negatively associated with depressive symptoms, social anxiety symptoms, and loneliness, and these negative mental health outcomes were also all associated with each other for both genders. Problematic Internet use was most strongly, positively associated with social anxiety symptoms, followed by loneliness and depressive symptoms for males. For females, problematic Internet use was most strongly, positively associated with depressive symptoms, followed by loneliness and social anxiety symptoms. For both genders, problematic Internet use was also negatively associated with college adjustment, college, and hometown friendship quality. These associations are consistent with pilot work and helped to clarify the strength and direction of the relationships amongst these variables. More in depth analyses were conducted to explore these relationships further.

Friendship quality and communication modalities

The Rich-Get-Richer Hypothesis (Lee, 2009) proposes that individuals who are socially skilled and use the Internet for social interaction will become even more socially skilled. Previous research (Crawford & Manassis, 2011) also established a link between social skills and friendship quality. The current study, therefore, predicted that hours spent communicating online would moderate the relationship between hometown friendship quality and college friendship quality. Inconsistent with the current study's hypothesis and previous studies (e.g., Lee, 2009), hours of online communication did not

moderate the effect of hometown friendship quality on college friendship quality. This model was not significant for the overall sample, only females, or only males.

It may be that the current study's model did not map closely enough onto the Rich-Get-Richer Hypothesis to find support, despite a link between social skills and friendship quality (Crawford & Manassis, 2011). Specifically, the current study used hometown friendship quality as an indicator of social skills, but it may be that friendship quality reflects other variables in addition to social skills, such as proximity, involvement in school-organized or parent-organized social events, and shared history. Because friendship quality may reflect variables beyond social skills, this likewise may make using college friendship quality as an outcome measure of increased social skills problematic.

Additionally, it may be that Internet use was not measured precisely enough, as study participants were asked to give only a crude estimate of the amount of time spent using various online communication methods with friends. Participants were asked only about the quantity of their interactions, and no measurement of quality of interaction was included. Whether participants were having intimate, validating interactions with a friend, or were having impersonal, or even negative (e.g., insults, bullying) interactions with a friend remains unknown, and could influence the relationship. Finally, it is possible that the relationship between hometown friendship quality and college friendship quality, which is quite strong, is not susceptible to changes in Internet use, but is instead more influenced by other factors such as social skills and social anxiety symptoms.

Pilot work (Dieter et al., 2013) showed that males and females use electronic communication technologies differently. Since females' friendships are characterized by

higher intimacy compared to male friendships (e.g., Buhrmester & Furman, 1987), the current study also hypothesized that females' friendship quality would be significantly predicted by more intimate communication methods, while males' friendship quality would be significantly predicted by more casual communication methods. Analyses revealed partial support for this hypothesis in the current study. Specifically, although the more intimate communication methods of phone and in-person communication did not significantly predict hometown friendship quality for females or males, these modes of communication did significantly predict college friendship quality for both females and for males.

These results differ from pilot work (Dieter et al., 2013), which showed that phone communication was associated with higher hometown friendship quality for females, but not males, and that in-person communication was related to higher college friendship quality for females only. Pilot work also found that phone communication was not associated with college friendship quality for either gender. Due to the nature of hometown friendships, individuals who are away at college are not as likely to spend in-person time with their best hometown friend, a problem that does not exist in college best friendships. It is likely, therefore, that students develop other mechanisms for maintaining intimacy. With regard to phone use, this is a communication modality that is currently in flux. With the introduction of other electronic communication modalities, such as texting, phone use has reduced in popularity. It may be, therefore, that those friendships that find phone communication effective at maintaining the relationship (i.e., those individuals who demonstrate a relationship between phone use and friendship quality) continue to

use the phone, whereas those students who do not find it effective no longer continue to use it as a communication modality with their friends.

The more casual communication methods of texting and social networking site communication significantly predicted hometown friendship quality for males, but not for females. This is consistent with pilot work (Dieter et al., 2013), which found that social networking site usage and texting were associated with higher hometown friendship quality for males. Pilot work also demonstrated that texting was related to higher hometown friendship quality for females, however. Given that electronic communication technologies are rapidly evolving, it may be that, compared to the time when the pilot study was conducted, there were more electronic communication technologies available at the time of the current study. Perhaps females are communicating on a wider variety of applications and modalities, and texting no longer reaches significance, or has fallen out of favor.

Texting and social networking site communication also significantly predicted college friendship quality for males and females. These results are somewhat consistent with pilot work (Dieter et al., 2013), which found that social networking site usage was related to higher college friendship quality for both genders. However, pilot work showed that texting was related to college friendship quality for females only. Again, this could be related to the content of the messages, and the overlap amongst various methods of communication. For example, it could be that males use social networking sites to send brief, text-like messages to college friends, rather than text messaging itself, and this is why it is related to college friendship quality. Perhaps females use the two technologies

interchangeably for sending brief messages, and use both to set up in-person meetings, which are also predictive of friendship quality.

Results indicated that, overall, college friendship quality was significantly predicted by a variety of communication modalities (i.e., phone, in person, texting, and social networking sites) for both males and females. Females used Instagram, Snapchat, and in person communication with a college friend significantly more than males did. It is likely that college friendship quality is predicted by a variety of communication modalities, because college friends have more access to and time for a variety of communication modalities than hometown friends. Since college friends are likely to see each other in person frequently, it is possible that they use a wide variety of other tools to arrange for (e.g., text, phone) and document (e.g., social networking sites, especially picture sites) these social interactions. That females used some modalities more than males is most likely related to the finding described in more detail below, specifically that females communicate more online than males in general.

For hometown friendship quality, the only significant electronic communication predictors for males were texting and social networking site usage. Although we do not know the content of the communication, this finding is consistent with past research that demonstrates that male friendships are less intimate (Buhrmester & Furman, 1987). It is likely that texting and social networks allow male friends to remain in frequent contact, even if the content is shorter and less intimate. Females used Instagram, Snapchat, and texting significantly more with a hometown friend than males did, and males used emailing significantly more with a hometown friend than females. The current study and pilot work (Dieter et al., 2013) both found that emailing was not significantly related to

hometown friendship quality. Therefore, although males used emailing more with a hometown friend than females, this does not appear to impact their friendship quality. Females, again, use electronic communication more in general, and it appears that they prefer Instagram and Snapchat (i.e., visual, pictorial communication) more than males in general.

Overall, females used online communication more than males at a marginally significant level. Therefore, it may be that females simply communicate with their friends more than males do. Male friendships have been consistently shown to be less intimate (Buhrmester & Furman, 1987), and therefore may require less communication to maintain the friendship. Female friendships, on the other hand, are more intimate, and require more communication generally to maintain the level of intimacy (Rose, 2002; Rudolph, Ladd, & Dinella, 2007). The current study suggests that females like to use a variety of communication modalities, including text-based (e.g., texting), image-based (e.g., Instagram, Snapchat), and voice-based (e.g., phone), in order to communicate with friends and maintain the level of intimacy in the friendship.

The present study found that female participants reported feeling closest with their friends when they correspond by in-person communication, followed by texting, telephone, Snapchat, video messaging, messenger, Facebook, Instagram, Twitter, emailing, Tumblr, in order. Male participants reported feeling closest with their friends when they communicate by in person communication, followed by telephone, texting, Snapchat, video messaging, messenger, Facebook, Twitter, Instagram, emailing, and Tumblr, in order. Compared to males, females reported feeling statistically significantly closer to friends while using Instagram, Snapchat, emailing, texting, messaging, video

messaging, the telephone, and in person communication. Again, it appears that females prefer to use a wider variety of different electronic communication with their friends than do males. Past research has established that intimacy in female friendship is greater than in male friendship (e.g., Buhrmester & Furman, 1987), and the current study also found higher friendship quality for females for both hometown and college friendships. It appears that for females, rather than a certain communication modality providing intimacy, it may be the content of the communication, regardless of modality, that leads to intimacy and friendship quality. The current study did not assess the content of electronic communication, but instead asked participants to report only the quantity of use per week. Exploring the content of communication between friends is an important future direction, which will help clarify this relationship.

Follow-up analyses were conducted to explore whether how close a participant feels to a friend when using a particular type of electronic communication method moderates the relationship between the use of that communication method and friendship quality. How close a participant feels to a friend while texting did not moderate the relationship between text use with a hometown friend and hometown friendship quality or the relationship between text use with a college friend and college friendship quality. Similarly, how close a participant feels to a friend while using Snapchat did not moderate the relationship between Snapchat use with a hometown friend and hometown friendship quality or the relationship between Snapchat use with a college friend and college friendship quality. Thus, for these two electronic communication methods, the relationship between frequency of use with a friend and friendship quality was not moderated by perceived intimacy. Both texting and Snapchat were designed to provide

brief communication between friends. Although texting applications have changed recently to become more like messenger applications, texts historically had character limits and were designed for short, quick communication. Similarly, Snapchat is designed so that the picture receiver may view a sent photo for only a short time limit. These less personal and short duration contacts, therefore, may not provide intimacy in a friendship, but may instead increase frequency (versus quality) of communication between friends and may facilitate in-person meetings or plans for more intimate communication (e.g., make plans for a phone call or in-person meeting).

How close participants feel while using messenger significantly moderated the relationship between messenger use with a hometown friend and hometown friendship quality for females, but there was no moderation regarding college friendships. In contrast, for males, although there was no moderation regarding high school friendships, how close males feel while using messenger with college friends was a marginally significant moderator of the relationship between messenger use and college friendship quality. Thus, for females, the effect of messenger use on hometown friendship quality, and for males, the effect of messenger use on college friendship quality, were moderated by perceived intimacy of the communication method. Messenger applications, by design, may allow for greater intimacy than texting and Snapchat due to a lack of limits of length and time of the message. It is likely that females are taking advantage of this feature, and are using messenger to have more lengthy, intimate conversations with their hometown friend. Males, on the other hand, may be using messenger in a way that more resembles text messaging with their college friends. Specifically, many messenger applications can now be used on smart phones, and resemble text messaging more closely. The current

study did not assess content of messages, but this would be an important direction for future studies, in order to more clearly define this relationship.

Finally, for males only, how close participants feel while using the phone moderated the relationship between phone use with a hometown friend and hometown friendship quality, and the relationship between phone use with a college friend and college friendship quality (at a marginally significant level). Overall, males did not report using the phone very much per week (mean= 1.22 hours with hometown friend; mean=.87 hours with college friend). Therefore, it may be that those males who perceive the phone as being an intimate form of communication use it more and therefore have higher friendship quality. Alternatively, those males who have low intimacy friendships may not seek to use the phone in their friendship. Overall, females may have greater intimacy in their communication, regardless of method, whereas perhaps for males, the phone allows greater intimacy than other methods.

College adjustment and electronic communication use

The Social Compensation Hypothesis (e.g., Lee, 2009) proposes that individuals who have difficulty forming relationships in person may be more successful in developing relationships online due to the anonymity of the Internet. The present study explored whether communicating online with a college friend could serve a compensatory role in the relationship between social anxiety symptoms and college friendship quality. Support for such a relationship was not found in the current study, and hours of online communication with a college friend did not moderate the effect of social anxiety symptoms on college social adjustment for the overall sample, females only, or males only.

It is important to note that when the Social Compensation Hypothesis was proposed, electronic communication use was not as widespread as it is today. Therefore, instead of attracting only individuals with certain characteristics (i.e., individuals who have difficulty forming relationships offline), electronic communication modalities are now used by a much larger and more diverse group. The current study explored how the Social Compensation hypothesis could translate into in-person college friendships, but perhaps the hypothesis, as originally proposed, applies to online-only friendships (i.e., socially anxious individuals compensate for their difficulty with relationships by forming online friendships). Additionally, past research (e.g., Lee & Stapinski, 2012), pilot work (Dieter, 2014), and the current study found that social anxiety symptoms are associated with problematic Internet Use. Perhaps when socially anxious individuals try to compensate with online communication, they fall into patterns of problematic Internet use, which can interfere with relationships.

Pilot work (Dieter et al., 2012) found that individuals who had both a low quality hometown best friendship and a low quality college best friend had more social anxiety symptoms and fear of negative evaluation. Perhaps for these individuals who have struggled to form high quality friendships throughout their adolescence, communicating online does not provide enough compensation to increase friendship quality.

Problematic Internet use

Pilot work (Dieter, 2014) demonstrated that for males, college friendship quality moderated the relationship between fear of negative evaluation and problematic Internet use. It also found that for males, both hometown and college friendship quality moderated the relationship between depressive symptoms and problematic Internet use.

The current study sought to extend these findings, and hypothesized that friendship experiences (i.e., hometown friendship quality and college friendship quality) would moderate the relationship between different markers of mental health (i.e., social anxiety symptoms, depressive symptoms, and loneliness) and problematic Internet use.

Previous research has shown that heavy Internet use is related to a reduction in psychological well-being (Huang, 2010), and that problematic Internet use is linked to social anxiety (Lee & Stapinski, 2012) and to depression (Ha et al., 2007). Past research has also indicated a protective influence of friendships against anxiety, depression, and loneliness (Brendgen et al., 2013; Erath et al., 2010; Nangle et al., 2013).

The current study found partial support for hypotheses exploring whether friendship experiences would moderate the relationship between mental health variables and problematic Internet use. Specifically, the results of the present study revealed different relationships amongst the variables based on both gender and friendship type (i.e., hometown versus college). For loneliness, college friendship quality marginally significantly moderated the relationship between loneliness and problematic Internet use for the overall sample, but not for only females or only males. The relationship with hometown friendship quality was not significant. Regarding the finding that the relationship with college friendships, but not hometown friendships, was marginally significant, it may be that loneliness is more susceptible to close-proximity friendships (e.g., college friends). Perhaps because individuals must maintain hometown friends from a distance, they do not expect the same provisions from the friendship, such as spending in-person time together. This may be something they expect more from their college friends. Thus, results indicate that the effect of loneliness on problematic Internet use is

not highly susceptible to changes in friendship quality, especially for hometown friends, and that this likely does not differ by gender.

For social anxiety symptoms, hometown friendship quality marginally significantly moderated the relationship between social anxiety symptoms and problematic Internet use for females only. The relationship with college friendship quality was not significant. This is somewhat consistent with pilot work (Dieter, 2014), which did not find significant moderations for either hometown or college friendship in the relationship between social anxiety symptoms and problematic Internet use. The current study found that the moderation model was significant for females with their hometown friendships providing the protective factor. It may be that social anxiety symptoms have inhibited friendship formation in college, and so a hometown friend is the only friend available to provide support.

To examine the role of social anxiety symptoms in more detail, social anxiety symptoms were also broken down into the subscales of fear of negative evaluation and social avoidance and distress. For fear of negative evaluation, both hometown and college friendship quality marginally significantly moderated the relationship between fear of negative evaluation and problematic Internet use for females. No significant relationships emerged when looking at social avoidance and distress. It appears that for females with social anxiety symptoms, particularly with regard to fear of negative evaluation, hometown and college friends play a somewhat protective role against developing problematic Internet use. These high-quality friendship experiences likely provide validation and boosts to self-esteem that may help these females engage in college

experiences despite their anxiety symptoms, instead of turning the Internet to avoid anxiety-provoking situations.

These results differ from those in pilot work (Dieter, 2014), which found that college friendship quality moderated the relationship between fear of negative evaluation and problematic Internet use for males, but not females. However, the current study did not support this relationship. Past research has demonstrated the relationship between social anxiety and problematic Internet use (e.g., Lee & Stapinski, 2012), and also that males are more likely to develop problematic Internet use compared to females (Lam et al., 2009). Therefore, the relationship between fear of negative evaluation and problematic Internet use for males may be robust to moderation. Similarly, social avoidance and distress specifically addresses an individual's avoidance of social situations. When this is high, it is likely to interfere with friendships, and also strengthen the relationship between social anxiety and problematic Internet use, making it robust to moderation.

Pilot work (Dieter, 2014) discovered that for males, both hometown and college friendship quality moderated the relationship between depressive symptoms and problematic Internet use. Therefore, similar predictions were made for the current study, with an emphasis on exploring gender differences. Results of the current study did vary by both gender and friendship type. Specifically, for males, hometown friendship quality moderated the relationship between depressive symptoms and problematic Internet use. In contrast, for females, college friendship quality moderated the relationship between depressive symptoms and problematic Internet use. This result seems to indicate that friendships can, in general, play a moderating role in the relationship between depressive

symptoms and problematic Internet use, but that different types of friends are more effective depending on gender. Perhaps for females, having a friend to engage in activities with in person (i.e., the college best friend), or discuss negative mood with in person is the protective factor. One depressive symptom is a withdrawal from, and lack of interest in, enjoyable activities. Likely, a close-proximity (i.e., college) friend could help an individual with depressive symptoms by encouraging engagement activities together, whereas a hometown friend may be able to provide only long-distance emotional support. For males, since friendships are less intimate overall (Buhrmester & Furman, 1987), perhaps a hometown friend would nevertheless provide more intimacy than a newly formed college friendship. It may be that for males, a level of trust and intimacy developed over time is the protective factor against problematic Internet use.

Additional analyses: First-generation college students

Although not the primary purpose of this study, additional information regarding the participants was collected focusing on whether or not they were first-generation college students. Analyses were then conducted to explore the role of this important demographic factor of first-generation student status in students' college adjustment. Previous research has shown that second-generation college students experience significantly greater social adjustment than first-generation students (Hertzel, 2010). Further, this study demonstrated that whereas second-generation students placed high value on the social and extracurricular activities in college, first-generation students tended to value intellectual activities, and this predicted their college adjustment. Results from the current study were consistent with these prior findings. Overall, non-first-generation college students had better college adjustment than first-generation students.

Specifically, when broken into the subscales of social adjustment, academic adjustment, personal adjustment, and college match, non-first-generation college students were consistently found to have better college social adjustment than first-generation college students.

These findings are consistent with previous research (Hertzel, 2010) that indicates that first-generation college students may not be investing as much energy into social activities as students who are not first-generation. While focusing more on their academic work, they may be missing opportunities for socialization in college, which, because they may have less support from family (Hertzel, 2010) can lead to attrition. Therefore, first-generation students may need programs and mentors who address problems they specifically may have as first-generation students.

Implications for intervention

The current study explored relationships amongst variables at the demographic level (e.g., first-generation student status), mental health variables (e.g., social anxiety symptoms, depressive symptoms), friendship variables, and college adjustment variables. Appropriate interventions would take all of these variables into account, and would target an individual's specific presenting problem. In terms of college adjustment, many colleges and universities provide orientation programs designed to help students acclimate to the campus environment and form social relationships. During the implementation of these programs, careful attention should be paid to first-generation college students, who may not be as likely to participate as second-generation college students (Hertel, 2010). Additionally, students experiencing depressive symptoms may

withdraw from these social activities, and students with social anxiety symptoms may avoid them.

Due to the protective role of friends, students should be encouraged to maintain and form high-quality friends. Social skills training may be helpful for individuals who lack the skills needed to form high-quality friends (Silverman, Pina, & Viswesvaran, 2008). The current study showed that encouraging electronic communication in friendships may help strengthen them in certain situations. Students should be educated about the potential utility of electronic communication in friendships. For example, the current study found that phone, in-person, texting, and social networking site communication predicted college friendship quality for both genders. Education should also warn about the potential for developing problematic Internet use, as this can result in negative consequences for an individual's functioning.

Individuals suffering from mental illnesses such as depression and anxiety should be encouraged to seek the help of a mental health professional. Evidence-based treatments for depression and anxiety (e.g., Cognitive-Behavioral Therapy) should be provided, with an emphasis on the individual's use of the Internet. Specifically, treatment should assess whether an individual has developed problematic Internet use or is at risk of developing it, and should help formulate alternative coping methods for anxiety and negative mood as appropriate. These individuals should also be encouraged to engage in social activities, so that they can create meaningful relationships and integrate into the college community. Interventions could provide these social opportunities, and also offer supports related to anxiety for the students.

Limitations and future directions

The current study revealed some findings that were consistent with study hypotheses and past research, and some results that varied from study hypotheses and past research. As presented above, many studies on adolescent Internet use have been conducted outside of the United States, outside of the field of psychology, or examined outdated technologies. While the current investigation addressed these concerns from the existing literature, this study nevertheless has some important limitations, which will be considered below along with future directions for this important line of research.

Study design

Despite the advantages of the current study over existing literature, perhaps the greatest remaining limitation of the present study is the correlational design, which does not allow for examination of directionality of the findings. The current study revealed some important relationships amongst friendship experiences, online communication and Internet use, and mental health and well-being; however, the direction of these relationships remains unknown. For example, although the present study found that for males, the relationship between depressive symptoms and problematic Internet use is moderated by hometown friendship quality, it is possible that problematic Internet use is, in fact causing depressive symptoms. The design of the current investigation does not allow for a causal explanation of findings. Similarly, although this study hypothesized that communication strengthened friendships, it is, of course, possible that friendship quality is instead predicting communication (i.e., if a friendship is deteriorating, surely there is a reduction in quantity and quality of communication). Although an experimental design that encouraged or limited online communication between friends would be ideal,

more realistically, future research should consider using a longitudinal study to explore these relationships. For example, an investigation that examined friendship experiences and mental health prior to a student moving to college, and then measured these variables throughout the first year of college may be able to see patterns emerge in the relationships amongst friendship formation and deterioration, as well as with mental health variables and college adjustment.

Timing of data collection

Similarly, the timing of the data collection for the present study may have limited the results. Data were collected throughout the first semester of college. Given that some students completed the survey in their first month of college, and others completed it during their fourth month of college, their experiences may have differed. For example, those that completed the survey at the beginning of the semester may have felt more strongly attached to their hometown friend, may not yet have formed as high-quality a college friendship, and may have been experiencing more negative mental health effects of having just transitioned to college than those who completed the survey at the end of the semester. Again, a longitudinal study that collects data at set time points throughout the first semester or first year of college would help to address this limitation more clearly.

Measures

Perhaps the most difficult methodological issue to address in research exploring online communication use is to find a way to measure what adolescents are actually doing when they are communicating online. The current study created a social experiences questionnaire, which asked participants about the length of time and types of

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communications used to stay in touch with friends, as well as what devices they communicate on. This measurement may be problematic for several reasons. The first is that it asks participants to recall and estimate how frequently they use each communication method per week. Many participants likely underestimated their use, while others probably overestimated their use. Additionally, use of these different methods may vary daily or weekly for these participants. Finally, the current study did not obtain any data on what participants are doing when using each of these methods (e.g., the content and quality of the communications). Future research should consider a study design that would allow the collection of specific data and messages shared between participants and their friends, although the ethical concerns related to this may be problematic. These data could be coded for different variables to determine more precisely what about different communication methods (e.g., the emoticons available, ability to write long messages, ability to send pictures) is driving the relationship between their use and friendship quality.

Study sample

Finally, generalizability of the current study's findings is limited by the confines of the sample characteristics. All participants were first-year college students at a rural university in New England. While some male participants were recruited through the University at large, most participants were enrolled in Psychology 100. Although a strength of the current study was approximately equal numbers of male (n=227) and female (n=235) participants, 88% of participants self-identified as Caucasian. Therefore, findings of the current study represent relationships for generally white, rural, college students. Future studies may wish to examine these relationships amongst a more diverse

population. Although the current study specifically looked at college students ages 18 and 19, future studies may also wish to explore how these variables are related in younger adolescents.

Summary

Given the increasingly central role that electronic communication processes play in adolescents' lives, a better understanding of how these processes influence adjustment is important to both describe behavior and inform interventions. Therefore, the purpose of the present study was to investigate the relationships amongst online communication processes, hometown and college friendship experiences, college adjustment, and mental health and well-being.

The current study revealed key findings, including that phone and in-person communication predicted college friendship quality for females and for males. Additionally, for males, texting and social networking site communication predicted hometown and college friendship quality, and for females, these modes of communication predicted college friendship quality. For females, college friendship quality significantly moderated the relationship between depressive symptoms and problematic Internet use, and hometown friendship quality marginally significantly moderated the relationship between social anxiety symptoms and problematic Internet use. For males, hometown friendship quality significantly moderated the relationship between depressive symptoms and problematic Internet use. Also, for the overall sample, college friendship quality marginally significantly moderated the relationship between loneliness and Problematic Internet use. Taken together, these findings reveal that different friendship experiences can have a protective effect in different situations. The

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results also reveal which types of communication may be able to strengthen these protective friendship relationships. Therefore, for college students suffering from social anxiety symptoms, depressive symptoms, or loneliness, who turn to excessive Internet use to reduce these negative feelings, an intervention that encourages positive friendship experiences may be helpful.

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Appendix A: Sona Study Summary
Recruitment

Sona Study Summary

Earn 1 research credit in our online survey! We are interested in the relations among students' friendship experiences, their thoughts and behaviors, and their adjustment to college. You must be a first year student and 18 or 19 years old to participate in this study. Please fill out our online survey. You can complete the survey on your own time, but be prepared to take the survey in one sitting, as the link cannot be saved for a later time. The survey should take approximately one hour to complete.

Recruitment Email

Seeking **Male First-Year Students** to Participate in an Online Study on Friendship Experiences and Adjustment to College

Earn a $10 Amazon gift card for participating in our online survey! We are interested in the relations among students' friendship experiences, their thoughts and behaviors, and their adjustment to college. **You must be a male first year student and 18 or 19 years old to participate in this study.** Please fill out our online survey. You can complete the survey on your own time, but be prepared to take the survey in one sitting, as the link cannot be saved for a later time. The survey should take approximately one hour to complete. If you have already participated in our study via the Psychology Department's SONA system, you are not eligible to participate.

(study link)

Peer Experiences, Electronic Communication, and College Adjustment
<u>Consent Form</u>

The purpose of this study is to better understand the personal and peer experiences of college students as they adjust to college. You are invited to participate in this study because you are 18 or 19 years of age and are a first-year student of the University of Maine, currently enrolled in an undergraduate psychology course. The principal investigator of this study is Patricia Dieter, a graduate student in the developmental-clinical psychology program, and Dr. Cynthia Erdley, a professor in the psychology department. Your participation in this study will help further the understanding of the experiences of college students with regard to social and personal adjustment.

What will you be asked to do during this study?
- After reading this form and indicating that you agree to participate in this study, you will be asked to complete several questionnaires using Qualtrics, an online survey format. The questionnaires will ask you a variety of questions about your friendships from home (e.g. How often do you spend time with your friend from home?) and from college (e.g. How often do you and your college friend go places and do things together?) and will also ask about the quality of your closest friendships (e.g. How much do you and your closest hometown friend get on each other's nerves?; How much does your closest college friend really care about you?). Other questionnaires will ask you about your mood (e.g. I feel sad much of the time), as well as general demographic information (e.g., age, ethnicity).
- These questionnaires will take approximately one hour to complete.

Risks:
Some questions may make you feel uncomfortable or distressed. You may skip any question that you would rather not answer, and you may stop participating at any time during the study. If you would like to speak with a professional about your experiences, you are encouraged to contact the University of Maine Counseling Center (581-1392), which provides free services to UMaine students. Information about the Counseling Center, including their hours of operation, can be found at http://umaine.edu/counseling/contact-us/

Benefits:
Although there may be no direct benefit to you for participating in this research, your responses will tell us more about the factors involved in adjusting to college with regard to personal and social experiences. This information will help to further research in the area of college adjustment, which could lead to future interventions for those who have difficulty adjusting to college.

Compensation

You will receive one research credit for participating in the survey. Even if you choose to skip some questions, you will still receive one credit for participating.

Confidentiality:

Your responses to the questionnaires will be anonymous. There is a temporary link between the Qualtrics website and the Sona website that will ensure that you will receive credit for your participation. There will be no connection between your responses to the questionnaires and any of your identifying information. The Qualtrics website is encrypted to protect data during transmission. This website has been established as a secure method for the transmission of private and confidential information in the form of surveys and questionnaires. Qualtrics has taken many safety measures to insure security in their software, hardware, network, and physical database in order to keep information confidential; you may view details regarding their security measures at www.qualtrics.com. After we have finished collecting data (December, 2014), we will download it to a database in Dr. Erdley's locked lab and the data file will be deleted from Qualtrics. Your answers to the questionnaires will be kept indefinitely in Dr. Erdley's locked laboratory. If the study is published or presented, only information based upon the entire group of participants will be used.

Questions?

If at any time you have questions or concerns about your participation in this project, you may contact Patricia Dieter via first class. You may also contact Dr. Cynthia Erdley at 581-2040 or via first class. If you have any questions about your rights as a research participant, please contact Gayle Jones, Assistant to the University of Maine's Protection of Human Subjects Review Board. Gayle Jones can be reached on FirstClass, (207) 581-1498, or at 114 Alumni Hall, Orono, ME 04469.

If you would like to print the consent form, go to File on your toolbar and click on print.

Voluntary

Your participation in this study is voluntary. You may choose to withdraw from the study at any point. You may also choose to skip any questions that you do not want to answer.

Would you like participate in this study?
_____Yes
_____No

Appendix C: Demographic Questionnaire

1. Please provide the following information about yourself:
   a. What is your gender?
      i. Male
      ii. Female
      iii. Transgender
   b. Please enter your age: _____
   c. Ethnicity
      i. Caucasian
      ii. Asian
      iii. Hispanic
      iv. African American
      v. American Indian
      vi. Other (please specify)
   d. What year are you at UMaine?
      i. First Year
      ii. Sophomore
      iii. Junior
      iv. Senior
      v. Non-degree student
2. How many semesters have you completed at UMaine? _____
3. What year did you graduate from high school? _____
4. Are you a first-generation college student (i.e., the first in your family to attend a four-year university to attain a bachelor's degree)?
5. Where do you live
      i. On campus – alone
      ii. On campus – with roommates
      iii. Off campus - alone
      iv. Off campus with relatives
      v. Off campus with nonrelatives

6. Hours of travel time between UMaine and your hometown_____
7. On average, how many times do you plan to travel to your hometown this semester? ____

Appendix D : Beck Depression Inventory-II

Instructions: This questionnaire consists of 20 groups of statements. Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. If several statements in the group seem to apply equally well, choose the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

1. Sadness
  0 I do not feel sad.
  1 I feel sad much of the time.
  2 I am sad all the time.
  3 I am so sad or unhappy that I can't stand it.

2. Pessimism
  0 I am not discouraged about my future.
  1 I feel more discouraged about my future than I used to be.
  2 I do not expect things to work out for me.
  3 I feel my future is hopeless and will only get worse.

3. Past Failure
  0 I do not feel like a failure.
  1 I have failed more than I should have.
  2 As I look back, I see a lot of failures.
  3 I feel I am a total failure as a person.

4. Loss of Pleasure
  0 I get as much pleasure as I ever did from the things I enjoy.
  1 I don't enjoy things as much as I used to.
  2 I get very little pleasure from the things I used to enjoy.
  3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings
  0 I don't feel particularly guilty.
  1 I feel guilty over many things I have done or should have done.
  2 I feel quite guilty most of the time.
  3 I feel guilty all of the time.

6. Punishment Feelings
  0 I don't feel I am being punished.
  1 I feel I may be punished.
  2 I expect to be punished.
  3 I feel I am being punished.

7. Self-Dislike
  0 I feel the same about myself as ever.
  1 I have lost confidence in myself.
  2 I am disappointed in myself.
  3 I dislike myself.

8. Self-Criticalness
  0 I don't criticize or blame myself more than usual.
  1 I am more critical of myself than I used to be.
  2 I criticize myself for all of my faults.
  3 I blame myself for everything bad that happens.

 9. Crying
  0 I don't cry anymore than I used to.
  1 I cry more than I used to.
  2 I cry over every little thing.
  3 I feel like crying, but I can't.

10. Agitation
  0 I am no more restless or wound up than usual.
  1 I feel more restless or wound up than usual.
  2 I am so restless or agitated that it's hard to stay still.
  3 I am so restless or agitated that I have to keep moving or doing something.

11. Loss of Interest
  0 I have not lost interest in other people or activities.
  1 I am less interested in other people or things than before.
  2 I have lost most of my interest in other people or things.
  3 It's hard to get interested in anything.

12. Indecisiveness
  0 I make decisions about as well as ever.
  1 I find it more difficult to make decisions than usual.
  2 I have much greater difficulty in making decisions than I used to.
  3 I have trouble making any decisions.

13. Worthlessness
  0 I do not feel I am worthless.
  1 I don't consider myself as worthwhile and useful as I used to.
  2 I feel more worthless as compared to other people.
  3 I feel utterly worthless

14. Loss of Energy
 0 I have as much energy as ever.
 1 I have less energy than I used to have.
 2 I don't have enough energy to do very much.
 3 I don't have enough energy to do anything.

15. Changes in Sleeping Pattern
 0 I have not experienced any change in my sleeping pattern.
 1a I sleep somewhat more than usual.
 1b I sleep somewhat less than usual.
 2a I sleep a lot more than usual.
 2b I sleep a lot less than usual
 3a I sleep most of the day.
 3b I wake up 1-2 hours early and can't get back to sleep.

16. Irritability
 0 I am no more irritable than usual.
 1 I am more irritable than usual.
 2 I am much more irritable than usual.
 3 I am irritable all the time.

17. Changes in Appetite
 0 I have not experienced any change in my appetite.
 1a My appetite is somewhat less than usual.
 1b My appetite is somewhat greater than usual.
 2a My appetite is much less than before.
 2b My appetite is much greater than usual.
 3a I have no appetite at all.
 3b I crave food all the time.

18. Concentration Difficulty
 0 I can concentrate as well as ever.
 1 I can't concentrate as well as usual.
 2 It's hard to keep my mind on anything for very long.
 3 I find I can't concentrate on anything.

19. Tiredness or Fatigue
 0 I am no more tired or fatigued than usual.
 1 I get more tired or fatigued more easily than usual.
 2 I am too tired or fatigued to do a lot of the things I used to do.
 3 I am too tired or fatigued to do most of the things I
    used to do.

20. Loss of Interest in Sex
    0 I have not noticed any recent change in my interest in sex.
    1 I am less interested in sex than I used to be.
    2 I am much less interested in sex now.
    3 I have lost interest in sex completely.

Appendix E: The College Freshman Adjustment Scales

Use these numbers to tell how much you feel something is true for you:

1. Sometimes I fear failure in college

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
really false   false   true   really true

2. I am awkward in meeting people

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
really false   false   true   really true

3. I am an aggressive and outgoing person

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
really false   false   true   really true

4. So far, my college achievements have been about as expected

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
really false   false   true   really true

5. I am a rather shy and timid individual

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
really false   false   true   really true

6. I am often ill at ease with people

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
really false   false   true   really true

7. I believe I have chosen the right major

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
really false   false   true   really true

8. I am a good conversationalist

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
really false   false   true   really true

9. I often feel that people are talking about me

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
really false   false   true   really true

10. I often feel depressed and discouraged

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
really false   false   true   really true

11. Sometimes I have feelings of inferiority

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
really false   false   true   really true

12. My career goals are clear and they are right for me

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
really false   false   true   really true

13. I am as happy here as I would be at another college

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
really false   false   true   really true

14. I often feel left out of things

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
really false   false   true   really true

Appendix F : Social Avoidance and Distress (#1-28), and Fear of Negative Evaluation (#29-58) Scales

Instructions: The following statements describe how people sometimes feel. If the statement describes the way you usually feel, mark your response as "True." If the statement does not describe the way you usually feel, mark it as "False."

1. I feel relaxed even in unfamiliar social situations…………………………………………..____
2. I try to avoid situations which force me to be very sociable…………………………....____
3. It is easy for me to relax when I am with strangers..……………………………………...____
4. I have no particular desire to avoid people…………………………………………………..____
5. I often find social occasions upsetting………………………………………………………….____
6. I usually feel calm and comfortable at social occasions………………………………..____
7. I am usually at ease when talking to someone of the opposite sex………………………..____
8. I try to avoid talking to people unless I know them well…………………………………____
9. If the chance comes to meet new people, I often take it……………………………………..____
10. I often feel nervous or tense in casual get-togethers in which both sexes are present...____
11. I am usually nervous with people unless I know them well…………………………………..____
12. I usually feel relaxed when I am with a group of people……………………………………....____
13. I often want to get away from people……………………………………………….........____
14. I usually feel uncomfortable when I am in a group of people I don't know…………....____
15. I usually feel relaxed when I meet someone for the first time………………………….....____
16. Being introduced to people makes me tense and nervous……………………………......____

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17. Even though a room is full of strangers, I may enter it anyway…………………………____
18. I would avoid walking up and joining a large group of people…………………......____
19. When my superiors want to talk with me, I talk willingly…………………………......____
20. I often feel on edge when I am with a group of people………………………….......____
21. I tend to withdraw from people……………………………………………………………..____
22. I don't mind talking to people at parties or social gatherings………………………….____
23. I am seldom at ease in a large group of people………………………………………….____
24. I often think up excuses in order to avoid social engagements…………………………..____
25. I sometimes take the responsibility for introducing people to each other…………......____
26. I try to avoid formal social occasions…………………………………………………………____
27. I usually go to whatever social engagements I have…………………………….......____
28. I find it easy to relax with other people……………………………………………….......____
29. I rarely worry about seeming foolish to others……………………………….................____
30. I worry about what people will think of me even when I know it doesn't make any difference……………………………………………………………………………………
…….____
31. I become tense and jittery if I know someone is sizing me up………………………….____
32. I am unconcerned even if I know people are forming an unfavorable impression of me…………………………………………………………………………………….____
33. I feel very upset when I commit some social error………………………………………… ____
34. The opinions that important people have of me cause me little concern……………….____
35. I am often afraid that I may look ridiculous or make a fool of myself………………....____
36. I react very little when other people disapprove of me……………………………….......____
37. I am frequently afraid of other people noticing my shortcomings…………....................____

38. The disapproval of others would have little effect on me……………………..…………____
39. If someone is evaluating me I tend to expect the worst…………………….…..……..____
40. I rarely worry about what kind of impression I am making on someone……………..____
41. I am afraid that others will not approve of me……………………………...................____
42. I am afraid that people will find fault with me…………………………..…………….....____
43. Other people's opinions of me do not bother me…………………….…..................____
44. I am not necessarily upset if I do not please someone………………….……..........____
45. When I am talking to someone, I worry about what they may be thinking about me……………………………………………………………………….……………….____
46. I feel that you can't help making social errors sometimes, so why worry about it…......____
47. I am usually worried about what kind of impression I make………………………......____
48. I worry a lot about what my superiors think of me…………………………..………….____
49. If I know someone is judging me, it has little effect on me………………….................____
50. I worry that others will think I am not worthwhile…………………………….…..….…....____
51. I worry very little about what others may think of me…………………….…..............____
52. Sometimes I think I am too concerned with what other people think of me………….____
53. I often worry that I will say or do the wrong things…………………………………..____
54. I am often indifferent to the opinions others have of me……………….…...................____
55. I am usually confident that others will have a favorable impression of me………......____
56. I often worry that people who are important to me won't think very much of me……____
57. I brood about the opinions my friends have about me…………….….............................____
58. I become tense and jittery if I know I am being judged by my superiors……………..____

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Appendix G: Social Experiences Questionnaire

1. a. How many friends are you regularly in contact with from your hometown (e.g., in person, calling, Facebook, texting)? _____
2. a. How many friends that you have at UMaine are you regularly in contact with (e.g., in person, calling, Facebook, texting)? _____
3. What are your grades at UMaine mostly like so far?
   - i. None yet
   - ii. A's
   - iii. B's
   - iv. C's
   - v. D's
   - vi. F's

Approximately how many HOURS PER WEEK do you use the following Internet/Technology resources to communicate with friends? Please keep in mind that 7 hours per week= 1 hour per day. You may use .25, .50, and .75 increments. If you do not use one of the resources at all, simply fill in 0.

4. Facebook
   - 4a. With your closest hometown friend?____ hours per week
   - 4b. With your closest college friend?_____ hours per week

5. Twitter
   - 5a. With your closest hometown friend?____ hours per week
   - 5b. With your closest college friend?_____ hours per week

6. Instagram
   - 6a. With your closest hometown friend?____ hours per week
   - 6b. With your closest college friend?_____ hours per week

7. Tumblr
   - 7a. With your closest hometown friend?____ hours per week
   - 7b. With your closest college friend?_____ hours per week

8. Snapchat
   - 8a. With your closest hometown friend?____ hours per week
   - 8b. With your closest college friend?_____ hours per week

9. Emailing
   - 9a. With your closest hometown friend?____ hours per week
   - 9b. With your closest college friend?_____ hours per week

10. Text (using your phone's service)
   - 10a. With your closest hometown friend?____ hours per week
   - 10b. With your closest college friend?_____ hours per week

11. Messenger (Text, e.g., Facebook messager, Gchat, etc.)
       11a. With your closest hometown friend?____ hours per week
       11b. With your closest college friend?_____ hours per week

12. Video messaging (e.g., Skype, Google Hangouts, etc.)
       12a. With your closest hometown friend?____ hours per week
       12b. With your closest college friend?_____ hours per week

13. Telephone
       12a. With your closest hometown friend?____ hours per week
       12b. With your closest college friend?_____ hours per week

Approximately how many <u>HOURS PER WEEK</u> do you communicate in person with friends? Please keep in mind that 7 hours per week= 1 hour per day. You may use .25, .50, and .75 increments

14. In Person
       13b. With your closest hometown friend?____ hours per week
       13c. With your closest college friend?_____ hours per week

Please answer Yes or No to the following questions.

15. I use electronic communication methods such as those above to communicate with friends via a desktop computer. _____

16. I use electronic communication methods such as those above to communicate with friends via a laptop computer. _____

17. I use electronic communication methods such as those above to communicate with friends via a tablet. _____

18. I use electronic communication methods such as those above to communicate with friends via a smartphone. _____

19. I frequently use some other electronic device to communicate with friends._____
       19b. Type of device: _____

Appendix H: The Network of Relationships Inventory: Social Provision Version-College Friend

Everyone has a number of people who are important in his or her life. These questions ask about your relationships with your *closest **college friend***.

How many years have you been friends with this person? _____
My closest college friend is the same gender as me Y/N

1. **How much free time do you spend with your closest college friend?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

2. **How much do you and your closest college friend get upset with or mad at each other?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

3. **How much does your closest college friend teach you how to do things that you don't know?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

4. **How much do you and your closest college friend get on each other's nerves?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

5. **How much do you talk about everything with your closest college friend?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

6. **How much do you help your closest college friend with things she/he can't do by her/himself?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

7. How much does your closest college friend like you?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

8. How much does your closest college friend treat you like you're admired and respected?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

9. Who tells the other person what to do more often, you or your closest college friend?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
S/he always does   S/he often does   About the same   I often do   I
always do

10. How sure are you that this relationship will last no matter what?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

11. How much do you play around and have fun with your closest college friend?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

12. How much do you and your closest college friend disagree and quarrel?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

13. How much does your closest college friend help you figure out or fix things?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

14. How much do you and your closest college friend get annoyed with each other's behavior?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

15. How much do you share your secrets and private feelings with your closest college friend?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

16. How much do you protect and look out for your closest college friend?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

17. How much does your closest college friend really care about you?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

18. How much does your closest college friend treat you like you're good at many things?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

19. Between you and your closest college friend, who tends to be the BOSS in this relationship?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
S/he always does   S/he often does   About the same   I often do   I
always do

20. How sure are you that your relationship will last in spite of fights?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

21. How much do you go places and do enjoyable things with your closest college friend?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

22. How much do you and your closest college friend argue with each other?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

23. How much does your closest college friend help you when you need to get something done?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

24. How much do you and your closest college friend hassle or nag one another?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

25. How much do you talk to your closest college friend about things that you don't want others to know?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

26. How much do you take care of your closest college friend?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

27. How much does your closest college friend have a strong feeling of affection (liking) toward you?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

28. How much does your closest college friend like or approve of the things you do?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

29. In your relationship with your closest college friend, who tends to take charge and decide what should be done?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
S/he always does   S/he often does   About the same   I often do   I
always do

30. How sure are you that your relationship will continue in the years to come?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

Appendix I: Pathological Use Scale

On the line below each question, please mark the word that you think best answers the question.

    1. **I have never gotten into arguments with a significant other over being online.**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
strongly disagree   disagree   agree   strongly agree

2. **I have been told I spend too much time online.**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
strongly disagree   disagree   agree   strongly agree

3. **If it has been a while since I last logged on, I find it hard to stop thinking about what will be waiting for me when I do.**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
strongly disagree   disagree   agree   strongly agree

4. **My work and/or school performance has not deteriorated since I started going online.**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
strongly disagree   disagree   agree   strongly agree

5. **I feel guilty about the amount of time I spend online.**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
strongly disagree   disagree   agree   strongly agree

6. **I have gone online to make myself feel better when I was down or anxious.**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
strongly disagree   disagree   agree   strongly agree

7. **I have attempted to spend less time online but have not been able to.**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
strongly disagree   disagree   agree   strongly agree

8. **I have routinely cut short on sleep to spend more time online.**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4
strongly disagree   disagree   agree   strongly agree

9. I have used the Internet to talk to others at times when I was feeling isolated.

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
strongly disagree   disagree   agree   strongly agree

10. I have missed classes or work because of online activities.

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
strongly disagree   disagree   agree   strongly agree

11. I have gotten into trouble with my employer or school because of being online.

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
strongly disagree   disagree   agree   strongly agree

12. I have missed social engagements because of online activities.

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
strongly disagree   disagree   agree   strongly agree

13. I have tried to hide from others how much time I am actually online.

1 ----------------------- 2 ----------------------- 3 ----------------------- 4
strongly disagree   disagree   agree   strongly agree

Appendix J: The Network of Relationships Inventory: Social Provision Version-Hometown Friend

Everyone has a number of people who are important in his or her life. These questions ask about your relationships with your *closest **hometown** friend*.

How many years have you been friends with this person? _____
My closest hometown friend is the same gender as me Y/N

1. **How much free time do you spend with your closest hometown friend?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

2. **How much do you and your closest hometown friend get upset with or mad at each other?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

3. **How much does your closest hometown friend teach you how to do things that you don't know?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

4. **How much do you and your closest hometown friend get on each other's nerves?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

5. **How much do you talk about everything with your closest hometown friend?**

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

6. How much do you help your closest hometown friend with things she/he can't do by her/himself?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat Very Much Extremely Much The most

7. How much does your closest hometown friend like you?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat Very Much Extremely Much The most

8. How much does your closest hometown friend treat you like you're admired and respected?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat Very Much Extremely Much The most

9. Who tells the other person what to do more often, you or your closest hometown friend?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
S/he always does S/he often does About the same I often do I always do

10. How sure are you that this relationship will last no matter what?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat Very Much Extremely Much The most

11. How much do you play around and have fun with your closest hometown friend?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat Very Much Extremely Much The most

12. How much do you and your closest hometown friend disagree and quarrel?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat Very Much Extremely Much The most

13. How much does your closest hometown friend help you figure out or fix things?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

14. How much do you and your closest hometown friend get annoyed with each other's behavior?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

15. How much do you share your secrets and private feelings with your closest hometown friend?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

16. How much do you protect and look out for your closest hometown friend?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

17. How much does your closest hometown friend really care about you?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

18. How much does your closest hometown friend treat you like you're good at many things?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

19. Between you and your closest hometown friend, who tends to be the BOSS in this relationship?

1 ---------------------- 2 ---------------------- 3 ---------------------- 4 ---------------------- 5
S/he always does   S/he often does   About the same   I often do   I always do

20. How sure are you that your relationship will last in spite of fights?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

21. How much do you go places and do enjoyable things with your closest hometown friend?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

22. How much do you and your closest hometown friend argue with each other?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

23. How much does your closest hometown friend help you when you need to get something done?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

24. How much do you and your closest hometown friend hassle or nag one another?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

25. How much do you talk to your closest hometown friend about things that you don't want others to know?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

26. How much do you take care of your closest hometown friend?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

27. How much does your closest hometown friend have a strong feeling of affection (liking) toward you?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

28. How much does your closest hometown friend like or approve of the things you do?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

29. In your relationship with your closest hometown friend, who tends to take charge and decide what should be done?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
S/he always does   S/he often does   About the same   I often do   I always do

30. How sure are you that your relationship will continue in the years to come?

1 ----------------------- 2 ----------------------- 3 ----------------------- 4 ----------------------- 5
Little or none   Somewhat   Very Much   Extremely Much   The most

31. Hours of travel time between where you are living and where your closest hometown friend is living: ___

32. My closest college friend is the same person as my closest hometown friend.

1 ----------------------- 2
true   false

Appendix K: UCLA Loneliness Scale
Version 3

Instructions: The following statements describe how people sometimes feel. For each statement, please indicate how often you feel the way described by writing a number in the space provided.
Here is an example:

How often do you feel happy?

If you never felt happy, you would respond "never"; if you always feel happy, you would respond "always."

NEVER	RARELY	SOMETIMES	ALWAYS
1	2	3	4

1. How often do you feel that you are "in tune" with the people around you? _____

2. How often do you feel that you lack companionship? _____

3. How often do you feel that there is no one you can turn to? _____

4. How often do you feel alone? _____

5. How often do you feel part of a group of friends? _____

6. How often do you feel that you have a lot in common with the people around you? _____

7. How often do you feel that you are no longer close to anyone? _____

8. How often do you feel that your interests and ideas are not shared by those around you? _____

9. How often do you feel outgoing and friendly? _____

10. How often do you feel close to people? _____

11. How often do you feel left out? _____

12. How often do you feel that your relationships with others are not meaningful? _____

13. How often do you feel that no one really knows you well? _____

14. How often do you feel isolated from others? _____

15. How often do you feel you can find companionship when you want it? _____

16. How often do you feel that there are people who really understand you? _____

17. How often do you feel shy? _____

18. How often do you feel that people are around you but not with you? _____

19. How often do you feel that there are people you can talk to? _____

20. How often do you feel that there are people you can turn to? _____

Appendix L: Thank you

Sona Participants

Thank you for your time and participation in our study! Your responses will help us to better understand the social and personal experiences of college students and they are greatly appreciated. You have earned one credit towards your research participation requirement for your psychology course.

If you are experiencing any distress after completing the questionnaires and would like to seek counseling, we encourage you to contact the University of Maine Counseling Center (581-1392), which provides free services to UMaine students. Information about the Counseling Center, including their hours of operation, can be found at http://umaine.edu/counseling/contact-us/

University Participants

Thank you for your time and participation in our study! Your responses will help us better understand the social and personal experiences of college students, and they are greatly appreciated.

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Please visit this link to provide your personal information. This information will be used to email you the $10 Amazon Gift Card and will not be linked to your survey responses.

(survey link)

BIOGRAPHY OF THE AUTHOR

Patricia Dieter was born in Manhasset, New York on July 26, 1988. She was raised in Somers, New York and graduated from Somers High School in 2006. She attended the University of Rochester and graduated in 2010 with a Bachelor's degree in Psychology. She moved to Maine and entered the Clinical Psychology graduate program at The University of Maine in the fall of 2010. She completed her APA-accredited pre-doctoral clinical internship at Westchester Jewish Community Services in Yonkers, New York (2015-2016). Patricia is a candidate for the Doctor of Philosophy degree in Psychology with a concentration in Clinical Psychology from The University of Maine in August 2016.