Facebook Use in Relation To Gender, Introversion-Extroversion, and Sense of Belonging Among College Students

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CHAPTER ONE

Literature Review

Abstract

Technology has afforded individuals with the luxury to be connected at all times. The creation of social networking sites has enabled individuals all over the world to connect to one another, communicate, develop and maintain friendships. After a review of the historical background into the genesis of online social networking, the success of Facebook is elaborated with regard to how it has changed the social fabric of people around the world. Friendship and political advocacy on Facebook is explored as well as the positive and negative consequences of engaging in social networking sites. Social networking sites present clinicians with numerous ethical challenges and professional opportunities. Ethical and research implications relating to mental health providers are also explored.


**Literature Review**

Online social networking sites are used by millions of people, in order to facilitate communication and connections with other users (Clark & Roberts, 2010). Technological advances have allowed people to talk to one another thousands of miles apart, via emails, text messages, and wireless communication. Unprecedented technological advances have marked the 21st century and it is important to understand the history behind them. The telegraph was one of the earliest advances in technology that revolutionized communication (Bargh & McKenna, 2004). Operators sent messages through wires that transported information across long distances (Standage, 1998). The telephone created a social network in the 1880s, helping family and friends maintain relationships traversed by distances (Bargh & McKenna, 2004; Croft, 1997). The radio continued the evolution in communication by broadcasting information to many people at once. Unlike previous technologies, the radio did not require cables to function. It enabled messages to go where wires were not possible (Bargh & McKenna, 2004). Similarly, research during World War II led to the first mobile phone, improving on the radio by adding portability to connectivity (Croft, 1997).

Scientists in the early 1960s designed an experimental network allowing computers to communicate with each other. The Internet as we know it today has its roots in the original Advanced Research Projects Agency Network (ARPANET), which first came online in 1969. This network was developed as a way for researchers to collaboratively use computing resources at remote sites (Kiesler, 1997). In a way, this network connecting university researchers across the country was the
first online social network. Emails were first sent across the network in 1971. In 1989, Tim Berners-Lee connected people through computers when he invented Hyper Text Markup Language (HTML), a project that he called the World Wide Web (Leiner et al., 1997). Today, the Internet combines features of previous technologies into one communication medium (Bargh & McKenna, 2004). The social network of Internet users continues to grow across the world. In the last ten years, Internet users worldwide increased by 480% (Internet World Stats, 2011). The Internet has replaced previous communication devices connecting people globally in a social network (Bargh & McKenna, 2004; Borden, 2000).

**Social Networking Sites**

Social networking websites are a growing vehicle for communication that provide access to social networks (Ellison, Steinfield, & Lampe, 2007). A social network is a group of people connected by a set of social relationships such as friendship, co-working, or information exchange (Garton, Haythornthwaite, & Wellman, 1997). Boyd and Ellison (2008) defined a social networking website as a web-based service that allows individuals to: (a) construct a public or semi-public profile within an organized framework (b) generate a list of other users with whom they share a connection, (c) navigate their own list of connections, and (d) view those made by others within the system. Sites such as Friendster, MySpace, Facebook, and Twitter are examples of social networking sites. These sites allow individuals to present themselves online and to form and maintain connections with others (Ellison et al., 2007). In June 2011, Facebook reported having 700 million members.
Facebook worldwide. As of December 2011, Facebook reported 845 million active users with daily continual growth (Facebook, 2011 & 2012).

Facebook is one of the fastest growing social networking sites. It was created in 2004 by Mark Zuckerberg, a student at Harvard University (Leow, 2009). Originally called “The Facebook,” the site started as an online directory connecting students at Harvard, and required users to have a harvard.edu e-mail address, creating a private community feel. Facebook began accepting other universities into its social network, but restricted access to those with a university address (Boyd & Ellison, 2008). Today, Facebook connects members of high school networks, colleges, businesses, and commercial organizations (Facebook, 2011). Facebook allows users to create and display personal information such as name, address, phone number, hobbies, interests, and photos on their profile, and allows users to control what personal information is shown. Users can search for and maintain “friends” who can comment on each other’s pages, and view each other’s profiles. “Friends” on Facebook are defined as anyone the user allows to view their profile by accepting a friend request or by another user accepting theirs. The decision to “friend” is determined on an individual basis, as each user decides what criteria a connection must meet in order to be accepted as their friend on Facebook. For that reason, the definition of “friend” is different for every user based on their individual judgments of what criteria another user must meet in order to view their profile.

Facebook is growing at a rate of 700,000 users a day (Grossman, 2010). Facebook is an inexpensive and convenient way to communicate with a social network (Leow, 2009). Lampe, Ellison, and Steinfield (2006) found that college
students in particular are heavy users of Facebook. Facebook use has increased rapidly from 20 minutes a day reported by Ellison et al. (2007) to 70 minutes daily reported by Klingensmith (2010). Although the majority of Facebook users are college students, the characteristics of the users are expanding (Grossman, 2010). Forty-five percent of Facebook users are over the age of 26, but the fastest growing group of Facebook users is women over the age of 55. In 2009, the number of female users over 55 increased by 175.3% in only 120 days (Smith, 2009). Bargh and McKenna (2004) found that communicating with others over the Internet helps maintain close ties with family and friends. Facebook in particular assists individuals in searching for established friends and acquaintances due to the availability of users’ personal information and photos (Ellison et al., 2007).

**Impression Management in the Digital Age**

In 1902 Charles Horton Cooley “introduced the term *looking glass self* to suggest that other people serve as a mirror in which we see ourselves” (Kassin, Fein, & Markus, 2008, p. 55). Mead (1934) expanded on the work of Cooley, suggesting that individuals come to know themselves by imagining what others think of them and incorporating those perceptions into their self-concept. Facebook users have the ability to edit their identity, changing how they are portrayed to others and their sense of self. Facebook promotes the concept of deindividuation, which allows users to take risks and experiment with their different selves. Although Facebook provides a new mechanism for presenting one’s best self, the idea that humans have multiple selves is an archaic concept.
In *As You Like It*, William Shakespeare (1623) wrote, “All the world’s a stage, and all the men and women merely players; they have their exits and their entrances; and one man in his time plays many parts” (p. 57). Inspired by Shakespeare, Goffman (1959) reasoned that life is like a theater and we all act out certain lines as if we were reading from a script. According to Goffman, individuals assume certain faces or social identity that society allows them to maintain. Self-presentation allows individuals a process by which to maintain and shape what other people think of them and what they think of themselves (Schlenker, 2003).

Goffman (1959) argued that identity is not the true essence of the self, but rather a construction we use to function in different social situations with the goal to seek and maintain social approval. Goffman (1959) proposed that humans engage in impression management by controlling information in order to affect others’ opinions of them. Facebook offers control over what information users display to others and it allows users to manage their impression by filtering what information they display about themselves to better conform to social norms. Moreover, compared to face-to-face interactions, the absence of nonverbal cues on Facebook may provide another approach for users to shape their identity.

By investigating the profiles of 63 college students, Zhao, Grasmuck, and Martin (2008) suggested that Facebook users managed their impression by posting photos of themselves in context of their friends smiling, or expressing affection for one another. Users also manage their impressions by describing their hobbies and interests in a self-description section and in an “about me” section, where users write their own narrative introducing themselves to the viewer. All postings projected a
self that was socially desirable by their network. Zhao et al. concluded that “Facebook users sought to make certain implicit identity claims aimed at generating desired impressions on their viewers especially in terms of the depth and extent of their social ties” (Zhao et al., 2008, p. 1825). Users also tried to manage their impression by having the “right” list of friends, filtering information posted to their profile or wall by choosing to delete or keep messages (Zhao et al., 2008). Other studies have shown that users also filter which friends they choose to “accept” to create a desired image of themselves through having the “correct” amount of friends (Tong, Van Der Heide, Langwell, & Walther, 2008) and physical attractive photos of themselves and their peers on user’s Facebook profile (Walther, Van Der Heide, Kim, Westerman, & Tong, 2008).

The ability to select what information to share about oneself on Facebook has important implications for introverted people who have been shown to use the Internet as a compensatory tool with which to socialize (Amichai-Hamburger, Kaplan, & Dorpatcheon, 2008). Bargh and McKenna (2004) suggested that the Internet offers control over how one presents oneself. Introverted users may feel that the Internet is a more secure environment through which to socialize because of the absence of nonverbal cues and physical appearance, thereby satisfying their need for social interaction in a more comfortable way. Congruent with this idea, the “poor get richer” theory of Internet use explains that introverts can use the Internet to meet their social needs by compensating themselves for the difficulties they experience in offline social interactions (Amichai-Hamburger, Wainapel, & Fox, 2002; Amichai-Hamburger et al., 2008).
Friendship and Facebook

Facebook is used to reconnect with old friends and establish new relationships. Bargh and McKenna (2004) found that communicating with others over the Internet helps maintain close ties with family and friends who are too far to visit. Additionally, the Internet facilitates the formation of new relationships. In a study by Lampe et al. (2006), users of Facebook reported using the site to reconnect with old friends. College students who are unable to see their hometown friends are now able to stay in communication.

Joining “groups” on Facebook can be a catalyst for the formation of new friendships for marginalized users. Bargh and McKenna (2004) found that online groups, because of the shared interests and values of the members, can be a positive environment to create new friendships and close relationships. By making connections with similar others, members can find support, empowerment, and validation (Bargh & McKenna, 2004).

Negative Effects of Social Networking Sites

Some unintended consequences of Facebook usage are cyber-bullying. Cyber-bullying is defined as “an individual or a group willfully using information and communication involving electronic technologies to facilitate deliberate and repeated harassment or threat to another individual or group by sending or posting cruel text and/or graphics using technological means” (Dilmac, 2009, p. 1308). In 2009, 58% of students in grades 4-12 reported that someone said something mean or hurtful to them online. Thirty-five percent of students reported being threatened online, and
one in five reported it happened on more than one occasion (National i-SAFE Survey, 2009).

A new form of bullying and harassment that has emerged is cyber-bullying (Dilmac, 2009). Bullying tends to peak in early teenage years. A study by Keith and Martin (2005) showed that since the start of the 21st century, the Internet has provided bullies with a new tool to follow their victims home. Instead of isolating abuse at school, as was traditional in the 1990s, cyberbullies are now utilizing text messages, e-mail, chat rooms, blogs, and social networking sites to continue spreading rumors and threats to their victims outside of the classroom. Campfield (2006) studied the psychosocial profile of cyber bullies and their victims and argued that cyber-bullying is much more harmful than traditional face-to-face bullying because online bullying can take place at anytime, day or night. Further, victims can be “embarrassed, humiliated, or intimidated in front of a much wider audience” (Campfield, 2006, p. 121). For example, a vicious e-mail can be spread much faster to more people than a rumor spread face-to-face. Similarly, an embarrassing post on one’s Facebook wall is on public display for an entire network to see. Facebook makes it easy for bullies to access victims’ 1) personal information, 2) publish rumors, 3) negative comments, and threats outside of school. Students can reduce their risk of being cyber-bullied by using social networking sites less frequently, spending more time with offline friends, and doing extracurricular activities (Sengupta & Chaudhuri, 2008).

Social networking related anxiety. Social networking sites have transformed the way that adolescents communicate. Talking on the phone has become passé. Sharing of new information is done via social networking sites. A
new phenomenon that is occurring is social networking related anxiety, defined by feeling pressure to always know what is occurring in the lives of one’s social network. A study conducted by Schwartz (2010) found Facebook intensity, or high usage of Facebook, frequency of status updates, and update intensity to be negatively related to self-esteem. Schwartz (2010) asked 218 undergraduate students questions to determine their overall Facebook usage, time spent on Facebook, meaningfulness of Facebook usage, frequency and meaningfulness of status updates, and number of relationships formed on Facebook. In addition, participants were given self-report measures of self-esteem, narcissism, and loneliness in order to determine if there was any relationship between Facebook usage and these variables. The study revealed that Facebook intensity, or high usage of Facebook, frequency of status updates, and update intensity to be negatively related to self-esteem, suggesting that users with lower self-esteem tend to use Facebook more intensely than users with high self-esteem. Klingensmith (2010) found high usage of Facebook to be positively related to feelings of loneliness, shyness, and “friendsickness,” which is described as the distress one experiences at the loss of old friends. Klingensmith (2010) investigated the relationship between Facebook usage and homesickness. A sample of undergraduate students were given an online questionnaire, which included the Homesickness scale, Facebook scale, Friendsickness scale, the Sense of Belonging Instrument, and the College Adjustment Index in order to determine the relationship between Facebook use, friendsickness, homesickness, and sense of belonging to the college environment. Paul and Brier (2001) define homesickness as the distress caused by physical separation from the home environment and friendsickness as
feelings of great loss for pre-college friends. High levels of Facebook use and frequency of status updates were positively related to higher levels of friendsickness, loneliness, and shyness for undergraduate users. Users with higher levels of shyness, loneliness, and a lower sense of belonging experienced more adverse effects from high Facebook use, such as feelings of being left out, than users with higher self-esteem. Results suggest that although Facebook may help keep college users connected to their family and pre-college friends, having constant connection with these contacts while maintaining physical distance from home, users may miss home even more.

Facebook anxiety may lead users to feel excluded and feel envious of other users’ lifestyles. Facebook users often fail to realize that Facebook allows individuals to shape what other people think of them on a continuous basis. Users who had high usage of Facebook reported anxiety and stress about feelings of responsibility to friends who are online and anxiety about managing one’s online social life (Therapy Today, 2011). Having a successful social life online can be measured by a user’s popularity indicated by his/her number of friends, having frequent activity on Facebook, and posting entertaining comments or material on one’s own page or others. Tong et al. (2008) coined the term "sociometric popularity" to demonstrate how people perceive others on Facebook as popular if they have more friends. They define sociometric popularity as "the number of friends or connections one has, which may be reflected in the coefficient of friends displayed on the profiles of Facebook users" (Tong et al., 2008, p. 535). Tong had 153 undergraduate students evaluate mock Facebook profiles with varying numbers of friends and found that users were
rated most attractive when they had 302 friends, but having more friends than that made users appear to "friend out of desperation". This may be influenced by social comparison theory: people have a tendency to evaluate themselves by comparing themselves to others (Festinger, 1954). Other negative consequences related to high Facebook use are loneliness, friend-sickness, anxiety, and loneliness offline where online friends do not exist (Kraut et al., 2002; Schwartz, 2010; Sheldon et al., 2011).

**Privacy and Facebook.** Another concern about Facebook usage is whether the personal information users post is safe to put on the Internet. Boyd and Ellison (2008) raised concerns about privacy on social networking sites such as unintentional disclosure of personal information, the possibility of damaging one’s reputation through rumors, gossip, and cyber-bullying. Other concerns include stalking, surveillance-like structures due to backtracking functions, use of personal data by third-parties, and hacking or identity theft. People are not fully aware of the risks to privacy by continually uploading personal information onto the Internet (Debatin, Lovejoy, Horn, & Hughs, 2009).

Privacy issues have been documented throughout Facebook’s history. During the first two years of Facebook’s functioning, Facebook users were outraged at the lack of privacy of the new news-feed and mini-feed function, which allowed all users’ actions on Facebook to be published in a semi-public news feed. Facebook responded by creating additional privacy features that limited who could see activities and what activities were actually published in the news feed (Facebook Press Release, 2008, September 6).
Although Facebook continually updates options to provide users with the ability to manage their privacy, research has shown that many users are unaware of these functions and do not implement privacy features on their profile. In a study by Debatin et al. (2009), users reported that they were unaware of their privacy settings and did not use controls to protect their profile, indicating that many users are uneducated about how to protect themselves, or what risks they take in continually uploading personal information.

The perceived benefits of Facebook use appear to outweigh the risks to privacy. Most users overlook the real dangers they face by continually uploading personal information to the Internet. Users face real risks of identity theft, stalking, and misuse of personal information by potential employers (Acquisti & Gross, 2005; Taraszow et al., 2010). Users should consider whom they accept as “friends” to their network because the “friends only” privacy feature in reality does not limit access to just friends, but many other people that the user may not know well or at all.

**Implications for Practice and Research**

Privacy associated with online social networking websites also has significant implications with regard to the clinical practice of psychology. A key privacy concern about Facebook is how it can affect psychologists’ professional relationships with clients. Lehavot, Barnett, and Powers (2010) found that 81% of psychology graduate students use a social networking site. Similarly, in a study by Taylor, McMinn, Bufford, and Chang (2010), 77.3% of early career psychologists, and doctoral-level psychology students reported that they used a social networking site to communicate with friends and family. According to Levahot et al. (2010), disclosure
of personal information is an issue in the professional field of psychology that has
called attention to two clinical issues. The first issue of concern is clients having
access to psychologists’ personal information, which may impede on the principles of
self-disclosure. The second issue is psychologists having access to clients’ personal
information in terms of self-disclosure, confidentiality, and safety.

Through social networking sites and various search engines, it is possible for
clients to find both private and public information about a psychologist on the
Internet. Taylor et al. (2010) argued that even if a psychologist chooses not to have a
profile on a social networking site, widespread search engines on the Internet make
virtually any psychologist easy to research. Levahot et al. (2010) found that 7% of
psychology graduate students reported that a client had informed them that they had
obtained information about them through the Internet. This included the client
“Googling” their therapist on the Internet. The study also found cases where a client
searched for personal information about their therapist to invade their personal space.
One client had looked up the therapist’s birth date, place of birth, telephone number,
and e-mail address, and continued to follow the therapist on campus and around her
neighborhood even after sessions were terminated. Psychologists described some of
the problems they faced on social networking sites, including personal stories about
finding a common friend or acquaintance with a client through a social networking
site (Taylor et al., 2010). Psychologists reported handling ethical situations such as
this by either deleting their page or by placing the highest security settings available
on their profile. If information is not carefully monitored, unwanted personal
information can be leaked to clients and possibly damage the client-therapist
relationship. It can also be a threat to the psychologist’s safety if a client becomes begrudged or seeks to see the psychologist outside of the therapy session.

Considering these findings, it is important for psychologists to note what information they are posting on their profiles and who has access to this information so as to protect the best interest of the psychologist and client.

Psychologists were also found to use the Internet to obtain information about their clients. In a study by Levahot et al. (2010), psychologists reported searching for clients on social networking sites out of curiosity, and looking at photos of them with their friends and family. Psychologists also reported looking up clients on social networking sites to “establish the truth.” In one such case, the psychologist searched for their client online and actually found that the client was lying during their therapy session. What is a psychologist to do with this contradictory information? Validating clients’ claims online without their knowledge or permission may put the psychologist in an ethical dilemma. According to the APA code of ethics, this action violates two rules, Beneficence and Nonmaleficence, to do no harm to the client, and Fidelity and Responsibility, creating and maintaining trust with the client (APA, 2002). Accessing a client’s social networking profile for non-therapeutic purposes are incongruent with the above mentioned codes of ethics and a violation of the client’s trust (Levahot et al., 2010). However, in some cases accessing a client’s social networking sites can be beneficial to the process of therapy (Levahot et al., 2010). A client had asked her psychologist to look at her MySpace profile, which allowed the psychologist more insight into the client's state of mind. When used in collaboration, and with the client’s consent, the use of online social networking sites
can be a valuable window into the client’s state of mind and identity for the therapist and help with the therapeutic process (Levahot et al., 2010). The psychologist’s best judgment should be used to treat each client situation individually and should follow the APA Code of Ethics. Future research should investigate the efficacy of addressing social media in the next revision of the APA ethics code.

Conclusion

Just as the telegraph bridged connections with its users, social networking sites allow users to reach millions of people instantaneously. According to Turkle (as cited in Price, 2011), people are connected more than ever due to social networking sites and texting, but are also more distant and lonely in their “unplugged lives.” Computers are our communication portals to connecting with others. Individuals now have “smart phones” so they can be connected all the time. Individuals engage in social networking when they are exercising, driving, and eating dinner. What are the psychological effects for children of the “Facebook Generation” who have been born into the Internet era and have grown up “online.” What efforts are being made to understand children and adolescents developing within a rapidly virtual universe while simultaneously living their lives in the real world (Greenfeld & Yan, 2006)?

Turkle (2011) has documented her research and field study observation. One salient aspect of her work explores relational aspects of the parent-child relationship. Turkle interviewed 300 children and found that they are bothered by the lack of eye contact their parents provide. For example when the parents pick their children up from school they are on their smart phones instead of engaging with their children. Turkle also reports that women are now texting while they breast-feed or bottle-feed their
babies, which may disrupt the bonding process. Breast-feeding is more than a milk delivery; it provides an opportunity for bonding between mother and child. Taylor (2006) provides a biological explanation why breast-feeding provides such a strong bond between mother and child. Oxytocin is a hormone that also acts as a neurotransmitter in the brain and facilities bonding between mother and infant, while the infant nurses. Oxytocin promotes caregiving behavior and promotes attachment. There has yet to be any research investigating long-term risks associated with using technology while breastfeeding, this is an area that merits further investigation. Future research should consider how caregivers use of technology influences child rearing from a developmental perspective. Technology is forever changing and leaving researchers with endless amounts of data to study.

Advances in social networking sites are shaping the practice of psychology, with college age students comprising the largest demographic on social networking websites (Smith, 2010). During this phase of their lives, college age users move on from their high school social networks to search for identity and establish new connections with others (Ellison et al., 2007; Erikson, 1968). Clinicians should be aware of the constructs of friendship and its clinical utility when exploring relational issues with their clients. In the digital age, however, the word “friend” takes on new meaning. Friendship in the traditional sense is an intimate relationship of mutual love and admiration for another in which trust has been established and personal information can be shared exclusively (Boyd, 2006; Gerstein, 1978). In fact, the more discrete information one shares with a friend, the closer and more intimate the relationship becomes (Gerstein, 1978). Friendship entails a certain level of
reciprocity, exchanging favors, as well as emotional and practical support. Typically, people have a small group of friends, consisting of a dozen or so strong ties to those in one’s social network with whom intimate secrets can be shared without fear of rejection (Boyd, 2006; Donath & Boyd, 2004). Including acquaintances and close friendships, a person’s total offline social network usually consists of about 150 social relationships. Historically, any numbers exceeding that leads to increased disconnection with existing members in one’s network (Dunbar, 1993).

On Facebook, almost anyone can request to be friends with a user, which often leads to users having a larger number of “friends” online than they do offline. On average, users have about 100 more friends on Facebook than they do in their offline social network (Dunbar, 1993; Walther et al., 2008). This is because being someone’s “friend” on Facebook can mean that the users are close friends, someone they met in an offline interaction, or a complete stranger met online (Tong, Van Der Heide, Langwell, & Walther, 2008). These factors make for a vast and sometimes superficial group of online social relationships that differ greatly from the traditional idea of the word “friend.” The typical demands of intimacy, trust, support, and exclusivity are not requirements of a Facebook friendship (Acquisti & Gross, 2005; Boyd, 2006; Debatin et al., 2009; Donath & Boyd, 2004; Ellison et al., 2007; Tong et al., 2008). Therefore, when a client presents with the issue that they have no friends or have trouble making friends, it would behoove the therapist to differentiate the complex meaning of friendship. Is the problem occurring online or offline? Social networking sites present clinicians with numerous ethical challenges and professional
opportunities. Clinicians should proceed thoughtfully as they navigate the uncharted territories of online social networks.
References


*Facebook Press Release.* Retrieved from

http://www.facebook.com/press/releases.php?


Retrieved from http://www.ebscohost.com


doi:10.1145/253671.253741


Madden, M. (2010). *Older Adults and Social Media*. Retrieved from Pew Research Center, Pew Internet & American Life Project website:
http://www.pewinternet.org/


CHAPTER TWO

Facebook Use in Relation To Gender, Introversion-Extroversion, and Sense of Belonging Among College Students

Abstract

Using social capital theory as a theoretical framework, this study examined the associations of time spent and number of friends on Facebook as they relate to gender, introversion/extroversion, and sense of belonging. The study was conducted using a national sample of 305 undergraduate and graduate students, recruited through a snowball sampling approach through Survey Monkey. The measures included a demographic questionnaire, the Facebook Usage Questionnaire, Eysenck Personality Questionnaire Revised-Short-scale (Eysenck, Eysenck, & Barrett, 1985), and Sense of Belonging Instrument (Hagerty & Patusky, 1995). Results of a one-way MANOVA indicated no significant gender differences on time spent on Facebook, substance of Facebook relationships, and number of friends on Facebook.

Extroversion was associated with lesser substance of Facebook relationships and having more Facebook friends, but not time spent on Facebook. Sense of belonging was associated with having more friends on Facebook. Exploratory analyses were also conducted on anxiety related to users’ needs to affiliate with Facebook, using a new measure Facebook Anxiety Index (FAI). Higher FAI was related to lower sense of belonging, more time spent on Facebook, and being female. Implications for practice and research are discussed.
Internet usage among adolescents has been growing exponentially (Becker, 2000). According to Palfrey and Gasser (2008), “Digital Natives” are persons born into the digital age (i.e., after 1980). This generation has strong computer skills and access to digital technologies. They share a common global culture that is not defined by age, but by certain attributes and experiences related to how they interact with information technologies, information itself, one another, and other people and institutions. As Palfrey and Gasser (2008) wrote, “Digital Natives change the personal information they share over the Internet all the time as they change their sense of self and how they wish to portray themselves. What it means to be a young person hasn’t changed; what has changed is the manner in which young people tend to express themselves.” (p. 32).

Garton, Haythornthwaite, and Wellman (1997) defined a social network as a group of people connected by a set of social relationships. Social networking sites are used by millions of people to stay in touch with others for friendship, networking, new employment, and entertainment (Clark & Roberts, 2010). In recent years, the creation of social networking web sites has allowed individuals all over the world to connect to one another, communicate, and develop new friendships. MySpace, LinkedIn, and Facebook are examples of social network sites that connect communities of people in order to enable the flow of information among users.
Social networking sites have provided a venue for young people to communicate and share information about themselves with other users (Peluchette & Karl, 2010). Subrahmanyam, Reich, Waechter, and Espinoza (2008) found that young adults use social networks to establish intimacy, connect, and reconnect with friends and family members. These sites often require the user to create a webpage that contains information about themselves that they want to share with others (Clark & Roberts, 2010; Walther, Van Der Heide, Kim, Westerman, & Tong, 2008). Users have control over how much information they choose to share about themselves; they have the freedom to post pictures and personal information about themselves or post nothing at all. “The result is that the content of information posted ranges from limited or tame information (such as pictures of one’s pet) to extreme information (such as pictures and comments about one’s sexual activities, use of alcohol, and/or drugs)” (Peluchette & Karl, 2010, p. 30).

According to the Pew Research Center for the People and Press (2007), 55% of youth ages 12 to 17 use social networking sites, mostly to reinforce existing relationships. Among the various websites designed, Facebook has been one of the most successful, with over 845 million active users in the world, half of which visit the site daily (Facebook, 2011 & 2012). Originally designed for Harvard University students, Facebook has become a medium accessible to the young and old, those unaffiliated with a learning institution, and even corporations vying for advertising opportunities. According to Krivack (2008), 52% of Facebook’s current users are between the ages of 18-24. Facebook is an online network that allows people to post messages, search for friends, maintain relationships, and provide personal information
Facebook provides various functions for users to create and display personal information such as names, addresses, phone numbers, and photos on their profile pages. The majority of Facebook users are college students (DiMicco & Millen, 2007; Smith, 2009). Many college students choose to continue using the site even after graduating from college, to keep in touch with their friends and continue networking opportunities (Ellison, Steinfield, & Lampe, 2007).

The average number of Facebook friends reported by college users has steadily increased over time, from 150 friends reported by Ellison et al. (2007) to 428 reported by Kim and Lee (2011). A positive consequence of Facebook is its ability to connect people. Ellison et al. (2007) found that 90% of Facebook users employ Facebook to stay in touch with old acquaintances and keep up with the activities of current friends. Walther et al. (2008) suggested that Facebook might provide the primary basis for impressions, based upon the data collected from 389 college students at a large Midwestern university. Who revealed that users of Facebook form snapshot impressions of novel contacts based on clues gathered from the users’ profile, such as photos and user activity. Even when previously unacquainted individuals meet face-to-face at college, they often check the other’s Facebook profile to learn more about that person’s interest and what they might have in common (Walther et al., 2008).

What contributes to Facebook’s success and popularity? Ellison et al. (2007) proposed that some of the appeal is due to the structure of Facebook itself. Users create a “profile,” which enables one to present oneself through various descriptions and a photograph. After a profile is created, users can accumulate “friends,” which
can be found by simply typing a name in a search box. Users then write comments after viewing each other’s profiles on a special section dedicated for communication called a “wall.” Hobbies, interests, likes, and dislikes are mapped out for other users to see on a profile page, enabling the user to express them through the social networking site. It is suggested that for this very reason, Facebook serves as an icebreaker when meeting new people or entering a new environment, especially for incoming college students (Krivak, 2008). Because Facebook is the leading social networking site to date and the college age population is its primary user, the current study focuses on college student (which includes both undergraduate and graduate students) users of Facebook.

Social Capital Theory

Social capital theory is a useful theoretical framework for understanding why students enrolled in higher education use social networking sites. The strength of this theory stems from its emphasis on understanding how individuals and groups benefit through an association with one another. Coleman (1988) defined social capital as the resources accumulated through relationships among people. Social capital can be compared to the common aphorism, “It’s not what you know, it’s who you know” (Woodcock & Narayan, 2000, p. 226). Bourdieu and Wacquant (1992) defined social capital as the “the sum of the resources, actual or virtual, that accrue to an individual or group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (p.14). Adler and Kwon (2002) linked social capital to positive social outcomes such as better public health and lower crime rates. Social capital allows people to draw on resources from other
networks that they belong to including ties with friends and neighbors, and is related
to indices of psychological well-being such as self-esteem and life satisfaction (Bargh

There are three types of social capital in regards to individuals: bridging, bonding, and maintained social capital. Although all forms of social capital are linked to psychological well-being such as self-esteem and life satisfaction, each form of social capital serves a different function in an individual’s life (Ellison et al., 2007). Granovetter (1982) described bridging social capital as resources gained through the formation of “weak ties” or loose connections between individuals. The benefits gained from this kind of networking are access to new useful information or perspectives, but not typically emotional support. Putnam (2000) defined bonding social capital as the resources gained from “strong ties” with family and close friends, or emotionally close relationships. This kind of social capital provides an individual with emotional support or access to scarce resources, which could be described as something that holds value for both the giver and receiver and poses risk to the giver, such as providing money, or a social asset as a favor (Williams, 2006). The third kind of social capital is maintained social capital. It is defined as the resources gained from weak ties or bridging ties with members of a previously inhabited community, for example, maintaining connections with high school acquaintances. This kind of social capital helps protect an individual from feeling “friendsickness” experienced by many college students as they lose connections with old friends from high school or their hometown (Klingensmith, 2010). This network of potentially useful
connections could also provide access to new useful information and job opportunities for the individual in the future (Ellison et al., 2007).

An empirical study by Ellison et al. (2007) showed that Facebook use among college students is associated with a significant increase in the measure of their bridging social capital, and the maintenance of bonding social capital. Facebook’s manifesto lines up with social capital. The website assigns the user the task of identifying who they know by accepting or rejecting friend request and indicating levels of trust by manipulating privacy settings. For example, a user may permit certain friends to view their photos while excluding others, assigning “trust” to a select group of close friends. Bonding capital occurs when users are socializing with people who are like them: same age, same race, same religion, etc. Bridging capital is what you do when you make friends with people who may be outside your typical social network, thereby increasing exposure to different worldviews.

“The Internet has been linked to both increases and decreases in social capital” (Ellison et al., 2007, pg. 1146). An empirical study by Williams (2007) surveyed 884 Internet users from all fifty states and found that time spent online displaces bridging and bonding social capital offline with increases in bridging social capital online. Data collected by Nie (2001) suggested that personal computers and widespread availability of Internet access create opportunities for individuals to retreat from social life activities, diminishing the number of ties they form. However, Nie (2001) did not consider whether the Internet could be a social activity itself. Facebook is a social platform offering the possibility to counteract this movement, away from social life withdrawal. Joining an organization to develop “weak ties” before Facebook
meant attending meetings and participating in organizational activities. Although these activities do provide face-to-face interaction with peers, they are time-intensive, placing limitations on the number of connections one is able to make. Facebook, however, provides the opportunity for users to connect with an endless number of social contacts across different online networks and virtually manage these relationships, thus removing the time constraint. The contradiction implied by the literature suggests a need for further research into the complicated nature of social networking sites.

Social capital can be referred to as resources grounded in durable exchange-based networks of persons (Bourdieu & Wacquant, 1992). Facebook is a social group maintained by mutual self-interest and reciprocity. A study by Ellison, Vitak, Gray, and Lampe (2011) found that on Facebook, social capital is not determined by a user’s number of friends, instead, work is required to produce social capital. Social capital could be equated that one’s number of friends are potential “profits” that accrue from investing one’s resources (novel information, advice, or emotional support) by spending time on the site and interacting with other members. Investment creates norms of reciprocity, which allow the user to expect future profits in return, thus generating social capital for the entire network and for the user themselves (Lin, 2001).

In Bowling Alone: America’s Declining Social Capital, Putnam (1995) documented the declining participation in social activities (such as bowling in leagues) over the past 25 years. These types of social activities have been a source of weak tie formation for many Americans. Putnam provided a wide array of
compelling evidence showing that Americans have been retreating from these activities, which Putnam referred to as a decline in social capital and linked to a decline in life satisfaction. A study by Williams (2007) supports this theory, purporting that offline bridging and bonding social capital are being replaced with an abundance of weaker less meaningful relationships online. In contrast, a study by Granovetter (1973) suggested that relationships with acquaintances (weak ties) could be more important than relationships with close friends (strong ties) for finding out about jobs, or more generally for enhancing social mobility. Putnam’s book preceded Facebook by approximately a decade, but presciently foreshadowed the future of present college students.

One potential measure of bridging and bonding social capital on Facebook is the number of friends that a user has associated with their user account. However, this number can be misleading because it does not reflect the quality of the relationship with these friends. For example, a user with an excessively large number of “friends” may not even really know most of them well enough to even be considered bridging capital. Williams (2006) developed online and offline scales that measure social capital, however, since the inception of Facebook, more specific scales have been devised. Ellison et al. (2007) devised a measure called “Facebook Intensity” which measures a users number of friends; time spent on Facebook, and asks questions which determine a user’s activity level during that time. Building on this, Ellison et al. (2011) devised a scale called “Signals of Relational Investment,” which measures a user’s actions on Facebook that signal attention and investment in their contacts on the system. However, Ellison et al. (2011) did not take into account
that time is also an investment, i.e., time invested in updating one’s own profile, reading the news feed, or learning about other contacts through their profile. Additionally, communication on Facebook is not necessarily bilateral as with face-to-face communication; one can post their status, broadcasting informational resources to a number of friends at once. Therefore, for this study a useful measure for social capital is the average time spent per friend, which is termed the “substance” of one’s set of online relationships.

This metric of “substance” reflects not only how many friends that one has, but also how much time is devoted to them. A study by Roberts and Dunbar (2010) revealed that time invested in a relationship determines the quality and strength of the relationship. For the purpose of this study, “substance” is defined as the total time spent on Facebook divided by the number of friends on Facebook, as shown in Equation 1. To evaluate the substance of a person’s online relationship, an equation was devised; where $\sigma$ is referred to as the Substance of the relationship:

$$\sigma = \frac{\text{Time spent on Facebook}}{\text{Number of friends on Facebook}}. \quad (1)$$

The equation will allow for measuring the amount of time spent in the social networking site divided by the number of friends they have. In this way, the same time spent across a larger number of friends will result in a decrease in the substance of the network. This is consistent with findings by Ellison et al. (2011), which showed that users with fewer friends on Facebook have more social capital than users with more friends because they are able to invest more among a smaller number of
contacts, which strengthens the overall quality of the network and generates more social capital.

This study is based on social capital theory across three dimensions: gender, introversion-extroversion, and sense of belonging. Ellison et al. (2007) investigated social capital among undergraduate students, but was limited to a small study in a single university and did not address the concept of “substance.” Studies investigating personality differences (i.e. introversion-extroversion) in Internet usage and social networking sites did not specifically address Facebook and participants were not from the United States (Amichai-Hamburger, Kaplan, & Dorpatcheon, 2008; Amichai-Hamburger & Vinitzky, 2010; Amichai-Hamburger, Wainapel, & Fox, 2002; Hamburger & Ben-Artzi, 2000; Ross et al., 2009). Although studies have looked into how social networking sites relate user’s self-esteem or loneliness (Barker, 2009; Mehdizadeh, 2010) they have not addressed sense of belonging, specifically in relation to number of friends (Klingensmith). Further, there has yet to be research specifically highlighting gender differences within the Facebook community.

**Gender**

Women comprise over 56% of the overall Facebook population (Facebook, 2010). According to Sheryl Sandbery (Facebook COO), women are more active on the website in terms of actual time spent than men (Goudrea, 2010; Lenda & Aiello, 2010). Additionally, 74% of women reported Facebook as their favorite website compared to 60% of men (Hoy & Milne, 2010).
Women utilize their social networks in a different way than men because women may want to increase their connections by sharing their personal lives (Aldrich, 1989; Burt, 1998; Goudreau, 2010). Lee and Robbins (2000) investigated social connections in the college population. They found that women value social connections based on intimacy whereas men value social connections based on status and power. Claes (1992) surveyed a sample of 349 teenagers from Quebec and found that males report more same-sex friendships than females, although females reported higher level of intimacy. When evaluating relationships, women prefer dyadic relationships, in contrast to men who prefer community or group affiliations (Frey, Tobin, & Beesley, 2004; Stokes & Levin, 1986).

Gilligan (1982, 1990, & 1996) has contributed to the field of the gender studies using qualitative methods including both interviews and observation of boys and girls in private school settings and coeducational independent school. According to Gilligan (1982), relationships are a central aspect of healthy psychological development for both men and women. However, Gilligan found that women are usually more inclined than men to place relationships at the foreground of their identity conceptions. Gilligan (1990, 1996) noted that men are acculturated to dissociate from relationships in early childhood in order to conform to patriarchal societal beliefs of masculinity. In support of this, a study by Eagly and Johnson (1990) investigated how gender roles affect leadership style and found that women were both more interpersonally oriented and had a more democratic leadership style than their male counterparts.
Relational-cultural theory, and by extension relational-cultural therapy, proposes that all people go through and toward relationships throughout their lives (Jordan & Hartling, 2002; Miller, 1976). The model stems from the work of Jean Baker Miller and the contributions of Carol Gilligan. The primary focus of relational-cultural theory is the examination of relationships towards mental health and wellness. The model emphasizes the importance of cultural and societal forces in causing either growth-fostering connection or destructive disconnection.

Online life reflects offline life, and many of the trends are not unexpected given social psychological phenomena. For example, males and females tend to communicate differently. Guadagno and Cialdini (2002) compared men and women’s social interaction style in online and offline settings through comparing participants' attitudes after hearing a series of arguments from a same-gender communicator via either e-mail or face-to-face interaction. Results showed that women tend to prefer meaningful bonds, and men strive to assert independence, especially during computer-mediated communication. Similarly, a study by Barker (2009) examined gender differences in motivations for using social networking sites and the effect on group belonging and self-esteem. The author found that females used social networking sites more to communicate with peers, which was strongly related to group identification and collective self-esteem. In addition, Jackson, Ervin, Gardner, and Schmitt (2001) found that women use the Internet for interpersonal communication more than men when they examined gender differences in online behavior. Rainie (2003) compared male and female Internet activity and found that women are more likely than males to talk about relational aspects of life such as
romantic relationships, secrets, and deep feelings. Such findings suggest that motivation to use Facebook may vary between men and women due to innate human desires to belong to “community.” Social capital gender differences may explain why men and women use Facebook differently. Agrawal (2000) found that within social networks, women form stronger kinship and friendship relations than men. Therefore, social capital theory would expect, that although men may accumulate more friends to widen their network and improve their “status,” the average time spent on Facebook per friend would be higher for females because of their tendency to establish closer bonds within a smaller group.

**Introversion and Extroversion**

Carl Jung is one of the major contributors in the field of personality (Hamburger, Kaplan, & Dorpatcheon, 2008). According to Jung (1939), personality consists of opposites, which can create a significant whole. Jung suggested that people could be divided into two general attitude types: introverts and extroverts (Morris, 1993). Extroverts are concerned with the external world; they are often considered the “joiners” and are interested in other people and in events going on around them. They are friendly and desire company, excitement, and risk-taking, often acting on impulse. Introverts are more concerned with their own private world. They are quiet and reflective, and prefer their own company instead of large crowds. They tend to be less sociable and lack confidence in their dealing with people.

According to Eysenck (1954) personality can be attributed to biological differences in cortical arousal. Extroverts have lower cortical arousal causing them to seek out stimulation by socializing with others and taking risks while introverts have higher
cortical arousal resulting in over stimulation during social interaction (Eysenck, 1967; Eysenck & Zuckerman, 1978; Zuckerman & Kuhlman, 2000). Jung believed that everyone possesses some aspects of both attitude types, with type dominant and the other largely submerged (Hamburger et al., 2008; Morris, 1993). According to Jung (1921), the terms introvert and extrovert can be used to describe two overarching psychological types that are exhibited in different attitudes for the perceiving the world and our relationship to it.

Different personalities can shape users’ online preferences and interactions. A study by Hamburger, Wainapel, and Fox (2002) investigated personality differences in Internet use, measuring the degree to which a subject opened up to their online versus offline friends. Results showed that due to their difficulties in face-to-face social interaction, introverts were able to be more open and reveal their true self on the Internet, whereas extroverts locate their real selves through traditional social interactions. Hamburger and Ben-Arzti (2000) demonstrated that introverts and extroverts use the Internet in different ways. On the Internet, introverted users can be more outgoing, confident, and sociable because the lack of non-verbal cues, control over personal information disclosed, and ability to process conversation in slower than real-time provides increased control over one’s self-presentation, making social interaction less overwhelming (Bargh & McKenna, 2004; Eysenck, 1954; Eysenck, 1967; Turkle, 2011; Zhao, Grasmuck, & Martin, 2008). Maldonado, Mora, Garcia, and Edipo (2001) found that introverts sent computer-mediated messages with an extroverted tone and these messages contained more information than those sent by extroverted individuals. The Internet offers introverts the opportunity to express their
true self in a more controlled environment where they can gain social recognition without feeling over stimulated by face-to-face interaction (Amichai-Hamburger, Wainapel, & Fox, 2002; Eysenck, 1967). Thus, introverted individuals would be expected to spend more time interacting on social networking sites than extroverted individuals. It is also expected that introverted people will have fewer friends, but with stronger connections, thus greater “substance” (as defined in Equation 1) in their online relationships. This supports Putman’s (2000) definition of bonding social capital.

Extroverts on the other hand behave the same way on the Internet as they do offline, seeking stimulation by socializing with friends and maintaining their outgoing character. The “rich get richer” theory of Internet use explains that although the Internet may function as a compensatory environment, extroverted users are still more socially successful than introverts because they already have strong social skills with which to extend their social network (Kraut et al., 2002). Therefore, although the Internet can help compensate introverted users for their social difficulties, research shows that on sites such as Facebook, where offline friends are transferred online, extroverted users are more socially successful and have a higher number of friends than introverted users (Amichai-Hamburger, Kaplan, & Dorpatcheon, 2008; Amichai-Hamburger & Vinitzky, 2010). Therefore, extroverts are expected to have more friends because of their tendency to network and utilize weak ties. This corresponds to Granovetter’s (1982) definition of bridging social capital. Extroverts may enjoy networking with a diverse group of individuals and collect friends to increase their Facebook social status.
Sense of Belonging

Theories of human development have offered explanations for why a sense of belonging to a social network may be of particular value to college students (Erikson, 1963, 1968). Erikson postulated that young adults should feel that their needs and desires are compatible with those of society. Belonging was defined as “the experience of personal involvement in a system or environment so that persons feel themselves to be an integral part of that system or environment” (Hagerty, Lynch-Sauer, Patusky, Bouwsema, & Collier, 1992, p. 173). Social belonging is a fundamental human motivation (Maslow, 1943). A vital component of mental health is sense of belonging. It has been negatively correlated with depression, anxiety, and loneliness, and positively correlated with social support (Hagerty, Williams, Coyne, & Early, 1996). Interestingly, women appear to experience a greater sense of belonging as a result of participating in social networks than do men (Hagerty et al., 1996). Nevertheless, a relationship exists between social networking and sense of belonging for both men and women and both are important to well-being.

Gross, Juvonen, and Gable (2002) established that one crucial factor in healthy/normal development in self-esteem is the establishment of supportive peer relationships involving social exchanges with responsive others. Social networking sites have a powerful ability to deliver peer acceptance and peer feedback. It was found that positive feedback to adolescent profiles on social networking sites increased adolescent self-esteem, whereas negative feedback had the reverse effect, with well-being seen as the outcome of self-esteem (Valkenburg, Peter, & Schouten, 2006).
Does social capital lead to higher sense of belonging? Ellison et al. (2007) found that the Internet has been linked to both an increase and a decrease in social capital. Nie (2001) postulated that Internet use diminishes face-to-face time with others, which can decrease an individual’s social capital. Conversely, Valkenburg (2007) argued that online communication enhances adolescents’ sociability in that it strengthens the quality of their pre-existing relationships. Additionally, Bargh and McKenna (2004) found that the Internet could help individuals with few friends and neighbors due to their low psychological well-being.

The goal of social capital is to improve one’s standing in a community. If the community in question is Facebook, this could explain why college students feel the need to collect so many friends. Research has yet to apply social capital theory to measure social networks in college students with regard to the amount of time they spend on the network and how many friends they have. Even though several studies have investigated the relationship between social networks and sense of belonging, few studies have explored whether social networking sites offer the same benefits to their users, particularly college students. Therefore, it is expected that a large amount of Facebook friends will positively correlate with a high level of sense of belonging.

**Purpose of Study**

This study focused on a college-age population which included both undergraduate and graduate students. During young adulthood, men and women are primarily concerned with defining who they are and understanding how others will perceive them, as described by Erikson’s *Intimacy versus Isolation* stage of development. In this stage individuals need to master the formation of close
friendships, intimacy, and companionship. At the inception of this theory over 40 years ago, intimacy was defined by face-to-face connection. In 2012, the question of intimacy and belonging has taken on a new meaning with the invention of social networking sites.

The literature regarding the benefits of social networking has demonstrated that participation in online social networks has a significant effect on the psychological well-being for both men and women. The study aimed at building upon the current literature on social networking sites. Therefore, the purpose of the study was to examine the relationship between college students' use of social networking sites and gender, introversion/extroversion, and sense of belonging. The following hypotheses guided the investigation.

Hypothesis 1: Female college students will spend more time on Facebook than male college students.

Hypothesis 2: Females will have a greater ‘substance’ (i.e., average time per friend) in their online relationships on Facebook than males.

Hypothesis 3: Males will have a greater number of friends on Facebook than females.

Hypothesis 4: There will be a negative correlation between extroversion and time spent on Facebook.

Hypothesis 5: There will be a negative correlation between extroversion and “substance” (i.e., average time per friend) in their online relationships on Facebook.

Hypothesis 6: There will be a positive correlation between extroversion and number of friends on Facebook.

Hypothesis 7: The number of friends that a college student has on Facebook will be positively correlated with their sense of belonging.
Method

Participants

The enrollment criteria for the study consisted of U.S. domestic undergraduate or graduate students currently enrolled in colleges and universities who were active Facebook users (defined as one with an already existing Facebook account at the time of study) and at least 18 years of age. To ensure a population representative of graduate and undergraduate students, the age range was further restricted to 18 to 35 years of age. A total of \( n = 305 \) responses were recorded for the survey, which indicates the number of participants who reached the online survey and proceeded through the Informed Consent page. Of these, a total of \( n = 226 \) surveys were considered complete and valid for use in the analysis. The online survey included a filter that checked that the participants indicated that they were enrolled in college, at least 18 years of age, and had an active Facebook account; those who did not meet these criteria were informed that they were not eligible, and thus were not allowed to complete the remainder of the survey. A survey was included in the analysis if the participant met the eligibility criteria and the survey was considered complete. To be considered complete the participant had to proceed through each page of the survey and click “Done” on the final page; a survey may still considered valid even if the participant decided not to answer select questions. The primary reason that many surveys were not eligible to be included in the analysis was that many of the invalid surveys did not indicate that the participants were both enrolled in college, had an active Facebook account, and met the age requirements \( (n = 64) \). Since the filter prevented ineligible participants from proceeding, further analysis of these
individuals is not possible. A small number of qualified participants also began the survey, but did not make it through to all of the measures \((n = 12)\). The survey was available online for 25 days with access for any eligible user to participate.

Based on the responses of the 226 participants, 27.0% were male \((n = 61)\), 72.6% were female \((n = 164)\), and 0.4% was self-identified “agendered” \((n = 1)\). There were 141 undergraduate students (62.4%) and 84 graduate students (37.2%). Eighty-five percent of participants were from the East Coast \((n = 193)\). In terms of ethnicity, the majority of students identified as Caucasian \((n = 172, 76.0\%)\), with the next largest group being Asian \((n = 16, 7.1\%)\), followed by mixed race \((n = 13, 5.8\%)\), Hispanic/Latino \((n = 13, 5.8\%)\), African American \((n = 8, 3.5\%)\), and other \((n = 3, 1.3\%)\). Finally, the participants’ age ranged from 18 to 35 with a mean age of 23.2 \((SD = 4.1)\). The mean age for undergraduates was 21.13 \((SD = 0.26)\), and the mean age for the graduate students was 26.81 \((SD = 0.32)\).

**Measures**

The survey included four sets of measures described below, and was posted as an online survey on Survey Monkey. The cover page for the survey provided participants with information regarding the purpose of the study and proceeding beyond the cover page confirmed informed consent. Once consent was obtained, the participants were directed to start the survey. Data were collected through the online survey from March 29, 2012 to April 22, 2012.

**Demographic questionnaire.** Eight demographic questions were asked using a forced-choice format. The survey included the following demographic questions: gender, age, ethnicity, relationship status (yes, no), education (freshman, sophomore,
junior, senior, master’s, doctoral, other), enrollment status (full-time, part-time), and school location by state. See Appendix B for a copy of the demographic questionnaire.

**Facebook usage questionnaire.** Twenty-three questions were written for this study to assess Facebook usage, building upon previous work by Ellison et al. (2007). Questions 1-12 were related to usage habits, and these items assessed time spent and number of friends on Facebook. The term “friends” in this survey was defined as the number of people one has listed as friends associated with their Facebook account. This survey also addressed stressors associated with Facebook usage. Questions 13-23 were related to assessing anxiety related to the user’s need to access Facebook. To this end, the survey included questions related to feelings of judgment by other users, sense of inclusion, anxiety about not having access to Facebook, and anxiety regarding relationship status with other users. See Appendix C for a copy of the Facebook usage questionnaire.

The Facebook usage questionnaire was pre-tested in a pilot study, in order to assess its test-retest reliability. The pilot study included the Demographic Questionnaire and the Facebook Usage Measure, which were hosted on Survey Monkey. The questionnaire was first administered to 30 participants selected from the list of Facebook friends of the research team. The participants were given a unique link to the Facebook usage survey on Survey Monkey, which maintained anonymity while allowing pairing of results between the two occasions of the test. The participants were instructed to re-take the survey a second time after a time interval of two weeks. Of the 30 requests, 23 participants completed the first survey. Reminders
were sent out to those who completed the first survey after two weeks to retake the survey using the same link as from their first attempt to uniquely code the pairs of responses.

**Pilot study responses.** At the conclusion of the survey, 22 participants had at least two completed surveys recorded. One set of responses had 3 responses, and the erroneous incomplete response was removed, and in another set one of the responses was not completed correctly and the pair was removed. A total of 21 pairs (42 surveys) were used in the pilot study analysis. Of the 21 participants who completed both surveys, 9.5% were male \( (n = 2) \) and 90.5% were female \( (n = 19) \). There were 11 undergraduate students (52.4%) and 10 graduate students (48.6%). The range of ages was from 20 to 35 with a mean age of 25.4 years old.

**Pilot study analysis.** The correlation between Test 1 and Test 2 for each participant was analyzed in SPSS to examine test-retest reliability. A Pearson’s correlation of \( r > 0.7 \) indicates high reliability. The raw data were downloaded as an SPSS file from SurveyMonkey. The invalid responses were removed, leaving 42 valid surveys (from 21 participants). Pairs were identified by collector number (unique for each link sent to the participants). The SPSS data were restructured into a sorted data set by combining each pair of responses into a single data entry leaving 21 data sets (one for each valid participant). The data were also restructured into a combined data set that combined all responses for questions 2 to 23 of the Facebook usage questionnaire (question 1 was a filter question to confirm that the user was a Facebook user) for each survey attempt leaving two array variables with 462 data points (22 questions x 21 responses).
Using the combined data set, the correlation between the full set of results for all participants between the two survey attempts was calculated to determine the overall reliability of the Facebook Usage measure. A 2-tailed Pearson Correlation analysis was conducted, resulting in a correlation of 1.00 ($p < .001$). Although this demonstrates that the measure on the whole provides consistent responses, there is bias present due to the varying ranges of the scales for each question. To assess reliability of the individual questions, each was assessed individually.

Using the sorted data set, the correlation of individual questions for all participants between the two survey attempts was calculated to determine the reliability of each individual question. A 2-tailed Pearson Correlation analysis was conducted for each of questions 2 to 23 of the Facebook usage questionnaire. Questions 4 and 8 are directly used in verifying the primary hypotheses, and the remaining questions are included to provide for a useful measure for exploring factors associated with Facebook usage. Question 4 (“Time spent on Facebook”) resulted in a correlation coefficient of 0.939 ($p < .001$). Question 8 (“Number of friends on Facebook”) resulted in a correlation coefficient of 1.000 ($p < .001$). Both of these exceeded the threshold set at a correlation of $r > 0.7$ and therefore were considered reliable measures. The complete list of correlations and significance for each question in the Facebook Usage questionnaire is in Table 1.

**Eysenck Personality Questionnaire Revised-Short-scale.** The Short-scale EPQ-R (Eysenck, Eysenck, & Barrett, 1985) is a 48-item questionnaire used to assess three major personality dimensions: extroversion, neuroticism, and psychoticism, plus a lie scale (Eysenck & Eysenck, 1994). The current study only administered the
Extroversion subscale, which contained 12 yes/no questions. This subscale reflects traits such as sociability, talkativeness, and outgoingness in an individual, which reflect whether the individual is more introverted or extroverted. The scale is scored as 1 for each “yes” response and 0 for each “no” response, except for questions 7 and 10 which are reverse scored for a total score range of 0-12. Higher scores indicated more extroversion such as playfulness, excitement seeking, impulsivity, gregariousness, liveliness, and a tendency to be carefree, talkative, and fast-moving.

In a comparative study of the psychometric properties of the Short-scale EPQ-R in four English speaking countries, the alpha coefficients for the short form Extroversion scale ranged from .78 to .87 (Francis, Brown, & Philipchalk, 1992). The Short-scale EPQ-R was shown to have sound concurrent validity as indicated by its association to the original (unrevised) subscales (Francis et al., 1992). See Appendix D for a copy of the Short-scale EPQ-R.

**Sense of belonging.** The Sense of Belonging Instrument (SOBI; Hagerty & Patusky, 1995) consists of 27 items with two subscales: the SOBI-P (psychological state) and the SOBI-A (antecedents). Both subscales utilize a 4-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). However, only the SOBI-P was used in this study, because it measures the individual’s “current” psychological state and assesses the extent to which an individual believes that he/she fits into their “current” environment.

The SOBI-P is an 18-item self-report questionnaire that assesses the psychological state of sense of belonging (Hagerty & Patusky, 1995). Participants were asked to rate the degree to which they agree with each of the 18 statements
using a 4-point scale (from Strongly Agree to Strongly Disagree). The total scores of
this scale range from 18 to 72, with higher scores indicating a greater sense of
belonging.

The SOBI-P was shown to have strong reliability and sound content validity
after being evaluated by a panel of experts (Hagerty & Patusky, 1995). The test-retest
reliability, construct validity, and internal consistency were analyzed with three
samples: community college students, Roman Catholic nuns, and patients in treatment
for major depression. The scale shows good internal consistency, with coefficient
alphas of .93 (college students), .91 (nuns), and .93 (depressed patients). A test-retest
correlation of .84 was reported using a college student sample over an eight-week
period. The SOBI-P was found to be of sound construct validity after being
examined using three methods: factor analysis, contrast groups, and correlation with
measures of similar constructs (Hagerty & Patusky, 1995). See Appendix E for a
copy of the Sense of Belonging Instrument – psychological state subscale (SOBI-P).

Procedure

The survey data were collected using a snowball sampling approach to ensure
broad demographics. Snowball sampling is often used to find populations that are not
easily accessible to the researcher through other sampling strategies (Biernacki &
Waldorf, 1981; Browne, 2005). The link to the survey was posted on the principal
investigator’s Facebook page, and then friends were invited to post the same link on
their Facebook page. This method allowed for participants with whom contact had
already been made to voluntarily post a link to the survey on their social network
(Facebook) to refer the researcher to other people who could potentially participate in
the study. The link was also emailed to the principal investigator’s friends who then emailed the link to their friends as well. The survey was taken anonymously with no user identifiable information stored to connect survey responses with specific participants.

The survey included the four sets of measures described above, and uploaded as an online survey (Survey Monkey). The cover page for the survey was provided to participants with information regarding the purpose of the study and informed consent. Participants were not allowed to begin the survey until selecting to continue after reading the informed consent page. Once consent was obtained, the participants were directed to start the survey and a record was stored in the Survey Monkey database for that response; no record was stored for individuals that did not proceed past the informed consent page.

**Dependent Variables**

The dependent variables associated with the study hypotheses are: time spent on Facebook per day, number of friends on Facebook, “substance,” level of extroversion, and sense of belonging. Time spent on Facebook was assessed by Question 4 in the Facebook Usage Questionnaire. The 11 options were converted to an 11-point scale, with 0 = “I do not engage in this activity”, 1 = “less than ½ hour per day on average”, 2 to 9 advancing in increments of ½ hour up to 5 hours per day, and 10 = “over 5 hours per day.” Number of friends on Facebook was assessed directly by the responses to Question 8 in the Facebook Usage Questionnaire. The value for the “substance” was operationalized using Equation 2 as:
\[ \sigma = \frac{30 \times (FB_{Q4}: \text{Time spent scale in 30 min increments})}{FB_{Q8}: \text{Number of friends}} \]  

which corresponds to minutes spent on Facebook per Friend on Facebook (based on the lower end of the time range selected in Question 4 of the Facebook Usage Questionnaire). “Level of extroversion” was calculated based on survey responses from the EPQ-R Extroversion Subscale with scores of this scale ranging from 0 to 12, with higher scores indicating that the individual is more extroverted. “Sense of belonging” was calculated based on survey responses from the SOBI-P scale with scores of this scale ranging from 18 to 72, with higher scores indicating a greater sense of belonging.
Results

The following section outlines the evaluation of the study hypotheses. The study variables associated with the hypotheses were calculated as described in the previous section. The analyses were performed based on pairwise assessment of the data, thus the number of samples for each variable varies slightly due to small amounts of missing data as shown below. Time spent on Facebook had a mean value of 3.16 ($N = 225$, $SD = 2.35$), which falls between the categories identified as 3 which corresponds to “between 1 hour and 1 ½ hours” and 4 which corresponds to “between 1 ½ hours and 2 hours.” The mean number of friends on Facebook found in this survey was 540.5 ($N = 225$, $SD = 336.4$). “Substance” had a mean value of 0.25 ($N = 225$, $SD = 0.33$), corresponding to an average of approximately 15 seconds per day spent on Facebook per friend on Facebook. Level of extroversion had a mean value of 8.4 ($N = 224$, $SD = 3.7$), and sense of belonging had a mean value of 58.9 ($N = 220$, $SD = 10.4$). Although it was optional for respondents to answer all questions ($N = 226$ respondents), no study variable had more than 6 missing data points and all maintained at least 220 valid samples. Further detailed descriptive statistics for the study variables can be found in Table 2 and Table 3.

In addition to the specific hypothesis tests detailed above, additional exploratory analyses were performed on the data. In particular, the primary study variables from Hypotheses 1 to 7 were also assessed with respect to anxiety associated with Facebook. The data were analyzed to determine if any additional correlations or relationships of relevance exist that warrant further investigation.
Evaluation of Hypotheses

Hypotheses 1 to 3: gender differences. A one-way MANOVA was performed to determine if there were gender differences ($p < .05$) in time spent on Facebook, number of friends, and substance of Facebook relationships. The independent variable was gender of respondents. The dependent variables, corresponding to Hypothesis 1 to 3 are: time spent on Facebook, number of friends on Facebook, and “substance” of relationships on Facebook. Descriptive statistics broken down by gender for study variables associated with Hypotheses 1 to 3 are included in Table 2. The MANOVA assumes multivariate normality, however, the analysis is quite robust to this assumption as long as there are at least 20 samples per cell (i.e. per gender in this analysis, $n_{male} = 61$, $n_{female} = 163$) (Tabachnick & Fidell 2007, p.251). First, the univariate normality of each variable was assessed. Although all of the variables show non-zero skewness, this doesn’t ‘make a substantive difference in the analysis’ when there is a reasonably large number of samples (Tabachnick & Fidell 2007, p.80). The variables also showed positive kurtosis, however the effects are reduced when the sample size is greater than 200 ($n = 224$ for this analysis) (Tabachnick & Fidell 2007, p.80). There were not significant univariate outliers. Multivariate outliers were assessed by determining the Mahalanobis distance, which refers to the distance a given set of responses lies from the mean value of the responses. The critical distance based on the chi-square distribution was determined to be $d_{crit} = 118.10$, and the maximum value of any participant’s response was $d_{max} = 107.53$ indicating that there were no multivariate outliers. Results of
MANOVA indicated no significant gender differences on the three dependent variables (Wilks’ $\lambda = .990$, $p = .523$, Partial $\eta^2 = .010$).

**Hypothesis 4: negative correlation between extroversion and time spent on Facebook.** This hypothesis was evaluated using a Spearman’s rho correlation analysis between the level of extroversion and reported time spent on Facebook. This analysis was selected because time spent on Facebook response was based on a ranked categorical range rather than a direct scale of the time spent. Although time spent was skewed and level of extroversion demonstrated skewness and negative kurtosis, there were no significant outliers. The correlation between level of extroversion and time spent on Facebook was nonsignificant ($r = .070$, $p = .151$).

**Hypothesis 5: negative correlation between extroversion and “substance” (i.e., average time per friend) in their online relationships on Facebook.** This hypothesis was evaluated by determining the Pearson’s correlation coefficient between level of extroversion and the “substance” of relationships on Facebook. The calculated values for “substance” showed a large kurtosis, but did not have extreme outliers. The correlation was significant ($r = -.221$, $p < .001$). Although the correlation is relatively weak, Hypothesis 5 was supported. Since a statistically significant correlation exists, a regression analysis was performed with the independent variable being level of extroversion as a predictor of the dependent variable “substance” ($\beta = -.221$, $r^2 = .049$).

**Hypothesis 6: positive correlation between extroversion and number of friends on Facebook.** This hypothesis was evaluated by calculating the Pearson’s correlation coefficient between level of extroversion and number of friends on
Facebook. This correlation was significant \((r = .320, p < .001)\) and moderately strong, supporting Hypothesis 6. Since a statistically significant correlation exists, a regression analysis was performed with the independent variable being level of extroversion as a predictor of the dependent variable number of friends on Facebook \((\beta = .320, r^2 = .102)\).

**Hypothesis 7: positive correlation between number of friends and sense of belonging.** This hypothesis was evaluated by determining the Pearson’s correlation coefficient between number of friends on Facebook and sense of belonging. Sense of belonging did not follow a normal distribution showing negative skewness and kurtosis, however, there were no outliers present. The correlation was weak but significant \((r = .138, p = .021)\), supporting Hypothesis 7. Since a statistically significant correlation exists, a regression analysis was performed with the independent variable being sense of belonging as a predictor of the dependent variable number of friends on Facebook \((\beta = .138, r^2 = .019)\).

**Exploratory Analyses**

In addition to the primary hypotheses, an exploratory analysis about anxiety associated with Facebook was conducted. Questions 13 to 23 of the Facebook Usage Questionnaire were used to assess anxiety associated with Facebook. The internal consistency of these 11 questions was evaluated using a Cronbach’s alpha analysis, with a value that indicates high reliability \((\alpha = .835)\). The items were used to form the Facebook Anxiety Index (FAI) by calculating the average of the 11 responses for each participant. The calculated FAI ranged from 1 to 5, with 5
representing higher anxiety associated with Facebook ($M = 2.58, SD = 0.67, N = 226$). FAI was found to be close to normally distributed with no outliers.

A stepwise multiple regression analysis was performed with the criterion variable as FAI, and predictor variables including gender, time spent on Facebook, number of friends on Facebook, substance, level of extroversion, and sense of belonging as predictor variables. Table 4 shows the intercorrelations among these variables. Using entry criteria of $p = .05$ and removal criteria of $p = .10$, the optimal linear regression model includes predictors of sense of belonging ($p < .001$), time spent on Facebook ($p < .001$), and gender ($p < .03$). The corresponding optimal model, as well as that of the first two steps of the stepwise regression, are shown in Table 5. The equation of this model accounts for 27.0% of the variance in FAI. Higher Facebook anxiety was related to lower sense of belonging, more time spent on Facebook, and being female.
**Discussion**

This study used social capital theory as a theoretical framework to examine the associations of time and number of friends on Facebook as they relate to gender, introversion/extroversion, and sense of belonging among college students. In addition to assessing number of friends and time spent, a measure called “substance” was developed to reflect the time spent per friend on Facebook. Hypotheses 1 to 3 were posed to determine if gender played a role in the amount of time spent on Facebook, the number of friends someone has on Facebook, and the “substance” of their Facebook relationships. Typical behaviors for face-to-face interaction for males and females are well documented in literature, but there is very little published research related to gender differences in computer-mediated-communication (Thompson & Lougheed, 2011). Although existing research suggests that there are gender differences in the qualities of face-to-face relationships (Guandagno & Cialdini, 2002), there is a lack of research examining gender differences in patterns and motives of using Facebook.

The results of a MANOVA found no significant gender differences on time spent on Facebook, number of friends, and substance of relationship ($p > .05$). Perhaps with the changing times, gender differences have been minimized, or perhaps online life does not reflect offline life. Although it was expected that women would spend more time on Facebook, have greater “substance” in their online relationships, and have fewer friends on Facebook based the research on gender and face-to-face interactions, the results implied that perhaps these trends in physical interactions do not translate into computer-mediated relationships. Perhaps a larger study would
reveal a significant relationship; however, the results of this study indicate that the relationship between gender and number of friends on Facebook is not as strong as expected.

Although significant differences were not found between males and females with regard to the number of Facebook friends, one interesting finding was the number of friends reported overall. The typical number of Facebook friends for both genders (male: 582, female: 520) far exceeds the threshold of Dunbar’s (1993) number that postulates that human beings can only maintain effective relationships with 150 individuals. Since the number of friends on Facebook in this study sample far exceeds this limit, it can be expected that the results may not correspond with the expectations for face-to-face relationships.

Hypotheses 4 to 6 focused on the relationship between extroversion and the amount of time spent, the substance of relationships, and the number of friends on Facebook. Hypothesis 4 specified a negative correlation between level of extroversion and time spent on Facebook, which was intended to demonstrate that an individual who presents as less extroverted (i.e., more introverted) would spend more time using online social networking. This hypothesis was grounded in research demonstrating that introverts spend more time on the Internet than extroverts (Amichai-Hamburger, Wainapel, & Fox, 2002). However the calculated correlation was not statistically significant. Although Amichai-Hamburger et al. (2002) showed that introverts spend more time on the Internet than extroverts, these findings do not translate into the patterns on social networking sites such as Facebook. Further, the work of Amichai-Hamburger, Kaplan, and Dorpatcheon (2008) that supported
Hypothesis 4 was done in Israel based upon an alternative social networking site called Hevrea, and may not be applicable to Facebook. Perhaps it is inaccurate to assume that past research indicating that the Internet provides an outlet for introverts to validate their sense of self generalizes to computer-mediated-communication on Facebook. It is possible that Facebook usage does not fit into the construct of typical passive Internet usage, rather as an active social activity. Further studies need to be conducted examining Facebook usage, and more specifically how their time is allocated among different activities (i.e., posting vs. reading) on Facebook, as it relates to personality differences in order to effectively make any conclusion.

Hypothesis 5 was supported in that a negative correlation was found between level of extroversion and “substance” of online relationships \( (p < .01) \); however, it was a weak correlation. This can be explained by the fact that those who present as more introverted spend more time per friend on Facebook to foster individual relationships, whereas extroverts may use Facebook to collect large amounts of friends. Since the relationship between time spent and level of extroversion was nonsignificant from Hypothesis 4, this result is consistent with Hypothesis 6 that suggests that extroverts have more friends on Facebook.

A positive and moderately strong correlation was found between level of extroversion and the number of friends one has on Facebook \( (p < .01) \), supporting hypothesis 6 and is consistent with past research (Amichai-Hamburger, Kaplan, & Dorpatcheon, 2008; Amichai-Hamburger & Vinitzky, 2010) that extroverts are concerned with the external world, are often considered “joiners,” and are interested in other people and in events going on around them. Future research should
investigate extroverts’ definitions of friendship, and how selective they are of including friends on Facebook. Perhaps those who are more extroverted behave similarly on computer-mediated social networking sites to face-to-face interactions, seeking stimulation by socializing with friends and maintaining their outgoing character.

Part of Facebook's allure is that it provides a way to connect with one’s friends who are also members and allows one to utilize all three types of social capital (bonding, bridging, and maintained; Ellison et al., 2007). Thereby increasing sense of belonging, and possibly psychological well-being. Hypothesis 7 specified a positive correlation between sense of belonging and reported number of friends on Facebook. Results supported the hypothesis that there is a positive correlation, although a weak one, between sense of belonging and number of friends on Facebook ($p < .05$). The outcome aligns with previous research (not affiliated with online social networking) that suggested friendships enhance sense of belonging (Erikson, 1963; Hagerty et al., 1996; Maslow, 1943). The results indicate that a greater number of friends on Facebook may be associated with a greater sense of belonging in general. Future research may investigate sense of belonging specifically within the Facebook community.

Although several previous studies have investigated factors such as loneliness, self-esteem, and academic adjustment associated with Facebook usage (Gonzales & Hanock, 2011; Shwartz, 2010), there has yet to be work published directly addressing anxiety over the use of Facebook. A pressing issue in the mental health needs of college students is anxiety management, and since results indicate that 90% of
undergraduate and graduate students (from this study sample) are on Facebook daily and log in an average of 9 times per day, this is a significant component of their lives. As a first step in this direction, exploratory analyses were conducted about anxiety related to users’ needs to affiliate with Facebook. A subset of survey questions were collapsed into a single variable referred to as the Facebook Anxiety Index (FAI).

Based on the regression model, FAI was negatively correlated with sense of belonging ($p < .01$), suggesting that users who feel marginalized have greater anxiety. Additionally, a significant positive correlation was found between FAI and time spent on Facebook ($p < .01$). This aligns with social comparison theory (Festinger, 1954) which suggests that users who spend more time on Facebook have more opportunity to negatively evaluate themselves by comparing to other users. Further, their higher score on the FAI indicated that women reported greater anxiety over Facebook than men ($p < .05$). This finding is of interest since there were no significant gender differences ($p > .05$) in time spent on Facebook, number of friends, and substance of Facebook relationships, yet women reported higher FAI score. Perhaps this gender difference can be explained by the epidemiological studies, Borooah (2010) and Eaton et al. (2012) who reported that women are more likely to experience symptoms of depression and anxiety than their male counterparts.

Implications for Practice

**Gender.** The results of this study can contribute to counseling psychologists’ understanding of gender biases embedded in traditional theoretical models of gender roles. Traditionally in face-to-face relationships, females utilize their social networks in a different way than males. Women typically try to increase their connections by
sharing their personal lives (Aldrich, 1989; Burt, 1998) and value social connections based on intimacy, whereas men value social connections based on status and power (Lee & Robbins, 2000). Women often prefer dyadic relationships, while men prefer larger community or group affiliations (Frey, Tobin, & Beesley, 2004). On the basis of this study, perhaps Digital Natives are closing the gender gap, in that computer-mediated-communication does not follow the same trends as face-to-face interactions.

**Introverts/Extroverts.** Extroverts are typically concerned with the external world, considered the “joiners,” and are interested in people and events around them (Myers & Myers, 1980). Introverts, on the other hand, are typically more concerned with their private world, are quiet and reflective, and prefer their own company to crowds (Pearman & Albritton, 1997). Although previous research has suggested that introverts spend more time on the Internet than extroverts (Amichai-Hamburger et al., 2002), these finding did not translate into the results from this study. Clinicians may consider Facebook more as a social outlet rather than a private activity on the Internet. From the mixed results clinicians should be careful not to stereotype introverts and extroverts. It should not be assumed that “extroverts prefer face-to-face communication and have various options to socialize in different atmospheres where computer-mediated communication is ideal for people with introvert personalities” (Acar, 2008, p.70).

**Sense of belonging.** The need to “belong” is a vital component of one’s developmental and psychological well-being. When one is unable to satisfy their need for belonging by connecting with others and having their experiences validated, feelings of disconnection result. This could make one feel alienated from those in
their social network, which negatively affects self-esteem and self-image (Jordan, Hartling, & Walker, 2004; Maslow, 1954). Although research regarding the effects of using the Internet in general as a communication tool has been inconclusive, this study indicated that students who have a larger number of friends on Facebook reported a greater general feeling of sense of belonging. Adjusting to college is a difficult process as students struggle to connect as they enter the adult world; perhaps encouraging greater interaction on Facebook may be associated with improved sense of belonging and psychological well-being.

Future research should extend the examination of Facebook usage and sense of belonging in other populations. The fastest growing demographic on Facebook is women over the age of 55 (Smith, 2009). Older people use Facebook to reconnect with old friends and acquaintances and therefore, can increase their sense of belonging by connecting to others through Facebook (Ellison et al., 2007; Sheldon et al., 2011). Research shows that older people with a greater sense of belonging have more reasons to live overall, indicating that Facebook may have positive implications for the well-being of older users (Kissane & McLaren, 2006).

**FAI.** For college students much of their interpersonal communication has shifted from face-to-face interaction to computer-mediated-communication, with Facebook being the most popular interface (Facebook, 2011 & 2012). It is evident that Facebook is not only popular, but that usage continues to increase (DiMicco & Millen, 2007; Leow, 2009). For some Facebook has allowed them to thrive and stay connected with friends and meet many new acquaintances. However, a large percentage of participants from this study reported feeling anxiety due to Facebook.
Students with anxiety typically display difficulties in self-expression, which today translates not only to face-to-face communication, but also computer-mediated-communication. Since anxiety regarding Facebook was inversely related to sense of belonging, counselors may consider encouraging students to engage in groups (both online and offline) to help reduce their anxiety. Clinicians deal with treating anxiety associated with social interactions on a daily basis; however, it is essential that clinicians understand how to transfer these skills into the online arena. According to Huberty (2008), depression and anxiety are the most common psychological problems that students experience. Clinicians should be aware that a variety of uses of Facebook could be anxiety provoking. New interventions are needed to address the negative consequences of Facebook usage.

Research pertaining to gender differences in anxiety and Facebook usage is not available (Kalpidou, Costin, & Morris, 2011). Although the current study found that there were no gender differences with respect to time spent, number of friends, or “substance,” gender was a significant predictor of FAI. Therefore, clinicians may consider gender when assessing a client and investigating possible sources of their anxiety.

Internet addiction has been a topic gaining popularity among university mental health providers. Kiralla (2005) investigated university counselors and found that 84% of counselors found Internet over usage to be a sufficient concern for students, and 93% of counselors thought that they did not have sufficient training regarding these new issues. Perhaps to combat the issue of excessive time spent
(found to be a contributing factor to FAI), guidelines should be developed to educate students about anxiety and time spent on Facebook.

**Limitations and Future Directions**

One limitation of this study relates to the sole usage of self-report instruments for data collection, which presents an issue of response bias from participant subjectivity and social desirability. Future research should attempt to assess behavior in addition to perceptions in self-report measures. Another limitation of the study was the lack of geographic and ethnic diversity in the study population. This may have been a result of using snowball sampling, which can have numerous disadvantages in that there is no way in knowing whether the sample is representative of the population. On the one hand, study volunteers may try to protect their friends by not referring them, a problem known as “masking.” On the other hand, “referrals occur through network links, so subjects with larger personal networks will be oversampled, and relative isolates will be excluded” (Heckathorn 1997, p. 175). For example, this study asked participants to forward the survey that they completed to their friends or post a link on Facebook. A disadvantage of this methodology is that many of the participants share similar traits and commonalities, and may not be representative of the larger population. This was evident in that the largest percentage of the participants was from Massachusetts (65%). Thus sample bias is the principal downside of snowball sampling. Therefore, generalizability of the findings in this study could be improved with a larger and more diverse group of participants. Additionally this study was limited to students in the United States and did not assess cultural differences.
This study investigated number of friends and time spent on Facebook. It also introduced metric of substance of the relationship (time / # of friends). A limitation of this study was neglecting to define the construct of friendship. The meaning of “friend” on Facebook can have many numerous connotations… “friend on Facebook often does not correspond to the same label offline, and this difference inflates the potential size of friend networks” (Tong, Van Der Heide, & Langwell, 2008, p.537). Questions # 8 on the Facebook Usage Questionnaire ascertained the user’s number of friends on Facebook. However, this metric does not reveal the relationship of the friendship. This study found the mean for number of friends was 536. This does not reveal the nature or strength of the relationship, or indicate whether these are these strong ties or weak ties. For example, this study does not define if a Facebook friend is someone the user has known for 10 years or someone they met for 10 minutes at an informal social gathering. Future studies should clarify the construct of friendship and ask the user their overall number of friends verses how many are close friends.

A contribution of this study is the introduction of the FAI to assess anxiety associated with Facebook. Although results from the FAI suggest that students are experiencing Facebook anxiety, future research should correlate these results with the well-established Beck Anxiety Index (BAI). Future studies should also focus on the usage of Facebook among those associated with marginalized groups. These groups may use Facebook as a way to feel connected, and this might result in a reversal of the relationship between time on Facebook and FAI or sense of belonging within these groups.
This study focused on a snapshot in time for each of the participants. Future studies may investigate the longitudinal effect of relationship maintenance. It is unclear how men and women keep such a large number of friends (average = 536 from this study), and if they pare down these hundreds of Facebook friends or continue to integrate them into their lives.

Facebook has become a mainstay in our current society with over 800 million users. The majority of Facebook users are college students (DiMicco & Millen, 2007; Smith, 2009). Perhaps the allure of Facebook is that it facilitates social relationships, which are the fundamental aspect of the human condition. Thus, it is necessary to understand users’ characteristics and their investment to the website. Additional research should be extended to mental health providers in college counseling centers to see if there is indeed an increase in client referrals due to anxiety caused by social networking sites. “Facebook is part of the ‘social glue’ that helps students settle into university life” (Madge, Meek, Wellens & Hooley, 2009, p.152). Thus, more research needs to be done into the world of social networking and how these websites are affecting students’ day-to-day lives, and whether these websites harm or help create intimate social relationships. Facebook is becoming an increasingly salient feature in peoples’ lives, so much so, that the world is adapting to include Facebook in its everyday functioning. People of all ages have incorporated Facebook into their daily routine, and as a result, the field of counseling psychology should be aware of new Facebook-related problems across all ages that may be encountered in counseling session as well as the potential risks and benefits of joining the social media movement (Keller et al., 2011).
References

doi:10.1080/15533610802052654


doi:10.1093/cje/24.3.283


doi:10.1016/j.chb.2008.02.005


doi:10.1089/109493102753770507

Facebook 74


*Journal Of Abnormal Psychology, 121*(1), 282-288. doi:10.1037/a0024780


doi: 10.1037/h0043564


University of Hartford, CT. Retrieved from
http://gradworks.umi.com/33/58/3358179.html


doi:10.1111/j.1083-6101.2006.00029.x


### Table 1

*Reliability Analysis of Variables in the Facebook Usage Questionnaire Pilot Study*

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>n</th>
<th>Correlation</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. How any years have you been registered as a member?</td>
<td>21</td>
<td>.787</td>
<td>.000</td>
</tr>
<tr>
<td>3. What best describes your typical Facebook usage?</td>
<td>21</td>
<td>.953</td>
<td>.000</td>
</tr>
<tr>
<td>4. How much time (on average) do you spend using Facebook each day?</td>
<td>21</td>
<td>.939</td>
<td>.000</td>
</tr>
<tr>
<td>5. On an average day, how much time do you spend writing comments on your own profile?</td>
<td>21</td>
<td>.745</td>
<td>.000</td>
</tr>
<tr>
<td>6. On an average day, how much time do you spend writing comments on other people’s profiles?</td>
<td>21</td>
<td>.774</td>
<td>.000</td>
</tr>
<tr>
<td>7. Approximately, how many times per day do you check Facebook?</td>
<td>21</td>
<td>.942</td>
<td>.000</td>
</tr>
<tr>
<td>8. Approximately how many Facebook friends do you have?</td>
<td>21</td>
<td>1.000</td>
<td>.000</td>
</tr>
<tr>
<td>9. How many of your friends do you regularly interact with in terms of posting comments or reading about them on Facebook?</td>
<td>21</td>
<td>.806</td>
<td>.000</td>
</tr>
<tr>
<td>10. In the last 7 days, how many new friends have you added on Facebook?</td>
<td>21</td>
<td>.658</td>
<td>.001</td>
</tr>
<tr>
<td>11. Do you accept friend requests from people you have never met in person?</td>
<td>20</td>
<td>.444</td>
<td>.050</td>
</tr>
<tr>
<td>12. How selective are you in accepting new friend requests?</td>
<td>20</td>
<td>.302</td>
<td>.196</td>
</tr>
<tr>
<td>13. Do you worry that people will judge you based on the number of friends you have?</td>
<td>21</td>
<td>.200</td>
<td>.386</td>
</tr>
<tr>
<td>14. I feel that people who have more Facebook friends are more popular than me.</td>
<td>21</td>
<td>.191</td>
<td>.408</td>
</tr>
<tr>
<td>15. I feel left out when I look at other people’s profiles and they appear to be engaged in fun activities.</td>
<td>21</td>
<td>.664</td>
<td>.001</td>
</tr>
<tr>
<td>16. How much thought do you put into selecting pictures that you will share with your friends?</td>
<td>20</td>
<td>.612</td>
<td>.004</td>
</tr>
</tbody>
</table>
17. I use Facebook in order to feel connected or be part of a certain community. 21 .579 .006
18. I would be anxious if I did not have access to Facebook for 24 hours. 21 .807 .000
19. I would feel embarrassed if someone broke up with me on Facebook and his/her status changed before I had a chance to share this information with friends. 21 .686 .001
20. I would feel embarrassed if someone defriends me on Facebook. 21 .634 .002
21. Do you worry that when you request someone as your friend they will turn you down? 21 .498 .022
22. Viewing my friends’ posts, pictures, etc. makes me feel that they live more active social lives than I do. 21 .831 .000
23. Facebook has caused me anxiety on occasion. 21 .593 .005

Note. All responses for Question 1, “Are you a current member of Facebook?” were ‘yes’ in order to be eligible for the study.
Table 2

Descriptive statistics associated with Hypotheses 1 - 3

<table>
<thead>
<tr>
<th></th>
<th>Male &amp; Female</th>
<th>Male Only</th>
<th>Female Only</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>1. Time spent on Facebook</td>
<td>3.16</td>
<td>2.35</td>
<td>3.21</td>
</tr>
<tr>
<td>2. Number of friends</td>
<td>540.5</td>
<td>336.4</td>
<td>581.9</td>
</tr>
<tr>
<td>3. Substance</td>
<td>0.25</td>
<td>0.33</td>
<td>0.26</td>
</tr>
</tbody>
</table>

N 224 61 163

Note. Time spent on Facebook was assessed on a scale such that 3 corresponds to “between 1 hour and 1 ½ hours” and 4 corresponds to “between 1 ½ hours and 2 hours.”
Table 3

*Descriptive statistics associated with Hypotheses 4 - 7*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Level of extroversion(^a)</td>
<td>8.42</td>
<td>3.65</td>
</tr>
<tr>
<td>2. Time spent per day(^b)</td>
<td>3.16</td>
<td>2.35</td>
</tr>
<tr>
<td>3. Substance(^c)</td>
<td>0.25</td>
<td>0.33</td>
</tr>
<tr>
<td>4. Number of friends</td>
<td>540.5</td>
<td>336.4</td>
</tr>
<tr>
<td>5. Sense of belonging(^d)</td>
<td>58.87</td>
<td>10.40</td>
</tr>
</tbody>
</table>

*Note. N's range from 220 to 225 due to occasional missing data.*

\(^a\)Level of extroversion was measured on a 12 point scale with higher values corresponding to greater level of extroversion.

\(^b\)Time spent was measured on a scale with ½ hour increments with 0 corresponding to no time spent and 1 corresponding to 0 to ½ hour spent per day.

\(^c\)Substance was calculated based on time spent and number of friends.

\(^d\)Sense of belonging was measured on a 18 to 72 point scale with higher values corresponding to greater sense of belonging.
### Table 4

*Intercorrelations Among Variables in the Regression Analysis Predicting Facebook Anxiety Index*

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. FAI</td>
<td>2.57</td>
<td>0.66</td>
<td>–</td>
<td>0.14*</td>
<td>0.36**</td>
<td>0.09</td>
<td>0.19**</td>
<td>–21**</td>
<td>–42**</td>
</tr>
<tr>
<td>2. Gender</td>
<td>1.73</td>
<td>0.45</td>
<td>–</td>
<td>–0.01</td>
<td>–0.08</td>
<td>–0.01</td>
<td>–0.04</td>
<td>–0.06</td>
<td></td>
</tr>
<tr>
<td>3. Time Spent</td>
<td>3.17</td>
<td>2.35</td>
<td>–</td>
<td>0.28**</td>
<td>0.49**</td>
<td>0.00</td>
<td>–0.15*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Friends</td>
<td>539.7</td>
<td>336.9</td>
<td>–</td>
<td>–0.36**</td>
<td>0.32**</td>
<td>0.14*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Substance</td>
<td>0.25</td>
<td>0.33</td>
<td>–</td>
<td>–0.22**</td>
<td>–0.20**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Extroversion</td>
<td>8.40</td>
<td>3.65</td>
<td>–</td>
<td>–0.47**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. SB</td>
<td>59.97</td>
<td>10.32</td>
<td>–</td>
<td>–</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* N’s range from 219 to 225 due to occasional missing data. FAI = Facebook Anxiety Index. SB = Sense of Belonging.

*a* male = 1, female = 2.

*p < .05. **p < .01.
Table 5

Stepwise Regression Analysis Predicting Facebook Anxiety Index

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Model 1st Step</th>
<th>Model 2nd Step</th>
<th>Model 3rd Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sense of Belonging</td>
<td>$\beta_1 = -.419^{**}$</td>
<td>$\beta_1 = -.373^{**}$</td>
<td>$\beta_1 = -.365^{**}$</td>
</tr>
<tr>
<td>2. Time Spent on Facebook</td>
<td>–</td>
<td>$\beta_2 = .299^{**}$</td>
<td>$\beta_2 = .301^{**}$</td>
</tr>
<tr>
<td>3. Gender$^a$</td>
<td>–</td>
<td>–</td>
<td>$\beta_3 = .120^*$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Model 1st Step</th>
<th>Model 2nd Step</th>
<th>Model 3rd Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple r</td>
<td>.419</td>
<td>.512</td>
<td>.526</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.175</td>
<td>.256</td>
<td>.267</td>
</tr>
<tr>
<td>$F$</td>
<td>45.72**</td>
<td>38.07**</td>
<td>27.18**</td>
</tr>
</tbody>
</table>

Note. N’s range from 219 to 225 due to occasional missing data. 1st and 2nd step models are intermediate steps, 3rd step model is the final model generated by the stepwise regression analysis.

$^a$male = 1, female = 2.

*p < .05. **p < .01.
Appendix A

Informed Consent

Northeastern University, Department of Counseling and Applied Educational Psychology

**Title of Project:** Facebook Use in Relation To Gender, Introversion-Extroversion, and Sense of Belonging Among College Students

**Principal Investigator:** Laurie Dickstein-Fischer, M.S.

**Sponsor:** Dr. Y. Barry Chung

**Purpose:** You are invited to participate in this research study to investigate college students’ Facebook usage in relation to gender, personality and their sense of belonging. Participation will require approximately 15 minutes of your time.

**You must be at least 18 years old** to participate in this research project and currently enrolled as a university student.

**Procedure:** This study will take place on Survey Monkey and will take approximately 15 minutes. If you decide to take part in this study, we will ask you to fill out a demographic questionnaire and complete survey questionnaires related to Facebook Usage, Personality, and Sense of Belonging.

**There are no foreseeable risks or discomforts to you for taking part in this study.**

**There are no direct benefits to you for participating in the study.** However, your answers may help us to better understand how college students use Facebook and its clinical implications.

**Your participation in this study is anonymous.** However, because of the nature of web based surveys, it is possible that respondents could be identified by the IP address or other electronic record associated with the response. Neither the researcher nor anyone involved with this survey will be capturing those data. Any reports or publications based on this research will use only group data and will not identify you or any individual as being affiliated with this project.

**The decision to participate in this research project is up to you.** You do not have to participate and you can refuse to answer any question. Even if you begin the web-based online survey, you may stop at any time.

**You will not be paid for your participation in this study.**
If you have any questions about this study, please feel free to email Laurie Dickstein Fischer at l.dicksteinfischer@neu.edu the Principal Investigator or her advisor Y. Barry Chung at Y.Chung@neu.edu

If you have any questions about your rights in this research, you may contact Human Subject Research Protection, Division of Research Integrity, 960 Renaissance Park, Northeastern University, Boston, MA 02115. Tel: 617-373-4588, Email: irb@neu.edu. You may call anonymously if you wish.

By clicking on the NEXT button you are indicating that you consent to participate in this study. Please print out a copy of this consent form for your records.

Thank you,
Laurie Dickstein-Fischer, M.S.
Appendix B

Demographic Questionnaire

1. Please select your gender.
   Male
   Female
   Transgender
   Other_________________

2. How old are you__________?

3. Are you currently enrolled as a student in a college or university?
   Yes
   No (please skip the rest of the survey)

4. What is your current level in school?
   Freshman
   Sophomore
   Junior
   Senior
   Master’s
   Doctoral
   Medical School
   Law School
   Other_________________

5. What is your enrollment status?
   Full-time
   Part-time
   Other_________________

6. What state is your school located in? ________________

7. Are you currently in a long-term romantic relationship (at least 3months)?
   Yes
   No

8. What best describes your ethnicity?
   African American
   Asian
   Hispanic or Latino
   Mixed Race
   Native American or Alaska Native
   Native Hawaiian or Pacific Islander
   White
   Other_________________
Appendix C

Facebook Usage Questionnaire

1. Are you a current member of Facebook?
   Yes
   No (please skip the rest of the survey, thank you).

2. How many years have you been registered as a member?__________?

3. What best describes your typical Facebook usage?
   Daily
   Weekly
   Monthly
   Less than once per month

4. How much time (on average) do you spend using Facebook each day?
   I do not typically engage in this activity daily
   Less than ½ hour per day on average
   Between ½ hour and 1 hour
   Between 1 hour and 1 ½ hours
   Between 1 ½ hours and 2 hours
   Between 2 hours and 2 ½ hours
   Between 2 ½ hours and 3 hours
   Between 3 hours and 3 ½ hours
   Between 3 ½ hours and 4 hours
   Between 4 ½ hours and 5 hours
   Over 5 hours per day on average

5. On an average day, how much time do you spend writing comments on your own profile?
   I do not typically engage in this activity daily
   Less than ½ hour per day on average
   Between ½ hour and 1 hour
   Between 1 hour and 1 ½ hours
   Between 1 ½ hours and 2 hours
   Between 2 hours and 2 ½ hours
   Between 2 ½ hours and 3 hours
   Between 3 hours and 3 ½ hours
   Between 3 ½ hours and 4 hours
   Between 4 ½ hours and 5 hours
   Over 5 hours per day on average

6. On an average day, how much time do you spend writing comments on other people’s profiles (this includes commenting on people’s pictures).
   I do not typically engage in this activity daily
   Less than ½ hour per day on average
   Between ½ hour and 1 hour
   Between 1 hour and 1 ½ hours
   Between 1 ½ hours and 2 hours
   Between 2 hours and 2 ½ hours
   Between 2 ½ hours and 3 hours
   Between 3 hours and 3 ½ hours
   Between 3 ½ hours and 4 hours
   Between 4 ½ hours and 5 hours
   Over 5 hours per day on average
7. Approximately, how many times per day do you check Facebook __________?

8. Approximately how many Facebook friends do you have______________?

9. How many of your friends do you regularly interact with in terms of posting comments or reading about them on Facebook ____________?

10. In the last 7 days, how many new friends have you added on Facebook ____________?

11. Do you accept friend requests from people you have never met in person?
   Yes
   No

12. How selective are you in accepting new friend requests?
    - Not at all selective
    - Somewhat selective
    - Moderately selective
    - Very Selective
    - Extremely selective

13. Do you worry that people will judge you based on the number of friends you have?
    - Never
    - Rarely
    - Sometimes
    - Often
    - Always

14. I feel that people who have more Facebook friends are more popular than me.
    - Strongly disagree
    - Disagree
    - Neither agree or disagree
    - Agree
    - Strongly agree

15. I feel left out when I look at other people’s profiles and they appear to be engaged in fun activities.
    - Strongly disagree
    - Disagree
    - Neither agree or disagree
    - Agree
    - Strongly agree

16. How much thought do you put into selecting pictures that you will share with your friends?
    - No thought (always post)
    - Slight amount of thought
    - Some thought
    - Moderate thought
    - Extreme amount of though (very selective)

17. I use Facebook in order to feel connected or be part of a certain community.
    - Strongly disagree
    - Disagree
    - Neither agree or disagree
    - Agree
    - Strongly agree
18. I would be anxious if I did not have access to Facebook for 24 hours.
   - Strongly disagree
   - Disagree
   - Neither agree or disagree
   - Agree
   - Strongly agree

19. I would feel embarrassed if someone broke up with me on Facebook and his/her status changed before I had a chance to share this information with friends.
   - Strongly disagree
   - Disagree
   - Neither agree or disagree
   - Agree
   - Strongly agree

20. I would feel embarrassed if someone defriends me on Facebook.
   - Strongly disagree
   - Disagree
   - Neither agree or disagree
   - Agree
   - Strongly agree

21. Do you worry that when you request someone as your friend they will turn you down?
   - Never
   - Rarely
   - Sometimes
   - Often
   - Always

22. Viewing my friends’ posts, pictures, etc. makes me feel that they live more active social lives than I do.
   - Strongly disagree
   - Disagree
   - Neither agree or disagree
   - Agree
   - Strongly agree

23. Facebook has caused me anxiety on occasion.
   - Strongly disagree
   - Disagree
   - Neither agree or disagree
   - Agree
   - Strongly agree
Appendix D

Eysenck Personality Questionnaire Revised-Short-scale

Instructions: Please answer each questions by selecting either ‘yes’ or the ‘no’ following the questions. There are no right or wrong answers, and no trick questions. Work quickly and do not think too long about the exact meaning of the questions.

1. Are you a talkative person? ................................................................. Yes No
2. Are you rather lively?........................................................................ Yes No
3. Do you enjoy meeting new people? ................................................. Yes No
4. Can you usually let yourself go and enjoy yourself at a lively party? .... Yes No
5. Do you usually take the initiative in making new friends? .............. Yes No
6. Can you easily get some life into a rather dull party? ..................... Yes No
7. Do you tend to keep in the background on social occasions? .......... Yes No
8. Do you like mixing with people? ....................................................... Yes No
9. Do you like plenty of bustle and excitement around you? ............. Yes No
10. Are you mostly quiet when you are with other people? ................. Yes No
11. Do other people think of you as being very lively?......................... Yes No
12. Can you get a party going? ............................................................. Yes No
Appendix E

Sense Of Belonging Instrument: SOBI-P

Instructions: Here are some statements with which you may or may not agree. Using the key listed below, circle the number that most closely reflects your feelings about each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I often wonder if there is any place on earth where I really fit it.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. I am just not sure if I fit in with my friends.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3. I would describe myself as a misfit in most social situations.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>4. I generally feel that people accept me.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5. I feel like a piece of a jigsaw puzzle that doesn’t fit into the puzzle.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6. I would like to make a difference to people or things around me, but I don’t feel what I have to offer is valued.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>7. I feel like an outsider in most situations.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>8. I am troubled by feelings like I have no place in this world.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>9. I could disappear for days and it wouldn’t matter to my family.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>10. In general, I don’t feel a part of the mainstream society.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>11. I feel like I observe life rather than participate in it.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>12. If I died tomorrow, very few people would come to my funeral.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>13. I feel like a square peg trying to fit into a round hole.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>14. I don’t feel that there is anyplace where I really fit into this world</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>15. I am uncomfortable that my background and experiences are so different from those who are usually around me.</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
16. I could not see or call my friends for days and it wouldn’t matter to them | 4 | 3 | 2 | 1
17. I feel left out of things. | 4 | 3 | 2 | 1
18. I am not valued by or important to my friends. | 4 | 3 | 2 | 1

*Note.* Answers were scored as follows: SA=1 point; A=2 points; D=3 points; SD= 4 points (except for item # 4 which is reversed scored).