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Are We Becoming More Socially Awkward? An Analysis of the Relationship Between Technological Communication Use and Social Skills in College Students.

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Are We Becoming More Socially Awkward? An Analysis of the Relationship Between

Technological Communication Use and Social Skills in College Students.

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Abstract

This study examined the relationship between the use of technological communication and social skills in college students. A total of 112 male and female undergraduate students at Connecticut College were surveyed about their social skills, social anxiety, technology use, and technology preference. Sixteen of these participants returned to participate in a conversation taking place in a lab setting that was observed by the researcher, in order to evaluate non-verbal social skills. We predicted that participants who used technological communication more frequently or preferred it to face-to-face communication, would have lower social skills and high social anxiety. In addition, women were expected to use technological communication more than men. A series of analyses provided support for the first hypothesis. Ultimately, communication preference strongly correlated with poor social skills and high social anxiety, while a greater restriction of technology in youth correlated with high social skills in college. Implications for the impact of technological communication on social skills were discussed.

Keywords: technology, communication, social skills, social anxiety, internet preference, college students

Acknowledgements

Table of Contents

List of Tables

List of Figures

List of Appendices

Are we becoming more socially awkward? An analysis of the relationship between

technological communication use and social skills in college students.

We walk through this world with our heads down. Immersed in the technological

realm, we disregard the real. We converse with our hands rather than our mouths,

tapping keyboards and touchpads to the rhythm of our thoughts. This is the way we

communicate in the 21st century. In the last decade, advances in information technologies

have substantially altered the way humans interact. Between email, texting, social

networking, instant messaging, and Skype, people now have the resources that would

make it possible to spend days or months without coming face-to-face with another

person, yet still remain connected with the world. From 1995 to the present, the number

of Internet users worldwide has risen from 16 million to 2280 million as of March of

2012, which is 32.7% of the world's total population (Internet World Stats, 2012). Today,

77% of teens have a cell phone; of these teens, only 39% made phone calls daily, whereas

63% text messaged daily (Dokoupil, 2012). Use of these new methods of

communication, as traditional voice-based methods have diminished, has reduced

communication to as few textual characters as possible.

Many researchers and individuals are thankful for these innovations, suggesting

they may promote relationship building and maintenance and allow individuals to

communicate while standing at opposite ends of the world (Kavanaugh, Carroll, Rosson,

Zin, & Reese 2005). New technologies also make many of our interactions easier and

faster, and enable people with social anxiety to communicate with others in a more

comfortable social environment. Therefore, it is no surprise research has found that 20%

of individuals prefer online communication or texting to in-person communication

(Thompson, 2012).

As technological communication becomes progressively diffused into our culture,

however, it is apparent that just as many negative as positive outcomes are emerging.

According to an article written in 2005, employers are complaining about the lack of

interpersonal communication skills their job applicants have, and communications skills

have consequently been pushed to the top of the list of qualities required of employees

(McKay, 2005). Neuroscience research has begun to examine how technological

communication is altering our brains. These studies have found that the brains of

individuals who spend a lot of time on the Internet resemble those of drug addicts in

significant ways. Every time an individual responds to the ping of an instant message or

text message, a small amount of dopamine is secreted in the brain as a reward, similar to

being under the influence of drugs (Dokoupil, 2012). Consequently, humans are

becoming addicted to these rewarding pings, just as with addicting drugs.

As we spend more time on the Internet our socialization with others face-to-face

is clearly decreasing as well. A study conducted in 2010 showed that the more time

members of our society spend using the computer, the less time they spend in person with

family and friends (Nie & Erbring, 2010). Other research suggests that 39% of

Americans spend more time socializing online than face-to-face (Thompson, 2012). The

American Psychiatric Association has shown clear concern with our cultural tendency to

spend copious hours on the Internet. In the revised version of the DSM 5, a new category

of psychiatric disorder called "internet addiction disorder" has been proposed, which

further highlights the negative side effects of Internet use. The social habits of college

students seem to be especially impacted by technological communication. A Professor of Communications at Alma College reported that in the last five years there has been "erosion in students' ability to focus and even their ability to engage in face-to-face interaction" (Weeks, 2012, para. 16). An additional study at the University of Michigan showed that college students were 40% less empathetic today than they were 20 years ago (Konrath, 2010). Psychologists have theorized how these changes are likely to be tied to overuse of technology; however, with so many confounding variables, researchers have had difficulty establishing clear relationship between variables.

Much research has been done on social anxiety as a cause of over-use or addiction to technological communication, yet there has been little research done on the reverse: technological communication as a cause of social anxiety and social inadequacy. Psychologists, teachers, and writers have theorized that we are becoming an "autistic society" that no longer values face-to-face interaction (Yehuda, 2001). The question is, to what extent does research support these claims, and do they have anything to do with technology?

The remainder of the introduction will review the research on technological communication and its impact on our lives. The paper will begin with an overview of how our society defines communication and how telecommunication differs. The history of telecommunication, how it began and evolved, and its many different forms (telephone, cell phone, texting, email, instant messaging, and social networking) will be reviewed. Next, the negative psychological impact the research suggests has emerged from these forms of telecommunication will be addressed. The focus will then shift to the communicatory aspect of telecommunication, specifically the language used in these

mediums and how telecommunication impacts our social skills in the cyber realm and in the real world.

Communication and Telecommunication

Communication is a "fundamental process of human activity" (Castells, Fernández-Ardévol, Qiu, & Sey, 2006, p. 15). In order to survive in a society among other human beings, interaction and communication is essential. Every day in every culture, humans communicate to exchange information. The word communication stems from the Latin word "communis," meaning "to share," and, yet in the modern world, this word also refers to electronic, verbal, and non-verbal means of communication (Merriam-Webster.com, 2012). Traditionally, interpersonal communication occurred by means of larger, communal, ritual get-togethers. Eventually, these gatherings were replaced with small brief rituals, frequently taking place between two individuals. The accumulation of these brief social interactions creates a self that is constantly reacting to and adjusting according to the judgments of others, in a way that never occurred in larger gatherings (Goffman, 1961).

While communication began as an interpersonal face-to-face exchange, the rapid growth of technology in the last century has enabled us to communicate in many other ways that do not demand spatial proximity; these are referred to as telecommunication. The purpose of telecommunication is to exchange information over significant distances by electronic means, consequently eliminating the distance between continents, countries, neighborhoods, and people (Smoreda, 2002). No longer is it necessary today to be standing next to people to communicate with them. Technological advances have made it

possible to communicate with a person at any time anywhere in the world with the click of a button.

Beneath the overarching category of telecommunication are two categories: mass communication and personal communication. According to Carne (1995), mass communication is when "information flows simultaneously from a single transmitting site to a large number of receiving sites" by the means of an electronic device (p. 6). Personal communication, the focus of this paper, is most often an electronic information exchange between a single transmitter and single receiver. Forms of personal telecommunication include, but are not limited to, the telephone, the cell phone, text messaging, instant messaging, emailing, and social networking. While some of these mediums are more asynchronous (independent of fixed time intervals), like text messaging, emailing, and, in a sense, social networking, others are synchronous (in real time). All of these technological mediums are responsible for significantly shaping the way we communicate today.

The Telephone. For centuries, messages were transported by carriers or messengers by foot, horse, coach, or boat. The messenger, or the middleman, was a vital component in the transmission of a message between two people. This type of message service dates back to 900 BC when the first postal service was created in China to be used by the government. By 200 BC this type of communication had spread to Egypt. In 1825, when William Sturgeon created a device that became the basis for all large-scale electronic communication, the postal service method of communication was challenged (Adib, 2003). This device, the electromagnet, created a magnetic field that produced the flow of an electric current, and Joseph Henry proved five years later that this current

could be sent over one mile of wire to strike a bell, leading to the creation of the electric

telegraph, the first device used for long distance communication (Adib, 2003). Samuel

Morse took this type of telecommunication to the next level, creating Trans-Atlantic

telecommunication for the first time in 1866 with the use of a logging device that

recorded messages to paper tape. Ten years later, Alexander Graham Bell and Elisha

Gray began the race to the creation of the telephone, each creating his own device to

electrically transmit speech. Initially, the creation of the telephone was purely a scientific

attempt to replace the telegraph. However, by 1878 the telephone had caught on as an

elite form of communication, and its popularity led to the creation of the first commercial

telephone company: AT&T (Marc, 2007). Businessmen began making use of the product

in order to communicate between floors of American skyscraper buildings. As

technology continued to improve in the field of telecommunication, telephones became

cheaper and landlines were installed in middle class family homes. By the 1970s, over

100 million people worldwide used a landline telephone. In 2006, landline use reached its

peak, with 20 landline telephones for every 100 people in the world (Belhueur, 2011).

Yet, as soon as this peak was reached, it began to fall rapidly, challenged by the creation

and popularity of the cell phone. From 2005 to 2010, landline-only homes dropped from

34.4%to 12.9% (Belhueur, 2011).

The Cell Phone. In 1973, Martin Cooper created the first mobile phone for Motorola.

Not only did this invention enable two communicating individuals to talk without

standing in the same location as each other, but the cell phone also gave both the freedom

to communicate from any location they desired. In 1987, 13 European countries agreed to

sign on to develop and deploy a common mobile telephone system across Europe,

creating, as a result, Groupe Spécial Mobile (GSM) a "unified, open, standard-based mobile network" larger than the network in the United States (Naughton, 2012). This contract signing initiated a monumental rise in popularity and usage of the cell phone. With its small size and mobility, the cell phone became the most unobtrusive and convenient means of communication. By 1990, there were 1 million cell phone subscribers in the United States and between 1995 and 2008, cell phone subscriptions in the United States increased from 33.8 million to 270.3 million. In 2012, 48 billion people worldwide reported having a cell phone, while there are six billion fewer people in the world who own a toothbrush (Bullas, 2012). While those in developing countries could not afford to pay for a landline, they were now able to communicate electronically by way of the disposable cell phone that provided the cheaper option of pay-as-you-go. In other developed countries, use of the landline began to fall at an exponential rate. By 2009, 26.6 % of families had rid their homes of landlines and16% only used mobile cellular phones. When looking at American teens in particular, one third under the age of 30 said they only used their cell phones, never the landline. Of those families that still had a landline in their household, 13% preferred to be called on their cell phone (CBS, 2009). Today, 77% of American teens have a cell phone, and 23% of these teens have a smart phone, a more advanced cellular device with Internet access and built in applications (Tippin, 2012). Because smart phones are equipped with Internet, games, the news, e-mail, weather reports etc. in addition to the simplistic elements of the basic mobile phone, they are inherently more time-consuming devices, which has also led to their widespread popularity.

Texting. The European mobile network, GSM, was the first to develop the idea of

texting as a way of transporting messages across channels without sound. The only

drawback of this method was the text limit of 160 characters to a message. This form of

communication, called SMS (short message), was included in the GSM system from the

beginning, however it didn't catch on until around 1996 when pay-as-you-go phones

were created. Suddenly, teens that were not on mobile plans could acquire cell phones.

Today, this demographic continues to be the biggest user of SMS, sending or receiving an

average of 3700 texts per month (Naughton, 2012). The average American teen sends 60

texts per day and receives 400 texts per month, which is up from 50 texts a day in 2009

and 100 texts per month in 2007 (Dokoupil, 2012). Sixty-three percent of teens said they

exchanged text messages on a daily basis; however, only 39% of teens made phone calls

and 35% engaged in face-to-face socialization outside of school daily. In a study

conducted in 2009 in which 280 American high school students were surveyed, 65% of

participants reported having texting abilities on their phone. While 57% of individuals

reported spending an hour or less talking on a cell phone per day, 55% reported spending

between 3-7 hours texting daily (Pierce, 2009).

Texting has become embedded in the lives of non-Americans as well. In Japan

there is a widespread agreement that texting is preferred to voice communication. In

Hong Kong texting is a status symbol among college students, representing wealth and

power. In Malaysia, cell phones are only used for texting (Thurlow & Poff, 2011).

It wasn't until the year 2000 that researchers, in particular language researchers,

began studying the intricacies of language used in texting and email. Initially, only

transactional (commercial, business) uses of text messaging were researched. However,

it soon became clear that relational motivations for texting were the most popular

(Thurlow & Poff, 2011). Relational texts range from friendly salutations, substantial

friendship maintenance, and making social arrangements to fights and cyberbullying.

Much of this sort of texting tends to "epitomize the small talk" of daily conversation

(Thurlow & Poff, 2011, p. 9). Despite their asynchronous quality, and the physical

distance between texters that makes it difficult to imitate face-to-face conversation, text

messages are surprisingly intimate due to the distance between texters that gives them a

"relative anonymity." The result is that texters feel more comfortable sharing private

information while texting than they would sharing this information with someone face-to-

face (Thurlow & Poff, 2011).

Email. Before texting, came email. Email is short for "electronic mail." If defined

loosely, the first e-mails were technically sent over one hundred years ago with the

telegraph and Morse Code. However today, email usually refers to the exchange of

messages between computers that began in the late 1970s to early 1980s in congruence

with the beginning of the Internet (Vleck, 2012). Email was originally utilized most by

companies that took advantage of the ability to send out information to many people at

once without calling a meeting or printing out materials (mass telecommunication).

However, as technology advanced, personal computers became cheaper and their demand

grew, allowing more individuals outside of the business world to start using email for

personal reasons in their own homes. It became commonplace for families and friends to

stay in touch over email rather than by phone. Today, the number of consumer email

accounts surpasses corporate accounts, with 75% of all email accounts belonging to

consumers. As of 2012, 3.3 billion people worldwide have at least one email account,

with Europe accounting for 22% of these email accounts, and North America, 14% (Radicati, 2012). It is clear that in the US, at least, email has been diffused more successfully within the adult demographic than with teens. Only 8% of American teens said they considered email their primary form of online communication, whereas 93% of adults preferred email to other online forms of communication (Boneva, Quinn, Kraut, Kiesler, & Shklovski, 2006).

Instant Messaging (IM). While email is popular, it lacks the synchronous aspect that makes talking on the telephone so similar to speaking face-to-face. The lag in response time that makes email asynchronous, is what sparked the creation of ICQ (I Seek You), an online software developed in 1996 for real-time text-based communication. Not long after, AOL created a similar instant messaging program (AIM), followed by Yahoo! Messenger and MSN messenger, yet AIM became the dominant service (Boneva, Quinn, Kraut, Kiesler, & Shklovski, 2006). These three services have in common allowing users to log in to their network, see whether their friends are online at the same time, and send messages back and forth in real time (Ling & Helmersen, 2000). Studies show that adolescents use instant messaging more than any other age group. In 2001, 74% of teens in the US used IM, and 35% of this group used it daily. In the last decade, use of AIM has fallen, but Google Chat (g-chat) has taken its place, and this change has been endorsed by AIM, which has created a new feature that allows users to convert their list of instant message "buddies" or contacts to Google Chat (Burnham, 2011).

Social Networking. Today social networking is the world's most popular online activity (Jung, 2011). Social networking did not truly come into the market until 2002 with the creation of Friendster, a network based on a degree of separation concept that promoted

the idea that richly connected online communities can exist between people. After one year, Friendster already had three million users. The immediate popularity of Friendster sparked the creation of tens of other social networking sites, including Myspace (2003), LinkedIn (2003), and Facebook (2004) that continue to be popular today. Seventy-five percent of teens are members of at least one social networking site, with Myspace and Facebook being the sites most widely used (Thompson & Lougheed, 2012). In 2007, Myspace towered over any other social networking site, appealing mostly to teenagers who utilized it for sharing music, videos, and photographs with friends. However, in 2009, Facebook surpassed Myspace's highest ratings, growing in popularity at an exponential rate. Facebook was initially only available to college students, giving it a more elite and refined reputation than Myspace (Lytle, 2012). As Facebook was adopted by other demographics, its exclusive nature was maintained, in that new users had to be invited by current users in order to join the network. Another quality that may have urged Myspace users to make the switch to Facebook is its "Facebook Chat" attribute, added to the site in 2008, which allowed users to communicate using instant message on the site (Wiseman, 2008). This gave Facebook a leg up on other social networking sites because the developers found a way to incorporate popular forms of online communicating (instant message and social networking) into one website, which no other social networking website had at this point. Today, Facebook is by far the leading social networking website, both in the United States and internationally, with over 500 million users worldwide. By gradually removing strict privacy settings, Facebook has become as easily accessible as Myspace, yet continues to be regarded as more sophisticated than Myspace by adult users (Goble, 2012).

Second to Facebook in popularity is Twitter, whose sole purpose is to share status updates, one of the features of Facebook. Twitter has found a unique way to combine the social networking aspect of mass communication with the concise nature of text messaging, as every status update is subject to a 140-character limit. This website prompts users to answer the question "what are you doing?" and companies, newspapers, celebrities, and the public respond with messages that range from humor and musings on life to links and breaking news. Today, 465 million people have Twitter accounts worldwide, and 1 million accounts are added daily (Bulas, 2012). Second to the US in Twitter usage is Brazil, followed by Japan.

Gender Differences in Technology Use

Much of the research conducted today suggests that the way in which people use technological communication differs by gender. With regard to Facebook use, a major component of technological communication, the majority of Facebook's 845 million users are women, and, additionally, women drive 62% of Facebook activity (status updates, messages, and comments). Women also have 8% more Facebook friends than do men and spend more time on the site altogether than do men (Miller, 2012). With regard to symptoms of Internet behavior that have the potential to lead to Internet addiction, women are also more likely to say they are closer to their Facebook friends than their friends in real life and that they feel addicted to Facebook, than men are (Thompson & Sharon, 2012). Women also spend more time texting than men do. In an average month, women will send and receive 717 text messages, which is 30% more than the 552 sent and received by men. Finally, women also spend 22% more time chatting on the phone than men do (Gross, 2010).

The question is what causes these gender differences in technological communication use to occur? Amanda Kimbrough, a graduate student at the University of Alabama, suggested that women are more frequent mediated communication users than are men because this behavior fits with the stereotypical female gender role more than with the male gender role. Traditionally, in social situations women are more communal (i.e., focus on establishing bonds within social interactions), whereas men are more "agentic" (i.e., aim to achieve independence and remain more task focused) (Kimbrough, 2012). Considering the two most prevalent reasons for using social networking sites are more communal than agentic (to maintain social relationships and for social surveillance), it makes sense that women would be more drawn to social networking than would men.

The Psychological Impact of Telecommunication

Social Networking and the Imagined Audience. Social networking is altering the social dynamic of communication by creating the impression of a constant audience looking in on one's life. For example, Facebook enables users to communicate through profiles, private instant messaging, and personal commenting. This self-presentation may include the addition of books, music, or favorite movies to the "about me" section of one's page. These modes of communication are editable. People present themselves in fixed singular and self-conscious ways on these pages to put themselves in an optimal light. The audience of "friends" that users broadcasts their lives to is a list of people to whom users have given page access. The labeling of people as "friends" gives individuals the ability

to publicly articulate their connections with others, verifying the reality of an audience that is constantly up to date with their own life: the automatic listener (Turkle, 2011).

Yet, the audience we project our lives onto is "imagined," in that, while users have granted hundreds of people access to their page, most social networking websites do not give users a list of people who visit the page and with what frequency. This part must be imagined by the user. The imagined audience also differs from one social networking website to another. With regard to Twitter, most accounts are public, meaning that anyone can gain access to what an individual has posted. While users are given the ability to "follow" others, there is no technical requirement or social expectation of reciprocity from these followers. Therefore, the audience of followers a Twitter user imagines is much more arbitrary than that imagined by Facebook users, who must grant permission to others to view their page.

Self-Esteem. For social networking users, the unknown audience can provoke anxiety. The presentation of an ideal self to an imagined audience is an example of the psychological term "self-presentation," which is "the attempt to control self-relevant images before real or imagined others" (Schlenker, 1981, p. 25). This behavior occurs in all walks of life, as individuals learn to segregate their audiences, presenting a self compatible to the audiences they find in different face-to-face social situations (Goffman, 1961). Yet in the case of social networks, we are faced with "collapsed contexts" of multiple distinct audiences in one space and we feel pressure to present a variable self-presentation to this mixed group of people (Goffman, 1961). Research shows that individuals who are more shy and idiocentric lie more about their identities online to appeal to an imagined audience, than extraverted individuals do (Chen &

Marcus, 2012). In addition, those who did not know the majority of their Facebook friends personally were more likely to think that their friends led happier lives than themselves (Chou &Edge, 2012).

The extent to which posted information accurately portrays the real life of the person posting, is unknown, which is what leads to Chou and Edge's finding on percieved happiness. What users choose to post about themselves is most often not based on how they in real life, but on how they would like to be seen by their "friends" (Schlenker, 1981). Most users edit out unattractive qualities of themselves from their social networking profiles, encouraging everyone to be "phonies, always relentlessly and annoyingly happy," as worded by reporter Connie Shultz (Faulk, 2012, para. 3). The truth behind the profile must be imagined, and humans are gullible creatures, so naturally they believe the artificially perfected information provided for them, potentially lowering their own self-esteem. A study conducted in 2011 found that levels of self-esteem decreased as frequency of Facebook use and status updates increased (Schwartz, 2011). A similar study with 425 college students measured the correlation between the number of years Facebooks users had a profile and their tendency to agree with three beliefs. The study found that those who had been using Facebook for a longer period of time were more likely to agree with the statements "others are happier and have better lives than myself," and less likely to agree with the statement "life is fair" (Chou & Edge, 2012). Unfortunately, users anticipate that Facebook will actually increase their self esteem levels, while it in fact does the opposite. Individuals with low self-esteem are *more* likely to use Facebook than are those with high self-esteem for this very reason (Mehdizadeh, 2012; Skues, Williams, & Wise, 2012). Facebook users have been found to be more

likely to engage in Facebook use immediately after a situation in which their ego was

threatened than when this had not occurred, suggesting that Facebook use can be

motivated by efforts to restore self-worth (Toma, 2012). What does this mean for the

future if users are incorrectly interpreting the benefits of Facebook?

Loneliness. With every status update and profile edit, followers and friends are notified

and the presumption is that people are making an effort to maintain a connection, which

is what fuels the imagined audience. Yet research suggests that rather than produce the

feeling that a user is more connected, this imagined audience causes users to experience a

paradoxical rise in feelings of loneliness. Facebook emerged at a time when solitary

lifestyles were already on the rise. In 1950, less than 10% of American households

contained only one person, but by 2010, nearly 27% of households had just one person

(Marche, 2012). Our culture has become progressively more solitary, and Facebook, a

solitary activity, is furthering this trend. Studies show that this solitary behavior has also

been linked to increasing loneliness. An Australian study found that lonely people are

inclined to spend more time on Facebook: "One of the most noteworthy findings," they

reported, "was the tendency for neurotic and lonely individuals to spend greater amounts

of time on Facebook per day than non-lonely individuals" (Ryan & Xenos, 2012, p.

1661). This finding has been attributed to the tendency for individuals who are already

lonely to use the site to compensate for a lack of offline relationships (Skues et al., 2012).

A longitudinal study conducted in 2011 found that of 218 Pace University undergraduate

students surveyed, loneliness signficantly increased with frequency of Facebook use and

frequency of status updates (Schwartz, 2011). This does not come as much of a surprise

considering, with some users having up to 3,000 friends, it is hard to do anything more

than brush the surface of connection with any one of them (Turkle, 2012). This sort of

meaningful connection happens more frequently face-to-face. According to Cacioppo,

who has done a significant amount of research on loneliness and Facebook use, "the

greater the proportion of face-to-face interactions, the less lonely you are" (Marche,

2012, pp. N/A). Stephen Marche, reporter for *The Atlantic*, makes it clear that lessening

the sense of loneliness felt between people in our culture is important for our health

alone:

> Being lonely is extremely bad for your health. If you're lonely, you're more
> likely to be put in a geriatric home at an earlier age than a similar person who
> isn't lonely. You're less likely to exercise. You're more likely to be obese.
> You're less likely to survive a serious operation and more likely to have
> hormonal imbalances. You are at greater risk of inflammation. Your memory
> may be worse. You are more likely to be depressed, to sleep badly, and to suffer
> dementia and general cognitive decline.
>
> (2012, para. 13)

However, we cannot make Facebook the sole culprit of our unhealthy loneliness.

The Internet in general is a solitary activity that has been around for two decades.

Overall, with more time spent on the Internet, less time is spent interacting with real

human beings. Even as early as the 1990s, researchers found evidence that increased

Internet usage coincided with increased loneliness (Marche, 2012). After spending just 2-

5 hours on the computer a week, individuals reported a considerable loss of contact with

their social environment and 25% less time spent talking on the phone. More time on the

Internet also correlated with less time spent shopping in stores or commuting in traffic

(Nie & Erbring, 2010). A major consequence of the Internet's rapid growth is that more

people are telecommuting, or working from home, which may account for some of the

previously stated results. Four times more people reported they were working from home

in 2006 than in 2000 (Lister, 2007). This home-based activity takes people away from the

office space, a place where socializing occurs, and keeps them in a solitary environment. Suddenly, the Internet becomes a replacement for many sociable aspects of real life, and the skills needed to socialize face-to-face are not practiced. A new study, in which 108 adults completed a variety of tests, found that lonely people have less grey matter in the part of the brain involved in basic social perception (the left posterior superior temporal sulcus- pSTS) than do non-lonely individuals. This section of the brain is important for understanding other people and picking up on social cues (Kanai, 2012). With Facebook making us lonelier, and lonely individuals having greater trouble picking up on the social cues needed to develop good social skills, could Facebook be diminishing our culture's social skills?

Depression. Social networking has also been linked to heightened levels of depression in users around the world. A report from the American Academy of Pediatricians in March 2011 added a new disease to the list of childhood and teen ailments, called "Facebook Depression." This phenomenon was defined as "a disorder that develops when preteens and teens spend a great deal of time on social media sites such as Facebook, and then begin to exhibit classic symptoms of depression" (Tanner, 2011, para. 1). These symptoms may put them at risk for social isolation and, consequently, more time spent on risky websites in order to relieve these depressive symptoms (O'Keefe & Clarke-Pearson, 2011). Another large scale study on the positive and negative effects of Facebook use in kids came to several intriguing conclusions. This research found that middle school, high school, and college students who checked Facebook at least once during a 15-minute study period achieved lower grades than did those who did not check during this study period. He also found that teens and young adults who spent a lot of time on Facebook

were more prone to develop a range of psychological symptoms and disorders, like

mania, paranoia, aggressive tendencies , antisocial behavior and substance abuse than

were those who spent less time on the site. Minor psychological issues, like anxiety and

insomnia were also linked to abnormally excessive Facebook use (Rosen, 2011).

A clear paradoxical cycle exists in the Facebook world. Users seek out Facebook

as a resource to reduce issues of loneliness, depression, and self esteem that they are

already experiencing in their everyday lives. Ironically in all cases, these problems are

only being enhanced with more Facebook use, and additional social issues are

occasionally appearing that were not there initially.

Internet Addiction and Brain Rewiring

Many of the social issues experienced by Facebook and social networking users

are congruent with general Internet use as well. Use of the Internet to communicate

interpersonally on a frequent basis has been found to lead to high levels of loneliness and

low relationship satisfaction (Wallace, 1999). Yet, different forms of communication on

the Internet reflect varying degrees of interaction. Specifically, "email users tend to

communicate online with people whom they also contact offline," whereas, "chat users

tend to communicate with some of their social contacts exclusively online" (Zhao, 2006,

p. 858). A longitudinal study over the course of the year with a group of participants who

began using the Internet for the first time, found that levels of depression and loneliness

increased with more time spent using the Internet (Kraut et al., 1998).

The consequence of this pattern is that doctors and psychologists are becoming

increasingly worried about the impact technology is having on our brains. In May of

2013 the American Psychiatric Association releases the DSM 5, which will, for the first

time, include a category of mental illness linked to Internet addiction: Internet Use

Disorder (IUD). This addition to the DSM came about as a response to published

research, suggesting that overuse of the Internet is leading to demonstrable changes in

behavior and the brain. In particular, changes have been found in "the brain areas that

control attention, executive control, and emotion processing" and in a decrease in the

number of dopamine receptors within these areas (Montag, Kirsch, Sauer, Markett, &

Reuter, 2012, p. 193). A recent study has found that some of these changes may even

trigger certain genetic variations in dopaminergic and seratonergic neurotransmission

(Montag et. al, 2012).

Remarkably, the changes in these brain areas are similar to those of people

addicted to drugs like cocaine and heroine (Walton, 2012). In the same way that the

brains of drug addicts become altered as levels of substance abuse rise, new research

supports that idea that repeated exposure to the Internet is rewiring our brains. Susan

Greenfield, a neuroscientist and professor and the University of Oxford, suggests that the

neuroplasticity of our brains makes it easy for adaptation to occur in an Internet-heavy

environment. Small, a neuroscientist at UCLA, predicts this re-wiring may negatively

impact our social skills face-to-face (Small, Moody, Teena, Prabha, & Bookheimer,

2009):

> Our brains are sensitive to stimuli moment to moment, and if you spend a lot of
> time with a particular mental experience or stimulus, the neural circuits that
> control that mental experience will strengthen. At the same time, if we neglect
> certain experiences, the circuits that control those will weaken. If we're not
> having conversations or looking people in the eye — human contact skills —
> they will weaken. (p. 118)

There is no question that we are currently living in an Internet-heavy environment that has the power to produce the grave neural changes that Small has proposed may occur. Half of American 13-17 year olds report spending more than 30 hours per week outside of school on the Internet (Greenfield, 2012). The Kaiser Family Foundation released a statistic in February of 2011 that 8-18 year olds were spending 11.5 hours a day using their technology. They argue that the brains of youths have consequently become re-wired to use their tech gadgets effectively in order to multi-task (Small & Vorgan, 2011). According to neuroscientist Michael Merzenich, "There is a massive and unprecedented difference in how [digital natives'] brains are plastically engaged in life compared with those of average individuals from earlier generations" (Leung, 2004, p. 332). Research shows that synchronous internet communication, meaning instant messaging and chatting, are the biggest culprits of excessive Internet use, and that young females who use these tools are those who most frequently develop an addiction (Leung, 2004).

While the focus of Internet Use Disorder is on Internet gaming rather than overuse of the Internet for recreational or work purposes, many of the symptoms listed in the DSM for this disorder have appeared in research under the effects of general Internet overuse. Some of the symptoms of Internet Use Disorder are preoccupation with Internet use, withdrawal symptoms when the Internet is taken away, the need to spend increasing amounts of time engaged in the Internet, unsuccessful attempts to quit use, loss of other interests, the use of the Internet to escape or relieve a dysphoric mood, and jeopardization or loss of significant relationships or a job because of Internet use (APA, 2012). At this point in time, 30% of teens are considered to be addicted to the Internet, and for the most

part, this addiction is linked to use of virtual reality, video games, or social media use (Dokoupil, 2012).

At the University of Maryland a project called "Unplugged" challenged 200 college students to stop using technology for 24 hours and found that a large percentage of them reported reactions that would suggest withdrawal from an activity to which they may be addicted. Many of the students used literal terms of addiction to characterize their dependence on media in their reflective reports. One said, "I noticed physically, that I began to fidget, as if I was addicted to my iPod or other media devices, and maybe I am," while another said, "I clearly am addicted and the dependence is sickening" (Moeller, 2010, para. 2). Research shows that several other psychological disorders, like OCD, Depression, and other anxiety disorders, have comorbidity with Internet Use Disorder. Those who showed signs of unhealthy Internet use, as defined by the symptoms under Internet Use Disorder, also had decreased self-esteem, satisfaction with life, happiness, and increased depression and loneliness (Spraggins, 2011).

While Internet use is higher in the US than in other countries around the world, reports of Internet addiction have begun to appear in Korea, Taiwan, and China, which have accepted the diagnosis and begun to take steps treating it. For example, the Korean government has funded the creation of Internet addiction treatment centers. They have also demanded that late-night Internet use be cut off for youth. China has also launched a campaign to create safe-web habits among youth (Dokoupil, 2012).

The Semantics of Technological Communication

Thus far, the social impact of two major types of technological communication, social networking and the general Internet, have been discussed. These two types are unique because they give individuals a way to communicate that is indirect and dissimilar to the way they communicate in real life. Whereas in social networking, connections are maintained as users keep up to date on timelines of each other's lives, with texting, email, and instant messaging, communication is transmitted back and forth intermittently in a text-based format. Our culture is more familiar with this traditional form of communicating than with social networking, in the sense that people have been communicating via text for centuries by writing letters. Text-based communication is becoming so frequent that it is developing a language of its own. This language conforms to different rules and expectations than the spoken language to which we are accustomed.

Everyone texts, emails, or instant messages in a different way. However, according to H. P. Grice, most forms of textual technological communication are founded on the same three maxims: brevity and speed, paralinguistic restitution, and phonological approximation (Grice, 1975). Rapid response is highly valued in the texting and email world, which explains Grice's first maxim. According to Sherry Turkle, a social scientist at MIT, success in the social world is measured by "rapid response to emails and texts…Technology sets expectations about speed" (Turkle, 2011, p. 166). The faster individuals respond to texts or emails the more synchronous this asynchronous form of communication becomes. In order to get a message out quickly, individuals use minimal capitalization and grammatical punctuation in text and email message (Grice, 1975). The second part of this maxim (brevity) is more salient in texting than email because of the

character limit that cell phone companies impose on texters. According to a study done by Thurlow and Poff, texters rarely ever reach the 200 character limit, sending, on average, 14 word texts with 65 characters (Thurlow & Poff, 2011).

Individuals apply paralinguistic restitution (Grice's second maxim) to texts, instant messaging, or emails, to make up for the lack of social presence in these forms of communication. Without the ability to convey non-verbal social cues in either medium, it becomes difficult to express intonations or to accent or stress certain words, which individuals often rely on in face-to-face conversations to convey emotion. Consequently, emails, instant messages, and texts risk being interpreted as cold, angry, or emotionless. To combat this issue, technological users add smiley face emoticons to express happiness or capitalize full words to stress the importance of an idea (Grice, 1975). Phonological approximation, or writing words as they sound, is the last maxim in Grice's list. Text-based communicators apply this maxim for the same reason as paralinguistic restitution: to make conversations more playful than cold. When sending messages individuals may, for example, write *workin* as opposed to *working* to create a sense of playfulness and informality, as well as show personality (Elizondo, 2011).

Over 100 media articles have addressed concerns raised by researchers, linguists, parents, and educators about how many of Grice's maxims are emerging in formal methods of writing for school or work, especially in congruence with texting (Siraj & Ullah, 2007). Bushnell, Kemp, and Martin conducted research in Australia in 2011 that looked at the presence of "textese," a "phonological form of spelling" that mixes spoken and written English, in writing outside of text messaging. The study found that of the 227 10-12 year olds tested, 82% text messaged daily, and younger participants began

texting at a significantly younger age than did older participants. In addition, when asked to write down 30 English words, on average, half of these words contained textese (Bushnell, Kemp, & Martin, 2011). This finding suggests that as technological communication becomes more popular, youth begin using it at an exponentially younger age.

These issues of textese hold true for the United States as well. American middle school teachers say they frequently see the words "You," and "Are" replaced with "u" and "r" in formal school writing, as the boundaries between formal and technological writing styles have become blurred for youth (Fieldman, 2011). One interpersonal communication teacher at Lyons Township High School said she has been working with students to develop the skills needed to effectively switch between different mediums of communication. The term "switching" originally referred to bilingual speakers who switch back and forth between dialects. Now it refers to the switching back and forth between electronic media communication and writing, or even speaking, in class (Fieldman, 2011). A survey conducted with a group of high school students in England, showed that although teens have a vocabulary of over 40,000 words, the top 20 words they use (such as "no," "but," or "yeah") accounted for a third of their speech. In addition, a student's average verbal response to a teacher's question in a classroom was found to be just four words long. Jean Gross, the British government's advisor on youth speech, coined the word "teenspeak" to refer to this manner of speaking. She claims the growth of teenspeak comes from the use of texting and social networking for communication, which demands brevity. Gross has launched a nationwide campaign called No Pens Wednesday, which aims to set aside classroom time for vocabulary

building activities in school to resolve this problem (Laing, 2010). The majority of teens

should have developed a vocabulary of 40,000 words by the age of 16, so what exactly

has changed?

Researchers hypothesize that this vocabulary issue may stem from the fact that, as

mentioned earlier, children are beginning to text at a much younger age. Leapfrog, a

company that makes children's toys in the United States, introduced a new gadget, the

"Text and Learn," in 2009, that will likely further drop the age at which children begin

texting. This device resembles a Blackberry yet is geared toward 3-6 year olds (Biggs,

2009). While the Text and Learn cannot send or receive text messages, the device is

meant to familiarize toddlers with mobile phones to facilitate an easier transition into

texting. Lisa Belkin, a writer on parenting for the *New York Times*, said she received mail

from a lot of parents who were concerned about where to draw the line in how old their

children should be when they start using these devices (Belkin, 2009).

Social Skills and Social Presence

Not only is the language used to communicate over technology significantly

different from the language used in formal writing or face-to face communication, but so

is social etiquette. In fact, the rules for behaving properly are so dissimilar that training

courses for online etiquette and etiquette guides, with lists of rules to follow when

communicating online, have emerged (Shea, 1994). As the rules of etiquette change, so

do the rules that determine adequate social skills in our culture. Traditionally, social skills

are intentionally repeatable, goal-directed behaviors and behavior sequences that human

beings are conditioned to build into their lives from the moment they are born. According

to Spitzburg (2003), in a social context, these goals of communication are interdependent, meaning they can only be accomplished through the symbolic interaction with others. As individuals communicate in these interdependent situations, they learn to pick up on social cues from others, differentiate between appropriate social behavior in different situations, and interpret what others are doing or saying and their intentions for doing so. Learning these behavior sequences ultimately enables the individual to react in a constructive and positive way, and hence, develop adequate social skills. Social skills also tend to vary according to the context of the situation, relationship, and function of the social interaction. We depend on social skills to live effectively in this socialized world. Human beings began communicating in single shared spaces while face-to-face. Yet technology has pushed us to adapt our skillset to interact without the help of the typical social cues, verbal and non-verbal, that we rely on to develop social skills face-to-face. As demonstrated in Figure 1, the technological communication we use most frequently has the fewest number of social cues.
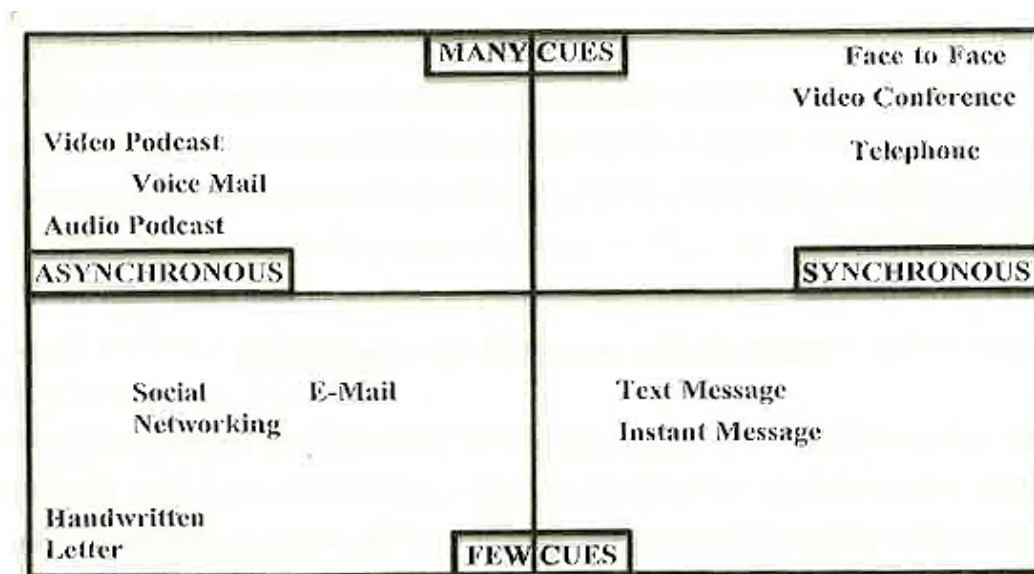
Figure 1: Rosen's Two-Dimensional Model of Communication Modalities
(Rosen, p. 126, 2012)

How are social skills now determined in these realms of mediated communcation we use so frequently? Without the ability to make eye contact or gesture while using technology, we must rely on other behavior entirely to determine adaquate social behavior. Grinter and Eldridge (2001) argue that texting allows teenagers to forego some spoken conversational conventions, and Döring (2002) concluded that with texting, users can be brief without fear of being perceived as abrupt or rude. Clearly, there are different expectations online and offline.

There are many versions of digital media etiquette manuals online that describe what is acceptable and unacceptable in online communication. Most tend to advise users to engage in behavior that minimizes their expression of emotion. For example, an article in *PC World Magazine* advised Facebook users to post profile pictures that are less sexy and more neutral, so as not to alienate the Facebook user's combined audience of friends, coworkers, and family members. The article also suggested only allowing certain friends to access your "About Me" section, to leave out your birth year in the birthdate section, and to post status updates and pictures occasionally, but not too often so as not to annoy other users. "It's okay to be passionate, but people can only take so much time out of their day," the article states. In this sense, truer representations of Facebook users are sacrificed for safe portrayals. When instant messaging, the article suggested avoiding sarcasm and inside jokes, because humor is often misunderstood, and to steer clear of using all caps in words so that excitement is not misunderstood as anger (Lynch, 2008). A separate article advised social networking users to post important information, like deaths and engagements, as status updates for everyone to see, in order to avoid the

hassle of calling all friends individually. They also advised to keep texting under 160 characters (Preston, 2012).

These cyber manner guides make it sound easy to over-act in online situations, displaying too much emotion, and ultimately committing a major media faux pas. It is for this reason that many adults have signed up for courses like "social media marketing boot camp" that teach individuals how to be technologically savvy, which many say is necessary for acquiring a job today (Preston, 2012). However, not everyone has signed up for technological boot camps. Technological communication is new, and most individuals using these devices are not following the rules, which accounts for the many misunderstandings and ineffectiveness of technological communication. As stated in iegal, Dubrovsky, Kiesler, and McGuire's research when technological communication was in its infancy "people using electronic communication overstep conventional boundaries; they mix work and personal communications; they use language appropriate for boardrooms and ball fields interchangeably; and they disregard normal conventions of privacy" (Siegel, Dubrovsky, Kiesler, & McGuire, 1985, p. 1125). While these were early observations in the grand scheme of where society is at in their use of technological communication today, many of these issues remain intact.

The first researchers to question the effectiveness of communication over the computer in its text-based form were Sproull and Kiesler. In 1985, the two created a "filter model" of computer-mediated communication (CMC), which stated that CMC was an "impoverished" form of social communication compared to face-to-face interaction. As stated earlier, online communication will never live up to in-person conversation due to its lack of non-verbal cues, asynchronous quality, and consequential anonymity of the

speaker. According to Kiesler and Sproull, this impoverished medium causes individuals

to act in more self-centered ways and perform in a less socially regulated way than they

would face-to-face; etiquette, manners, and politeness are often forgotten or disregarded

when conversing (Sproull & Kiesler, 1985). In their study conducted one year later,

Sproull and Kiesler deepened their research on the relationship between the social

absence on CMC and diminished communicative abilities. They found that a medium's

level of social presence depends on the range of non-verbal social cues that can be

expressed over this medium. They defined social presence as "the degree to which a

medium is perceived as conveying the actual physical presence of the communicating

participants" (Sproull & Kiesler, 1986, p. 1494). According to their study, CMC's lack

of facial expression, direction of gaze, posture, and verbal cues like timing, pauses, and

accentuations, means that it lacks communicative abilities.

Other terms have been used to describe this phenomenon as well. For example,

Ronald Rice (1992) coined the term "media richness" in his research about the use of

computer-mediated communication in the workplace. Media richness refers to a

medium's ability to bridge different frames of reference and make communicated issues

less ambigious. Rice claims that the presence of these qualities can be determined by a

medium's capacity for immediate feedback, the language variety of the medium, the level

of personalization that the medium enables a communicator to convey, and, like social

presence, the number of cues and senses involved. In Rice's study, managers were asked

to rank the level of media richness of different medias used in the workplace, as well as

their preference of medium for communication purposes. He found that text messages,

handwritten notes, and email were the least rich forms of media, while face-to-face and video were the most (Rice, 1992).

Lack of Social Presence Depletes Social Skills

Why does it matter that email and text message are not as media rich or socially present as are face-to-face conversations, no matter how technologically savvy one is while using them? Sproull and Kiesler say that because Internet communication lacks non-verbal social cues, and consequently lacks social presence, it is also missing personalness and warmth (Sproull & Kiesler, 1986). As we have learned from the cyber manner guides, the lack of personalness and warmth comes not only from this technical social absence, but also from the social norm that displaying too much warmth is a faux pas. It is for this reason that numerous studies have suggested email should not be used for social, intuitive, or emotional tasks and should be reserved for simple exchanges of information. Email is an appropriate way to set up a time to meet with a co-worker; face-to-face communication would be better for delivering bad news to a friend. Studies have found that when communicating over email, people express more antisocial behavior or may come off as cold when they don't mean to be, when compared to face-to-face communication (Siegel, Dubrovsky, Kiesler, & McGuire, 1985).

Unfortunately, despite the coldness that is projected over technological forms of communication, people continue to prefer less media rich communication to the face-to -face option. One study found that even when individuals have the opportunity to socialize with people face-to-face, on the weekend for example, 11% of adults prefer to stay at home and communicate on devices instead. When this sample is narrowed to teens, 33% of teens say that texting is their most preferred way to communicate with friends

(Common Sense Media, 2012). In addition, teenagers are breaking up with boyfriends and girlfriends over text messages and email with greater frequency. In fact, in July 2012, "Start Strong," a Boston-based initiative to promote healthy teenage relationships, hosted "Break-Up Summit 3.0," a conference devoted entirely to the purpose of teaching teens how to break up face-to-face rather than online or via text message (Quinn, 2012). This preference for carrying out behavior that is meant to take place offline in an online environment is troublesome. Ninety-percent of the "influential conversations" we have on a daily basis take place offline, and we're at risk for losing these as we spend more time online (Keller & Fay, 2012).

Social Anxiety

Another issue tied to the social absence on CMC is the poor development of social skills in face-to-face settings while using this medium. As users adapt to less emotional ways of speaking in digital settings, they spend less time developing the social skills needed to talk face-to-face, and consequently, individuals become more socially anxious in interpersonal interactions than if their primary medium were face-to-face (Mikami, 2010). Social anxiety is "a state of anxiety resulting from the prospect or presence of interpersonal evaluation in real or imagined social settings" (Pierce, 2009, p. 1368). Some of the symptoms are depression, anxiety, and overall discomfort that make interaction in social situations difficult. People with social anxiety normally feel distress in the situations that involve being introduced to other people, being teased or criticized, being the center of attention, being watched or observed, speaking publicly, or meeting other people's gaze. Socially anxious people may also become embarrassed easily,

blushing or shaking when this occurs (Pierce, 2009). About 15 million adults worldwide

have a social anxiety disorder of some sort, and 7-10% of the population is considered to

be "socially inadequate" (Greene & Burleson, 2003).

It is common for individuals with this type of anxiety to fear face-to-face

interactions, and often prefer the sanctuary of their own home or technology instead. A

study conducted by Mazer and Ledbetter found that individuals with social anxiety are

more likely to engage in compulsive Internet use (CIU) than those who are not socially

anxious (Ledbetter & Mazer, 2011). The text-based manner that these devices

communicate rids conversation of most of the aspects these individuals fear in face-to-

face interactions. Larry Rosen provides an example of this exact scenario in his book

iDisorder, in which John, a shy cubicle worker who keeps to himself in the office, comes

off as funny and outgoing in his emails. Numerous researchers have found positive

correlations between the use of technological communication and high levels of social

anxiety (Erwin, Turk, Heimberg, Fresco, & Hantula, 2004; Kraut et al., 1998; Pierce,

2009; Philippot, 2011). Could it be that youths are taking themselves out of the

environments that teach them to communicate face-to-face as they spend more time

online, and are consequentially becoming more socially anxious?

Youth Development of Social Skills

Countless psychologists and scientists advise users to steer clear of using

technological communication as a replacement for face-to-face interactions, yet youths

continue to do so. Most adults today were old enough when they began using mobile

devices or the Internet that their social skills were fully developed. However, compared

to adults, youths have interpersonal skills that are not yet fully developed. Developmental psychologists say adolescent peer interactions "hold the greatest importance for individuals' social and behavioral functioning" (Mikami, 2010, p. 48). This is a time in which adolescents are easily influenced by peer behaviors through contagion effects (Dishon & Owen, 2002). Sherry Turkle agrees in an interview with Kluger, saying that a large part of childhood development is learning how to have a conversation with another student (Kluger, 2012). This daily exercise, she says, teaches children to think, reason, and self-reflect.

Children are spending a large percentage of time communicating through technologies that lack media richness, and they are being deprived of this vital part of social development. Punching buttons that spell out "I'm sorry" and hitting 'send' leaves out hurt or sadness that would be conveyed through visual or verbal cues. This approach makes it easier for the person apologizing to communicate this difficult message, yet it also allows this person to avoid vital emotions that come with being in a relationship and seeing one's partner as a human being. Once texting becomes habitual, which statistics show has already happened for many youth, children lose the practice of interpreting nonverbal communication cues. As Kluger says, "there's a reason it's easy to lie to small kids" (e.g., they believe Santa really and truly came down through the chimney with a bag of presents) (Kluger, 2012, para. 4). Children are "functionally illiterate" when it comes to reading inflection and facial expressions, two aspects of face-to-face communication that come with time and experience. The consequence of young children adapting to a lifestyle where most communication takes place over technology is that they do not practice and develop the social skills needed to speak with people in person.

In Turkle's interview, she says he's spoken with teens as old as 18 who express this fear of an inability to converse with others, hoping that someday they will "learn to have a conversation" (Kluger, 2012).

The National Association of Colleges and Employers conducted a survey among college administrators, professors, and employees across the country, asking the question "Do most college students have effective communication skills?" Seventy-nine percent of the surveyed population believed college students did not have effective communication skills (NACE, 2011). The reasons why college faculty came to this conclusion are unclear, yet these results come as no surprise to researcher Susan Greenfield. Youths are spending more time using social networking, says Greenfield, who has looked specifically at this medium's lack of eye contact and body language, which are pivotal components of human interaction. Greenfield predicts youths will lose the skills essential to produce empathy, and it seems as though they already have (Greenfield, 2012).

The Changing State of our Society

Autism. Other researchers have questioned whether our society is becoming more autistic as a result of the incessant use of information technology. The number of children today who are being diagnosed with autism is growing rapidly (Yehuda, 2001). Baruch Yehuda, who has studied this change, has suggested that the social anonymity of communication over technological devices that stands as a buffer between humans and their environment, has depersonalized communication. Consequently, individuals who spend a lot of time using technological communication have frequently displayed two

autistic symptoms that are found in the DSM. The first is lack of affective emotional

contact with others, and the second, a self-chosen intense insistence on sameness. These

symptoms, Yehuda proposes, may be mistaken for true autism. Yet regardless of what is

true or false autism, technological communication may cause users to act autistic when

communicating face-to-face.

Yehuda's claim that an increase in autistic diagnoses in recent years is tied to

overuse of emotionless technological communication, seems much more plausible when

it is examined in the context of a study about empathy in college students. Over the last

30 years, researchers at the University of Michigan have surveyed 14,000 college

students to assess their levels of empathy. They discovered that students surveyed in the

last five years were less likely to agree with the statements "I try to understand my

friends better by imagining how things look from their perspective" and "I often have

tender, concerned feelings for people less fortunate than me" than were those from the

1980s. They also found that college students today are 40% less empathetic than were

those in the 1980s, with the greatest drop in empathy occuring in the year 2000 (Konrath,

2010). A separate study found that adolescents today struggled significantly more than

did adolescents in the past with recognizing others' emotions, which is part of what

enables empathetic responsiveness. In 2002, a project conducted on adolescents and

emotions found they struggled with the ability to recognize another person's emotions

when asked to identify specific emotions from facial expressions. Another study in 2007

showed virtually the same results (Small & Vorgan, 2011). Additionally, 140 college

students at Stanford University were found to be unable to accurately gauge others'

happiness even when they were evaluating the moods of people to whom they were close—friends, roommates, and people they were dating (Copeland, 2011).

Is it just a coincidence that in the years right after the turn of the millenium, Internet usage began to skyrocket and empathetic responsiveness began to plummet? Unfortunately, empathy is still declining substantially and shows no signs of slowing down. Sarah Konrath, writer for *Psychology Today* and head researcher on the University of Michigan project, speculates that one likely contributor to decining empathy is the "rising prominence of personal technology and media use in everyday life… with so much time spent ineracting online rather than in reality, interpersonal dynamics such as empathy might be altered" (Rosen, 2012, p. 126).

Empathy is not the only emotion technology use may be depleting. The results of an additional study that surveyed 16,500 college students between 1982 and 2006 found that college students are also significantly more narcissistic today than they were in the 1980s (Twenge, 2006). Narcissists are likely to have short-lived romantic relationships, lack emotional warmth or empathy, be more dishonest, and be more aggressive in their behaviors than is true of those not so labeled. This trend of higher levels of narcissism goes hand in hand with an unhealthy rise in levels of self-esteem since the 1980s. A potential linkage that can be made here, as suggested by Jean Twenge in her book *Generation Me: Why Today's Young Americans Are More Confident, Assertive, Entitled — and More Miserable than Ever Before,* is that these two changes have caused individuals to consequently react worse to criticism and favor the promotion of themselves over the promotion of others (Twenge, 2006).

It would be difficult for researchers to generate a causal relationship between the fall of empathy, the rise of narcissism, and a single factor like technology use. However, if we think about the type of emotions or behaviors that are encouraged of users while using these mediums, narcissicism and empathy are high on the list. The nature of Facebook is to advertise oneself in an optimal light, be it through photos, status updates, or one's About Me section. The consequence, as mentioned, is that frequent users are becoming more narcissistic. Netiquette guides are also encouraging users of text-based communication mediums to be less emotional in order to avoid misunderstandings, which in turn means being less empathetic as well. The social norms that are coming to fruition in technological realms are leading users to develop drastically different emotions and behaviors. Therefore, it is probable that technology has had an impact on one or more of the psychological shifts we've seen between different generations of college students.

No More Community. As the rise and infiltration of technological communication change us as individuals, the notion of a community is diminishing. So-called connectedness and communication can now occur without words, and even while physically alone. The American push for independence and individualism that has thrived for so long, has entered an era in which they are being exponentially strengthened. In regard to the major University of Michigan study on empathy, Konrath pointed out that the number of family dinners, friend visits, organizations, and meetings of people have significantly declined since technology has become more popular. Statistics support this claim, showing that American involvement in group-oriented activities (like bowling leagues, church groups, etc.) has declined in the last decade (Wellman & Hogan, 2005). Studies also show that traditional gathering places, like bars for example, have been

getting less business among college students who prefer to stay home and set up places to meet via text rather than congregate at a bar (Rubin, 2012). According to Rubin, "these days text messaging, Facebook and Foursquare make it possible to see if a bar is worth the trip without leaving the dorm" (Rubin, 2012, para. 2). Essentially, much of what we used to call "a community" has been replaced with "networked individualism" (Wellman & Hogan, 2005). Rainie and Wellman discuss the meaning of this term in their book *Networked: The New Social Operating System*. They say that with the help of technology, people have become increasingly networked as individuals, rather than embedded in groups. The person has become the focus, over the family, the work unit, the social group, or the neighborhood community (Rainie & Wellman, 2012). Moving past the small, tight social networks people utilized in the past, networked individualism is oriented around looser, more fragmented networks. This new mode of networking requires that people gain new skills to operate within it. Networking is now active and competitive and requires dynamic management of self-presentation.

Alone Together. Sherry Turkle, professor of the Social Studies of Science and Technology at MIT, is well known for her research on the negative interactions between humans and technology, particularly among youth. After conducting hundreds of interviews with technology users and non-users alike, Turkle published a book entitled *Alone Together* that shed light on technology trends among youth, as well as their treatment and perception of technology as a means of connection and communication. Turkle suggests that the source of our negative relationship with technology stems from two paradoxical cycles. The first relates to intimacy: "technology proposes itself as the architect of our intimacies… we are lonely but fearful of intimacy… our networked life

allows us to hide from each other, even as we are tethered to each other.. we remake ourselves and our relationships with each other through our new intimacy with machines" (Turkle, 2011, p. 1). Turkle's extensive past research with robots has made her concerned with the idea of seeking out intimacy from machines. Although humans use technological communication in order to develop connections with other people, the mechanical device used to assist these interactions is, by nature, heartless. Therefore, in a sense "we are navigating intimacy by skirting around it" (Turkle, p. 60).

The second paradox is related to time. Turkle says that "overwhelmed by the volume and velocity of our lives, we turn to technology to help us find time. But technology makes us busier than ever and ever more in search of retreat" (Turkle, 2011, p. 17). Technology is both the catalyst of the fast-paced American life we cannot sustain, and the fix-it tool we seek out under such delusional strain. Turkle compares the way we interact with technology today to a group of MIT students called "Cyborgs" who took a vow in 1996 to remain constantly connected to a computer in order to test the assumption at the time that continual connectivity would increase productivity and memory (Turkle, 2011, p. 161). The Cyborgs were in a sense testing whether the historical anthropolgial theory that humans create tools with the purpose of extending our human physical selves, remains true with technological tools today. What they found is that technological devices are very different because they are, rather, an extension of our *mental* selves, used to create "ambient intimacy," or the ability to connect with any one you please at any point in time (Case, 2010). The Cyborgs reported they had, as a result, "become their device," and had trouble with the rapid cycling between technology and the real world (Turkle, 2011).

Researchers like Turkle are fearful that most people today are becoming Cyborgs and are consequently having trouble cycling between technology and real world connections. A study comparing data from 1985 to 2004 showed that the mean number of people with whom Americans can discuss important matters dropped 33% to 2.94 people in that 20 year time period. In addition, two times more people today (25%) than 20 years ago say they have no one with whom to talk about important matters (Miller, McPHerson, Smith-Lovin, & Brashears, 2006).

Human relationships are rich, complex, and demanding, yet we attempt to streamline them with technology. We sacrifice conversation for mere connection. While little fragments of communication like texting and email may provide tiny rewards, they don't help us get to know each other. We seek the illusion of companionship without the demand of friendship. "I share therefore I am" is a new regime that if we don't connect, we don't exist (Turkle, 2011).

The Present Research

The history of our use of technology is a history of isolation desired and achieved. When the telephone arrived, neighbors stopped knocking on each other's doors. When groceries and clothes became available online, people stopped going into stores, losing the connection they had with their storeclerks and neighbors. Everything has become remote and indirect as we push ourselves away from the real world and into cyberspace. Yet, the rapid pace at which technology improves and advances leaves us hardly enough time to be critical of the impact it is having on our social lives. In the last five years, tens of researchers, journalists, authors, and professors, have reflected on the evidence their

own lives show for reason to be concerned with the way technology is diminishing our social skills. Email has begun to replace phone calls, texting has replaced email, social media has replaced "get-togethers," couples check smartphones at the dinner table rather than conversing, and friends huddle in the corner texting at parties Even when standing face-to-face having a conversation, our eyes and attention are directed towards our cell phones (Zaro, 2012; Holm, 2013; Torevell, 2012; Reisman, 2001). How will we remember how to converse face-to-face, and more importantly, how will our children, who are being raised in a technologically dominated world, develop adaquate social skills?

Research Questions. While this research does not aim to make such a bold causal claim that technological communication is the sole creator of poor social skills, its purpose is to take previous research, which has demonstrated a clear *correlation* between technological communication and poor social skills, and take it a step further. This study was guided by two major hypotheses:

H1: Participants who score lower on the social skills inventory will have more technologically dense communication lifestyles, meaning they use technology more frequently and prefer online communication to face-to-face, than will those with higher scores.

H2: Women will have more technologically dense communication lifestyles than will men.

Method

Participants

A total of 112 students participated in study 1 of this research on technological communication and social skills. The sample consisted of students at Connecticut College between the ages of 18-23; 89.1% were White and 75.5% were women. This sample consists predominantly of women who are White, yet accurately reflects the student body at Connecitcut College.

A total of 16 students participated in the second section. These participants were women selected at random from the sample of participants in study 1 who indicated they were interested in taking part in a follow up study by leaving their email at the end of the survey.

Procedure

In order to recruit participants for study 1, a sign up sheet was posted on the main floor of an academic building at Connecticut College. College students signed up to take part in this study on a volunteer basis and attended one of eight different sessions to complete the online survey (which was completed in a computer classroom). When students arrived at the assigned room for this part of the study, they were given an informed consent before the study began (Appendix A) and a debriefing form once the survey was completed that explained the nature of the study (Appendix I). Each participant received 30 minutes of research credit, which counted toward the research requirement or extra credit in their Psychology courses.

Study 2 took place three weeks after the Study 1. Female participants chosen at random were sent an email (Appedix K), which invited them to participate in the second section. Once participants arrived for the second section of the study, they were asked to complete the Derogatis Affects Balance Scale, and then enter another room where a

confederate (supposedly from the other group) was waiting to meet them. Both

individuals were asked to complete another informed consent (Appendix B), consenting

to take part in the study as well as to be videotaped.   All participants were granted an

extra 30 minutes of research credit for completing part two of the study. During this

section, participants were told to sit down with a confederate (whom they believed to be

another participant) and were given the prompt to "get to know each other" for five

minutes. A videotape player was turned on in the room, which appeared to face both

participants but was only actually facing the true participant (not the confederate). The

experimenter left and waited in the adjacent room during this five minute period. One

female confederate (a theatre major at the college) conducted all 16 interviews and was

instructed to act relatively shy and quiet during the conversation so that the participant

would have the opportunity to carry the conversation. Once the conversation was over,

the confederate and participant were asked to complete a self report section of the

Conversational Skills Rating Scale, and the Derogatis Affects Balance Scale for a second

time to assess any mood changes related to the stress of interacting socially with a

stranger. Finally, the participant was given a debriefing form (Appendix J) that revealed

the person they had just spoken to was a confederate, and were asked to keep this

information confidential.

Measures

The online questionnaire consisted of 139 items, which were compiled from three

published scales, and nineteen additional items created by the researcher. All of the

published scales used in this study were self report and included (1) The Social Skills

Inventory (Riggio, 1986), which measured social skills, (2) The Interaction Social

Anxiousness Scale (Leary, 1983), which measured social anxiety, and (3) The Internet

Behavior and Attitudes Scale, that looked at Internet use and preference. Finally there

were nineteen demographic questions that evaluated technological communciation use

habits. All of these measures were completed upon entering the room on a computer,

using the survey program Qualtrics to collect data. There were two measures used in the

second part of the study (1) The Derogatis Affect Balance Scale (Derogatis & Rutigliano,

1996), which measured mood change before and after the study, and (2) The

Conversational Skills Rating Scale (Spitzberg, 2007), which measured non-verbal social

skills. The DABS was self-report and was completed before and after the conversation,

while the CSRS was only completed after.

Social Skills Inventory (Appendix C): Also referred to as the Self-Description

Inventory, this measure assesses basic social skills that underlie social competence. It

evaluates strengths and weaknesses in verbal and non-verbal communication skills. This

measure consists of 90 items that are to be evalauted on a five-point Likert scale ranging

from strongly disagree to strongly agree. Examples of some of the items that appear on

this inventory are "People can always tell when I dislike them, no matter how hard I try

to hide my feelings," and "I find it very difficult to speak in front of a large group of

people." The Social Skills Inventory (SSI) has shown acceptable test-retest reliability,

with a .84 chronbachs alpha, as reported in Riggio and Carney's study, and a .72 alpha in

this study (Riggio & Carney, 2003). The scale is comprised of 90 items, divided into six

different subscales (all with cronbachs alphas from this study listed below) that conern

expressiveness, sensitivity, and control within social (verbal) and emotional (non-verbal)

domains. Descriptions of each subscale are below, paraphrased by Loton (2007):

Emotional Expressivity (EE). An individual's ability to express, spontaneously and accurately, felt emotional states, as well as the ability to nonverbally express attitudes and cues of interpersonal orientation (α= .70).

Emotional Sensitivity (ES). Skill in receiving and decoding the nonverbal communication cues of others. Individuals high in ES are concerned with observing the nonverbal emotional cues of others (α = .72).

Emotional Control (EC). The general ability to control and regulate emotional and nonverbal displays. An individual high in EC is likely to be a good emotional actor, able to pose emotions on cue, and able to use conflicting emotional cues to mask felt emotional states (e.g., laughing appropriately at a joke; putting on a cheerful face to cover sadness) (α = .71).

Social Expressivity (SE). A general verbal speaking skill and ability to engage others in social interaction. Persons high in SE appear outgoing and gregarious (α = .88).

Social Sensitivity (SS). The ability to decode and understand verbal communication and general knowledge of the norms governing appropriate social behaviour. Socially sensitive individuals are attentive to others (i.e., good watchers and listeners) and may become over concerned with the appropriateness of their own behavior (α = .79).

Social Control (SC). A general skill in social self-presentation. Individuals high in SC are tactful, socially adept, self-confident, and skilled at acting ($\alpha = .81$).

The Interaction Social Anxiousness Scale (Appendix E). This scale measures social anxiousness by evaluating specific behaviors that often, but not always, accompany social anxiety. Specifically, this scale is used to gauge the frequency or intensity with which participants experienced anxiety during or prior to social encounters. The Interaction Social Anxiousness Scale (ISAS) consists of 15 items, each rated on a five-point Likert scale ranging from strongly disagree to strongly agree. This measure includes items such as "I am usually at ease when speaking to a member of the other sex," and "I seldom feel anxious in social situations." ($\alpha=.87$)

The Internet Behavior and Attitudes Scale (Appendix D). This scale measures the attitudes Internet users have towards communication via the Internet. Preference for Internet communication over face-to-face communication is evaluated as well as behaviors that occur in online communication versus offline. This measure (the IBAS) is 15 items long, and each item is rated on a five-point Likert scale. Some of the items on this scale are as follows: "Going online has made it easier for me to make friends," "I open up more to people online than I do in other forms of communication," and "most of my friends I know from online."Higher scores on this measure indicate high levels of comfortability and confidence communicating in online environments ($\alpha=.79$)

Internet Preference Scale (included in Appendix D). To form a narrower index of Internet preference from these diverse internet behaviors and attitudes, a

subscale was created via content analysis from the IBAS for the purpose of testing

the second hypothesis that deals specifically with preference for online

communication versus offline communication. This subscale is called The

Internet Preference Scale. This scale includes six items from the Internet Behavior

and Attitudes scale. These items were chosen by the researcher, and confirmed

by a second coder, because they asked the respondent to specifically compare

offline and online environments. The six items chosen in this subscale are: "I am

friendlier online than in real life," "I open up more to people online than I do in

other forms of communication," "I am more myself online than in real life," "I

have more fun with people I know online than elsewhere," "My online friends

understand me better than other people," and "I prefer communciating online to

face-to-face communication" ($\alpha=.748$).

The Derogatis Affect Balance Scale (Appendix G). This scale (DABS) was a

developed as a self-report mood inventory that assesses positive and negative affectivity,

affective balance, and affective intensity. The positive affects dimensions are labeled joy,

contentment, vigor and affection, and the negative dimensions are anxiety, depression,

guilt and hostility. The Derogatis Affect Balance Scale consists of a list of 50 emotions

(e.g., nervous, glad, worthless, angry). Participants are asked to indicate the degree to

which they feel those emotions at that particular moment on a corresponding five point

scale from "not at all" to "very much." This measure was not a major part of the analyses

($\alpha=.82$).

Conversational Skills Rating Scale (Appendix F). This scale (CSRS) is an

instrument used for assessing interpersonal communication skills. The administration of

this 25-item survey takes place following a 5-7 minute conversation between two participants in a lab or classroom setting, in which the two are instructed to "get acquainted" with each other. Each item on this scale is rated on a five point Likert scale ranging from "strongly agree" to "strongly disagree." There are three versions of the CSRS: one observer rating form, one self rating form, and one participant rating form (to rate the individual the participant is conversing with). Only the self-rating form and observer-rating form were used for this study (α= .80-.90). In order to evaluate the reliability of the researcher's observations while rating the participant, an additional member of the research team filled out the scale for 25% of the videos (four videos). The inter-observer agreement between these scores was good (κ=.724, SE of κ = .056).

In addition to these measures, this study included a final section created by the researcher that included demographic questions regarding race, age, and gender, as well as questions about Internet, Facebook, texting, and cell phone usage over the course of a participant's lifetime (see Appendix H).

Results

Study 1

Descriptive Analyses. A table of descriptives (see Table 1) demonstrates that the mean score of participants on the Social Skills Inventory (SSI) was relatively high: 3.37 on a five point scale, in which five indicates high social skill and zero indicates low social skill. The SSI subscale means all followed this pattern, generating means that ranged from 3.0-3.7, using the same scale as the SSI. This pattern suggests that participants generally had average to high social skills. The average score for

participants on the Interaction Social Anxiousness Scale (ISAS) was average to high, 2.93, on the same five-point scale, in which five indicated high social anxiousness and zero indicated low social anxiousness. In contrast, participants had a relatively low average score on both the Internet Behavior and Attitudes Scale Scale (IBAS), 1.82, and the Internet Preference subscale, 1.77, on a five point scale.

Communication Technology Use Patterns. Participants were asked 16 questions about their communication technology history, attitudes, and opinions regarding Facebook, cell phone, texting, and instant message use. These will be referred to as "technology use questions." In this sample, 97.3% said they owned a cell phone, 79.5% had email-equipped cell phones, while 94.6% had a Facebook (see Table 2 for summaries of 8 yes/no questions). Within this sample, 45.5% spent between 30 minutes to 1.5 hours on Facebook daily, whereas 20.5% spent between 1.5 to 3 hours, and 6.3% spent between 3.5 to 5 hours daily. Despite the large amount of time spent on Facebook by participants, 35.7% of them reported that they had, for one reason or another, de-activated their Facebook account at some point and then returned to using it.

In response to questions regarding the age at which participants began using different forms of technological communication (see Figure 2), the majority of participants began using instant messaging at a younger age than they began using a cell phone or Facebook. When asked about when they first acquired a cell phone, compared with other kids in their community, school, or friend group, an equal number of participants felt they had acquired a cell phone later than others as felt they had acquired one earlier. In response to a question about texting frequency, 85.8% reported sending

Table 1

Descriptive Statistics of Main Variables

	Min.	Max.	Mean	Std. Dev.
Leary Anxiousness	1.47	4.53	2.93	0.54
Internet Behavior	1.00	3.67	1.82	0.53
Internet Preference	1.00	3.80	1.77	0.66
Social Skills Invnt.	2.58	4.21	3.37	0.28
Emotional Sensitivity	2.33	4.87	3.75	0.42
Emotional Control	1.73	4.27	3.00	0.47
Emotional Expression	1.93	4.47	3.13	0.48
Social Sensitivity	1.27	4.47	3.31	0.64
Social Control	2.33	4.93	3.73	0.52
Social Expressivity	1.80	4.40	3.30	0.56

Note: $n = 112$

Table 2

Communication Technology Use Patterns: Yes/No Questions (in percentages)

	Yes	No	*n*
Do you use Facebook?	94.6	2.7	112
Have you ever gotten rid of your Facebook?	35.7	62.5	111
Do you own a cell phone?	97.3	0.0	110
Is your cell phone equipped with email?	79.5	17.0	110
Have you ever broken up with someone over a text message?	13.4	84.8	110
Have you ever settled a fight over a text message?	55.4	42.9	110
Did you grow up in a household with rules limiting Internet/cell phone use?	44.6	53.6	110
Do you instant message daily?	35.7	62.5	111
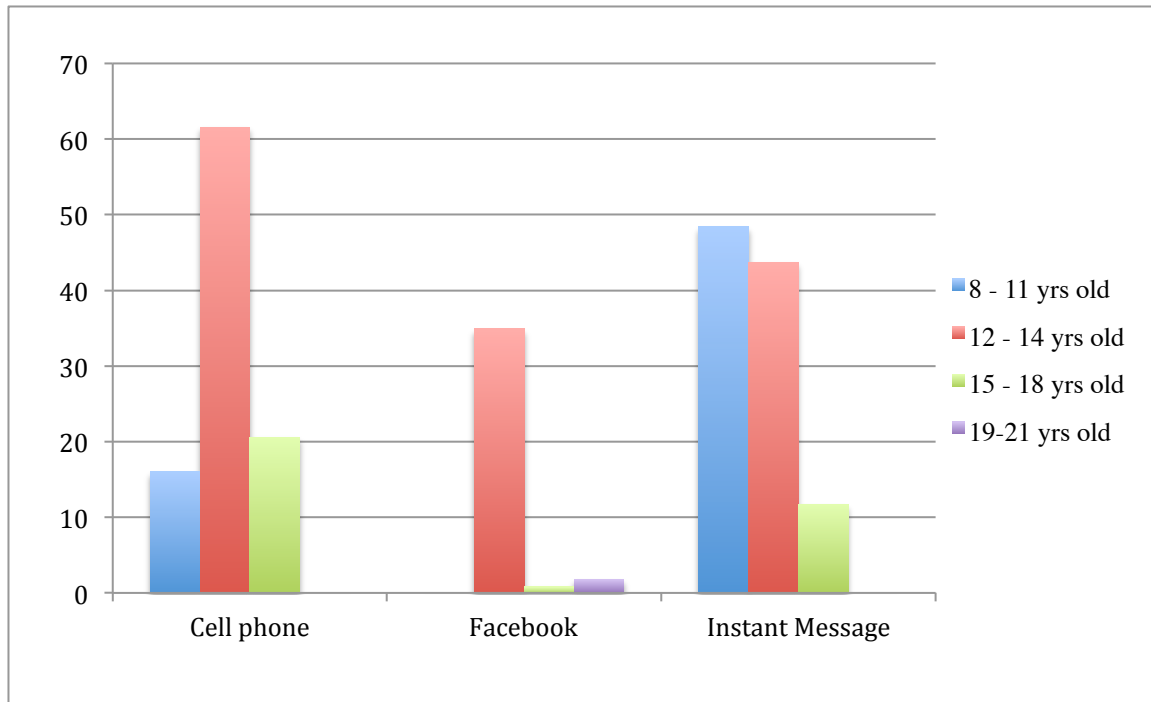
Figure 2. *Age students began use of different communication mediums*

between 1-50 text messages daily, with 18.8% sending up to 10, 41.1% sending between 10-30, and 25.9% sending 30-50. In this sample, 85.7% of participants reported that face-to-face communication was their most preferred method of communication, whereas only 8.9% said texting was most preferred. However, responses to some other questions show a relatively high preference for use of texting to communicate about serious topics of conversation. A total of 13.6 % of participants said they had broken up with a significant other over a text message before, and 56.4% of participants said they had settled a fight over text message before (see Table 1). A significant chi square test showed that engaging in one of these texting behaviors was related to engaging in another $\chi^2(1, N = 110) = 9.65, p = .002$.

Relationships between Social Skills and Social Anxiety. In order to determine whether the social skills and social anxiety correlate, as measured by these particular scales, so that we can make further analyses between overall social ineptitudes and technology use, correlational analyses were performed between the Leary Social Anxiety scale and the SSI total and subscales. As expected, social anxiety was significantly negatively correlated with overall social skills, $r(110) = -.568, p < .001$. Social anxiety was also significantly correlated with several of the SSI subscales, including Emotional Expressivity $r(110) = -.473, p < .001$, Social Expressivity $r(110) = -.645, p < .001$, Social Sensitivity $r(110) = -.338, p < .001$, and Social Control $r(110) = -.752, p < .001$. However, social anxiety did not significantly correlate with Emotional Sensitivity $r(112) = -.052, p = .588$ or Emotional Control $r(110) = -.089, p = .352$. These negative correlations between social anxiety and all of the social subscales, and one of the emotional subscales of the SSI, show broad associations between higher levels of social

anxiety and lower skill in social relationships.

Associations Between Internet Behavior and Technology Use Questions.

The original purpose of the IBAS was to evaluate participants' Internet use patterns. If

the IBAS were to have served its purpose, it would have correlated strongly with the

technology use questions, which evaluated frequency of technology use and preference

for technology use. However, the results did not show strong relations between the IBAS

and technology use/preference. Internet behavior on the IBAS only correlated with one

technology use question. There was a significant positive correlation between time spent

on Facebook daily and the IBAS, $r(109) = .311, p < .001$. However, there was only a

marginally significant correlation between the IBAS and social anxiety $r(110) = .186, p =$

.052. Therefore, to evaluate the validity of hypothesis one, that technological

communication use would be negatively correlated with social skills, a combination of

the Internet Preference scale (the subscale of the IBAS) and the technology use questions,

were used. This combination evaluates both technology use and preference for

technological communication, whereas the IBAS evaluates a broader range of Internet

behavior and attitudes not as central to this research (e.g., feelings of liberation in online

environments).

Several analyses provided support for the Internet Preference subscale as a valid

tool for the evaluation of technology preference. The Internet preference subscale

positively correlated with a preference for texting communication $r(109) = .242, p = .011$,

and negatively correlated with a preference for face-to-face communication $r(109) = -$

$.195, p = .042$. The Internet Preference subscale also correlated with technology use

questions. There was a significant correlation between time spent on Facebook daily and

the Internet Preference subscale $r(109) = .294, p = .002$ with the question "do you instant

message daily?" Participants who said they instant messaged daily (M= 10.03 SD= 3.68)

reported higher preference for online communication than those who did not instant

message daily (M= 8.11 SD= 2.89); $t(108) = -3.01, p = .003$. There were no other

correlations with continuous variables from the technology use questions (i.e., age of cell

phone, Facebook, or instant message use, preference for certain mediums etc.).

Relationships Between Internet Use and Social Skills. The primary hypothesis of

this study, that Internet use and preference would be negatively correlated with social

skills, was supported by the following analyses. Correlational analyses using the full SSI

and the Internet Preference scale of the IBAS revealed a significant negative relationship

between social skills and internet preference $r(110) = -.197, p = .039$. Thus, participants

with a higher preference for communicating in online settings had lower social skills than

did those with a lower preference for mediated communication. An additional significant

negative correlation was found between preference for online communication and the SSI

subscale, Social Control, $r(110) = -.298, p = .002$, suggesting those with a higher

preference for online communication are less able to be confident and adept in social

situations than are those with less of a preference for communicating online. Additional

analyses were conducted in order to determine whether there were correlations between

social skills and the individual items on the Internet preference scale. Low social skill

strongly correlated with agreement with the statement "I am more myself online than in

real life" $r(112) = -.316, p < .001$, and with the statement "my online friends understand

me better than other people" $r(112) = -.172, p = .036$. When these Internet preference

questions were run against the social skills subscales, low social control correlated with

agreement with the statements "I prefer to communicate online over face-to-face" $r(112)$

$= -.228, p = .008$ and "I am more myself online than in real life" $r(110) = -.340\ p < .001$.

There were no other significant correlations between IBAS-IP and SSI subscales.

The previous findings illustrate a relationship between online preference and social

skills. In regards to a relationship between technology *use* and social skills (to provide

support for the second half of the first hypothesis), there was one finding that particularly

stood out. An independent samples *t*-test showed a significant relationship between the

question "did you grow up in a household with rules governing your technology use" and

social skills, on both the SSI and three of its subscales. Participants who had rules that

restricted technology use in their household *(M* $= 308.62\ SD = 23.06)$ had higher social

skills than those who did not *(M* $= 297.48\ SD = 26.10)\ t(108) = 2.35, p = .021$. These

individuals also had significantly better emotional and social expressivity than those

without household rules in their youth (see Table 3).

One finding produced results that were contrary to the hypothesis that technology use

and preference would be related to lower social skills. Those with higher social skills *(M*

$= 302.98\ SD = 24.33)$ were more likely to say they used Facebook than were those with

lower social skills *(M* $= 272.33\ SD = 36.94); t(107) = 2.13, p = .036$.

Additional correlational analyses examined the relationship between Internet use and

social anxiety, in order to develop a stronger sense of what the relationship is between

social ineptitudes (be in social anxiety or poor social skills) and technology use. Social

anxiety significantly correlated with preference for technological communication, as

measured by the IBAS Internet Preference subscale $r(110) = .227, p = .017$. These

results suggest that a high preference for online communication is related to higher levels

Table 3

Means and t-values of Household Rules and Social Skills

Measures	Response	t-test results		
	Did you grow up in a household with rules?	Mean	Std. Dev.	t-value
Social Skills	Yes	308.62	23.406	2.35*
	No	297.48	26.08	
Emotional Expressivity	Yes	49.04	7.91	2.90**
	No	45.13	6.22	
Emotional Sensitivity	Yes	56.92	5.95	1.41
	No	55.18	6.81	
Emotional Control	Yes	45.56	8.22	.842
	No	44.40	6.21	
Social Expressivity	Yes	51.98	8.58	2.25*
	No	47.92	10.10	
Social Sensitivity	Yes	54.18	7.40	-1.68
	No	56.67	7.93	
Social Control	Yes	50.92	8.32	1.69
	No	48.18	8.55	

Note: Two-tailed correlations *p* < .05 **p* < .01; *n* = 112

of social anxiety, thus providing indirect support for the primary hypothesis.

   Gender Specific Examinations of Internet Use, Social Skills, and Social Anxiety.

To evaluate the significance of the third hypothesis, that states technological use will be

higher for women than for men, gender comparisons were made for the main variables in

Study 1. A multivariate analysis was conducted to determine whether there was a

significant difference between male and female responses on the SSI and all of its

subscales. There was an overall statistically significant difference in social skills between

genders, $F(14, 202) = 2.17, p = .010$, Wilks's $\Lambda = 0.755$. Responses to items on the SSI

subscales also differed significantly by subscale: Emotional Control, $F(2, 107) = 5.95, p$

$= .004$, Social Control, $F(2, 107) = 3.38, p =.038$, and Social Sensitivity, $F(2, 107) =$

$4.94, p =.009$. These results mean that men have significantly higher overall social skills

than did women, and men reported better emotional and social control than did women.

However, women reported higher social sensitivity than men. Additional independent

samples *t*-tests showed that men also reported significantly less social anxiety than

women, $t(106)=-3.34, p < .001$ (see table 4), and that there was no significant difference

in scores on Internet Preference $t(106)=9.10, p= .365$ (see table 5).

        Finally, independent samples t-tests were conducted to evaluate whether

responses to technological use questions differed based on gender. The results showed

that men ($M=16.13 SD= 1.68$) acquired a Facebook at a significantly later age than did

women ($M=14.91 SD=1.19$), $t(103)= 3.98, p= .002$, and that women had settled a fight

over text message more often than had men $\chi^2 (1, N= 110) = 7.203, p = .027$. However,

These data provide limited support for the second hypothesis, that women use more

technological communication than men.

Table 4

Means and F-values of multivariate analysis for gender differences in main variables

	Gender	Mean	Std. Dev.	F-value
Social Skills	Men	310.24	18.17	1.51*
	Women	300.38	26.99	
Emotional Expressivity	Men	49.00	2.30	1.46
	Women	46.31	7.77	
Emotional Sensitivity	Men	54.92	5.31	.615
	Women	56.35	6.83	
Emotional Control	Men	48.84	8.07	5.51**
	Women	43.87	6.52	
Social Expressivity	Men	53.28	6.77	2.69
	Women	48.58	10.14	
Social Sensitivity	Men	51.36	8.14	5.49**
	Women	56.88	7.25	
Social Control	Men	52.84	6.93	3.24*
	Women	48.28	8.77	

Note: Two-tailed correlations *p* < .05 **p* < .01; *n* = 112

Table 5

Means and t-values of t-test for gender differences in technology preference and social anxiety

	Gender	Mean	Std. Dev.	t-value
Internet Preference	Men	9.32	3.65	9.10
	Women	8.62	3.24	
	Men	39.12	6.11	-3.34**
Social Anxiety	Women	45.12	8.29	

Note: Two-tailed correlations *p* < .05 **p* < .01; *n* = 112

Analyses of Technology Use and Social Skills for females. In this final set of analyses, technology use and social skills were examined again, this time specifically with women, because Study 2 focused only on female participants. These analyses enable more direct comparisons across studies. Looking at the sample of women alone, strong correlations were found regarding age of acquisition of technological communication devices and social skills, but not in the predicted direction. The age women acquired a cell phone was negatively correlated with social skills $r(81) = -.276, p = .012$. Thus, *younger* cell phone acquisition was related to *higher* social skills. In addition, the age women acquired a Facebook was negatively related to social skills on the SSI, $r(81) = -.286, p = .010$, meaning that having a Facebook at a *younger* age was linked with having *better* social skills.

Study 2

The Derogatis Affect Balance Scale, completed by the 16 participants in section two before and after taking part in the five minute conversation, was administered in the study for the sole purpose of assuring the conversational section was not emotionally taxing for participants. Therefore, the only analysis run using this measure was a bivariate correlation comparing the before and after versions of the DABS, and the results showed a strong correlation between both versions $r(16)=.641, p=.002$. Therefore, the results show this exercise did not significantly alter the emotional state of the participants.

The Conversational Skills Rating Scale was completed by all 16 participants who took part in Study 2, and for each participant, the observer completed an additional survey, evaluating the participant's non-verbal behaviors. A paired samples *t*-test

comparing the self report (CSRS participant) and observer (CSRS observer) scores

showed that participants self-reported significantly lower scores for conversational skills

($M= 85.81, SD= 8.93$) than the observer ($M= 93.94, SD= 11.98$); $t(15) = 2.91, p = .01$.

The small sample size for Study 2 created a lack of statistical power; however, the

fact that this section of the study is driven by a directional hypothesis provides support

for running one-tailed correlations. Bivariate correlations comparing the CSRS

participant and CSRS observer scores to the Social Skills Inventory, with all of its

subscales, showed few correlations between the two types of social skills measures.

Neither the CSRS self or CSRS observer measures were significantly correlated with the

Social Skills Inventory total score or the Interaction Social Anxiousness Scale (see Table

6). This may be due to the fact that the SSI measured both verbal and non-verbal social

skills while the CSRS only measured nonv erbal skillsHowever, of the SSI subscales,

Emotional Sensitivity positively correlated with both the CSRS observer scores

$r(16)=.571, p=.010$ and the participant scores $r(16)=.479, p=.030$. The CSRS participant

scores also correlated with Social Control $r(16)=.511, p=.022$.

Relationships Between the CSRS variables and Internet Preference or Technology

Use. Unfortunately, the Internet Preference scale did not correlate with the CSRS

observer ratings $r(16)= -.162, p=.549$ or the CSRS participant ratings $r(16)=.109, p=.676$

(see Table 7). However, when individual items of each scale were cross correlated using

one-tailed tests for exploratory purposes, various significant correlations were found.

Overall, the Internet Preference scale negatively correlated with facial expressiveness on

the CSRS participant scale $r(16)= -.443, p=.043$, and negatively correlated with nodding

in response to partner's statements on the CSRS observer rating scale $r(16)= -.451$,

$p=.040$. Going further, when the Internet Preference scale items are compared

individually to the CSRS items, additional correlations are found. The item "going online

has made it easier for me to make friends" on the participant rating scale, nevatively

correlated with vocal variety $r(16)= -.535, p=.016$, and positively correlated with both

volume $r(16)= .516, p=.020$ and the use of humor during conversation $r(16)= .474,$

$p=.032$. This finding suggests that those who made friends more easily online, spoke

without tonal variety in their voices, yet loudly and with an appropriate amount of humor.

Looking at the observer CSRS ratings, a one-tailed correlation found that those who

"preferred to communicate online rather than face-to-face" also used less nodding in

response to their partner's comments $r(16)= -.532, p=.017$, smiled or laughed less

frequently $r(16)= -.515, p=.021$, and provided less encouragement or agreement to their

partner while conversing $r(16)= -.436, p=.046$.

     The CSRS observer and participant measures did not correlate with any of the

continuous technology use variables (i.e., age of acquisition of a cell phone or Facebook,

frequency of Facebook use, texting, or instant message etc.). However, significant

relationships could be found with two of the categorical variables. The CSRS observer

ratings significantly correlated with answers to the question "is your cell phone equipped

with email." Those who had a cell phone equipped with email ($M= 91.79 \ SD= 11.16$) had

significantly lower social skills, as measured by the CSRS, than did those without email

on their cell phones ($M= 109.0 \ SD= 4.24$); $t(14) = -2.15, p=.022$. While the observer

CSRS ratings were not significantly related to any other categorical variables, an

independent samples t-test showed a significant negative relationship between the

participant ratings and the question "have you ever gotten rid of your Facebook?"

Participants who had never gotten rid of their Facebook in the past (*M*= 57.67 *SD*= 7.51)

scored lower on the CSRS than did those who had gotten rid of their Facebook before *M*=

(*M*=85.92 *SD*= 9.47); *t*(15)= 2.28, *p* < .001. This suggests that those individuals that led

more technologically dense lifestyles (because they had never gotten rid of their

Facebook and had cell phones equipped with email) had poorer non-verbal social skills.

Table 6

Correlations Between the CSRS Measures and Social Skill/Social Anxiety Variables

	CSRS Observer	CSRS Participant
Social Skills Inventory	.353	.279
Emotional Expressivity	-.315	-.249
Emotional Sensitivity	.571*	.479*
Emotional Control	.105	-.041
Social Expressivity	.148	.348
Social Sensitivity	.355	-.184
Social Control	.416	.511*
Leary Anxiousness	-.331	.177

Note: One-tailed correlations, $*p < .05$ $**p < .01$

Table 7

Correlations Between the CSRS Variables and Internet Behavior and Preference

	CSRS Observer	CSRS Participant
Internet Behavior	-.162	.109
Internet Preference	-.192	.272

Note: One-tailed correlations

Discussion

The results of this study show that hypothesis one, which predicted individuals who used technological communication more often and preferred it to face-to-face communication would have poorer social skills, was supported. However, hypothesis two, which anticipated women would lead more technologically dense lifestyles than men, was only minimally supported.

Those who indicated on the Internet Preference scale that they preferred to talk with others online or on their phones also had lower social skills, as measured by both the Social Skills Inventory and the Conversational Skills Rating Scale. On the SSI, those with a higher preference for technological communication had particularly lower social control. Such a lack of social control would mean acting less tactfully and with less self-confidence in social situations. Similar results were found between non-verbal social skills (CSRS) and communication preference in Study 2, both between overall measures and individual items on each scale. While the results of Study 2 had low statistical power because of the small sample size, paired together with the results of study two, we find ample support for the primary hypothesis of this study. In general, participants who indicated a stronger preference for technological communication were less facially expressive, smiled less often, nodded less while listening to others, spoke with less vocal variety, encouraged their partners less, and spoke at a higher volume, than those who had a lower preference for technological communication. The group of participants that preferred to communicate in technological settings also spent more time on Facebook, and were more likely to say they instant messaged on a daily basis than others.

Overall, these results show that preference for online communication correlates with poor social skills, and specifically, less ability to perform socially acceptable behaviors while interacting face-to-face. Many of these behaviors, like minimal vocal variety, speaking at an abnormal volume, or a lack of encouragement during a conversation, resemble the symptom list for Aspergers, a mild type of autism (Mayo Clinic staff, 2010). Yehuda Baruch, who feared behavioral changes of this magnitude, said excessive technological communication use was linked to two major symptoms of autism: poor affective emotional contact with others, and self-chosen intense insistence on sameness. The diminished facial expression, nodding, and encouragement of partner's comments that correlated with a strong preference for technological communication in this study, are signs of poor affective emotional contact with others. If these behaviors are appearing in accordance with a strong preference for communicating on the Internet, is the Internet causing these behaviors or are individuals who already have these symptoms seeking out the Internet for comfort? As Yehuda said, the number of people being diagnosed with autism today is growing rapidly, and his belief is that this trend is the result of the depersonalized manner in which people communicate technologically. Although making a link to autism is beyond the scope of this study, its results do support the possibility that affective emotional contact may be harmed by a preference for technological communication.

Further support for the claim that technological communication may indeed by a causal factor of diminished social skills comes from an additional finding that those who grew up in a household with rules that restricted technology use had higher social skills than those who did not grow up with these rules. As stated clearly by Sherry Turkle, the

development of adequate social skills in childhood and adolescence are instrumental in our ability to communicate effectively as adults. Limiting the use of technology in the home automatically creates a space where significantly more face-to-face interaction occurs for these children, which is what may have led to their development of better social skills in adulthood. These children most likely spend more time socializing face-to-face in the home with family members, rather than in front of a computer screen talking to friends. The simple restriction of technology may teach youth in these households to develop less habitual and dependent routines of technology use later in life. Restrictive parents teach their children to be hyper-conscious of the way in which they use technology, while other children learn to passively integrate it into their lives. Learning to be critical of technology early in life is a habit not easily forgotten. As these youth maintain awareness of their technology use in adulthood, they may also maintain the development of adequate social skills from their childhood.

This study produced one other finding that connects social skills with technology use in youth. Women who began using technological communication at a younger age had better social skills than did those who began interacting this way more recently. There are a variety of explanations that shed light on what has caused this trend. The first is that technological communcation may actually be improving users' social skills, which is why those who have used it for longer are more socially skilled. Yet, this explanation seems to contradict our first finding that those who use technological communication more frequently have lower social skills. Therefore, a more likely reason for this finding would be that women who began using technology earlier on developed healthier technology use habits than those who began using it later in life. In the same

way that youth who learned to restrict their technology use in youth had better social

skills later in life, those who have lived with technological communication in their lives

for longer, have established early on how to incorporate it in a balanced manner.

Additionally, for early users, the novelty of technological communication has may have

worn off to the point that they are not quite so enthralled by it as newer users may be. The

consequence is they probably use technology less than those who began using

technological communication more recently, and therefore have better social skills.

Gender Differences

The second hypothesis, which predicted that women would have more

technologically dense lifestyles than would men, was partially supported by the findings

that women acquired a Facebook at a younger age and were more likely to have cell

phones equipped with email than were men. However, women did not have a higher

preference for technological communication than did men, nor did they use Facebook,

instant message, or text more than did men. The fact that women acquired a Facebook at

a younger age than did most men, may be attributed to the fact that women were drawn to

the communal social aspect of Facebook when it first came out, as described earlier. As

Facebook has evolved, it has become slightly more agentic in its nature. While

Facebook's mission was originally to cultivate new relationships, as technology has

enabled the society we live in to become increasingly preoccupied with information

consumption, Facebook has followed suit.   People devote longer periods of time to

browsing on Facebook today than they did when it first came out, mainly because they

are using Facebook to read articles, listen to music, post status updates, be entertained,

and essentially advertise themselves. These activities are much more agentic than

communal, which may account for the fact that while women began using Facebook at a younger age than did men (i.e., at one point used Facebook more than men did), today men and women spend about the same amount of time on this social networking site (Fitzgerald, 2012).

Men and women also differed in their level of social skill, which may or may not be attributed to the difference in technological activity. While women were more socially sensitive than were men, women also scored lower in overall social skill, particularly in emotional and social control than men did. This pattern fits with gender stereotypes, in which men are encouraged to suppress and control emotion, whereas women are free to express a greater range of emotion. Women were also significantly more socially anxious than were men.

Patterns of use in this sample

In general, the college students in this sample led extremely technologically dense lifestyles. Every single participant had a cell phone, and the majority of participants had a Facebook that they used for at least 30 minutes per day; a fifth of this sample used Facebook more than 1.5 hours a day. Finally, over a fourth of participants sent up to 50 text messages a day. These numbers are in line with the abundance of research that has calculated the frequency of technology use among college students in the last ten years. Yet, this sample shows similar, if not higher, use patterns.

How much of this behavior is by choice, and how much of it is the result of a minor addiction? Researchers have found that college students have trouble separating themselves from their devices and often display withdrawal symptoms, similar to with drug addiction, after being pulled apart from their devices for days at a time. Over a third

of the sample in this study stated they had, at one more point or another, deactivated their

Facebook account. All but one of these individuals stated that they currently use

Facebook, meaning that although they had de-activated their account at one point, they

had begun using it again. Why would people who spend so much time engaging in a

behavior want to rid themselves of the ability to continue doing so by deleting it from

their lives? This tendency to de-activate one's Facebook account and then resume using

it later, demonstrates slightly addictive behavior, specifically, the type of ambivalence

that we see arise in addiction. There is the notion that people think Facebook is bad for

them, or feel guilty using it, and thus, want to get rid of it, but cannot keep themselves

from returning to it. Do people feel that their overuse of this technology is infringing on

their daily activities, or even on the time they spend with others face-to-face?

Conclusions

Researchers who have studied the connection between social anxiety and

technology use in the past, like Kraut, Pierce, and Phillopot, have found similar results to

those in this study. Social anxiety, poor social skills, and technology use, correlate over

and over again in studies conducted internationally. Yet, these researchers have attributed

this relationship to the fact that many individuals who are more socially anxious or more

socially inept began this way, and thus have sought out technological communication as a

less socially stressful method of interacting. In a sense, this means that poor social skills

are the motivating factor for a strong preference for technology use, and that overuse of

technology is the consequence of social anxiety. Yet, what makes this particular study

unique is that it attempted to provide evidence for the opposite being true.

The original purpose of this study was to develop empirical evidence for the hypothesis that technological communication is making Generation Y more socially inept and awkward in face-to-face situations. Without the time to do the longitidunal study that this type of research demanded, we planned to find this support by evaluating the social skills of college students today and comparing them to those of students from the 1980s, a time during which technological communication virtually did not exist. Unfortunately, between 1980 and 2005, the measure was altered, making only a second edition of the Social Skills Inventory available for research use. The Likert scale and the wording of certain items had been altered between editions, meaning the two surveys (the edition used in the present research and the edition used by Riggio in the 1980s) would be impossible to compare without encountering confounding variables. If there had been a significant difference between social skills then and now, this would provide us with support for the claim that our ability to communicate face-to-face has altered over the last 30 years. Yet, such a decline would also be affected by other confounding variables that have the ability to alter social patterns.

The result of this unfortunate obstacle in the research was the creation of a study that attempted to draw longitudinal correlations between participants' technology use when they first began incorporating it into their lives, and their social skills today, at a time when they use technology considerably more.

Limitations

One of the major limitations of this study was the lack of male participants. This limitation was expected given that women far outweigh men in the Connecticut College population from which these data were collected, especially in the Psychology

department, which was the major source of participants. An attempt was made to avoid such a female heavy participant sample by recruiting a large number of participants overall, however, still only 25 men completed the study. The results show trends that suggest that in a future situation where there were more men, significant findings would appear in social skills and technology use. A second limitation with the sampling of participants emerged in the second section of the study, for which only 16 participants took part. Emails were sent out to the majority of female participants, but because many of these participants had already completed the necessary research credit hours for their courses, only a small percentage of participants indicated that they still wanted to take part in the second section of the study.

The decision to use the Internet Behavior and Attitudes Scale in this study was an additional limitation to the results. It occurred to the research team after evaluating the results that another measure may have evaluated behavior on technological communication more directly. Many of the questions on the IBAS referenced behaviors such as making friendships online, or in virutal environments that used avatars, which were not applicable to my research. At the same time, once the Internet Preference scale was developed from the larger IBAS, we were able to evaluate Internet behavior in a way that was more specifically applicable to this research, leading to more accurate and significant results.

Finally, considering the large number of analyses that were conducted in this study, there is a chance for type 1 error in the results. However, because this study was a preliminary investigation into the topic that had a particuarly small sample size for Study 2, we went ahead with the analyses without making bonferroni adjustments.

Future Directions

As mentioned earlier, there was an measurement issue with this research that limited our ability to accurately test the issue at hand, whether technology use is responsible for diminished social skills. Rather, we were forced to make inferences from the correlational relationships that were found. This problem, however, still demands quantitative support, and I hope to conduct this research in the future in the form of a longitidunal study that erases many of the confounding variables that came about during the first attempt at this research.

In addition, with greater statistical power, the second section of the study, in which researchers observed the behavioral manifestations of social skills in a conversational setting, has the potential to provide unique insight into this issue. The Social Skills Inventory is a reasonable survey for the assessment of self-report social skills in a participants' past experiences. However, it does not address non-verbal social skills as well as the Conversational Skills Rating Scale does, and requires self-awareness about social skill levels. With a larger sample of participants, in which men were also included, we may have found additional significant results that would have strengthened the conclusions of this research.

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APPENDIX A
Informed Consent

I hereby consent to participate in Cecilia Brown's research on communication skills and use of technological communication mediums.

I understand that the study will involve completing a series of questionnaires on this topic and that I will receive 30 minutes of research credit upon their completion.

I have been told there are no known risks or discomforts related to participating in this research.

I understand I may decline to answer any question as I see fit and withdraw from the study at any time without penalty.

I understand my answers will be kept confidential and data will be analyzed using code numbers instead of names to preserve confidentiality.

I consent to publication of the results in this study and understand that the research ahs been approved by the Connecticut College Human Subjects Institutional Review Board (IRB).

Any concerns about the study can be directed towards Cecilia Brown (email: cbrown6@conncoll.edu), the advising professor Audrey Zakriski (email: alzak@conncoll.edu, phone: x5134), or the chair of the institutional review board, Jason Nier(janie@conncoll.edu, phone: x5057)

I am at least 18 years of age, and I have read these explanations and assurances and voluntarily consent to participate in this research about communication and technology use.

Name (printed) _____

Signature _____

Date _____

APPENDIX B
Informed Consent

I hereby consent to participate in Cecilia Brown's research on communication skills and use of technological communication mediums.

I know that this section of the study will be videotaped and viewed at a later time by the researcher and one other member of the research team *only* for coding and analysis purposes. The videotapes will be stores in a secure place and labeled by number to preserve confidentiality. Once they have been coded they will be destroyed.

I understand that the study will involve completing a series of questionnaires on this topic and that I will receive 30 minutes of research credit upon their completion.

I have been told there are no known risks or discomforts related to participating in this research.

I understand I may decline to answer any question as I see fit and withdraw from the study at any time without penalty. I understand my answers will be kept confidential and data will be analyzed using code numbers instead of names to preserve confidentiality.

I consent to publication of the results in this study and understand that the research ahs been approved by the Connecticut College Human Subjects Institutional Review Board (IRB).

Any concerns about the study can be directed towards Cecilia Brown (email: cbrown6@conncoll.edu), the advising professor Audrey Zakriski (email: alzak@conncoll.edu, phone: x5134), or the chair of the institutional review board, Jason Nier(janie@conncoll.edu, phone: x5057)

I am at least 18 years of age, and I have read these explanations and assurances and voluntarily consent to participate in this research about communication and technology use.

Name (printed) _____
Signature _____
Date _____

I give the researcher permission to videotape my completion of this section of the study to be viewed at a later time by the researcher and one other member of the research team *only* for coding and evaluation purposes.

Signature _____

Date _____

APPENDIX C
Social Skills Inventory

Reverse Scoring: 1,3, 5, 9, 10, 15, 17, 18, 21, 24, 25, 30, 36, 37, 39, 41, 43, 48, 49, 54, 56, 60, 64, 66, 67, 69, 72, 73, 76, 81, 84, 85

Participants are asked to rate the following scale using a 1-5 Likert scale: "Very much like me"=5, "Somewhat like me"= 4, "Neutral"=3, "Not much like me"=2, "Not at all like me"=1

_____ 1. It is difficult for others to know when I am sad or depressed

_____ 2. When people are speaking, I spend as much time watching their movements as I do listening to them.

_____ 3. People can always tell when I dislike them, no matter how hard I try to hide my feelings

_____ 4. I enjoy giving parties

_____ 5. Criticism of scolding rarely makes me feel uncomfortable.

_____ 6. I can be comfortable with all types if people—young and old, rich and poor

_____ 7. I talk faster than most people

_____ 8. Few people are as sensitive and understanding as I am

_____ 9. It is often hard for me to keep a "straight face" when telling a joke or humorous story

_____ 10. It takes people quite a while to get to know me well

_____ 11. My greatest source of pleasure and pain is other people

_____ 12. When I'm with a group of friends, I am often the spokesperson for the group.

_____ 13. When depressed, I tend to make those around me depressed also

_____ 14. At parties, I can immediately tell when someone is interested in me

_____ 15. People can always tell when I am embarrassed by the expression on my face.

_____ 16. I love to socialize

_____ 17. I would much rather take part in a political discussion than to observe and analyze what the participants are saying

_____ 18. Sometimes I find it difficult to look at others when I am talking about something personal.

_____ 19. I have been told that I have expressive eyes

_____ 20. I am interested in knowing what makes people tick

_____ 21. I am not very skilled in controlling my emotions

_____ 22. I prefer jobs that require working with a large number of people

_____ 23. I am greatly influenced by the moods of those around me.

_____ 24. I am not good at making prepared speeches.

_____ 25. I usually feel uncomfortable touching other people

_____ 26. I can easily tell what a person's character is by watching his or her interactions with others.

_____ 27. I am able to conceal my true feelings from just about anyone

_____ 28. I always mingle at parties

_____ 29. There are certain situations in which I find myself worrying about whether I am doing or saying the right things

_____ 30. I find it very difficult to speak in front of a large group of people

_____ 31. I often laugh out loud

_____ 32. I always seem to know what peoples' true feelings are no matter how hard they try to conceal them

_____ 33. I can keep a straight face even when friends try to make me laugh or smile

_____ 34. I usually take the initiative to introduce myself to strangers

_____ 35. Sometimes I think that I take things other people say to me too personally

_____ 36. When in a group of people, I have trouble thinking of the right things to talk about

_____ 37. Sometimes I have trouble making my friends and family realize just how angry or upset I am with them

_____ 38. I can accurately tell what a persons' character is upon first meeting him or her

_____ 39. It is very hard for me to control my emotions

_____ 40. I am usually the one to initiate conversations

_____ 41. What others think about my actions is of little or no consequence to me.

_____ 42. I am usually very good at leading group discussions

_____ 43. My facial expression is generally neutral

_____ 44. One of my greatest pleasures in life is being with other people

_____ 45. I am very good at maintaining a calm exterior even if I am upset

_____ 46. When telling a story, I usually use a lot of gestures to help get the point across

_____ 47. I often worry that people will misinterpret something I have said to them

_____ 48. I am often uncomfortable around people whose social class is different from mine

_____ 49. I rarely show my anger

_____ 50. I can instantly spot a "phony" the minute I meet him or her

_____ 51. I usually adapt my ideas and behavior to the group I happen to be with at the time

_____ 52. When in discussions, I find myself doing a large share of the talking.

_____ 53. While growing up, my parents were always stressing the importance of good manners

_____ 54. I am not very good at mixing at parties

_____ 55. I often touch my friends when talking to them.

_____ 56. I dislike it when other people tell me their problems

_____ 57. While I may be nervous on the inside, I can disguise it very well from others

_____ 58. At parties I enjoy talking to a lot of different people.

_____ 59. I can be strongly affected by someone smiling or frowning at me.

_____ 60. I would feel out of place at a party attended by a lot of very important people

_____ 61. I am able to liven up a dull party

_____ 62. I sometimes cry at sad movies.

_____ 63. I can make myself look as if I'm having a good time at a social function even if I'm not really enjoying myself at all

_____ 64. I consider myself a loner

_____ 65. I am very sensitive of criticism.

_____ 66. Occasionally I've noticed that people from different backgrounds seem to feel uncomfortable around me.

_____ 67. I dislike being the center of attention

_____ 68. I am easily able to give a comforting hug or touch someone who is distressed

_____ 69. I am rarely able to hide a strong emotion.

_____ 70. I enjoy going to large parties and meeting new people.

_____ 71. It is very important that other people like me

_____ 72. I sometimes say the wrong thing when starting a conversation with a stranger.

_____ 73. I rarely show my feelings or emotions

_____ 74. I can spend hours just watching other people

_____ 75. I can easily pretend to be mad even when I am really feeling happy

_____ 76. I am unlikely to speak to strangers until speak to me.

_____ 77. I get nervous if I think someone is watching me

_____ 78. I am often chosen to be the leader of a group

_____ 79. Friends have sometimes told me that I talk too much

_____ 80. I am often told that I am a sensitive, understanding person

_____ 81. People can always "read" my feelings even when I am trying to hide them.

_____ 82. I tend to be the "life of the party"

_____ 83. I'm generally concerned about the impression I'm making on others

_____ 84.I often find myself in awkward social situations.

_____ 85. I never shout or scream when angry

_____ 86. When my friends are angry or upset, they seek me out to help calm them down.

_____ 87. I am easily able to make myself look happy one minute and sad the next.

_____ 88. I could talk for hours on just about any subject.

_____ 89. I am often concerned with what others are thinking of me

_____ 90. I can easily adjust to being in just about any social situation

APPENDIX D
Internet Behavior and Attitudes Scale

Participants are asked to rate the following scale on the a 1 to 4 point scale
("Strongly Agree"=4, "Agree"=3, "Disagree"=2, "Strongly Disagree"=1)

_____ 1. Going online has made it easier for me to make friends

_____ 2. I am friendlier online than in real life

_____ 3. I sometimes go online to escape pressures

_____ 4. I open up more to people online than I do in other forms of communication

_____ 5. I have a network of friends made online

_____ 6. When I am online I feel totally absorbed

_____ 7. The anonymity of being online is liberating

_____ 8. I have more fun with people I know online than elsewhere

_____ 9. I have pretended to be someone of the opposite sex while online

_____ 10. I am more myself online than in real life

_____ 11. Most of my friends I know from online

_____ 12. I have shared intimate secrets online

_____ 13. Sometimes I pretend to be someone I am not while online

_____ 14. I prefer communicating online to face-to-face communication

_____ 15. My online friends understand me better than other people

Internet Preference subscale includes items 1, 2 ,4, 8, 10, 14

APPENDIX E
Interaction Social Anxiousness Scale

Indicate how characteristic each of the following statements is of you according to the following scale:

1 = <u>Not at all</u> characteristic of me.
2 = <u>Slightly</u> characteristic of me.
3 = <u>Moderately</u> characteristic of me.
4 = <u>Very</u> characteristic of me.
5 = <u>Extremely</u> characteristic of me.

____ 1. I often feel nervous even in casual get-togethers.

____ 2. I usually feel comfortable when I'm in a group of people I don't know.

____ 3. I am usually at ease when speaking to a member of the other sex.

____ 4. I get nervous when I must talk to a teacher or a boss.

____ 5. Parties often make me feel anxious and uncomfortable.

____ 6. I am probably less shy in social interactions than most people.

____ 7. I sometimes feel tense when talking to people of my own sex if I don't know them very well.

____ 8. I would be nervous if I was being interviewed for a job.

____ 9. I wish I had more confidence in social situations.

____ 10. I seldom feel anxious in social situations.

____ 11. In general, I am a shy person.

____ 12. I often feel nervous when talking to an attractive member of the opposite sex.

____ 13. I often feel nervous when calling someone I don't know very well on the telephone.

____ 14. I get nervous when I speak to someone in a position of authority.

____ 15. I usually feel relaxed around other people, even people who are quite different from me

APPENDIX F
Conversational Skills Rating Scale

CONVERSATIONAL SKILLS RATING SCALE (Rating of Partner Form)								
Your Name:						Partner Name:		
Your ID:						Partner ID:		
Date:				Class:			Activity:	

Rate how skillfully **YOUR PARTNER** used, or didn't use, the following communicative behaviors in the conversation, where:

1	=	**INADEQUATE**	(use is awkward, disruptive, or results in a negative impression of communicative skills)
2	=	**FAIR**	(occasionally awkward or disruptive, occasionally adequate)
3	=	**ADEQUATE**	(sufficient but neither noticeable nor excellent. Produces neither strong positive nor negative impression)
4	=	**GOOD**	(use was better than adequate but not outstanding)
5	=	**EXCELLENT**	(use is smooth, controlled, results in positive impression of communicative skills)

Circle the single most accurate response for each behavior:

1	2	3	4	5	=	(1)	Speaking rate (neither too slow nor too fast)
1	2	3	4	5	=	(2)	Speaking fluency (pauses, silences, "uh", etc.)
1	2	3	4	5	=	(3)	Vocal confidence (neither too tense/nervous nor overly confident sounding)
1	2	3	4	5	=	(4)	Articulation (clarity of pronunciation and linguistic expression)
1	2	3	4	5	=	(5)	Vocal variety (neither overly monotone nor dramatic voice)
1	2	3	4	5	=	(6)	Volume (neither too loud nor too soft)
1	2	3	4	5	=	(7)	Posture (neither too closed/formal nor too open/informal)
1	2	3	4	5	=	(8)	Lean toward partner (neither too forward nor too far back)
1	2	3	4	5	=	(9)	Shaking or nervous twitches (aren't noticeable or distracting)
1	2	3	4	5	=	(10)	Unmotivated movements (tapping feet, fingers, hair-twirling, etc.)
1	2	3	4	5	=	(11)	Facial expressiveness (neither blank nor exaggerated)
1	2	3	4	5	=	(12)	Nodding of head in response to partner statements
1	2	3	4	5	=	(13)	Use of gestures to emphasize what is being said
1	2	3	4	5	=	(14)	Use of humor and/or stories
1	2	3	4	5	=	(15)	Smiling and/or laughing
1	2	3	4	5	=	(16)	Use of eye contact
1	2	3	4	5	=	(17)	Asking of questions
1	2	3	4	5	=	(18)	Speaking about partner (involvement of partner as a topic of conversation)
1	2	3	4	5	=	(19)	Speaking about self (neither too much nor too little)
1	2	3	4	5	=	(20)	Encouragements or agreements (encouragement of partner to talk)
1	2	3	4	5	=	(21)	Personal opinion expression (neither too passive nor aggressive)
1	2	3	4	5	=	(22)	Initiation of new topics
1	2	3	4	5	=	(23)	Maintenance of topics and follow-up comments
1	2	3	4	5	=	(24)	Interruption of partner speaking turns
1	2	3	4	5	=	(25)	Use of time speaking relative to partner

For the next five items, rate your partner's overall performance. My partner was a(n)...

POOR CONVERSATONALIST ::	1	2	3	4	5	6	7	: GOOD CONVERSATIONALIST
SOCIALLY UNSKILLED ::	1	2	3	4	5	6	7	: SOCIALLY SKILLED
INCOMPETENT COMMUNICATOR ::	1	2	3	4	5	6	7	: COMPETENT COMMUNICATOR
INAPPROPRIATE COMMUNICATOR ::	1	2	3	4	5	6	7	: APPROPRIATE COMMUNICATOR
INEFFECTIVE COMMUNICATOR ::	1	2	3	4	5	6	7	: EFFECTIVE COMMUNICATOR

Comments:

CONVERSATIONAL SKILLS RATING SCALE (Rating of Self Form)							
Your Name:					Partner Name:		
Your ID:					Partner ID:		
Date:				Class:		Activity:	

Rate how skillfully **YOU** used, or didn't use, the following communicative behaviors in the conversation, where:

1	=	INADEQUATE	(use is awkward, disruptive, or results in a negative impression of communicative skills)
2	=	FAIR	(occasionally awkward or disruptive, occasionally adequate)
3	=	ADEQUATE	(sufficient but neither noticeable nor excellent. Produces neither strong positive nor negative impression)
4	=	GOOD	(use was better than adequate but not outstanding)
5	=	EXCELLENT	(use is smooth, controlled, results in positive impression of communicative skills)

Circle the single most accurate response for each behavior:

1	2	3	4	5	=	(1)	Speaking rate (neither too slow nor too fast)
1	2	3	4	5	=	(2)	Speaking fluency (pauses, silences, "uh", etc.)
1	2	3	4	5	=	(3)	Vocal confidence (neither too tense/nervous nor overly confident sounding)
1	2	3	4	5	=	(4)	Articulation (clarity of pronunciation and linguistic expression)
1	2	3	4	5	=	(5)	Vocal variety (neither overly monotone nor dramatic voice)
1	2	3	4	5	=	(6)	Volume (neither too loud nor too soft)
1	2	3	4	5	=	(7)	Posture (neither too closed/formal nor too open/informal)
1	2	3	4	5	=	(8)	Lean toward partner (neither too forward nor too far back)
1	2	3	4	5	=	(9)	Shaking or nervous twitches (aren't noticeable or distracting)
1	2	3	4	5	=	(10)	Unmotivated movements (tapping feet, fingers, hair-twirling, etc.)
1	2	3	4	5	=	(11)	Facial expressiveness (neither blank nor exaggerated)
1	2	3	4	5	=	(12)	Nodding of head in response to partner statements
1	2	3	4	5	=	(13)	Use of gestures to emphasize what is being said
1	2	3	4	5	=	(14)	Use of humor and/or stories
1	2	3	4	5	=	(15)	Smiling and/or laughing
1	2	3	4	5	=	(16)	Use of eye contact
1	2	3	4	5	=	(17)	Asking of questions
1	2	3	4	5	=	(18)	Speaking about partner (involvement of partner as a topic of conversation)
1	2	3	4	5	=	(19)	Speaking about self (neither too much nor too little)
1	2	3	4	5	=	(20)	Encouragements or agreements (encouragement of partner to talk)
1	2	3	4	5	=	(21)	Personal opinion expression (neither too passive nor aggressive)
1	2	3	4	5	=	(22)	Initiation of new topics
1	2	3	4	5	=	(23)	Maintenance of topics and follow-up comments
1	2	3	4	5	=	(24)	Interruption of partner speaking turns
1	2	3	4	5	=	(25)	Use of time speaking relative to partner

For the next five items, rate your overall performance. I was a(n)…

POOR CONVERSATONALIST ::	1	2	3	4	5	6	7	: GOOD CONVERSATIONALIST
SOCIALLY UNSKILLED ::	1	2	3	4	5	6	7	: SOCIALLY SKILLED
INCOMPETENT COMMUNICATOR ::	1	2	3	4	5	6	7	: COMPETENT COMMUNICATOR
INAPPROPRIATE COMMUNICATOR ::	1	2	3	4	5	6	7	: APPROPRIATE COMMUNICATOR
INEFFECTIVE COMMUNICATOR ::	1	2	3	4	5	6	7	: EFFECTIVE COMMUNICATOR

Comments:

CONVERSATIONAL SKILLS RATING SCALE (Observer Rating of Conversant Form)

Your Name:		Partner Name:	
Your ID:		Partner ID:	
Date:	Class:		Activity:

Rate how skillfully **THIS INTERACTANT** used, or didn't use, the following communicative behaviors in the conversation, where:

1	=	INADEQUATE	(use is awkward, disruptive, or results in a negative impression of communicative skills)
2	=	FAIR	(occasionally awkward or disruptive, occasionally adequate)
3	=	ADEQUATE	(sufficient but neither noticeable nor excellent. Produces neither strong positive nor negative impression)
4	=	GOOD	(use was better than adequate but not outstanding)
5	=	EXCELLENT	(use is smooth, controlled, results in positive impression of communicative skills)

Circle the single most accurate response for each behavior:

1	2	3	4	5	=	(1)	Speaking rate (neither too slow nor too fast)
1	2	3	4	5	=	(2)	Speaking fluency (pauses, silences, "uh", etc.)
1	2	3	4	5	=	(3)	Vocal confidence (neither too tense/nervous nor overly confident sounding)
1	2	3	4	5	=	(4)	Articulation (clarity of pronunciation and linguistic expression)
1	2	3	4	5	=	(5)	Vocal variety (neither overly monotone nor dramatic voice)
1	2	3	4	5	=	(6)	Volume (neither too loud nor too soft)
1	2	3	4	5	=	(7)	Posture (neither too closed/formal nor too open/informal)
1	2	3	4	5	=	(8)	Lean toward partner (neither too forward nor too far back)
1	2	3	4	5	=	(9)	Shaking or nervous twitches (aren't noticeable or distracting)
1	2	3	4	5	=	(10)	Unmotivated movements (tapping feet, fingers, hair-twirling, etc.)
1	2	3	4	5	=	(11)	Facial expressiveness (neither blank nor exaggerated)
1	2	3	4	5	=	(12)	Nodding of head in response to partner statements
1	2	3	4	5	=	(13)	Use of gestures to emphasize what is being said
1	2	3	4	5	=	(14)	Use of humor and/or stories
1	2	3	4	5	=	(15)	Smiling and/or laughing
1	2	3	4	5	=	(16)	Use of eye contact
1	2	3	4	5	=	(17)	Asking of questions
1	2	3	4	5	=	(18)	Speaking about partner (involvement of partner as a topic of conversation)
1	2	3	4	5	=	(19)	Speaking about self (neither too much nor too little)
1	2	3	4	5	=	(20)	Encouragements or agreements (encouragement of partner to talk)
1	2	3	4	5	=	(21)	Personal opinion expression (neither too passive nor aggressive)
1	2	3	4	5	=	(22)	Initiation of new topics
1	2	3	4	5	=	(23)	Maintenance of topics and follow-up comments
1	2	3	4	5	=	(24)	Interruption of partner speaking turns
1	2	3	4	5	=	(25)	Use of time speaking relative to partner

For the next five items, rate this person's overall performance:

	1	2	3	4	5	6	7	
POOR CONVERSATONALIST ::	1	2	3	4	5	6	7	: GOOD CONVERSATIONALIST
SOCIALLY UNSKILLED ::	1	2	3	4	5	6	7	: SOCIALLY SKILLED
INCOMPETENT COMMUNICATOR ::	1	2	3	4	5	6	7	: COMPETENT COMMUNICATOR
INAPPROPRIATE COMMUNICATOR ::	1	2	3	4	5	6	7	: APPROPRIATE COMMUNICATOR
INEFFECTIVE COMMUNICATOR ::	1	2	3	4	5	6	7	: EFFECTIVE COMMUNICATOR

Comments:

APPENDIX G
Derogatis Affect Balance Scale

Below is a list of words that describes the way people sometimes feel. We would like you to tell us whether you are having any of these feelings right now (that is, at the present moment). Please indicate the degree to which you are feeling each emotion by circling the number that best describes your experience. Circle only one number for each emotion and do not skip any items.

	NOT AT ALL	A LITTLE	MODERATELY	QUITE A BIT	VERY MUCH
1. NERVOUS	0	1	2	3	4
2. ACCEPTED	0	1	2	3	4
3. SAD	0	1	2	3	4
4. REGRETFUL	0	1	2	3	4
5. IRRITABLE	0	1	2	3	4
6. HAPPY	0	1	2	3	4
7. PLEASED	0	1	2	3	4
8. EXCITED	0	1	2	3	4
9. DISLIKED	0	1	2	3	4
10. PASSIONATE	0	1	2	3	4
11. TIMID	0	1	2	3	4
12. HOPELESS	0	1	2	3	4
13. BLAMEWORTHY	0	1	2	3	4
14. RESENTFUL	0	1	2	3	4
15. GLAD	0	1	2	3	4
16. WANTED	0	1	2	3	4
17. CALM	0	1	2	3	4
18. ENERGETIC	0	1	2	3	4
19. LOVING	0	1	2	3	4
20. TENSE	0	1	2	3	4
21. WORTHLESS	0	1	2	3	4
22. ASHAMED	0	1	2	3	4
23. DISCARDED	0	1	2	3	4
24. ANGRY	0	1	2	3	4
25. CHEERFUL	0	1	2	3	4
26. SATISFIED	0	1	2	3	4
27. ACTIVE	0	1	2	3	4
28. FRIENDLY	0	1	2	3	4
29. ANXIOUS	0	1	2	3	4
30. DESIRED	0	1	2	3	4
31. MISERABLE	0	1	2	3	4
32. GUILTY	0	1	2	3	4
33. ENRAGED	0	1	2	3	4
34. DELIGHTED	0	1	2	3	4
35. REJECTED	0	1	2	3	4

	0	1	2	3	4
36. RELAXED	0	1	2	3	4
37. VIGOROUS	0	1	2	3	4
38. AFFECTIONATE	0	1	2	3	4
39. AFRAID	0	1	2	3	4
40. POPULAR	0	1	2	3	4
41. UNHAPPY	0	1	2	3	4
42. REMORSEFUL	0	1	2	3	4
43. UNACCEPTED	0	1	2	3	4
44. BITTER	0	1	2	3	4
45. JOYOUS	0	1	2	3	4
46. UNWANTED	0	1	2	3	4
47. CONTENTED	0	1	2	3	4
48. LIVELY	0	1	2	3	4
49. WARM	0	1	2	3	4
50. LIKED	0	1	2	3	4

APPENDIX H
Demographics

1) Gender:
     a) Male
     b) Female
     c) Other

2) Age:
     a) 18
     b) 19
     c) 20
     d) 21
     e) 22
     f) Other _____

3) Race/ Ethnicity:
     a) African-American/ Black
     b) Asian-American/ Pacific Islander
     c) Caucasian/ White
     d) Hispanic/ Latino
     e) Native American
     f) Other _____

4) Rank the following communciation mediums in order of preference with 1 being the medium you *most* prefer to communicate with, and 7 being the medium you *least* prefer for communicate with.
____ Skype
____ Social networking (Facebook, Twitter, Myspace etc.)
____ Texting
____ Phone
____ Face-to-face
____ Email
____ Instant message
____ Other _____

5) Do you use Facebook? (Yes/No)
6) Have you ever gotten rid of your Facebook? (Yes/No)
7) If you have Facebook….
8) At what age did you acquire a Facebook? _____
9) How much time do you spend on Facebook daily?
     a) under 30 minutes

       b) 30 min - 1.5 hours

       c) 1.5 hours -3 hours

       d) More than 3 hours

10) Do you own a cell phone? (Yes/No)

11) At what age did you first acquire your own cell phone? _____

12) Compared to other kids in your community/school/ friend group, did you have a cell phone…

       a) very early

       b) a bit early

       c) about the same time

       d) a bit later

       e) very late

13) Is the cell phone you own now equipped with email? (Yes/No/Don't have one)

14) How many text messages do you send daily?

       a) None

       b) 1-10

       c) 10-30

       d) 30-50

       e) 50-70

       d) More than 70

15) Have you broken up with someone over text message? (Yes/No)

16) Have you ever settled a fight over text message (Yes/No)

17) Did you grow up in a household with rules limiting your internet or cell phone rules? (Yes/No)

17a) If yes please elaborate: _____

18) At what age did you start using instant messaging? _____

19) Do you instant message daily (instant messaging on social networking sites included) (Yes/No)

Please provide your email address if you would like to be contacted to participate in part two of this study for an additional 30 minutes of credit. Only a subset of the participants in part one will be contacted to participate in part two. Please list your email address if you wish to be considered:_____

APPENDIX I
Debriefing form Study 1

Thank you for participating in this research study on communication skills and use of technological communication mediums. This is a two part study and I may contact you via email if you qualify to return for an additional study that will grant you another 30 minutes of research credit. In this research I plan to look at the connection between use of technological communication and social skills. Previous research has suggested that the use of texting, email, Skype, instant messaging, and social networking may be significantly changing the way we communicate. With more time spent communicating via technology, we spend less time communicating face-to-face. Parents, educators, researchers, and journalists have speculated about some of the negative effects of this change, and I plan to look more in depth at this idea in my current research.

Any questions or concerns about the study can be directed towards Cecilia Brown (email: cbrown6@conncoll.edu), the advising professor Audrey Zakriski (email: alzak@conncoll.edu, phone: x5134), or the chair of the institutional review board, Jason Nier(janie@conncoll.edu, phone: x5057).

Listed below are three sources of literature and research on this topic:

-- Dokoupil, T. (July 9, 2012). Is the web driving us mad? *The Daily Beast*. Retrieved from http://www.thedailybeast.com/newsweek/2012/07/08/is-the-internet-making-us-crazy-what-the-new-research-says.html

--Caplan, S. (2007). Relations among loneliness, social anxiety, and problematic internet use. *Cyber Psychology and Behavior*, *10*(2), 234-242. DOI.1089/cpb.2006.9963

--Greenfield, S. Mind change is an issue that's as important and unprecedented as climate change. *The Guardian*. Video
http://www.guardian.co.uk/commentisfree/video/2011/aug/15/susan-greenfield-video

APPENDIX J
Debriefing form Study 2

Thank you for participating in this research study on communication skills and use of technological communication mediums. The conversation you just completed took place with a confederate. The confederate was a member of my research team that was trained to have this conversation with you. This person has sworn to confidentiality so that your answers will be kept confidential. As mentioned in the informed consent, you have been videotaped during this section of the study. The video will be viewed at a later time by the researcher and one other person on my research team in order to measure your social skills in your conversation with the confederate. The video will be stored in a secure location and labeled by number rather than by name to preserve confidentiality. Once the video has been coded, it will be destroyed.

In this research I plan to look at whether use of technological forms of communication has an effect on everyday social skills. Previous research has suggested that individuals with poor social skills spend more time communicating on technological mediums (instant message, social networking, texting etc.) in order to avoid the discomfort of face-to-face interactions. In turn, their underdeveloped social skills are preserved, or even made worse, from lack of practice in real interpersonal interactions. In the last decade, since techonlogical communication has grown more popular, people have begun to prefer technological communication to anything else. Many articles have emerged that theorize about how this form of communication may be degrading our social skills and thus weakening our ability to communicate face-to-face.

Any questions or concerns about the study can be directed towards Cecilia Brown (email: cbrown6@conncoll.edu), the advising professor Audrey Zakriski (email: alzak@conncoll.edu, phone: x5134), or the chair of the institutional review board, Jason Nier(janie@conncoll.edu, phone: x5057).

Listed below are three sources of literature and research on this topic:

-- Dokoupil, T. (July 9, 2012). Is the web driving us mad? *The Daily Beast*. Retrieved from http://www.thedailybeast.com/newsweek/2012/07/08/is-the-internet-making-us-crazy-what-the-new-research-says.html

--Caplan, S. (2007). Relations among loneliness, social anxiety, and problematic internet use. *Cyber Psychology and Behavior*, *10*(2), 234-242. DOI.1089/cpb.2006.9963

--Greenfield, S. Mind change is an issue that's as important and unprecedented as climate change. *The Guardian*. Video
http://www.guardian.co.uk/commentisfree/video/2011/aug/15/susan-greenfield-video

APPENDIX K
Study 2 Recruiting Email

Dear participant,

First, I would like to thank you for taking part in the first part of my research study on technological communication and social skills. I have begun to analyze the data and I would like to invite you to return for the second half of my research study. You will receive an additional 30 minutes of research credit for completing the second section. To preserve confidentiality, you have been assigned #6 (number will be changed for each participant). If you would like to participate, please enter this number into a time slot that works best for you on the google doc I have shared with you below. At that time, please come to the main room on the fifth floor of bill hall (this floor can be accessed from the staircase at the back of bill hall) to complete the study.

Thank you, your help is appreciated!

--Cecilia