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Examining the Impact of Information Communication Technology on Social Skills and Total Likability

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EXAMINING THE IMPACT OF INFORMATION COMMUNICATION
TECHNOLOGY ON SOCIAL SKILLS AND TOTAL LIKABILITY

A Dissertation Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Philosophy

Aaron Lee Wallis

College of Education and Behavioral Sciences
School of Applied Psychology and Counselor Education
Program of Counseling Psychology

August, 2015

This Dissertation by: Aaron Lee Wallis

Entitled: *Examining the Impact of Information Communication Technology on Social Skills and Total Likability*

has been approved as meeting the requirement for the Degree of Doctor of Philosophy in College of Education and Behavioral Sciences in School of Applied Psychology and Counselor Education, Program of Counseling Psychology

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ABSTRACT

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This study examined the relationship among individuals' use of information communication technology (ICT), their level of social skills, and how likable they were perceived to be by a communication partner in two different communication media: text chat and face-to-face. Specifically, this study examined how an individual's frequency of ICT use and preference for ICT in social communication over face-to-face interaction was related to their level of social skills based on Riggio's (1989) Social Skills Inventory. It also examined how well an individual's reported preference for ICT communication and level of social skills predicted his/her ratings of likability and rapport by a conversation partner. Data were analyzed for 120 undergraduate students using bivariate correlations and one and two-way ANOVAs. Results indicated no significant relationship between either ICT frequency or ICT preference and social skills. Participants were rated as significantly more likable over text chat than face-to-face. Social skills were not shown to have a significant relationship to likability or ICT use. Implications included a need for a more varied sample of ICT users and detailed analysis of specific social skill components.

Keywords: Information Communication Technology, ICT, Likability, Rapport, Preference, Social Skills

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CHAPTER I

INTRODUCTION TO THE RESEARCH PROBLEM

"Mr. Watson, come here. I want to see you," spoken by Alexander Graham Bell

on March 10th, 1876, were the first intelligible words heard over the telephone. These

words heralded a new generation in communication, one that saw the average person able

to communicate precise, detailed information over vast distances almost immediately.

This technology changed the ways humans interacted and added an entirely new

communication medium to which humanity must adapt. Now, more than 130 years later,

we are grappling with a massive variety of new communication technologies including

texting, email, Internet chat, and social networks, all of which share with the telephone an

indelible impression of human communication and interaction.

The past two decades have brought about significant change in the ways people

communicate, largely due to the Internet and mobile phones. Globally, 4.6 billion people

own a mobile phone, 75.6% of U.S. citizens own a computer and 77% of U.S. citizens

report regularly accessing the Internet (International Telecommunications Union, 2009;

U.S. Bureau of Labor Statistics, 2008; U.S. Census Bureau, 2009). A large portion of the

communication that happens on the Internet is through the use of social networks such as

Facebook and MySpace. The Nielsen Company (2010) reported the U.S. national

average for online social network use is about six hours per month. Social network use

varies drastically with population; college students, for example, use social networks far

more than other populations. Of 18- to 29-year-olds who are online, 72% reported using social networking websites, which is much higher than 39% of adults 30 and over who use these sites (Lenhart, Purcell, Smith, & Zickuhr, 2010). With nearly three quarters of young adults using social networking regularly, it is important to consider the impact of this form of communication on young adult users.

While usage varies among this population, in general, time spent utilizing social networks is also greater for the college-aged population. In a study at the University of New Hampshire (Martin, 2009), light social network users were differentiated from heavy social network users with the following distinctions: light social network users spent 15.5 hours per month (based on a 30 day month) on social networks, more than twice the national average; whereas heavy users spent a minimum of 30.5 hours per month on a social network, nearly five times the national average (Martin, 2009). This level of usage implies that for these heavy users, social networking sites might encompass a large proportion of all their social communication, which makes further investigation necessary.

Texting on mobile phones is another popular method of electronic communication. While counseling psychology does not explicitly define texting, the *Merriam-Webster Dictionary* defines "texting" (2011) or Short Message Service (SMS) as follows: "A short message sent electronically usually from one cell phone to another" (para. 1). Texting is one of the most used and fastest growing communication methods in the United States and worldwide. CellSigns (2008) reported that in 2006, U.S. text message users sent over 18 billion messages per month. This growth has increased approximately 250% per year; in 2008, 75 billion text messages were sent per month. It

is apparent this communication medium is growing rapidly. The International Telecommunications Union (2010) estimated that over 200,000 text messages are sent per second internationally, which translates to over 518 *billion* text messages sent per month across the world. Texting has become especially popular with teenagers; it has eclipsed all other forms of communication including email, landline conversation, instant messaging, social networking sites, cell phone voice conversations, and face-to-face interactions (Lenhart, Ling, Campbell, & Purcell, 2010). This rapid rise in texting as a form of communication, combined with social networking, especially among teenagers and young adults bears consideration. These new forms of communication are heavily used amongst this generation and are functionally different from traditional communications seen in previous generations.

Taylor, McMinn, Bufford, and Chang (2010) examined differences in social network use between psychology graduate students and psychologists. While 86% of respondents under 30 reported maintaining a social network page, none of the 15 respondents over the age of 54 used social networking sites. This sample was too small to make statistical generalizations to a larger population of adults over 54; however, it did imply there might be a generational effect where younger adults and teenagers use social networking far more than older generations.

The dramatic increase in the use of so many relatively new and prolific forms of social communication necessitates a look at these technologies as a whole to examine their impact upon those who use them. Texting and social networking are often lumped together with other forms of electronic communication under the heading of information communication technology (ICT). Research has been mixed on the effect ICT has had on

users. Several authors have noted that Internet use has a negative effect on the well-being, defined as average positive affect, of users (Gross, Juvonen, & Gable, 2002; Kraut, Patterson, & Lundmark, 1998; Schiffrin, Edelman, Falkenstern, & Stewart, 2010; Van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008; Wolak, Mitchell, & Finkelhor, 2003). Lyubomirsky, King, and Diener (2005) indicated that social support has a strong positive correlation with well-being and ICT might affect the nature and quality of social support garnered by users. Steinfield, Ellison, and Lampe (2008) found that use of the online social network Facebook interacts with an individual's self-esteem to influence social capital defined as nature, structure, and resources embedded in a person's network of relationships. Their study also noted that individuals with lower self-esteem reported greater benefits in terms of increased social capital than individuals with high-self-esteem. Query and James (1989) provided a logical extension from social support to communication and a link to the current study in that interpersonal communication competence is an integral part of social support. Thus, it is logical to conclude that interpersonal communication is linked to well-being and is affected by ICT use. In a nationwide study in Japan, Ishii (2006) found social skill levels were negatively correlated with "Mobile Mail" that consists of texting and email from mobile phones (which according to the author are converging into a single form of communication in Japan). The study also noted that while the effect of ICT was generally negative for social skills, a small proportion of heavy ICT users had high social skills and used ICT primarily to manage their large social networks. Ishii found that because of this group of heavy users, it was useful to categorize ICT users in terms of relative preference for ICT rather than in terms of the amount of ICT use. This study is discussed more in-depth in

Chapter II. Since ICT use is linked to social skills, social capital, interpersonal communication, and well-being, it is imperative to consider the impact the dramatic increase in these technologies might have on mental health services for both client and practitioner. Counseling psychology in particular might be affected by these trends in social skills and technology due to the powerful effect rapport and therapeutic relationships have on therapy efficacy and outcomes (see discussion in Chapter II), which might necessitate adaptations to the pedagogy, selection, and implementation of counseling services.

Communicative Aspects of Therapy

In the past two decades, research into the efficacy of therapy has highlighted the need for greater understanding of client characteristics that might affect therapy and are not related to therapist factors or chosen theories and interventions. Research on the efficacious elements of therapy, specifically Lambert and colleagues, showed client factors had a larger effect on the outcome of therapy than did specific techniques or the mutual emotional bond between therapist and client--often referred to as the therapeutic alliance (Lambert, 1992; Lambert & Hill, 1994). However, social skills are often not considered when discussing client factors; Ryan and Deci (2000) addressed some client factors in therapeutic outcomes such as emphasizing the importance of client motivation and autonomy but did little to address social skills. WarWar and Greenberg (as cited in Scheel, 2010) came closer to the issue of client social skills as an relevant client factor in therapeutic outcome: "We need to learn more about how to work with clients who have more difficulty forming an alliance to develop strategies to set up a helping relationship" (p. 277). While it has been more than a decade since they made this statement, research

on the topic of clients' social characteristics and their impacts on therapy has been virtually non-existent. A person's level and quality of social skills might become an increasingly important consideration for therapists, educators, and administrators, especially those working with the upcoming generation of individuals who use ICT regularly for social communication and might therefore have different qualities or types of social skills. Recently, Ulvenes et al. (2012) suggested that a therapist's ability to create an alliance might be more significant than the client's abilities as long as the therapist is able to understand his or her client's interaction preferences and tailor his or her therapeutic style to facilitate alliance creation. The primacy of therapist social skills has important implications for training programs and might become increasingly important as younger therapists whose upbringing might have included far more ICT use than previous generations of practitioners and who might be subject to the same effects of ICT use noted in clients. Unfortunately, it was beyond the scope of this study to examine this issue.

Information communication technology is not restricted to social communication alone and is now being utilized by mental health professionals, most notably in the various forms of online therapy. Gainsbury and Blaszczynski (2011) performed a systematic review of online therapy as an alternative for traditional addiction therapy and found that while online therapy widely varied in implementation, online therapy provided a successful alternative mode of treatment for addictions. Stark (1992) found substance abuse clients were more likely to continue therapy if it was conveniently located, provided rapid initial response, and individual attention was delivered in a comfortable environment. Online therapy could provide some of these characteristics to clients, offer

therapy in the comfort and convenience of their own homes, and, depending on the nature of the online services, might also offer rapid response and individual attention. Gainsbury and Blaszczynski concluded,

> Use of the Internet is rapidly increasing and this medium is becoming progressively more necessary to reach and serve consumers. This medium has enormous potential to provide a highly influential tool to assist individuals in overcoming their addictions in a manner that appropriately meets client's expectations and needs. (p.497)

Online therapy might offer a unique service to clients who are less successful in traditional therapies and is therefore a vital area of exploration for psychologists. It is also reasonable to conclude that the rise in use of ICT, especially for people under 30 years of age, might also indicate a preference for electronic communication media. Therefore, more information is needed about the preferences this age bracket might have for communication in general and particularly the delivery of mental health services. Specifically, do high frequency users or individuals with a high preference for ICT prefer to communicate through ICT and what implications might this have for therapy?

Three primary theories were used to conceptualize the effect of ICT on individuals in this study: social network, social compensation, and rich-get-richer (Birnie & Horvath, 2002; Granovetter, 1973; Kraut, Kiesler, Boneva, Cummings, & Helgeson, 2002). Social network theory provides a framework through which to understand individual use of ICT and assumes that, in general, people exist within a social network and continually seek to increase that network. As they do so, they increase their consumption of media, such as ICT, traditional voice telephones, or face-to-face communication that most readily facilitate that expansion.

Social compensation theory assumes people naturally attempt to make up for deficits in their social skills by avoiding situations that have high social demands, e.g., face-to-face interaction, and gravitate toward media like ICT that require a lower level of social skill (Kraut et al., 2002). This is thought to represent a functional alternative for these individuals and it is assumed they will benefit from this medium.

The rich-get-richer theory assumes individuals with a low level of social skill will, like social compensation theory, seek out media like ICT that require less social skill but will find use of ICT detrimental to their social skills (Kraut et al., 2002). Likewise, rich-get-richer theory also assumes individuals with high social skills will use ICT but will take advantage of the medium to maintain a larger social network than would be otherwise possible and experience positive social benefit from interactions using ICT.

Statement of the Problem

Due to the prevalence of ICT and its rapidly growing complexity and impact upon society in the United States and globally, it is important to further study the long- and short-term effects ICT might have. Information communication technology and the changing nature of social skills are likely to continue to affect the field of psychology, especially psychotherapy. Psychotherapy relies heavily on interpersonal communication skills of both the therapist and client. If ICT affects the social skills of users, especially those generations reared with ICT as their primary communication medium, it is reasonable to assume it might change "normal" communication, which would likely have an impact on psychotherapy. Thus, understanding both the link between ICT and social skills and between social skills and ability to communicate socially is integral to our understanding of and the continuing efficacy of psychotherapy in both implementation

and therapist training. This study examined individual communication abilities in both in-person and text-chat interactions. Participants were asked to "get to know" their partners in a 10 minute interaction and then rated their partners' likability and rapport, which were represented together as "Total Likability." Individuals with different preferences for social interaction such as ICT-dominant communication might also have different preferences for the way in which they receive mental health services. If mental health providers want to serve populations with a preference for ICT communication, it is vital to understand how this preference affects their social and communicative skills.

Purpose

The purpose of this study was to (a) determine the level of social skills of 18-25-year-old students and its relationship to relative preference for and frequency of ICT use, (b) determine which measure of ICT was of more utility-- relative preference or frequency of use, and (c) assess the possible impact of ICT and social skills on an individual's ability to effectively engage in positive social communication for undergraduate students.

Undergraduate students are avid consumers of ICT and often the primary clientele for university counseling centers. As such, they presented a unique opportunity to study the relationship between ICT, interpersonal communication abilities, and social skills.

Delimitations

The intended population of this study was traditional undergraduate college students between the ages of 18-25 who used ICT on a regular basis. The sample was limited to volunteers from psychology and freshman level, university-wide required classes at a university in the Rocky Mountain region.

Research Questions

The following research questions guided this study:

Q1   What is the relationship between frequency of ICT use and Social Skills as measured by the Social Skills Inventory (Riggio, 1989)?

Q2   What is the relationship between relative ICT preference and Social Skills as measured by the Social Skills Inventory (Riggio, 1989)?

Q3   What is the relationship between Social Skills and Total Likability across communication conditions (Reysen, 2005; Tickle-Degnen & Rosenthal, 1990)?

Q4   What is the relationship between ICT preference and Total Likability across communication conditions (Reysen, 2005; Tickle-Degnen & Rosenthal, 1990)?

Q5   What is the relationship between ICT preference and Total Likability across social skill levels (Reysen, 2005; Riggio, 1989; Tickle-Degnen & Rosenthal, 1990)?

RQ6   For high frequency ICT users, what is the relationship between Social Skills and Total Likability (Reysen, 2005; Riggio, 1989; Tickle-Degnen & Rosenthal, 1990)?

Definition of Terms

Communication conditions.

Condition 1--In-person. In this condition, participants converse with another randomly assigned participant while in the same room without the use of any form of ICT or computer mediated communication. Participants are then asked to rate their partner on scales of likability and rapport.

Condition--In-text. In this condition, participants converse with another randomly assigned participant using a text-chat program via an iPhone in separate rooms. Participants only interacted through text statements to each other. Please note: "text" does not refer to Short Message Service (SMS) commonly used in mobile phone

conversations; it refers to typed statements on an SMS analogue. Participants were then

asked to rate their partners on scales of likability and rapport.

Face-to-face communication (FTF). The number of hours per week of face-to-

face interactions (Ishii, 2006).

Frequency of information communication technology. Defined as the number

of hours in a week an individual reports spending using various forms of ICT. Hours

from each ICT medium were added together to obtain a total number of ICT hours/week.

Information communication technology (ICT). Refers to the frequency of use

of social networks, SMS, email, and Internet chatting.

Relative information communication technology preference. Calculated by

the following formula: relative preference = information communication technology/

(ICT +FTF; Ishii, 2006).

Social skills. Refers to a client's skill in receiving, decoding, and accurately

interpreting emotional and social information from both self and others as well as in

sending and regulating emotional and social information appropriate to the interpersonal

and situational circumstances assessed by the Social Skills Inventory (SSI; Riggio, 1989).

Total likability. The combination of likability and rapport. Likability is defined

as a persuasion tactic and a scheme of self-presentation (Cialdini, 1993; Kenrick,

Neuberg, & Cialdini, 2002). It incorporates aspects of *attractiveness* (friendly

approachable, pleasing, modest, warm, and unbiased) and *expertise* (knowledgeable,

intelligent, and competent) as well as asking participants to imagine the target source

(interaction partner) as part of their lives (Reysen, 2005). Rapport is the interaction

between mutual attentiveness, positivity, and coordination that occurs during the interaction between one or more people.

Summary

This study explored the relationship between ICT and social skills as related to the performance on a social task for undergraduate students. Recent literature determined ICT use is on the rise and is becoming ever more prevalent, especially for younger generations; it suggests that ICT affects the social skills of its users, especially those who prefer ICT to less technology-oriented methods of communication, specifically face-to-face and voice calls. Psychotherapy is primarily delivered using face-to-face and voice calls and might therefore be affected by a growing trend of ICT preference in communication. This trend merits examination of the actual effect ICT has on psychotherapy and might highlight the need for adjustments to therapist training, interventions, or therapy media. In terms of theory, how do we provide efficacious mental health services to both the "socially rich" and "socially poor" across mediums in which their performance might vary drastically and whose relationships might be mediated by a myriad of factors including expectations, services delivery, ICT use and preference, generation, and rapport capacity of both client and counselor. In addition, all of these factors continue to evolve at an extremely rapid pace with computing power doubling approximately every two years and technology that continues to infiltrate increasingly more intimate aspects of our lives.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter begins by describing in more depth the theories of networking and communication used to explain the effect of ICT on its users. It then discusses studies supporting each of the theories as well as identifies trends within the field regarding these studies. Next, studies discussing the social and psychological effects of ICT use and preference on users are explored within the context of each theory. Then an argument is made for the rich-get-richer theory as the most likely explanation of ICT's effect on users based on the research. Next, research on the possibilities of addressing social skill deficits is discussed followed by implications for counseling. Online counseling is then discussed along with a brief overview of its state, efficacy, and ethical concerns. Penultimate is a discussion of the role of nonverbal information in communication and the challenges integrating this information in an ICT context. Finally, the relationship among social skills, therapeutic alliance, and therapy outcomes is discussed with concern for both client and therapist.

Theories of Communication and Networking

When reviewing the literature regarding social or interpersonal skills and information communication technology, three primary social theories appeared: social network, social compensation, and rich-get-richer (Kraut et al., 2002). Social network theory provides the basis for understanding how individuals maintain and use their social

resources. Social compensation and rich-get-richer theories attempt to explain how an individual's level of social competence affects how and to what extent he or she utilizes his or her social resources.

Social network theory posits that as people increase the size of their social networks, they are likely to increase their consumption of media that facilitate communication (Birnie & Horvath, 2002). Social network theory originated with the work of Mark Granovetter (1973), wherein he postulated the existence of strong and weak ties that connect individuals. Strong ties include family and close friends with whom the individual has a high degree of contact. Weak ties are composed primarily of acquaintances and people with whom the individual has only a low level of contact or knowledge. Individuals are seen in the context of their relationships to others and are judged in terms of their social capital (Granovetter, 1973). Social capital includes the nature, structure, and resources embedded in a person's network of relationships. Individuals are motivated to maintain and increase their social capital and are likely to do so in the easiest manner possible. According to social network theory, as people increase the number of social contacts they possess, they use information communication technology (ICT) more frequently to maintain these ties and create new ones.

Another study that illustrated how social network theory plays a role in the development of social capital was conducted by Beckenhauer and Armstrong (2009) who examined older adults' use of ICT for social support. This study represented the qualitative portion of a mixed methods study that examined the normative aging process, communication, and quality of life in older adults. The authors found ownership of a computer and frequency of use was correlated with a larger social network, more frequent

communication, and higher perceived quality social relationships. Computer use also facilitated the reconnection with distant or past relationships. It is important to note that their study addressed neither the social skills of the users nor the relative frequency of face-to-face communication. It is also significant that the population of the study (seniors) might have limited ability to engage in more traditional forms of communication based on health or distance and, consequently, might have benefitted more from ICT.

Another aspect of ICT, texting from mobile phones, has been highly criticized for possible detriments to the language and grammar development of frequent users, especially teenagers. In an effort to make an empirically supported statement, Kemp (2011) reviewed some of the literature regarding literacy and texting and found little evidence that texting caused a deficit in reading or writing skills of users, contrary to some press coverage. Kemp stated he viewed the relationship as positive between texting and literacy; in some instances, texting might actually have a positive effect on some literacy-related skills for users. Kemp called for further research in this area to keep up with developing technology. Smith (2011) also stated that texting helps teens in three areas: building relational bonds, learning communications skills, and learning technical skills. Both of these studies provided support for social networking theory as the mechanism for using ICT to increase one's social capital. These studies made no considerations for the characteristics of individual users and how ICT might have different effects on individuals who differ in terms of social skills; therefore, they offered no evidence relevant to the rich-get-richer or social compensation theories. Kemp and

Smith provided evidence against the popularly held belief that texting has a unilaterally

negative effect on literacy and social skills of users.

Social compensation theory is the idea that people will compensate for deficits in

their social abilities by seeking media that do not require skills they lack. In essence,

they compensate for their weaknesses by avoiding them. Kraut et al. (2002) described it

as follows:

> A "Social Compensation" model predicts that those who are introverted or lack
> social support would profit most from using the Internet. People with fewer
> social resources could use the new communication opportunities on-line to form
> connections with people and obtain supportive communications and useful
> information otherwise missing locally. (p. 58)

In the context of this study, social compensation theory meant individuals with

low social skills, specifically those used in interpersonal interaction, who avoid face-to-

face and voice communication and seek out ICT due to their ability to communicate

within a technological context that does not exploit their interpersonal weaknesses.

Alternatively, Kraut et al. (2002) theorized that for people with strong face-to-face social

ties, using the Internet might actually interfere with those relationships. While people

with social skill deficits might see an increase in their social network, individuals who

already have strong local ties might see these relationships suffer when they integrate a

new medium, ICT, into their social network system (Kraut et al., 1998). It is important to

note that the study upon which his statement was based involved giving Internet access to

individuals who did not previously have it; as such, it might have disrupted the usual

social interaction methods these individuals used to maintain their social networks, which

might account for the negative effect seen in the adoption of ICT by individuals with high

social skills. The effect might be different on individuals who already had a familiarity with the social use of ICT.

The rich-get-richer theory is a somewhat colloquial term in the literature that refers to the idea that people with social skill advantages will increase those advantages and those with social skill deficits will be more disadvantaged. Kraut et al. (2002) described it as follows:

> A "Rich Get Richer" model predicts that those who are highly sociable and have existing social support will get more social benefit from using the Internet. Highly sociable people would reach out to others on the Internet and use the Internet especially for communication. ...If so, these groups would gain more social involvement and well-being from using the Internet than those who are introverted or have poor network relations. (p. 58)

In the context of this study, this means individuals with high social skills use ICT frequently to maintain and increase their social ties and do not experience any detriment in social skills from this increased use. Conversely, individuals with low social skills, or social anxiety, use ICT frequently to avoid that anxiety or personal interaction and use ICT as an alternative method to gain the requisite social support. These individuals likely see their social skills continue to decrease despite their social contact through ICT.

The literature is still divided on the effects of ICT on social skills and related concepts; the following discussion identifies research supporting both the rich-get-richer and social compensation theories.

Social Compensation

Birnie and Horvath's (2002) study on Internet communication examined sociability and the frequency of traditional social behaviors (frequency and intimacy of traditional social contacts and interpersonal interactions) and how they were related to the frequency of Internet social communication. The authors investigated traditional social

behaviors, sociability, and shyness in terms of frequency and intimacy in 115

undergraduate students. The authors predicted and their results showed online social

communication seemed to support and complement traditional social behaviors rather

than being a substitute or "compensatory medium for shy and socially anxious

individuals" (p. 17). Their results showed an individual's frequency and intimacy of

traditional social behaviors was generally similar to his or her online social interactions

and these findings seemed to be evidence against social compensation theory. However,

the authors noted shyness was associated with increased intimate communication online

and concluded Internet communication and traditional communication were not

"functionally equivalent" (p. 17). This finding provided evidence for social

compensation theory.

While many studies have touted the positive aspects of ICT, large numbers of

studies warned of the dangers or at least negative correlations with ICT use. In a study of

over 600 children and adolescents, Bonetti, Campbell, and Gilmore (2010) examined the

relationship between self-reported social anxiety, loneliness, and frequency of online

communication. Congruent with social compensation theory, the authors found

participants with high scores on loneliness and social anxiety scales used online

communication for personal and intimate topics significantly more than those with low

scores. The authors hypothesized this was because individuals with high scores were

using online communication to compensate for weak social skills and facilitated

necessary self-disclosure and identity exploration in an online context. The authors also

specified future research should focus on whether the social needs of individuals with

weak social skills were actually being met by the online environment. Their study

provided support for the view that individuals with social skill deficits utilized ICT to compensate for those deficits; however, it did not provide evidence that the individuals experienced a positive effect from doing so and thus only marginally supported social compensation theory.

Bonebrake (2002) found correlations between loneliness and social skills with frequency of online communication similar to those found by Bonetti et al. (2010). Bonebrake also found individuals with lower social skills were more likely to find and interact with people with similar social skills than were individuals with high social skills and were more likely to experiment with new online personas. Caplan (2005) predicted individuals with lower social skills would exhibit a preference for computer mediated communication, which would represent a functional alternative to face-to-face interaction. Caplan's results instead showed an individual's preference for online interaction better explained "the degree to which [participants] reported an inability to control impulses to use [ICT]" (p.731). This meant individuals who preferred online social interaction over face-to-face interaction might experience less ability to control their impulses to use the Internet for social communication rather than a simple voluntary preference for the medium based on their social skills. Previously, Caplan (2003) found that while excessive Internet use was associated with negative outcomes in an individual's social life, compulsive Internet use, preference for online social interaction, and withdrawal were far stronger predictors of negative outcomes. This suggested simple high frequency Internet use might not be as useful in predicting problematic results from Internet use as other cognitive factors. The above studies provided support for the social compensation hypothesis and highlighted the trend of individuals with poor social skills

using online communication not only more frequently but impulsively. It is possible it was the impulsivity or another characteristic of the individual that was responsible for the negative outcomes of ICT use rather than pure frequency of ICT causing the negative outcomes.

In a study examining undergraduates' Internet use based on interpersonal skills, personality, and emotional intelligence, frequency of Internet use was found to be associated with loneliness and adherence to idiosyncratic values and, to a lesser extent, poor emotional intelligence and a poor balance between work and leisure (Engelberg & Sjoberg, 2004). Idiosyncratic values were viewed by the authors as representing a lower level of social adaptation and were expected in the high frequency use group. "We also assumed that social integration should benefit from adhering to a mainstream value system, and therefore we additionally expected to find that frequent users would deviate in their values from the sample as a whole" (Engelberg & Sjoberg, 2004, p. 42).

High frequency Internet users were found to have significantly more loneliness, more values that deviated from the norm, and lower emotional intelligence. Congruent with Engelberg and Sjoberg's (2004) assumptions that these characteristics were a disadvantage in social interactions, high frequency users were found to have less elaborate social networks. Interestingly, personality was not found to be a factor in Internet use (Engelberg & Sjoberg, 2004). Extroversion also had a strong negative correlation with loneliness--the more introverted or less extroverted an individual was, the higher his or her score on the loneliness scale. Emotional intelligence, as measured by this study, was related to social skills and the ability to meaningfully engage with others; as such, it provided evidence in support of social compensation theory.

Rich Get Richer

In 1998, Kraut et al. identified the Internet paradox, a phenomenon that has since been widely examined. The authors described this paradox as the fact that people use the Internet for increased communication, which normally has a positive effect on social involvement. However, in their 1998 study, it was found to have a negative effect. The study offered free Internet connections and accompanying hardware to 73 families (169 individuals) who previously had none in exchange for participation in the study. These families were followed for two years and were given questionnaires that asked about their levels of social involvement, psychological well-being, and Internet use. Contrary to the authors' predictions, Internet use was found to have a negative effect on psychological well-being and social involvement. While these results were compelling, the study was criticized because it lacked a control group and the sample studied had significant community involvement. The requirements of the study to engage in online communication might have disrupted current social ties, which might explain the negative effect found.

In their 2002 reexamination of this paradox, Kraut et al. included a control group and his chosen sample included people already using ICT. Eventually the control group, which had not previously had Internet access, had to be combined with the other group due to the fact that 83% of the control group obtained Internet access independently. Kraut et al. also examined individual differences in extroversion and perceived social support:

> Extraversion is the tendency to like people, to be outgoing, and to enjoy social interaction; it is a highly stable personality trait, predictive of social support,

social integration, well-being, and positive life events (e.g., Magnus et al., 1993; Von Dras & Siegler, 1997). The perception of social support refers to feelings that others are available to provide comfort, esteem, assistance, and information or advice; perceived social support buffers the effects of stress (e.g., Cohen, 1988). (p. 58)

Kraut et al.'s (2002) study found although the negative effects dissipated, two distinct groups within the samples emerged: introverts and extroverts. For extroverts, as Internet use increased, community involvement increased and loneliness decreased. For introverts, the results were the opposite--as Internet use increased, community involvement decreased and loneliness increased. Kraut et al. found a similar pattern with regard to well-being: "extraverts who used the Internet more reported increased well-being, including decreased levels of loneliness, decreased negative affect, decreased time pressure, and increased self-esteem. In contrast to extroverts, an increase in Internet use showed declines in well-being for introverts (p. 64). Overall, extroverts experienced positive results from using the Internet and introverts negative results.

As traits alone, introversion and extroversion do not indicate the quality of an individual's social skills. However, in 2001, Lieberman and Rosenthal found introverts were less skilled at multi-tasking, which affected their ability to perform nonverbal decoding during social interactions. Nonverbal decoding was identified by the authors as integral to face-to-face social skills:

Specifically, a number of theoretical frameworks suggest that extraverts are more socially skilled than introverts, in part because they are better decoders of nonverbal communication (Allport, 1924; Eysenck, 1967, 1990; Jung, 1923/1971; Sapir, 1958). …Given that a large part of social communication is nonverbal, extraverts are prime candidates to be superior nonverbal decoders. (Lieberman & Rosenthal, 2001, p. 294)

Lieberman and Rosenthal (2001) manipulated participants' focus on either conversation maintenance or reflected appraisal (i.e., what does my conversation partner

think of me?) during a conversation with a confederate. Extroverts were able to perform equally well in both conversation maintenance and reflected appraisal regardless of which was the focus. Introverts performed as well as extroverts on the task they were told to focus on and experienced performance deficits on the secondary task. The authors described this as a multitasking deficit for introverts. Introverts were able to perform conversation maintenance or reflected appraisal as well as extroverts but only when the task was primary. When reflected appraisal was the secondary task, introverts experienced the most performance decline, indicating when they focused on conversation maintenance, their ability to assess the nonverbal cues from their partner significantly decreased. It is possible multitasking might represent a vital social skill for face-to-face communication. This might explain why some individuals are drawn to ICT as a form of communication; both because of its asynchronous nature (allowing time to perform reflected appraisal without the immediate pressure of conversation maintenance) and because of the greatly lessened amount of nonverbal cues to which they must attend while performing conversation maintenance.

The deficits introverts experience in the nonverbal and multitasking domain could be termed social skill deficits. Therefore, Kraut et al. (2002) provided evidence against social compensation theory. Social compensation theory expects only introverts or those with lower social skills to benefit from Internet use and either no change or a detrimental effect on users with adequate social skills. The rich-get-richer model was supported by the aforementioned study because the more socially skilled group reported positive effects from ICT use and the less socially skilled group experienced negative effects.

The presence of distinct groups of high frequency users with different effects from ICT use was mirrored by Ishii (2006).

Ishii (2006) conducted a large, nationwide survey in Japan, where he examined the relationships among frequency of ICT use, network, number of friends, and social skills. According to Ishii, Japan offered a unique perspective on technology because Japan has had widespread use of mobile phones and other ICT longer than the United States and therefore effects of ICT could be seen more easily. Text messaging and email from mobile phones have become nearly indistinguishable in Japan and were referred to collectively in the study as "Mobile Mail." This study was significant not only because it was one of the few to incorporate many aspects of ICT in one study (text messaging, PC e-mail, mobile and landline voice) but also because the author made an important distinction between frequency of ICT use and relative *preference* for ICT.

Using a self-administered questionnaire, Ishii (2006) surveyed 3,123 participants between the ages of 14 and 71. Ishii's study used relative preference because he found simple frequency of use was not an accurate predictor of social skills for ICT users. The data showed the presence of two distinct groups of high frequency users: those who had high social skills and used ICT to maintain and expand their social networks and those who had extremely low social skills and used ICT as a method to get social support without face-to-face interaction. Ishii found pure frequency of use was inadequate to describe the relationship between social skills and ICT use; one must have knowledge of an individual's preference for one communication medium over another in order to determine the effect ICT has on its user. Ishii's study found participants who had a relative preference for ICT over face-to-face and were in the high frequency of use group

had poor social skills and psychological adjustment relative to both low frequency users and high frequency users who indicated less preference for ICT. While Ishii did not term them thusly, these distinct groups were reminiscent of Lieberman and Rosenthal's (2001) results regarding the distinctly different effects ICT had on introverts and extroverts.

Similarly, Liu and Peng (2009) examined the online gaming community and found dependency on massive multiplayer online games (MMOGs) was predicted by preference for a virtual life and was negatively related to social-control skills (self-presentation, role taking, and impression management). Use of relative preference for ICT, rather than pure frequency, was an emerging concept in the ICT literature. The idea of two distinct groups of high frequency users with vast differences in psychological adjustment and social skills gave heavy support to the rich-get-richer hypothesis.

Social Effects of Information Communication Technology

Schott and Selwyn (2000) explored some of the views the public has on ICT users, specifically the stereotype of the frequent computer user as "a male, socially inadequate, and isolated individual" (p. 291). They viewed this stereotype as a cause for many students to avoid contact with ICT, which they viewed as a positive, pro-social medium. The authors examined gender and social competency elements related to computer use frequency in 12th grade students in comprehensive schools in the United Kingdom. No significant differences were found between males and females in the level of ICT use. High ICT users were found to have similar levels of global self-worth as low ICT users and there was no difference in social competency between groups. The authors did a series of follow up interviews and found the aforementioned stereotype still existed in the low ICT use group. The authors concluded ICT had little effect on the social

competency of users and even argued it might have a positive effect on social skills due to the possibility of using technology for social connections. While this study's results seemed to support a positive, additive view of ICT use and social competency, it is important to contextualize this study in the rapidly changing field of ICT. This study's mean age was 16 years 9 months and the study itself occurred four years before the advent of Facebook. This population might represent early adopters of technology who already had a solid foundation of social skills and, as such, might not be expected to experience the same effects as more recent samples of individuals who rely on ICT for a larger portion of their social interaction.

Schiffrin et al. (2010) put forth an alternative version of the Internet paradox--one in which people increasingly use the Internet for communication even though they perceive it to be less beneficial than face-to-face interaction. In their study, they found not only was Internet communication common and people perceived it as less useful than face-to-face interactions, it was also associated with decreased well-being. Well-being in their study was assessed by the Satisfaction with Life scale (Diener, Emmons, Larsen, & Griffin, 1985), which asked participants to rate their agreement to questions such as "In most ways, my life is close to my ideal" on a Likert scale. Although not explicitly stated, their study addressed people's relative preference for ICT even in the face of conflicting attitudes about its effect on psychological health and well-being.

Some researchers attempted to combat the reported negative effects of ICT by examining the impact more traditional (face-to-face or voice communication) means of communication had on personal characteristics. Iacovelli and Valenti (2009) examined Kraut et al.'s (2002) Internet paradox by conducting a study in which Internet users'

likability and rapport were rated by individuals conversing with them on the telephone. Individuals were given a cooperative and adversarial task and asked to communicate with another person via phone and then rate their partner's likability and rapport. Frequent Internet users were found to have lower ratings of rapport and likability, which the researchers attributed to the lack of social skills learned from face-to face-interactions. This study had powerful implications for the current study in that individuals' use of ICT were correlated with negative social impressions, i.e., some aspect of ICT, either the characteristics of individuals that used it or an effect of the medium on the individual, might have a deleterious effect on the social skills of frequent users.

Matzat (2010) examined online communities to see if strictly virtual communities exhibited significant differences in member trust, free rider behavior (individuals who took advantage of group membership but did not actively participate in the group), and membership stability from communities that also incorporated some face-to-face communication (i.e., mixed groups). Matzat found mixed communities had less free rider behavior and more member trust but membership stability was unaffected. The author argued that offline interactions had a positive mediating influence on online relationships. This study demonstrated off-line (i.e., face-to-face) interactions reduced problems of online-sociability and facilitated online-information sharing, which lent credence to the idea that face-to-face interactions provided a vital social or interaction component missing in purely virtual interactions. Thus, an individual with a strict preference for online interaction might experience the same deficits apparent in Matzat's groups and might benefit in the same way from increased offline interactions. These studies were

also important because they examined the correlation of social skills or pro-social

behavior as an additive factor rather than a deficit.

Effect on Users

Harman, Hansen, Cochran, and Lindsey (2005) also examined the frequency of

Internet use in relation to social skills, self-esteem, social anxiety, and aggression. The

authors also examined online faking behaviors of participants, e.g., falsifying aspects of

oneself (e.g., age). Unlike previous studies, the authors did not find an effect on

measured characteristics for frequency of use. There was a significant correlation among

faking behavior and poor social skills, lower self-esteem, higher social anxiety, and

aggression. It is possible frequency of use encompassed other factors that might have

better predicted poor social skills and that frequency of use by itself might not have been

as maladaptive as some studies made it seem.

When reviewing the literature, one could find evidence to support both social

compensation and rich-get-richer theories. As mentioned above, many studies identified

effects of ICT on individuals with different levels of social skills and it appeared ICT

could be both beneficial and detrimental to its users. However, studies that supported

social compensation (Birnie & Horvath, 2002; Bonebrake, 2002; Bonetti et al., 2010;

Caplan, 2005; Engelberg & Sjoberg, 2004) only supported the concept that individuals

with lower social skills were drawn to or utilize ICT more frequently than did individuals

with higher social skills. Social compensation theory necessitates that individuals with

lower social skills use ICT more often and are actually successfully compensating for

their social skill deficits through these media. The above studies did not provide

evidence for the efficacy of this compensation and did not support social compensation

theory. Birnie and Horvath (2002) echoed this sentiment in their statement that electronic communication and traditional communication were "not functionally equivalent" (p. 17).

Due to the recent identification of the importance of ICT preference over frequency and studies like Harman et al. (2005) and Caplan (2003) that postulated other factors within frequency might account for negative effects on social skills, this researcher found the dichotomous views of social network theory and social compensation must be integrated into the more likely "Rich Get Richer" hypothesis. In this view, individuals with lower social skills might utilize ICT more frequently than those with higher social skills although they generally experienced a negative effect from such use. These individuals attempted to use ICT in a compensatory manner. However, this effort was often ineffective, essentially reinforcing their social skill deficits by avoiding traditional social interaction. Individuals with greater social skills might utilize ICT frequently, allowing them to maintain a larger social network than they could without ICT. These individuals tended to experience positive effects from ICT.

It is essential to note here that most studies cited above comparing the rich-get-richer and social compensation theories were focused on how an individual's level of social skill was correlated with his or her use of ICT. Thus, as currently understood, social compensation holds that individuals with lower social skills use ICT more frequently to compensate for their social deficits. Whereas, rich-get-richer holds the opposite belief--individuals with high social skills use the Internet more frequently to maintain larger social networks. However, they were discussed above not only in terms of their frequency of use but in reference to their effects as well. This was because it was

the belief of this researcher that based on the literature, a more important distinction needed to be made between the two theories--that of social and interpersonal efficacy. As already noted, pure frequency of ICT use did not accurately predict the effect on ICT users (Ishii, 2006). Due to the presence of different groups of high frequency users with distinctly levels of social skill, research in the field would be better served to theorize about the *effect* of ICT use rather than correlations between frequency and user attributes.

This study expanded the current definition of social compensation and rich-get-richer theories to include the effects on users. Social compensation in this context focused on the effective, successful compensation for social deficits by low socially skilled individuals using ICT. Rich-get-richer in this context assumed the full meaning of the colloquial phrase: "The rich get richer and the poor get poorer," meaning both low and highly socially skilled individuals will take advantage of ICT due to its convenience. However, low socially skilled individuals will experience largely negative effects from ICT and find it reinforces their social deficits while highly socially skilled individuals will experience positive effects from ICT and find it augments their social advantages by providing a broader context of use.

The trend of high-frequency, low socially skilled ICT users experiencing social skill deficits is alarming, particularly when one considers the rapid pace and increasingly widespread adoption of ICT. Mental health practitioners should be concerned with the self-reinforcing nature of ICT use by individuals with social skill deficits; as they experience discomfort in social interaction, they increase their use of ICT, thereby reducing their amount of face-to-face interaction, allowing little opportunity for further offline social skill development, and reinforcing the use of anxiety-ameliorating ICT.

Fortunately, there is some evidence that social skills could be improved. Current social skill training programs usually focus on those with more serious mental illnesses, developmental delays, or children (DiGennaro-Reed, Hyman, & Hurst, 2011; Laugeson, Frankel, Gantman, Dillon, & Mogil, 2012; Lecomte et al., 2008). Nelis et al. (2011) provided a link to the current study by evaluating the effectiveness of an emotional competence training program on healthy undergraduate students.

Social skills often get included under the umbrella of emotional competence/ intelligence because to interact successfully with another individual, it is essential to have basic skills in identifying, expressing, understanding, regulating, and using emotions (Petrides & Furnham, 2003). Nelis et al. (2011) found an interactive training (18 hours followed by 12 email contacts over six weeks) focused on "understanding emotions, identifying one's own emotions, identifying others' emotions, regulating one's own emotions, regulating others' emotions, and using positive emotions to foster well-being" (p. 356) increased participants' self-reports of social relationship quality as well as extraversion scores. Thus, training in emotional competence in a healthy undergraduate population was shown to have a positive effect on the social relationships of participants; social skill played an integral role on extroversion, which, as noted earlier, might indicate a higher level of social skill and social comfort (Lieberman & Rosenthal, 2001). It is possible mental health providers could include elements from such a training program in therapy, especially with individuals who might be experiencing social skill deficits.

The Nonverbal Deficit

Communication researchers have long argued that effective human communication is not limited to the verbal area alone and nonverbal communication

plays a large part. Just how large a part is still the subject of debate in the field. Early proponents of nonverbal dominance stated nonverbal communication might constitute as much as 93% of communication of feelings and opinions (Mehrabian, 1972). Other researchers (Friedman, 1978) argued the dominance of nonverbal communication has been greatly overstated and nonverbal communication might have a more contributory than primary role.

Trimboli and Walker (1987) argued that researchers on both sides of the issue are making conclusions based on biased methodology. The authors stated the supposed "dominance" of nonverbal communication could be manipulated by the presence of "camouflage," which they defined as the presence of naturally occurring consistent messages. By varying the presence and frequency of messages that were consistent both in content and conveyance (verbal and nonverbal), the authors were able to vary the perceived amount of nonverbal reliance in participants. When the amount of camouflage was low (i.e., small percentage of consistent messages), the reliance on nonverbal cues was high, whereas when camouflage was high, the reliance on nonverbal information was greatly reduced. It is possible that when faced with a lack of consistent messages (camouflage), a person chooses to rely on nonverbal cues possibly because they might be viewed as harder to fake.

Trimboli and Walker (1987) concluded the dominance of nonverbal cues in communication was overestimated in much of the literature although it still played an important role. Interest in nonverbal cues began to wane in the 1980s with the increasing popularity of the cognitive movement. More recent psychological research tends to regard nonverbal communication as secondary to verbal communication while research in

the communication fields tends to regard it is as primary (Hecht & Ambady, 1999).

Perhaps the most useful contribution of nonverbal communication is its role in the

formation of the therapeutic alliance. Tickle-Degnen and Gavett (2003) noted nonverbal

communication has three primary elements in formation of the therapeutic alliance:

attentiveness, positivity-negativity, and coordination. Attentiveness refers to each

individual's capacity for focusing attention on the other: is the therapist nonverbally

attending to the client and does the client show interest in therapy? Positivity-negativity

refers to how client and therapist react to each other: do their postures, gestures, and

intonation convey openness or discomfort, hostility or compassion? Coordination refers

to the extent to which individuals act and react in kind with each other: do they mirror

facial expressions, posture, gestures, or other nonverbal information to convey similarity

or reciprocity? Given these elements of nonverbal communication, it is clear any form of

therapy in an ICT medium that precludes nonverbal communication also lacks vital

information and tools important to the establishment of a strong working alliance. This

does not mean an alliance cannot be created without nonverbal cues; the proliferation of

successful online counseling programs argues this is possible. While the field has not

reached a consensus about the portion of the contribution nonverbal cues make to human

communication, it is clear nonverbal cues are important.

Nonverbal communication was important in the context of this study due to its

nearly complete omission in ICT. Nonverbal communication is a large source of

communicative data and modern modes of communication largely eschew this fact.

Consumers of ICT have long noted the incomplete nature of text-only communication

and have made attempts to rectify it with Emoticons. An emoticon (2011) is defined by

Merriam-Webster as "a group of keyboard characters [such as :-)] that typically represents a facial expression or suggests an attitude or emotion and is used especially in computerized communications (as e-mail)" (para. 1). Emoticons are used to supplement text-only communication and are surrogates for nonverbal data in electronic communication media. Shao-Kang Lo (2008) assessed the role of emoticons in informing text-based communication as quasi-nonverbal cues. Lo manipulated the presence and consistency of emoticons with messages within three groups. The control group received text-only communication, another group received text communication with appropriately matched emoticons, and the third group received text communication with opposite meaning emoticons. Lo found without the presence of emoticons, participants had greater difficulty determining "correct emotion, attitude, and attention intents" (p. 597). The presence of emoticons greatly changed the receiver's perceptions of the message; opposite-meaning emoticons created the greatest difference between receiver perceptions and the actual intent of the message.

While the role of nonverbal communication might have been overestimated in the past and in popular psychology, it is clear nonverbal communication has an important role in communication and becomes a necessity in text-based communication as seen by the power and influence of emoticons. Any electronic counseling medium taking place without the aid of video would need to make use of quasi-nonverbal cues such as an emoticon to aid both the sender and receiver in effective, affectively accurate communication.

Role of Preference

This study enhanced the literature regarding social skills and ICT by examining the relationship between ICT use/preference and the social skills of users and providing data that might help elucidate important measurement differences between ICT *use* and ICT *preference*. It also provided a unique perspective of possible social skill deficits by comparing a person's ICT preference and his/her level of social skills to actual performance of a social task across three different communication media.

Joinson (2004) examined the link among self-esteem, interpersonal risk, and preference for email and face-to-face communication in a number of interpersonal tasks (asking for a date, self-disclosure, asking for a raise, and lying). This study showed that regardless of the task, individuals with a high level of self-esteem exhibited a preference for face-to-face communication while individuals with low self-esteem preferred email communication. For both esteem levels, as the degree of interpersonal risk increased, the preference for email communication increased.

Joinson's (2004) study had two important implications for the current study. First, self-esteem and social skills were shown to be positively correlated in a number of studies (Gable & Shean, 2000; Jenkins, Goodness, & Buhrmester, 2002; Williams & Galliher, 2006), suggesting similar effects on communication performance might be seen between individuals with high and low social skills as seen in Joinson's study of high and low self-esteem. Essentially, individuals with high social skills were likely to have higher ratings of likability and rapport in face-to-face interactions than those with lower social skills. Second, a face-to-face interaction could be considered an activity with a high degree of perceived interpersonal risk, largely due to the level of self-disclosure

necessary, the synchronous nature of the communication, and the inclusion of nonverbal information; as such, it might affect an individual's performance in different interaction media with differential effects for higher and lower socially skilled groups (Joinson, 2004). This assertion was supported by the evidence that "individuals tend to disclose more, less socially desirable information about themselves online compared to equivalent [face-to-face] contexts"(Joinson, 2004, p. 472; see also Barak, 1999; Barak & Fisher, 2003; Birnie & Horvath, 2002; Bonetti et al., 2010).

This study examined this researcher's definition of the rich-get-richer theory with regard to the effect ICT use has on the social skills of users. By incorporating a performance task, it was possible to assess if individuals with a certain ICT preference and certain scores on measures of social skills actually exhibited functional differences in the interaction task; if these differences existed, in which medium the difference was most pervasive was compared to other participants with different levels of ICT use/preference and social skills. For example, a participant would support the rich-get-richer theory if he/she had low social skills, high ICT preference, and rated lower on Total Likability scores across both communication conditions. High socially skilled individuals would support the rich-get-richer hypothesis if they endorsed high ICT use and exhibited higher Total Likability across both communication conditions. For high socially skilled individuals, it was possible ICT use might be high while ICT preference might be lower; this might be due to the fact that highly social people utilize ICT frequently to maintain their social networks but do not necessarily prefer ICT interaction over FTF interaction. Given this, it would be important to note that just because ICT

preference was low, ICT use might not be low due to the globally increased social

activity of highly social individuals.

This hypothesis was supported by two seemingly contradictory studies.

Valkenburg and Peter (2007) found less socially anxious (presumably more socially

skilled) individuals utilized an online dating service more frequently than those with

higher social anxiety. Poley and Luo (2012) in a similar study of online dating argued

their results contradicted those of Valkenburg and Peter due to their findings that

individuals with lower social competence used and preferred online dating more than

socially competent people. However, it was this researcher's hypothesis that both studies

actually supported the rich-get-richer theory and their findings represented the

hypothesized two distinct groups of ICT users. Both exhibited high frequency of ICT

communication but it was the relative preference and corresponding level of social skill

that was of utility.

Social Skills

A discussion of social skills would be incomplete without a review of the larger

related concepts. The literature on an individual's ability, capacity, and functional

implementation of emotional and social elements utilized such a variety of terms that

some common definitions must be established. Generally, social functioning is

considered the umbrella term under which other related terms are found. Social

functioning "implies overall performance across many everyday domains (e.g.,

independent living, employment, interpersonal relationships, and recreation)" (Yager &

Ehmann, 2006, p. 48). Under social functioning is social skills and social cognition.

Social cognition (in the context of a social setting) refers specifically to the mental

processes used and is defined as "those aspects of higher cognitive function which underlie smooth social interactions by understanding and processing interpersonal cues and planning appropriate responses" (Scourfield, Martin, Lewis, & McGuffin, 1999, pp. 559). Social skills represent an individual's abilities and have been defined as

> the abilities to (a) accurately select relevant and useful information from an interpersonal context, (b) use that information to determine appropriate goal-directed behavior, and (c) execute verbal and nonverbal behaviors that maximize the likelihood of goal attainment and the maintenance of good relations with others. (Bedell & Lennox, 1997, p. 9)

Note the definition quoted above is not the same as the one operationally defined in Chapter I. However, it is essentially equivalent to Riggio's (1989) definition with the exception that Riggio specifically noted these abilities were in emotional and social contexts, which Bedell and Lennox did go on to describe in their article. Social intelligence (SI) and emotional intelligence (EI) are terms related to the concepts described above and are often used interchangeably or said to be one construct (Bar-On, 2005; Bar-On, Tranel, Denburg, & Bechara, 2003; Kobe, Reiter-Palmon, & Rickers, 2001). Crowne (2009) argued this was a mistake--each are distinct concepts in which SI is superordinate to EI. After an exhaustive review of the different definitions and concepts associated with EI and SI in the literature, Crowne determined EI was best defined as "the recognition and understanding of emotions not only in oneself, but in others as well as an ability to effectively use this emotional information in thought processes and appropriate actions" (p. 150). Social intelligence is defined globally as "an ability to interact effectively with others" and incorporates "knowledge of the social situations and the skill to perceive and interpret the situations accurately, that lead one to successfully behave in the situation" (Crowne, 2009, p. 150). The argument that SI is

superordinate to EI centers on the idea that all interactions require SI but not all interactions require EI. That is to say all interactions require an individual to have social knowledge, understanding, receptive, expressive, and control skills while not all interactions require one to have an understanding of emotions in oneself and others. The concepts of flexibility and control of emotional and social information are considered part of SI and thus superordinate to EI.

Based on Crowne's (2009) definitions, social cognition and social skills are contained within SI, which could be said to be similar to social functioning. The exception is social functioning is a broader definition to include not only social interaction contexts but any context that has a social element such as those exemplified above. For the purpose of this study, the focus was on social skills because the researcher was concerned with how functional, ability-based social elements (social skills) were affected by ICT. Larger concepts such as EI and SI, while relevant, were beyond the scope of this study.

This study used Riggio's (1989) three factor model of social intelligence. Riggio's three factor model came out of research that suggested social intelligence was more than simply being able to "read" people (Marlowe, 1986; O'Sullivan, 1983). When Riggio referred to SI, he meant the more limited, ability-based definition of SI rather than Crowne's (2009) more recent and encompassing version and was referred to in this study as social skill. Thus, social skill was expanded to include accurately understanding and interpreting the emotions of others, understanding and effectively expressing one's own emotions, and successfully monitoring and regulating felt emotions. This was commensurate with this study's operational definition of social skills. The ability to

detect emotional states in others, one of the characteristics EI and social skills

encompass, has been shown to predict relationship well-being (Carton, Kessler, & Pape,

1999), popularity and academic achievement in adolescents (Meijs, Cillessen, Scholte,

Segers, & Spijkerman, 2010; Nowicki & Duke, 1992), and positive marital functioning

(Noller, Feeney, Bonnell, & Callan, 1994). Individuals with strong social skills also tend

to receive more social support and rate themselves higher on self-report measures of

psychological adjustment (Riggio, Watring, & Throckmorton, 1993). Secure attachment

style is also correlated with strong social skills (Dereli & Karakus, 2011). Riggio,

Throckmorton, and DePaola (1990) also found socially skilled individuals were more

likely to score higher on self-report measures of self-esteem.

It is clear that social skills can have an impact on an individual's life including

perceptions of self-esteem and well-being as well as an individual's popularity,

psychological adjustment, and social support. Technology and communication media

that affect an individual's social skills might also be indirectly affecting these areas of an

individual's life. The effects of such a technology should be explored.

Social Skills, Likability,
and Rapport

A person's level of social skill can have strong effects on how that person is

perceived by peers. Individuals who report social anxiety are more likely to be perceived

as less likeable by their peers in face-to-face social interaction than individuals without

social anxiety (Voncken &Dijk, 2013). Socially anxious individuals can be seen as

having a lower level of social skill than those without anxiety due to comfort and

perceived ability to perform in a social context. Children who exhibit more prosocial

behaviors (i.e., high social skills) are seen as more likeable and preferred by their peers

when compared to children with less prosocial behaviors (Gülay, 2011). Rapport is a related concept and its relationship to social skills is similar; rapport is negatively related to social inhibition (Iacovelli & Valenti, 2009). This suggests individuals who are socially inhibited or display lower levels of social skill experience detriments in rapport during conversation tasks.

There was some inconsistency in the literature regarding the use of self-reported and peer-reported characteristics in social research. Recently, some evidence suggests peer ratings might be more accurate than self-ratings. Peer ratings of childhood characteristics including social withdraw and likability were found to be more predictive of adult big-five personality traits than self-ratings (Martin-Storey, Serbin, Stack, Ledingham, & Schwartzman, 2012).

Measure of Social Skills

Riggio's Social Skill Inventory (1989) was chosen for this study primarily because of its expanded age range of 14 years and higher. Other social skills measures such as the Social Skills Improvement System Rating Scales (Gresham & Elliott, 2008), the School Social Behavior Scales (Merrell, 1993), the Social Behavior Assessment Inventory (Stephens & Arnold, 1992), and the Waksman Social Skills Rating Scale (Waksman, 1992) all had age ranges that stopped before 18, none of which are useful in a college population. Measures such as the Cain-Levine Social Competency Scale (Cain, Levine, & Elzey, 1963) are used in specialized populations such as individuals with cognitive disabilities but were not applicable to this study. Table 1 compares various measures of social skills.

Table 1

Comparison of Social Skills Measures

Name of Measure	Types of Scores	Reliability	Validity	Age Ranges
Social Skills Improvement Systems Rating Scales	Parent/Teacher Rating	.74-.97		3-18
School Social Behavior Scales	Teacher/Therapist Ratings	.94-.98	.78-.90	5-18
Social Behavior Assessment Inventory	Teacher Ratings	.90-.94		5-14
Waksman Social Skills Rating Scale	Teacher/Therapist Ratings	.92		5-18
Cain-Levine Social Competency Scale	Parent Ratings	"high"		5-13
Social Skills Inventory	Self-Report	.94	.63-.85	14+

Social Skills and Therapy

This study also assessed the possible effect decreased social skills might have on psychotherapy--both for the therapist and the client who have high ICT use. Unfortunately, a significant lack of research specifically addressed pretreatment levels of social skills and those effects on the efficacy of therapy; however, many studies mentioned it as a possible effect.

Most of the research related to this topic was in the common factors literature, which was primarily focused on distilling the effective elements of psychotherapeutic

treatment of which Lambert's (1992) study was especially notable. He argued that client factors accounted for 40% of therapeutic change, which is addressed later, and the therapeutic relationship accounted for 30% of therapeutic change. This 30% was largely believed to be facilitated by the clinician who is supposed to establish this relationship by being "warm, attentive, interested, understanding, and respectful" (Strupp, Fox, & Lessler, 1969, p. 116). There was extensive literature on how the therapist could accomplish this and training programs have integrated the facilitation of these characteristics into their curricula. Of greater interest was how clients with deficient social skills could take full advantage of the therapeutic relationship and how their characteristics (40% of change) might affect therapeutic outcome.

Clarkin and Levy (2003) provided an excellent review of hard to find literature concerning client factors and how they influenced therapy. Some studies examined a client's prior interpersonal relationship patterns and the associated predictions for therapy. Piper, Azim, Joyce, and McCallum (1991) found the greater the relationship disturbance between a client and partner, the greater capacity a client had for forming a relationship with the counselor. They attributed this to emotional neediness and thought the client's need for emotional closeness facilitated relationship formation with the therapist. Several other researchers (Alpher, Perfetto, Henry, & Strupp, 1990; Clementel-Jones, Malan, & Trauer, 1990; Moras & Strupp, 1982) found good interpersonal functioning prior to therapy was predictive of a good therapeutic alliance and, in some cases, improved treatment outcomes. It was implied that prior interpersonal functioning had a link to the presence of well-developed social skills but a specific relationship was not identified.

More recently, Horvath, Del Re, Flückiger, and Symonds (2011) performed a meta-analysis exploring the relationship between therapeutic alliance and outcome and found a moderate correlation of .275, suggesting a significant therapeutic factor. DeRubeis, Brotman, and Gibbons (2005) maintained this correlation could be due to the therapist's ability to form an alliance or a client's level of social skill and attachment among other factors. Baldwin, Wampold, and Imel (2007) investigated this claim and found therapist variability in ability to form an alliance accounted for most of the correlation between alliance and outcome. Their study highlighted the importance of social skill in the formation of an alliance. Interestingly, the client's ability to form an alliance did not contribute significantly to outcome despite research supporting the weight of client factors (Norcross & Wampold, 2011). It is possible that while a client's ability to form an alliance is less important than the therapist's, it is equally important that a practitioner understand a client's interactional style and have the ability to augment his or her own style to suit that of the client.

Based on research by Walters, Solomon, and Walden (1982) and Piper et al. (1991), Clarkin and Levy (2003) postulated that clients who drop out of therapy might actually have healthier interpersonal functioning and drop out due to a lower need for closeness and intimacy, especially from the therapist, whereas clients who stay in therapy might have more significant pathology and a much stronger need for intimacy and emotional closeness from the therapist. They supported this view by citing Blatt and Ford (1994) wherein clients who made the most progress in therapy had the most dysfunctional interaction patterns at the start of treatment. Blatt and Ford argued this was likely due to those individuals' willingness to disclose and work on their issues. This

implied that with a decrease in social skills, therapists might see better therapy attendance and a rise in client census along with better therapeutic relationships. It was unclear whether this would lead to better outcomes and was counter intuitive in that a therapist does not expect a client with poor social skills to have an easier time forming relationships. More research is needed on the nature of poor social skills; the predictive factor might lie more in a client's attachment style and matching effect with the therapist than in a simple measure of social skills (DeRubeis et al., 2005).

Recent research has called for therapists to be mindful of their clients' characteristics, including social skills, and to tailor their therapy and interventions not only to a client's diagnosis but to his/her specific characteristics and preferences (Lambert & Barley, 2001; Norcross & Wampold, 2011). Norcross and Wampold (2011) specifically addressed a client's interaction style and described it as a significant variable with which the therapist must consider and work. This applied to the current study in that we must not only be aware of our clients' interaction patterns but must also consider their actual capacity for engaging in a social relationship (Clarkin & Levy, 2003).

As argued previously, ICT could have a significant impact on social skills and it is apparent a client's social skills have an impact on the outcome of therapy. However, this effect is not always certainly positive or negative; examples of both were found in the literature. The rising prevalence of ICT in daily life and the dominance of ICT in the social formation of upcoming generations make it imperative that we understand the increasing impact ICT will have on therapy itself.

Summary

This chapter began by describing the theories of social networking, social compensation, and rich-get-richer and studies that examined how each theory explained the effect of ICT on its users. Then it was argued the rich-get-richer theory most nearly explained ICT's effect on users based on research that supported generally positive effects on individuals with high social skills ("the rich get richer") and negative effects on individuals with low social skills ("and the poor get poorer"). Next, research addressing social skill deficits and methods for improving social skills was reviewed as well as implications for counseling. The role of preference for ICT or FTF and related psychological factors was discussed. Penultimate was a discussion of the role of nonverbal information in communication and the challenges of integrating this information in an ICT context. Finally, the relationship among social skills, therapeutic alliance, and therapy outcomes was examined with concern for both client and therapist.

CHAPTER III

METHODS

The purpose of this study was to examine the relationship among individuals' use of information communication technology (ICT), their level of social skills, and how they were perceived on Total Likability by their communication partner in two different communication media--text chat and face-to-face. Specifically, this study examined how an individual's preference for ICT in social communication over face-to-face interaction was related to his/her level of social skills based on Riggio's (1989) Social Skills Inventory. It also examined how well an individual's reported preference for ICT communication and level of social skills predicted his/her ratings of likability and rapport by a conversation partner.

This chapter begins with a discussion of the research questions that guided this study. Next, participant characteristics and the research design used are delineated. That is followed by a detailed discussion of the instruments used in the study. Next is an outline of the data collection and recruitment procedures that were utilized. Finally, the chapter explains the analyses used and provides hypotheses based on this study's research questions.

Volunteer participants were recruited from psychology, sociology, or First Year Experience classes at a medium sized, public Rocky Mountain university with an undergraduate population of about 12,000. Cohen's (1992) power analysis was used to

determine an appropriate sample size for this study. This study used a power level of .80 and a medium effect size of $f = .25$, which is commonly accepted for use in behavioral research (Chuan & Penyelidikan, 2006; Cohen, 1992). The statistical program G*Power 3 was used to calculate a target sample size of 128 (Faul, Erdfelder, Lang, & Buchner, 2007). One hundred twenty participants completed the testing materials with 55 identified as male and 65 identified as female. All participants ranged in age from 18-25 with the mean age of 18.8. The In-Text condition contained 61 participants while the In-Person condition contained 59 individuals; equivalency testing was used to assess initial group differences.

Research Design

This study utilized an experimental design that examined the relationship among ICT use, social skills, and performance on a social task. The social task had two different communication conditions and was designed to elucidate performance differences that might exist in different communications media. Condition I required participants to converse in person with a partner in the same room. Condition II required participants to converse over a text chat program using iPhones with a partner in a separate room. In both communication conditions, participants were randomly assigned into conditions and a conversation partner. They were asked to "get to know" their partner for a duration of up to 10 minutes. This was considered sufficient time as supported by Iacovelli and Valenti's (2008) study that demonstrated participants were able to rate communication partners on likability and rapport in two five minute tasks for a total of 10 minutes.

Instruments

To examine the relationship among ICT use, social skills, and performance on the social task, four measures were used: one measure that identified a person's level of social skills, a questionnaire that assessed the frequency of ICT use and demographics, a measure of likability, and a measure of rapport. Testing materials included

- Demographics and ICT Use Questionnaire (see Appendix A)

- Social Skills Inventory, Research Edition (see Appendix B)

- Likability Scale (see Appendix C)

- Rapport Questionnaire (see Appendix D).

Demographics and Information
Communication Technology
Use Questionnaire

On the demographics questionnaire, participants were asked about their level of ICT use and their preference for therapy media (see Appendix A). Deane, Podd, and Henderson (1998) compared one month self-report data of individuals using computer systems with electronic log reports and found self-report estimates were consistent with independent data collected electronically. This meant individuals were able to accurately assess their use of technology, which lent support to this study's use of a self-report questionnaire for ICT use. Information communication technology use was divided into short message service (How many hours have you spent text messaging in the last month?), social network (How many hours have you spent per week using social networking / chat websites in the last month?), voice phone calls (How many hours have you spent making phone calls in the past month?), and email (How many hours per week have you spent sending emails in the past month?). Email use was limited to sending due

to the number of fallacious or solicitous (also known as "spam") messages an individual might receive. Participants were also asked about their preferences for face-to-face versus ICT communication. In addition, the questionnaire included basic demographic information: age, sex, classification, and ethnicity.

Social Skills Inventory

Riggio's (1989) Social Skills Inventory (SSI) is a 90-item, self-report inventory that evaluates a person's perceived social skills in three major areas: expressivity, sensitivity, and control. Participants rated their perceived similarity to statements related to their social skills, e.g., "I am usually wary of strangers," on a 5-point Likert-type scale. The scale ranged from 1--*Not at all like me* to 5--*Exactly like me*. Each of the three areas was measured on emotional and social aspects, which yielded six domains. Higher scores in each domain indicated a higher level of competence in that area of social skills, e.g., high scores on emotional expressivity meant an individual was highly skilled at accurately and adequately expressing emotions. The total SSI score represented "a global level of social skill development indicative of overall social competence or social intelligence" (Riggio, 1989, p. 5). The SSI was norm referenced and provided five different levels of social skill--both for the full scale social skill score and for each subscale. Participants could achieve social skill scores of Low, Moderately Low, Average, Moderately High, and High. For the purposes of this study, scores were represented as a bimodal construct: Low and Moderately Low were represented as Low while Moderately High and High were represented as High. Scores on the SSI had reported internal consistency reliability estimates between .62 and .87; the Emotional Expressivity and Emotional Sensitivity scales for males were lower (.62 and .67,

respectively; Riggio, 1989). Two week test-retest reliability was reportedly strong (.81-.96) and the total SSI reliability was .94 on a sample of 549 of which 264 were male and 285 female (Riggio, 1989). Validity for the SSI was established by correlations with 29 other instruments including the Rosenberg Self-Esteem Scale (Rosenberg, 1965). Convergent validity was supported for the total SSI with 18 significant relationships, $r =$ .21-.64. The SSI's subscales showed several significant correlations ($r = .17$-.63) with the 16 Personality Factors Questionnaire (Cattell, Eber, & Tatsuoka, 1970). This study calculated the SSI's internal consistency reliability as $\alpha = .879$.

Cattell et al. (1970) performed a factor analysis to determine factor loadings. Due to the length of the instrument, items for each of the five scales were grouped into parcels of five items each, resulting in three validity coefficients for each scale. Subscale loadings coefficients were reported as follows: Emotional Expressivity (.82, .60, .72), Emotional Sensitivity (.70, .76, .78), Emotional Control (.85, .79, .72), Social Expressivity (.85, .63, .28), Social Sensitivity (.83, .85, .53), and Social Control (.84, .74, .78). Some concern was expressed about the low level of one of the Social Expressivity coefficients (.28) and the fact that only one factor analysis was performed. Kramer and Conoley (1992) suggested the six factor model might not be the best model and that a model with a smaller number of factors may work just as well (Kramer & Conoley, 1992). Since this study only used the overall SSI score, individuals' coefficient loadings were of less concern.

Likability Scale

Participants completed the Reysen Likability Scale (RLS; 2005) to assess the perceived likability of their partner in the communication task. The RLS is an 11-item

questionnaire assessing the perceived likability of an individual with whom one has interacted. Likability is generally described as a persuasion tactic and a scheme of self-presentation (Cialdini, 1993; Kenrick et al., 2002). Perceptions of likability are strongly tied to level of social skills (Kwon, Kim, & Sheridan, 2012); when combined with rapport, they are good indicators of a person's social abilities in an applied situation (Iacovelli & Valenti, 2009). The RLS contains items that assess a person's perceptions of another's likability, e.g., "This person is friendly" and "I would like to be friends with this person." Each item is positively scored on a 7-point Likert-type scale ranging from 1--*Very strongly disagree* to 7--*Very strongly agree* (Reysen, 2005). Higher scores represent greater likability of the target individual. Internal consistency for the RLS reportedly had an alpha of .90 to .91 on a sample of undergraduate students (Reysen, 2005). This study calculated internal consistency for RLS to be $\alpha = .866$.

Riggio et al. (1993) assessed discriminant validity by the administration of both the RLS and Goldberg's (1992) 100-Adjective Big Five personality test. The Goldberg scale measured personality on five subscales: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. The RLS was found to have very small correlations with four of the five subscales on the Goldberg scale, suggesting the RLS measured something distinct from what was measured by the Extraversion, Neuroticism, Openness, and Conscientiousness scales. The RLS had a weak but significant correlation with the Agreeableness scale ($r = .18$, $p < .05$ for men; $r = .21$, $p < .05$ for women).

Rapport Questionnaire

Participants were also given a Rapport Questionnaire (RQ) modified from Tickle-Degnen and Rosenthal (1990). The RQ is a 14-item questionnaire that asked participants

about their experience of rapport in a preceding interaction: "Did you feel warm towards her/him?" and "Did you like her/him?" Each item was rated on a Likert-type scale: 0-- *Not at all* to 6-- *Very*. The questionnaire was divided into two sections: in the first section, seven items asked the participants about their feelings toward their conversation partners; the same seven questions were used in the second section and asked how the participants interpreted their conversation partner's feelings toward them. The RQ was positively scored with a floor of 0 and a ceiling of 42 for each section. Higher scores indicated a higher level of either rapport given or received. For this study, only questions regarding how the participant felt toward his or her partner were included in the analysis The RQ did not have any published psychometric data; however, in this study, the RQ had an internal consistency of $\alpha = .945$.

The Likability Scale and Rapport Questionnaire were both positively scored, non-normative measures where higher scores indicated higher levels of positive regard between participants. Bivariate correlation showed a significant positive relationship between the RLS and RQ ($p = .000$, $r = .666$). These scores were combined to indicate an overall level of regard between participants labeled Total Likability ($\alpha = .946$).

Test Conditions

In Condition I, individuals were randomly matched with a partner and were asked to converse with their partner in-person. For this condition, partners were randomly matched and conversed with one another in the same room with no other participants or researchers present. Interactions in this condition were audio recorded for possible future content analysis, which was approved by the Institutional Review Board (see Appendix E).

Condition II asked participants to converse via a text-based chat through a mobile phone with a partner located in a different room. Partners were again randomly assigned and given access to a private mobile device with a chat program installed. Each individual's participant number was used as his/her screen name for the chat program. Participants were not instructed as to whether they should provide names, gender, or other identifying information. The text log from these conversations was retained for possible future content analysis.

In both conditions, participants were told the study was about how people interact with an unknown person for the first time. Participants were told to "get to know" their partner as if they might start a friendship with that person. Participants were told they were going to be asked their impressions of the other person after the task. Participants were matched randomly and no effort was made to match same-sex partners.

After participants from each condition completed their conversation tasks, they were then asked to fill out questionnaires that assessed how each individual felt about his/her conversation partner. Data from these two instruments were then attached to the other data from the person who was rated. For example, if Participants A and B were partners, data from Participant A's SSI and demographics were combined with the RLS and RQ data from Participant B's ratings. Table 2 presents the research question variables. The following research questions and hypotheses were generated:

Q1 What is the relationship between frequency of ICT use and social skills as measured by the Social Skills Inventory (Riggio, 1989)?

H1 Frequency of ICT use will exhibit a mild negative correlation with total social skill scores on the Social Skills Inventory (Riggio, 1989).

Q2   What is the relationship between relative ICT preference and social skills as measured by the Social Skills Inventory (Riggio, 1989)?

H2   Relative preference for ICT will exhibit a negative correlation with total social skill scores on the Social Skills Inventory. The negative correlation between relative preference for ICT and social skills will be stronger than the negative correlation between frequency of ICT use and social skills (Riggio, 1989).

Q3   What is the relationship between Social Skills and Total Likability across communication conditions (Reysen, 2005; Tickle-Degnen & Rosenthal, 1990)?

H3   Individuals with higher social skills will not experience significant Total Likability differences across communication conditions. Individuals with lower social skills will demonstrate lower Total Likability ratings in-person than over text.

Q4   What is the relationship between ICT preference and Total Likability across communication conditions (Reysen, 2005; Tickle-Degnen & Rosenthal, 1990)?

H4   Individuals with a preference for ICT will experience lower Total Likability in Condition I than Condition II. Individuals with a FTF preference will experience no differences in Total Likability ratings across conditions.

Q5   What is the relationship between ICT preference and Total Likability across social skill levels (Reysen, 2005; Riggio, 1989; Tickle-Degnen & Rosenthal, 1990)?

H5   Individuals with a preference for ICT will exhibit lower Total Likability than individuals with a preference for FTF regardless of test condition.

RQ6   For high frequency ICT users, what is the relationship between Social Skills and Total Likability (Reysen, 2005; Riggio, 1989; Tickle-Degnen & Rosenthal, 1990)?

H6   Two distinct groups of high frequency ICT users will emerge from the data--one with low social skills and one with high social skills. The low socially skilled group will demonstrate lower Total Likability and the higher socially skilled group will exhibit higher Total Likability.

Table 2

Research Question Variables

Research Question	Independent Variable(s)	Dependent Variable(s)
1	ICT Frequency Social Skills	N/A
2	ICT Preference Social Skills	N/A
3	Social Skills Communication Condition	Total Likability
4	ICT Preference Communication Condition	Total Likability
5	ICT Preference Social Skills	Total Likability
6	Social Skills	Total Likability

Note. ICT = Information Communication Technology

Bivariate correlation equations were used to answer research questions 1 and 2, a two-way factorial ANOVA was used to answer questions 3 through 5, and a one way ANOVA was used for question 6. Convenience sampling was used by recruiting from undergraduate psychology, sociology, and First Year Experience courses.

Relative preference was calculated by comparing the hours spent in ICT communication and hours spent in face-to-face interaction: ICT/(ICT +FTF; Ishii, 2006). This formula resulted in scores between 0.0 and 1.0--1 represented a maximum preference for ICT and 0.0 represented lowest possible ICT preference or highest preference for FTF. Preference was bimodal: 0.0-.50 represented a preference for FTF

and .51-1.0 represented a preference for ICT. The two-way ANOVA used in questions 3

through 6 factorial ANOVA used a 2 X 2 factor structure. Table 3 depicts a typical factor

structure using research question 3 as an example.

Table 3

Example Factor Structure for Questions 3-5

RQ3		Factor B: Social Skill Score (Median Split)	
		Low (B$_1$)	High (B$_2$)
Factor A: Communication Condition	In-person (A$_1$)	$\bar{x}_{11}$	$\bar{x}_{12}$
	Text Chat (A$_2$)	$\bar{x}_{21}$	$\bar{x}_{22}$

Note. $\bar{x}$ indicates the mean Total Likability score for a given cell.

Both Tables 2 and 3 illustrated the possible combinations of Factor A (Row) and

Factor B (Column). Using the first row and first column as an example, we can see that

the cell ($\bar{x}_{11}$) shared by the first level of these two factors represented the average mean

scores of Total Likability for individuals with low social skills in the In-Person condition.

Methodology

Recruitment

Approval to conduct research was obtained from the university's Institutional

Review Board (IRB; see Appendix E). Following that approval, permission to conduct

the study was obtained from the instructors of undergraduate courses such as psychology

and sociology as well as First Year Experience (FYE) classes at the university. Once

instructors gave approval, recruitment was carried out in those classes. The primary

investigator attended classes to explain the study if requested by the professors.

Data were collected by administering the paper form of the demographic survey,

RLS, RQ, and SSI. Administration of materials took place after the communication task.

Participants were taken to separate rooms upon arrival to minimize contact with potential

communication partners. Partners also filled out their packets separately to reduce their

partner's presence influencing the data. Completion of the research materials required

approximately 50 minutes and approximately 10 minutes to complete the communication

task.

Informed Consent

Each participant was required to read and sign the Participant Consent form to

ensure participation was voluntary and would in no way influence their grade in the

course (see Appendix F). Participants were assigned random number codes linking their

Likability and Rapport ratings with their completed demographics and social skills

measures. Participants' identifying information and number codes were kept on a 128 bit

encrypted IronKey USB device kept in a locked cabinet. Paper materials were kept in a

locked file drawer. Participants were instructed to provide only their first name to their

conversation partner and refrain from giving identifying information. Pursuant to state

law, data and implied consent will be kept for three years.

Procedures

After consent was obtained, participants were instructed to "get to know" their

communication partner for approximately 10 minutes in their assigned communication

condition. After the communication task, participants completed the demographics

questionnaire, the SSI, the RLS, and the RQ. Completion of these materials took approximately 30-50 minutes to complete.

Data Analysis

Analysis began with descriptive statistics to determine the demographic characteristics of the sample and allow implementation of the relative preference formula (hours of ICT communication/[hours of ICT communication + hours of non-ICT communication]) used to answer research questions 2 and 4.

Bivariate correlations were used to answer the first two questions due to the researcher's interest in the relationship between two independent variables. Bivariate correlations assumed normal distribution for each variable (Glass & Hopkins, 1996).

Two-way ANOVAs were used to answer research questions 3 through 5. Two-way ANOVAs have three assumptions: observations and groups are independent of each other, population variances are identical within each cell, and the dependent variable is normally distributed within each cell (Glass & Hopkins, 1996). Two-way ANOVAs are characterized by the presence of two or more categorical independent variables and one continuous dependent variable. Two-way ANOVAs are useful when examining both the effect each independent variable has on the dependent variable as well as possible interaction effects among the two independent variables and the dependent variable. An advantage of the two-way ANOVA is it permits one analysis instead of multiple single ANOVAs and prevents the researcher from analyzing the same data twice and increasing the likelihood of a Type I error. A two-way ANOVA was chosen over an ANCOVA because the researcher was interested in the main effects of both independent variables in each question as well as their interaction effects. An ANCOVA would have been

disadvantageous in this study as it would treat social skills (question 3) and ICT

preference (question 4) as covariates and would only provide data on how the condition

affected Total Likability after removing the variance associated with those variables.

This study required analysis of the main effect of both independent variables as well as

the possible interaction effects. A one-way ANOVA was used for question 6 and had the

same assumptions listed for two-way ANOVAs.

CHAPTER IV

RESULTS

Introduction

This study explored the impact of information communication technology (ICT) use and Social Skills on Total Likability in a social interaction using data collected from undergraduate students at a public university. Additionally, this study also examined the correlations among ICT frequency, ICT relative preference, and Social Skills. This chapter contains the results of the study and begins with a summary of the investigation and analysis.

Summary of Study

The purpose of this study was to examine the relationship among individuals' use of ICT, their level of social skills, and how they were perceived on scales of likability and rapport by their communication partner in two different communication media: text chat and face-to-face. Specifically, this study examined how an individual's preference for ICT in social communication over face-to-face interaction was related to his/her level of social skills based on Riggio's (1989) Social Skills Inventory. It also examined how well an individual's reported preference for ICT communication and level of social skills predicted his/her ratings of Total Likability by a conversation partner.

Procedures

Recruitment took place online through the use of the institution's SONA system, a cloud-based participant management system used primarily as a recruitment pool for students in introductory psychology courses and through classroom presentations in First Year Experience programs. After signing up, participants were randomly assigned to treatment conditions (in-person or in-text). Upon arrival, participants were given an informed consent document (see Appendix F) and taken to separate rooms to minimize contact with other participants before the study began. Participants were paired with their conversation partner and instructed to have a conversation either in the in-person or in-text conditions. After completion of the conversation task, they were given a packet containing a demographics questionnaire, Social Skills Inventory, and Likability and Rapport Questionnaires. Total time to complete this procedure ranged between 40-60 minutes.

Demographics

The sample consisted of 120 students, the majority of which identified as female (female: $n = 65$, 54.2%, Male: $n = 55$, 45.8%) and Caucasian ($n = 80$, 66.7%). Participant ages ranged from 18-25 (mean: 18.8, median: 18, $SD = 1.4$). The majority of students identified as college freshman and sophomores ($n = 111$, 92.5%). Participants reported spending an average of 41.80 hours per week using ICT. However, due to the large variance in scores ($SD = 38.67$), the median score of 27 hours per week might be more indicative of the typical score. Fourteen participants indicated more cumulative ICT use than there were hours in a week (ICT > 168) and were excluded from the analysis. Ten percent ($n = 12$) of participants had Low social skills, 31.7% ($n = 38$) scored Moderately

Low, 34.2% (*n* = 41) scored Moderately High, and 24.2% (*n* = 29) scored in the High

range for social skills. The majority (58.4%, *n* = 70) were in either the High or

Moderately High. 53.2% of participants indicated a preference for face-to-face

interactions, while 46.8% indicated an ICT preference. Additional demographic

information appears in Table 4.

Table 4

Demographic Characteristics of the Study Sample

		N	%
Age	18	60	50.0
	19	35	29.2
	20	11	9.2
	22-25	7	5.8
	Unreported	7	5.8
Gender	Male	55	45.8
	Female	65	54.2
Class Standing	First Year	97	80.8
	Sophomore	14	11.7
	Junior	5	4.2
	Senior	3	2.5
	Graduate Student	1	0.8
Ethnicity	White / Caucasian	80	66.7
	Black / African American	2	1.7
	American Indian or Alaskan Native	1	0.8
	Asian / Pacific Islander	7	5.8
	Latino/a or Hispanic	21	17.5
	Multi-Racial	9	7.5

N = 120

Preliminary Analysis

Due to the exclusion of some participants' data, the achieved power of this study

was calculated to be 0.73 (Faul et al., 2007). Calculation of ICT frequency combined

hours of ICT use for social networking, texting, online chat, and email per week. Several

participants indicated extremely high levels of use that were far above the norm. To

preserve useful data from these participants without skewing ICT hours, a ceiling was

created. Data from participants that indicated more hours of ICT use than was possible in

a given week ($n > 168$) were treated as missing values. This resulted in the following

missing values: social networking = 4, texting = 3, online chat = 2, and email = 1. The

same exclusionary rule was created for the FTF components (phone, in person), resulting

in the following missing values: Phone = 1, In person = 5. Relative ICT preference was

calculated by comparing the hours spent in ICT communication and hours spent in face-

to-face interaction: ICT/(ICT +FTF; Ishii, 2006). This formula resulted in scores

between 0.0 and 1.0: 1.0 represented a maximum preference for ICT and 0.0 represented

lowest possible ICT preference or highest preference for FTF. Table 5 presents the

descriptive statistics of the instruments.

Table 5

Descriptive Statistics of Instruments

Instrument	M	SD	Minimum	Maximum	*Sk*	*K*	α
SSI	286.97	30.25	223.00	357.00	.130	-.521	0.879
Total Likability	96.90	17.06	38.00	139.00	-.435	1.355	0.708
ICT Frequency	41.80	38.67	2.5	165	1.439	1.491	0.525
(Hours per week) ICT Frequency	5.84	2.77	1.58	12.85	.703	-.273	0.525
Transformed ICT Preference	0.50	0.20	0.11	1	.198	-.383	N/A

Note. *N* = 120, *M* = Mean, *SD* = Standard Deviation, *Sk* = Skewness, *K* = Kurtosis; ICT frequency showed non-normality in its distribution of scores.

Normal Distribution of Scores

Frequency plots were reviewed for each variable to assess normality. Overall, SSI, Likability and Rapport, and Relative preference all exhibited normal distributions with skewness less than 1.00 and kurtosis less than 2.00 (Garson, 2012). The ICT frequency was significantly non-normal (skewness = 1.44, kurtosis = 1.49) and thus was likely uninterpretable in its current form (Garson, 2012). Additionally, ICT frequency did not exhibit the predicted bimodal distribution. Square root transformations are often used with positive numerical data with values greater than one in order to change the scale to allow for valid analysis (Bartlett, 1947). A square root transformation was applied to ICT frequency after which the variable exhibited a normal distribution (skewness = .703, kurtosis = -0.273) To reduce the chance of Type I errors, a Bonferroni correction was applied to each analysis to adjust for the number of analyses performed on the data (Tabachnick & Fidell, 2007). To calculate the adjusted alpha, the researcher

divided the conventional alpha level (.05) by the total number of analyses (six). Thus, the

adjusted alpha for this study was $\alpha = .0083$.

Findings

The first research question asked whether there was a relationship between

frequency of ICT use and social skills as measured by the Social Skills Inventory. It was

also hypothesized that frequency of ICT use would exhibit a mild negative correlation

with total social skill scores on the Social Skills Inventory. This hypothesis was not

supported; frequency of ICT did not show a significant correlations with SSI ($p = .107$, r

$= .154$).

The second research question asked whether there was a relationship between

relative ICT preference and social skills as measured by the Social Skills Inventory. It

was also hypothesized that relative preference for ICT would exhibit a negative

correlation with total social skill scores on the Social Skills Inventory and that negative

correlation between relative preference for ICT and social skills would be stronger than

the negative correlation between frequency of ICT use and social skills. This hypothesis

was not supported; relative preference for ICT showed no significant relationship with

overall SSI ($p = .834$, $r = -.02$).

The third research questions asked whether there was a relationship between

Social Skills and scores of Total Likability across communication conditions. It was also

hypothesized that individuals with higher social skills would not experience a difference

in Total Likability across communication conditions and individuals with lower social

skills would demonstrate lower Total Likability ratings in-person than in-text. No

significant interaction effect was found between social skills and communication

conditions on total Likability, $F(1,116) = .723$, $p = .397$, $\eta^2 = .006$. Main effects analysis showed significant effects for both SSI, $F(1,116) = 4.902$, $p = .029$, $\eta^2 = .041$, and Test Condition, $F(1,116) = 8.428$, $p = .004$, $\eta^2 = .068$. After application of the Bonferroni correction ($\alpha = .0083$), only Test Condition could be considered statistically significant.

The fourth research question asked whether there was a relationship between ICT preference and scores of likability and rapport across communication conditions. It was also hypothesized that individuals with a preference for ICT would experience lower Total Likability in-person than in-text and individuals with a FTF preference would experience no differences in Total Likability across conditions. No significant interaction effect was found between ICT preference and communication condition on Total Likability, ($F(1, 105) = .267$, $p = .606$, $\eta^2 = .003$). Simple main effect analysis showed no significant difference in Total Likability based on ICT preference, $F(1, 105) = .018$, $p = .894$, $\eta^2 = .000$. Thus, this hypothesis was not supported. Main effects analysis showed that people in the In-Text condition had significantly higher Total Likability, $F(1, 105) = 9.549$, $p = .003$, $\eta^2 = .083$. After application of the Bonferroni correction ($\alpha = .0083$), this relationship was considered statistically significant.

The fifth research question asked whether there was a relationship between ICT preference and Total Likability across social skill levels. It was also hypothesized that individuals with a preference for ICT would exhibit lower Total Likability than individuals with a preference for FTF regardless of social skill. No significant interaction effect was found between social skills and ICT preference on Total Likability, $F(1, 105) = .035$, $p = .853$, $\eta^2 = .000$. Simple main effects analysis showed a significant difference in Total Likability based on social skills, $F(1, 105) = 5.192$, $p = .025$, $\eta^2 = .047$. After

application of the Bonferroni correction ($\alpha = .0083$), social skills no longer showed a significant relationship to Likability. No significant main effect was found for relative preference, $F(1, 105) = .125$, $p = .724$, $\eta^2 = .001$; thus, the hypothesis was not supported.

The sixth research question asked whether there was a relationship between Social Skills and Total Likability for high frequency ICT users. It was also hypothesized that two distinct groups of high frequency ICT users would emerge from the data (one with low social skills and one with high social skills); the low socially skilled group would demonstrate lower Total Likability and the higher socially skilled group would exhibit higher Total Likability. A median split was performed on ICT frequency (median 27) that resulted in 55 participants with high ICT use and 56 with low ICT use. Cross tabulation showed 23 participants with low social skills and 32 with high social skills. An ANOVA was performed with high ICT use individuals to assess the relationship between social skills and Total Likability within this group. No significant relationship was found, $F(1, 54) = 2.886$, $p = .095$, $\eta^2 = .703$. Thus, while two separate groups of high frequency users existed, no significant relationship was found between their level of social skill and Total Likability.

Summary

This study asked if use of ICT had any relationship with the social skills of an individual. Neither frequency of ICT use nor calculated relative preference for ICT use had any significant relationship with social skills. Thus, it could be said that neither ICT use nor preference was shown to be a factor in the level of social skills an individual possesses. This study demonstrated no significant relationship between ICT preference or frequency and Total Likability. Thus, use of ICT either in quantity or preference did

not have an effect on one's perceived likeability. Before a Bonferroni correction, social

skills showed a significant positive relationship to Total Likability in two analyses though

was no longer considered significant after the correction. Test condition was shown to be

significantly related to Total Likability in two analyses. Participants were seen as more

likable in the In-Text condition regardless of social skill or ICT preference. This study

predicted the presence of two groups of high frequency ICT users who differed in social

skill. While two distinct groups were found of high and low social skills for high

frequency ICT users, their group membership had no effect on how likable they were

perceived to be.

CHAPTER V

DISCUSSION

Introduction

This chapter discusses the results of the data analysis and the possible implications of those findings. First a brief summary of the study problem and methodology is provided. Next, the study demographics and their impact on the results are discussed. They are followed by an exploration of the effect social skills, information communication technology (ICT), and communication medium had on the study. Next is a discussion of the study's limitations, research implications, and concluding remarks.

Summary of the Study

Due to the prevalence of ICT and its rapidly growing complexity and impact upon society, both in the United States and globally, it is important to further study the long- and short-term effects of ICT. Information communication technology and the changing nature of social skills are likely to continue to affect the field of psychology, especially psychotherapy. Psychotherapy relies heavily on interpersonal communication skills of both the therapist and client. If ICT continues to affect the social skills of users, especially those generations reared with ICT as their primary communication medium, it is reasonable to assume it might change "normal" communication, which would likely have an impact on psychotherapy. Thus, understanding both the link between ICT and social skills and between social skills and ability to communicate socially is integral to

our understanding and the continuing efficacy of psychotherapy in both implementation and therapist training.

Three primary theories were used to conceptualize the effect of ICT on individuals in this study: social network, social compensation, and rich-get-richer (Birnie & Horvath, 2002; Granovetter, 1973; Kraut et al., 2002). Social network theory provides a framework through which to understand individuals' use of ICT and assumes that, in general, people exist within a social network and continually seek to increase that network. As they do so, they increase their consumption of media, such as ICT, telephones, or face-to-face (FTF) communication that most readily facilitates that expansion.

Social compensation theory assumes people naturally attempt to make up for deficits in their social skills by avoiding situations that have a high social demand, such as face-to-face interaction, and gravitate toward media like ICT that require a lower level of social skill (Kraut et al., 2002). This is thought to represent a functional alternative for these individuals and it is assumed they will benefit from this medium.

The rich-get-richer theory assumes individuals with a low level of social skill will, like social compensation theory, seek out media like ICT that require less social skill but find use of ICT is detrimental to their social skill (Kraut et al., 2002). Likewise, rich-get-richer theory also assumes individuals with high social skills will use ICT but take advantage of the medium to maintain a larger social network than would be otherwise possible and experience positive social benefit from interactions using ICT.

This researcher intended to expand the current definitions of social compensation and rich-get-richer theories to include the effects on users. Social compensation in this

context focused on the effective, successful compensation for social deficits by low

socially skilled individuals using ICT. Rich-get-richer in this context assumed the full

meaning of the colloquial phrase: "The Rich Get Richer and the poor get poorer,"

meaning both low and highly socially skilled individuals take advantage of ICT due to its

convenience. However, low socially skilled individuals experience largely negative

effects from ICT and find it reinforces their social deficits while highly socially skilled

individuals experience positive effects from ICT and find it augments their social

advantages by providing a broader context of use. In this study, the effect on users was

indicated by their Total Likability perceived by a partner.

The purpose of this study was to examine the relationship among individuals' use

of ICT, their level of social skills, and how they were perceived on scales of likability and

rapport by their communication partner in two different communication media; text chat

and face-to-face. Specifically, this study examined how an individual's preference for

ICT in social communication over face-to-face interaction was related to their level of

social skills based on Riggio's (1989) Social Skills Inventory. It also examined how well

an individual's reported preference for ICT communication and level of social skills

predicted his/her ratings of Total Likability by a conversation partner. The study was

guided by the following research questions:

Q1   What is the relationship between frequency of ICT use and Social Skills as
      measured by the Social Skills Inventory (Riggio, 1989)?

Q2   What is the relationship between relative ICT preference and Social Skills
      as measured by the Social Skills Inventory (Riggio, 1989)?

Q3   What is the relationship between Social Skills and Total Likability across
      communication conditions (Reysen, 2005; Tickle-Degnen & Rosenthal,
      1990)?

Q4   What is the relationship between ICT preference and Total Likability across communication conditions (Reysen, 2005; Tickle-Degnen & Rosenthal, 1990)?

Q5   What is the relationship between ICT preference and Total Likability across social skill levels (Reysen, 2005; Riggio, 1989; Tickle-Degnen & Rosenthal, 1990)?

RQ6   For high frequency ICT users, what is the relationship between Social Skills and Total Likability (Reysen, 2005; Riggio, 1989; Tickle-Degnen & Rosenthal, 1990)?

Demographics of the Sample

Fourteen participants were excluded due to overestimation of ICT use; however, other testing materials these individuals completed did not indicate intentional data manipulation. It is possible these individuals misunderstood the question or were being hyperbolic in their attempt to convey very high ICT use. Removal of 14 possible high frequency ICT users might have caused the data to reflect a lower estimation of ICT use than was actually present in the population. The majority of participants were in either the High or Moderately High social skill range, which might be due to sampling bias. Participants higher in social skills and thus more comfortable in social interactions might have been more likely to sign up for a study that asked them to engage in a social task. The majority of participants also indicated a preference for face-to-face interactions, which might have been related to the aforementioned sampling bias. Individuals who prefer interacting in person might be more likely to sign up for a study that requires they physically attend the study and interact in person. Individuals with lower social skills or individuals who prefer to take online surveys using the SONA system might not have been well represented in this sample.

**Social Skills and Information
Communication Technology**

Ishii (2006) and several other studies (Caplan, 2003, Joinson, 2004, Liu & Peng, 2009) used ICT preference over ICT frequency as a predictor of ICT's effect on its users. This study examined the utility of both and found neither was significantly related to social skills. Harman et al. (2005) also found ICT frequency was not useful to assess ICT's effect on the user or his/her social skills. This might indicate the near ubiquitous adoption of at least some level of ICT use by younger generations and might dilute any differences in ICT use by social skill due to the overwhelming social convention of ICT use. Engelberg and Sjoberg (2004) associated high Internet use with idiosyncratic values. The results of their study might indicate that a decade later, the paradigm has shifted; for the youngest generation, a lack of ICT use actually represents an idiosyncratic value.

This study found social skills were positively related to likability in a social task. Independent of the communication medium, participants with higher social skills were more likely to be rated positively by their partners than were those with lower social skills. While the relationship was no longer significant after the Bonferroni correction, this suggested social skills might play a role in positively mediating a person's likability. In this manner, the rich-get-richer hypothesis was supported; higher socially skilled (rich) individuals performed better in a social task and thus were rated as more likeable and less socially skilled (poor) individuals performed worse and were thus rated as less likeable.

Communication Medium

This study showed participants were significantly more likely to be rated as likable over SMS (texting) than in-person. This was true even after accounting for social

skills, ICT frequency, and ICT preference. Thus, it could be said people are either more

likable using ICT or less likeable in person. It was also possible that a lack of visual and

vocal cues led a participant to believe their conversation was similar to themselves.

Some research suggested perceptions of dissimilarity harmed likability and perceptions of

similarity increased likability (Rosenbaum, 1986; Smeaton, Byrne, & Murnen, 1989).

Text-only ICT might provide users with both a lack of dissimilarity cues and assumptions

of similarity, which might have aided likability in this ICT medium. Previous studies that

examined the effect of text only interactions found computer-mediated communication

had a positive effect on interpersonal attraction (Bargh, McKenna, & Fitzsimons, 2002;

Walther, 1995). Information communication technology provides asynchronous

communication by giving its user time to consider his/her partner, formulate an ideal

response, and communicate that response while experiencing his/her own private

reactions to the interaction. In this case, an individual could convey only the most

desirable aspects of themselves in the absence of partner scrutiny or pressure of

conversation maintenance. This assertion was echoed by Harasim (1993):

> Participants can take time to formulate their idea into a more composed and
> thoughtful response, contributing to improved quality of communication. This
> attribute is especially advantageous for educational and business networld
> activities, but it is also important in the social networld, where the time to reflect
> before responding can enhance the exchange. (p. 24)

Interacting in such a way might also help mediate the conversational differences

between introverts and extroverts noted by Lieberman and Rosenthal (2001). Increased

time available for response might reduce the multitasking demand for introverts and

allow them to engage in both conversations maintenance and reflected appraisal. This

might provide introverts the opportunity to perform as well as extroverts in interaction tasks using ICT.

In-person interactions not only have the additional pressures of being synchronous, they also involve significant nonverbal factors (Trimboli & Walker, 1987). Face-to-face (FTF) participants are subject to each other's physical appearance including attractiveness, hygiene, gender, age, etc.; participants are both conveying their own and perceiving their partner's nonverbal reactions during the interaction. It might be there were simply more opportunities to garner negative impressions in FTF interactions. Walther's (1996) hyperpersonal communication theory asserted reduced nonverbal cues encouraged increased self-disclosure and reduced interpersonal inhibitions. Antheunis, Valkenburg, and Peter's (2011) study examined how this theory related to interpersonal attraction in three different interaction conditions: text only, text and visual (no audio), and face-to-face. The authors found interpersonal attraction was higher in text only interactions than in the other two conditions and suggested increased self-disclosure and increased direct questioning behaviors contributed to the result. This finding supported this study's results that people are in general more likeable in an ICT context.

The aforementioned theory and this study's results supported the rich-get-richer theory: both high and low socially skilled individuals might be attracted to ICT due to its positive perception bias but only the highly skilled (rich) were likely to be considered likable in both conditions. A person with low social skills might be rated as more likable in an ICT interaction rather than FTF; however, he or she would be less likeable than a person with high social skills in an ICT context. Social network theory suggests individuals are more likely to use ICT to increase their social connections due to its

—

availability and ease of use. This might be true but the above result also suggested a

potential positive perception bias for online use. Thus, people might be more likely to

consume ICT, not only because of its practical utility but also because it paints both the

individual and those with whom they interact in a more favorable light.

A recent meta-analysis conducted by Shapiro and Margolin (2014) examined

several studies on adolescent use of social networking and their psychosocial

development. They found adolescents with high social skills were both likely to have

more online connections and to experience more benefits to their well-being than less

socially skilled adolescents. Shapiro and Margolin also found adolescents "who post

more negative messages, which may include those with low self-esteem or poor social

skills, open themselves up to negative feedback from others" (p. 9). In contradiction to

social compensation theory, Weidman et al. (2012) found, "Whereas individuals higher in

social anxiety feel more comfortable when communicating online and use the Internet as

a place to self-disclose more than in offline contexts, such behavior may be associated

with poorer well-being" (p. 194).

It is clear this study and recent research did not fully support social compensation

theory; namely compensatory use of ICT is not always effective and does not provide a

functional alternative to FTF interactions. Social networking theory appeared to provide

a logical framework for the expansion of ICT use and represented a convenient and

efficient method of social communication. This study also suggested a positive

perception bias might also be a factor in ICT's attractiveness as a communication

medium. While further research is needed, this study's results supported the definition of

the rich-get-richer theory. Socially skilled individuals tended to benefit more from any

communication medium and experienced further increased likability using ICT. Recent studies also suggested individuals with lower social skills might experience more negative interactions online, which provided further support that in addition to the rich getting richer, the poor also got poorer.

Clinical Applications

The therapeutic alliance is said to be responsible for as much as 30% of change in clients (Lambert, 1992). While the therapist is largely considered responsible for the creation of this alliance (Baldwin et al., 2007), practitioners must be aware of forces that shape communication and thus rapport building of both themselves and their clients. This study indicated individuals with higher social skills were more likely to be seen as likeable. Intuitively, this seemed to suggest both therapists and clients with social skills would be more likeable and thus build stronger rapport. However, Clarkin and Levy (2003) found clients with poor social skills had high need for social connection and thus appeared to build rapport with the therapist more quickly. This might indicate the importance of the clinician's social skills was superordinate to the client's.

This study showed that in general people are viewed as more likeable online or less likeable in person. This suggested, at least for individuals who interacted in both ICT and FTF environments, that traditional FTF therapy might already be at a rapport building disadvantage. As discussed above, this might be due to either the advantages of asynchronous communication for ICT, to the presence of potentially negative interpretations of nonverbal content, or some combination thereof. However, therapy might differ from other FTF interactions in that the clinician is primarily responsible for building rapport and clinical training usually includes significant attention to nonverbal

cues. Therapists monitor facial expression by consciously utilizing minimal encouragers and nonverbal attending (Davis & Hadkis, 1994). While the therapist might still be subject to negative evaluation based on appearance, gender, hygiene, etc., he or she might be at a slight advantage in FTF rapport building compared to non-clinical interactions due to the intentional inclusion of these rapport building nonverbal behaviors.

Therapists must also be cautious in their interpretations of a client's use of ICT and examine their own assumptions about the effects of ICT on users. Recent studies suggested online game playing does not actually represent a function deficit in social skill or well-being (Kowert & Oldmeadow, 2013; Visser, Antheunis, & Schouten, 2013). It is important to consider a client's level of social skill across all types of interactions and encourage relational skills that can generalize across media when social interactions are a focus of therapy. For clients who prefer online interaction, it is important for therapists to not immediately assume this represents a compensatory social behavior. Clinicians must understand the temptation to use ICT not only due to its ease of use but to the significant positive perception bias ICT affords by both its asynchronous nature and lack of potentially negative nonverbal cues.

With the increasing adoption of online therapy (Gainsbury & Blaszczynski, 2011), it is important to consider the effects a client's social skills and the online medium might have on the formation of a therapeutic alliance. It is possible that while online-only therapeutic interactions might be effective, therapy might generalize best if a combination of ICT and FTF interactions was utilized.

Multicultural competence is a core ethic of the counseling psychologist and must be considered in relation to this study's findings. Given the hypothesized positive

perception bias, assumptions of similarity, and increased self-disclosure, ICT might

provide unique opportunities to more effectively create rapport with diverse clients.

However, access to and comfort with ICT due to cultural, linguistic, ability and

generational factors might provide additional hindrances to alliance formation and should

be considered carefully before choosing ICT as the desired medium.

   This study has several implications for counseling psychologists. Clinicians must

consider including social skills training as part of their clinical development. Regardless

of the medium and independent of a client's social skills, a psychologist's level of social

skill strongly influences their likability and thus therapeutic alliance formation. Training

programs for counseling psychologists should consider social skills as imperative to

trainee selection, development, and evaluation. Psychologists engaged in supervision

should consider both how their own social skills contribute to the supervisory relationship

and how their supervisee's social skills might impact their own clinical work.

Community engagement and social justice are integral to counseling psychology, involve

multiple types of interactions over ICT and FTF media, and require strong social skills.

Psychologists might even take advantage of the positive perception bias inherent in ICT

and make initial contact, especially for potentially contentious interaction, over text-

based ICT. As ICT becomes more commonly used for both professional communications

and delivery of services, it is vital that psychologists be aware of its effect on those

interactions.

<div align="center">**Limitations**</div>

   In this study, ICT frequency was non-normally distributed and had a few

significant outliers. This might have skewed analyses that included ICT frequency as a

variable. Future studies should include either an hours cap in the question or have

participants select from a range of hours. Researchers might also benefit from first

asking what a participant's primary mode of ICT communication is and assess hours for

that particular activity. This study used a summation of several types of ICT, which

might have introduced more error into participant self-assessments.

Information communication technology preference was difficult to calculate for a

number of reasons. First, there are a number of hours in a day when people might be less

likely to engage in ICT interaction than FTF interaction, e.g., in class, eating, or walking

around campus, which might bias preference calculations toward FTF when it might not

in fact be his/her preference. Secondly, ICT has a significant opportunity to engage in

multitasking, e.g., texting while talking to a friend or browsing social media together.

These multitasking events create significant opportunities for ICT/FTF overlap and

muddy self-assessment of use. This is especially salient due to the increase in the use of

mobile phones and other mobile devices.

This study relied heavily on self-reported data and questionnaires. Despite some

evidence that participants could accurately self-assess their technology use, there were

some discrepancies in participants' estimates as discussed above (Deane et al., 1998).

Self-report questionnaires, while convenient and often recommended by educational

researchers, are imperfect (Glass & Hopkins, 1996). Self-reported measures like those

used in this study are subject to face validity and offer participants the opportunity to

engage in impression management.

As discussed above, some sample bias might have been introduced due to the

nature of the study. Student self-selected to take part in this study and students socially

skilled and comfortable FTF might have been more likely to sign up for a study involving in-person participation. Additionally, while efforts were made to separate participants who knew each other and to prevent conversation partners from seeing each other or interacting before engaging in the test conditions, this was not always possible. Participants might have had additional interaction time before the study began that might have biased their ratings of each other. Participants in the In-Text condition who saw each other before interacting might have been influenced by the appearance and nonverbal cues of their partner.

In both conditions, participants were asked to converse for 10 minutes as if they were talking to a potential friend. While previous research used the same time interval, participants had specific problem solving tasks to complete (Iacovelli & Valenti, 2009). It is possible that without a specific task, participants' quality and quantity of engagement varied between dyads, which would conceivably have affected their perceived likability independent of condition or social skill and introduced error. Such ambiguous instructions might be representative of a "first contact" situation between partners. However, it is possible that even in initial ICT or FTF first contact there is a context that might help shape the interaction.

The short time interval might have also been a limitation for this study. In a large meta-analysis, Ambady, Bernieri, and Richeson (2000) argued that people are adept at making complex conclusions about others' personality characteristics from "thin slices," i.e., 4-10 minutes of observations, transcripts, video, etc. However, in a majority of the studies, the authors reviewed the people making accurate judgements about those they observed were passive and did not interact with their targets. It is possible that during an

interaction task where conversation maintenance, reflected appraisal, and impression management are simultaneous tasks, a short, non-directed interaction might not be sufficient for social skill and likability differences to emerge.

Research Implications

While the current study and those discussed above largely supported the rich-get-richer theory, to truly examine this theory, one must see the effect these factors have on participants *over time*. Thus, without a longitudinal component, one cannot assess if these were merely static functional differences in skill and context or if ICT users with different characteristics saw changes in their use and social skill as they continued to consume ICT over a period of years.

This study was able to make statements about how ICT and social skills affected a person's likability in different communication media. However, it was not able to predict a person's likeability based on ICT use and various characterological factors. Future research should examine what combinations and in what ratios of FTF to ICT online therapy would be most effective. Studies with large sample sizes should seek to predict the effect the above ratios have for different ages, genders, races, and ethnicities. Different pairings of participant factors should be examined, e.g., pairing people with low social skills together or people with high ICT use together. Since therapy might also be impacted, future studies should attempt to examine the phenomenon with different therapist and client factors. The SSI provided for a much more detailed interpretation than was used in this study. Future research should attempt to determine what specific facets of social skills interact with ICT. Researchers should examine the effects control, sensitivity, and expressivity have across social and emotional domains.

Due to the possible sampling bias, future research might benefit from a more thoroughly disguised recruitment statement. Studies should recruit from participants within the same generation and from different socioeconomic status, geographic areas, and education levels.

Conclusions

This study and much of the ICT literature examined the effect ICT use/preference has on users. However, could this effect be accurately assessed in a generation reared from infancy with ICT incorporated into multiple daily activities? We must ask ourselves, how are social skills acquired? If social skills are acquired by observing others and ICT is a part of the fabric of the observed society, could a distinct effect really be delineated? A trend was already seen in the literature regarding differing effects on users based on the time frame in which the study was conducted (Kraut et al., 1998, 2002). At best, this study and others like it represent a snapshot in time and can only describe changes in trends rather than draw specific conclusions and causality about ICT. Perhaps somewhat ironically, even ICT is changing to both integrate with FTF (Google Glass, Facial Recognition applications) and to mimic FTF interactions by replicating its features (Virtual Reality, FaceTime, Skype). It is the opinion of this researcher that the qualitative distinction between FTF and ICT communication will continue to shrink until the only difference remaining is geographical. Future research should seek to describe not only current trends but to look across the decades of ICT adoption and see the dynamic interplay between the adoption of a new technology, its incorporation into everyday life, and its eventual relegation to invisibility due to ubiquity.

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APPENDIX A

**DEMOGRAPHICS AND INFORMATION COMMUNICATION
TECHNOLOGY USE QUESTIONNAIRE**

1. What is your gender?
    a. Male
    b. Female
    c. Transgender
    d. Prefer not to answer

2. Please indicate your age.
    a._____ years

3. What is your classification?
    a. Freshman (0-29 credit hours)
    b. Sophomore (30-59 credit hours
    c. Junior (60-89 credit hours)
    d. Senior (90+)
    e. Graduate Student (bachelor degree and enrolled in graduate coursework)

4. Please indicate your major. If undecided type "undecided"

5. What is your ethnicity?
    a. White / Caucasian
    b. Black / African American
    c. American Indian or Alaska Native
    d. Asian / Pacific Islander
    e. Latino/a or Hispanic
    f. Other

6. Please estimate the number of hours per week you have used social networking sites in the past month. (Ex. Facebook, Myspace, Google+)

7. Please estimate the number of hours per week you spent text messaging in the past month.

8. Please estimate the number of hours per week you spent per week chatting online in the past month.

9. Please estimate the number of hours per week you spent sending emails in the past month.

10. Please estimate the number of hours per week you spent browsing online in the past month. (eg. Reading news, blogs, doing research, watching videos etc. Do not include chatting, social network sites or email.)

11. Please estimate the number of hours per week you spent making personal voice phone calls in the past month.

12. Please estimate the number of hours per week you spent talking to your friends in person in the past month.

13. Have you ever had therapy or counseling before?
     a. Yes
     b. No

14. If you answered yes to the above question please indicate by which of the following methods you received therapy or counseling. (you may mark more than one)

	Face-to-face (50% or more communication with your therapist is in person)
	Via email (50% or more communication with your therapist is through individual emails)
	Via telephone (50% or more communication with your therapist is through personal phone calls)
	Via text message (50% or more communication with your therapist is through text messages on a mobile device)
	Via online text chat (50% or more communication with your therapist is through online text communication like a private chat room or private social network chat)
	Via online video chat (50% or more communication with your therapist is done through a video chat service like Skype)

15. How satisfied were you with the services you received?
     a. Highly unsatisfied
     b. Somewhat unsatisfied
     c. Neutral
     d. Somewhat satisfied
     e. Highly satisfied

16. When given the choice, I prefer to communicate with friends:
    a. In-person or on the telephone
    b. Using Information Communication Technology (online text or video chat such as Skype, text messaging, social networks, email, etc.)

17. When given the choice, I prefer to communicate with family:
    a. In-person or on the telephone
    b. Using Information Communication Technology (online text or video chat such as Skype, text messaging, social networks, email, etc.)

APPENDIX B

SOCIAL SKILLS INVENTORY

Directions

 On the following pages are 90 statements that indicate an attitude or behavior that may or may not be characteristic or descriptive of you. Read each statement carefully. Then, using the scale shown below, decide which response will most accurately reflect your answer and darken the appropriate circle on your answer sheet. Note that you will need to work from left to right on the answer sheet.

Example	Not at all like me	A little like me	Like me	Very much like me	Exactly like me
I am usually wary of strangers	①	②	③	④	⑤

Keep in mind that there are no right or wrong answers. Mark only one response for each statement. Mark all of your responses on the separate answer sheet. It is important to try to respond to every statement.

1 = *Not at all like me*
2 = *A little like me*
3 = *Like me*
4 = *Very much like me*
5 = *Exactly like me*

Please ensure that you work from left to right on the answer sheet.

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 or scolding rarely makes me feel uncomfortable.

6. I can be comfortable with all types of 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 that 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.

1 = *Not at all like me*
2 = *A little like me*
3 = *Like me*
4 = *Very much like me*
5 = *Exactly like me*

Please ensure that you are working from left to right on the answer sheet.

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 person's 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.

1 = *Not at all like me*
2 = *A little like me*
3 = *Like me*
4 = *Very much like me*
5 = *Exactly like me*

Please ensure that you are working from left to right on the answer sheet.

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 they 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'm 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 C

LIKABILITY SCALE

Likability Scale

Instructions: Please answer the following questions about your experience with your conversation partner. Circle how strongly you agree with each statement.

1. This person is friendly.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

2. This person is likeable.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

3. This person is warm.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

4. This person is approachable.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

5. I would ask this person for advice.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

6. I would like this person as a coworker.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

7. I would like this person as a roommate.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

8. I would like to be friends with this person.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

9. This person is physically attractive.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

10. This person is similar to me.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

11. This person is knowledgeable.
Very Strongly   Strongly   Disagree   Neutral   Strongly   Very Strongly
  Disagree   Disagree   Agree   Agree

APPENDIX D

RAPPORT QUESTIONNAIRE

Rapport Questionnaire

INTERACTION RESPONSE FORMS
Please answer the following questions about your conversation partner.

Don't think long about your responses, just give gut reactions, that is, responses that come quickly and spontaneously to you.

Answer honestly. There are no right or wrong answers. Your responses are confidential and your anonymity will be maintained.
****

What is today's date? : _____

****
DURING the conversation you just had, describe **how you felt** about the other student:

	Not at all					**Very**	
-Did you like her/him?	0	1	2	3	4	5	6
-How aware were you of her/him?	0	1	2	3	4	5	6
-Did you feel warm towards her/him?	0	1	2	3	4	5	6

-Did you feel that there was
a comfortable rhythm to
the interaction?   0   1   2   3   4   5   6

-Did you feel that your actions
and words smoothly
coordinated with his/hers?   0   1   2   3   4   5   6

-Were you interested in her/his
words and actions?   0   1   2   3   4   5   6

-Did you feel in rapport
with her/him?   0   1   2   3   4   5   6

Describe how you think **the other student felt** about you **DURING** the session:

	Not at all					**Very**	
-Did she/he like you?	0	1	2	3	4	5	6
-How aware was she/he of you?	0	1	2	3	4	5	6
-Did she/he feel warm towards you?	0	1	2	3	4	5	6

-Did she/he feel that there was
a comfortable rhythm to
the interaction?   0   1   2   3   4   5   6

-Did she/he feel that her/his
actions and words smoothly
coordinated with yours?   0 1 2 3 4 5 6

-Was she/he interested in your
words and actions?   0 1 2 3 4 5 6

-Did she/he feel in rapport
with you?   0 1 2 3 4 5 6

APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVAL

UNIVERSITY of
NORTHERN COLORADO

Institutional Review Board

DATE: September 3, 2014

TO: Aaron Wallis, B.A.
FROM: University of Northern Colorado (UNCO) IRB

PROJECT TITLE: [517171-4] EXAMINING THE IMPACT OF INFORMATION
                       COMMUNICATION TECHNOLOGY ON SOCIAL SKILLS AND PERCEIVED
                       LIKABILITY AND RAPPORT
SUBMISSION TYPE: Continuing Review/Progress Report

ACTION: APPROVED
APPROVAL DATE: September 3, 2014
EXPIRATION DATE: September 3, 2015
REVIEW TYPE: Expedited Review

Thank you for your submission of Continuing Review/Progress Report materials for this project. The University of Northern Colorado (UNCO) IRB has APPROVED your submission. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on applicable federal regulations.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of September 3, 2015.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

APPENDIX F

**INFORMED CONSENT FOR HUMAN
PARTICIPANTS IN RESEARCH**

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

Project Title: Examining the Impact of Information Communication Technology on Social Skills and Perceived Likability and Rapport
Researcher: Aaron Wallis B.A., Department of Applied Psychology and Counselor Education

Email: Wall1368@bears.unco.edu
Research Advisor: Brian Johnson, PhD.
Phone Number: (970) 351-2209   Email: brian.johnson@unco.edu

I am researching the relationship between two forms of electronic communication: face-to-face and text chat and the social skills of college students. This study also examines how these factors may affect how individuals are perceived by others with whom they have a conversation. As a participant in this study you will be asked to fill out a questionnaire about your use of electronic communication, a self-report inventory assessing your social skills, participate in a 10 minute conversation with a partner, and give your impressions of the person's likability and rapport. Your conversation will take place either in person or through a text chat system. Combined the questionnaire, inventory and conversation should take between 50-60 minutes to complete.

For this study you will not be asked to provide your name but you will be asked to provide your age, gender, grade classification and ethnicity. Text chat conversations will be recorded and a de-identified transcript will be retained. In-person conversations will be audio recorded. Only the research team will have access to the data which will not contain identifying information. Results of the study will be presented in aggregate form and as such will not be identifiable to individual participants. Researchers will strive to protect the anonymity and confidentiality of your responses. Risks are minimal and should be no greater than risks typically associated with classroom participation. Participation or nonparticipation in this study will not affect your academic standing in anyway. Anonymous Participant IDs will be the only identifying information on the testing materials. The Participant ID master sheet and Testing materials, and audio recordings will be kept in a locked file cabinet in McKee 201 room for 3 years then destroyed. Only the researcher, his advisor and members of the research team will have

access to the data. Audio recordings will be destroyed after transcripts are made and checked for accuracy.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Completion of the following survey materials indicates consent to participate in the study. If you have any concerns about your selection or treatment as a research participant, please contact the Office of Sponsored Programs, Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-2161.

Please Sign and Date Below

_____   _____
Research Participant   Primary Researcher

APPENDIX G

MANUSCRIPT

Examining the Impact of Information Communication Technology on Social Skills and

Total Likability

Aaron L. Wallis

University of Northern Colorado

Abstract

This study examined the relationship among individuals' use of information communication technology (ICT), their level of social skills, and how likable they were perceived to be by a communication partner in two different communication media: text chat and face-to-face. Specifically, this study examined how an individual's frequency of ICT use and preference for ICT in social communication over face-to-face interaction was related to his/her level of social skills based on Riggio's (1989) Social Skills Inventory. It also examined how well an individual's reported preference for ICT communication and level of social skills predicted his/her ratings of likability and rapport by a conversation partner. Data were analyzed for 120 undergraduate students using bivariate correlations and one and two-way ANOVAs. Results indicated no significant relationship between either ICT frequency or ICT preference and social skills. Participants were rated as significantly more likable over text chat than face-to-face. Social skills were not shown to have a significant relationship with likability or ICT use. Implications included a need for a more varied sample of ICT users and detailed analysis of specific social skill components.

Keywords: Information Communication Technology, ICT, Likability, Rapport, Preference, Social Skills

INTRODUCTION

The past two decades have brought about significant change in the ways people communicate, largely due to the Internet and mobile phones. Globally, 4.6 billion people own a mobile phone, 75.6% of U.S. citizens own a computer, and 77% of U.S. citizens report regularly accessing the Internet (International Telecommunications Union, 2009; U.S. Bureau of Labor Statistics, 2008; U.S. Census Bureau, 2009). A large portion of the communication that happens on the Internet is through social networks such as Facebook and MySpace. The Nielsen Company (2010) reported the U.S. national average for online social network use is about six hours per month. Social network use varies drastically with the population; for example, college students use social networks far more than other populations. Seventy-two percent of online 18- to 29-year-olds reported using social networking websites, which was much higher than the 39% of adults 30 and over who used these sites (Lenhart, Purcell, Smith, & Zickuhr, 2010). With nearly three quarters of young adults using social networking regularly, it is important to consider the impact of this form of communication on its users.

In a recent study (Martin, 2009), college age social network users identified as "light" users were defined as spending 15.5 hours per month and heavy users spent 30.5 hours per month. Light users spent more than twice as long on social networks as the national average whereas heavy users spent nearly five times the national average. This level of usage implied that for college students, especially heavy users, social networking sites might encompass a large proportion of all their social communication.

Texting on mobile phones is also another popular method of electronic communication. Texting is one of the most used and fastest growing communication

methods both in the United States and worldwide. The International

Telecommunications Union (2010) estimated that globally over 200,000 text messages

are sent per second, which translates to over 518 *billion* text messages sent per month

across the world. Texting has become especially popular with teenagers where it has

eclipsed all other forms of communication (Pew Internet & American Life Project, 2011).

This rapid rise in texting combined with social networking, especially among teenagers

and young adults, bears consideration.

Texting and social networking are often lumped together with other forms of

electronic communication under the heading of information communication technology

(ICT). The research has been mixed on the effect ICT has had on users. Several authors

noted Internet use had a negative effect on the well-being, or average positive affect, of

users (Gross, Juvonen, & Gable, 2002; Kraut, Patterson, & Lundmark, 1998).

Lyubomirsky, King, and Diener (2005) indicated social support has a strong positive

correlation with well-being and ICT might affect the nature and quality of social support

garnered by users. Query and James (1989) provided a logical extension from social

support to communication and a link to the current study in that interpersonal

communication competence is an integral part of social support. Thus, it is logical to

conclude that interpersonal communication is linked to well-being and, as such, is

affected by ICT use. In a nationwide study in Japan, Ishii (2006) found social skill levels

were negatively correlated with "Mobile Mail," which consists of texting and email from

mobile phones, and according to the author, were converging into a single form of

communication in Japan. The study also noted that while the effect of ICT was generally

negative for social skills, a small proportion of heavy ICT users had high social skills and

used ICT primarily to manage their large social networks. Ishii found because of this group of heavy users, it was useful to categorize ICT users in terms of relative preference for ICT rather than simply in terms of the amount of ICT use. Since ICT use is linked to social skills, interpersonal communication, and well-being, it is imperative to consider the impact the dramatic increase in these technologies might have on mental health services for both client and practitioner. Counseling psychology in particular might be affected by these trends in social skills and technology due to the powerful effect rapport and therapeutic relationship have on therapy efficacy and outcomes, which might necessitate adaptations to the pedagogy, selection, and implementation of counseling services.

Communicative Aspects of Therapy

In the past two decades, research into the efficacy of therapy has highlighted the need for greater understanding of client characteristics that might affect therapy and are not related to therapist factors or chosen theories and interventions. Common factors research, specifically Lambert and Hill (1994), indicated client factors have a larger effect on the outcome of therapy than from specific techniques or the therapeutic alliance. WarWar and Greenberg (as cited in Scheel, 2010) came closer to the issue of client social skills as an effect in therapeutic outcome: "We need to learn more about how to work with clients who have more difficulty forming an alliance to develop strategies to set up a helping relationship" (p. 277). While it has been more than a decade since they made this statement, research on the topic of clients' social characteristics and the impact on therapy was limited. Recently, Ulvenes et al. (2012) suggested therapists' ability to create an alliance might be more significant than the clients' as long as the therapist is able to understand their clients' interaction preferences and tailor their therapeutic style to

facilitate alliance creation. This has important implications for training programs and might become increasingly important for younger therapists whose upbringing might have included far more ICT use than previous generations of practitioners.

Three primary theories were used to conceptualize the effect of ICT on individuals in this study: social network, social compensation, and rich-get-richer (Birnie & Horvath, 2002; Granovetter, 1973; Kraut, Kiesler, Boneva, Cummings, & Helgeson, 2002). Social network theory provides a framework through which to understand individuals' use of ICT and assumes that, in general, people exist within a social network and continually seek to increase that network. As they do so, they increase their consumption of media, e.g., ICT, telephones, or face-to-face communication, which will most readily facilitate that expansion.

Social compensation theory assumes people naturally attempt to make up for deficits in their social skills by avoiding situations that have a high social demand, such as face-to-face interaction, and will gravitate toward media like ICT that require a lower level of social skill (Kraut et al., 2002). This is thought to represent a functional alternative for those individuals and is assumed they will benefit from this medium.

The rich-get-richer theory assumes individuals with a low level of social skill will, like social compensation theory, seek out media like ICT that require less social skill but will find use of ICT detrimental to their social skills (Kraut et al., 2002). Likewise, rich-get-richer theory also assumes individuals with high social skills will use ICT but will take advantage of the medium to maintain a larger social network than would be otherwise possible and experience positive social benefit from interactions using ICT.

Purpose

Due to the prevalence of ICT and its rapidly growing complexity and impact upon society, both in the United States and globally, it is important to further study the long- and short-term effects of ICT. Information communication technology and the changing nature of social skills are likely to continue to affect the field of psychology including psychotherapy.

The purpose of this study was to (a) determine the level of social skills of 18 to 25-year-old students and their relationship to relative preference for and frequency of ICT use, (b) determine which measure of ICT was of more utility--relative preference or frequency of use, and (c) assess the possible impact of ICT and social skills on an individual's ability to effectively engage in positive social communication for undergraduate students.

METHOD

Cohen's (1992) power analysis was used to determine an appropriate sample size for this study. This study used a power level of .80 and a medium effect size of $f = .25$ commonly accepted for use in behavioral research (Chuan & Penyelidikan, 2006; Cohen, 1992). The statistical program G*Power 3 was used to calculate a target sample size of 128 (Faul, Erdfelder, Lang, & Buchner, 2007).

Instrumentation

Four measures were used in this study: a background and ICT use questionnaire, the Social Skills Inventory (Riggio, 1989), the Rapport Questionnaire (Tickle-Degnen & Rosenthal, 1990) and the Reysen Likability Scale (Reysen, 2005).

Demographics and Information Communication Technology Use Questionnaire

On the demographics questionnaire, participants were asked about their level of ICT use and their preference for therapy media. Deane, Podd, and Henderson, (1998) compared the one month self-report data of individuals using computer systems with electronic log reports and found self-report estimates were consistent with independent data collected electronically. This meant individuals were able to accurately assess their use of technology, which lent support to this study's use of a self-report questionnaire for ICT use. Information communication technology use was divided into short message service (How many hours have you spent text messaging in the last month?), social network (How many hours have you spent per week using social networking/chat websites in the last month?), voice phone calls (How many hours have you spent making phone calls in the past month?), and email (How many hours per week have you spent sending emails in the past month?). Participants were also asked about their preference for face-to-face versus ICT communication. In addition, the questionnaire included basic demographic information: age, sex, classification, and ethnicity.

Social Skills Inventory

Riggio's (1989) Social Skills Inventory (SSI) is a 90-item, self-report inventory that evaluates a person's perceived social skills in three major areas: expressivity, sensitivity, and control. Each of the three areas was measured on emotional and social aspects, which yielded six domains. Higher scores in each domain indicated a higher level of competence in that area of social skills, i.e., high scores on emotional expressivity meant an individual was highly skilled at accurately and adequately expressing emotions. The total SSI score represented "a global level of social skill

development indicative of overall social competence or social intelligence" (Riggio, 1989, p. 5). The SSI is norm referenced and provides four different levels of social skill, both for the full scale social skill score and for each subscale. Participants could achieve social skill scores of Low, Moderately Low, Moderately High, and High. For the purposes of this study, scores were represented as a bimodal construct: Low and Moderately Low were represented as Low while Moderately High and High were represented as High. Scores on the SSI reported internal consistency reliability estimates between .62-.87 and the Emotional Expressivity and Emotional Sensitivity scales for males were lower (.62, .67, respectively). Two week test-retest reliability was reportedly strong (.81-.96) and the total SSI reliability was .94 on a sample of 549 of which 264 were male and 285 were female (Riggio, 1989). Validity for the SSI was established by correlations with 29 other instruments including the Rosenberg Self-Esteem scale (Rosenberg, 1965). Convergent validity was supported for total SSI with 18 significant relationships, $r = .21-.64$. The SSI's subscales showed several significant correlations with the 16 Personality Factors Questionnaire ($r = .17-.63$; Cattell, Eber, & Tatsuoka, 1970). This study calculated the SSI's internal consistency reliability as $\alpha = .879$.

Likability Scale

Participants completed the Reysen Likability Scale (RLS; 2005) to assess the perceived likability of their partner in the communication task. The RLS is an 11-item questionnaire assessing the perceived likability of an individual with whom one has interacted. Likability is described as a persuasion tactic and a scheme of self-presentation (Kenrick, Neuberg, & Cialdini, 2002). Perceptions of likability are strongly tied to level of social skills (Kwon, Kim, & Sheridan, 2012); when combined with rapport, they are

good indicators of a person's social abilities in an applied situation (Iacovelli & Valenti,

2009). The RLS contains items that assess a person's perceptions of another's likability.

Higher scores represent greater likability of the target individual. Internal consistency for

the RLS reportedly had an alpha of .90 to .91 on a sample of undergraduate students

(Reysen, 2005). Discriminant validity was assessed by the administration of both the

RLS and Goldberg's (1992) 100-Adjective Big Five personality test. The Goldberg scale

measured personality on five subscales: openness, conscientiousness, extraversion,

agreeableness, and neuroticism. The RLS was found to have very small correlations with

four of the five subscales on the Goldberg scale, suggesting the RLS did measure

something distinct from what was measured by the extraversion, neuroticism, openness,

and conscientiousness scales. The RLS had a weak, but significant correlation with the

agreeableness scale ($r = .18$, $p < .05$ for men; $r = .21$, $p < .05$ for women). This study

calculated internal consistency for RLS to be $\alpha = .866$.

Rapport Questionnaire

Participants were also given a Rapport Questionnaire (RQ) modified from Tickle-

Degnen and Rosenthal (1990). The RQ is a 14-item questionnaire that asks participants

about their experience of rapport in a preceding interaction. The RQ was positively

scored with a floor of 0 and a ceiling of 42 for each section. Higher scores indicated a

higher level of either rapport given or received. The RQ did not have any published

psychometric data although this study calculated the RQ to have an internal consistency

of $\alpha = .945$.

The Likability Scale and Rapport Questionnaire were both positively scored, non-

normative measures where higher scores indicated higher levels of positive regard

between participants. Bivariate correlation showed a significant positive relationship between the RLS and RQ ($p = .000$, $r = .666$). These scores were combined to indicate an overall level of regard between participants labeled Total Likability ($\alpha = .946$).

Methodology

Volunteer participants were recruited from psychology, sociology, or First Year Experience classes at a medium sized, public Rocky Mountain university with an undergraduate population of about 12,000. This study utilized a quasi-experimental design that examined the relationship among ICT use, social skills, and performance on a social task. The social task had two different communication conditions and was designed to elucidate performance differences that might exist in different communications media. Random assignment was used to determine both the condition and conversation partner to which an individual was assigned. They were asked to get to know their partner for up to 10 minutes. Participants were asked to complete the rest of the testing materials after the interaction task.

RESULTS

Demographics

The sample consisted of 120 students, the majority of which identified as female (female: $n = 65$, 54.2%; male: $n = 55$, 45.8%) and Caucasian ($n = 80$, 66.7%). Participant ages ranged from 18-25 (mean was 18.8, median was 18, and $SD = 1.4$). The majority of students identified as college freshman and sophomores ($n = 111$, 92.5%). Participants reported spending an average of 41.80 hours per week using ICT; however, due to the large variance in scores ($SD = 38.67$), the median score of 27 hours per week might be more indicative of the typical score. Fourteen participants indicated more cumulative

ICT use than there were hours in a week (ICT > 168) and were excluded from the

analysis. Ten percent ($n = 12$) of participants had Low social skills, 31.7% ($n = 38$)

scored Moderately Low, 34.2% ($n = 41$) scored Moderately High, and 24.2% ($n = 29$)

scored in the High range for social skills. The majority (58.4%, $n = 70$) were in either the

High or Moderately High range; 53.2% of participants indicated a preference for face-to-

face interactions, while 46.8% indicated an ICT preference.

Preliminary Analyses

Due to the exclusion of some participants' data, the achieved power of this study

was calculated to be 0.73 (Faul et al., 2007). Calculation of ICT frequency combined

hours of ICT use for social networking, texting, online chat, and email per week. Several

participants indicated extremely high levels of use that were far above the norm. To

preserve useful data from these participants without skewing ICT hours, a ceiling was

created. Data from participants indicating more hours of ICT use than were possible in a

given week ($n > 168$) were treated as missing values. This resulted in the following

missing values: social networking-- 4, texting--3, online chat--2, and email--1. The same

exclusionary rule was created for the FTF components, resulting in the following missing

values: phone--1, in-person--5. Relative ICT preference was calculated by comparing the

hours spent in ICT communication and hours spent in face-to-face interaction: ICT/(ICT

+FTF; Ishii, 2006). This formula resulted in scores between 0.0 and 1.0; 0.0 represented

lowest possible ICT preference or highest preference for FTF and 1.0 represented a

maximum preference for ICT.

Frequency plots were reviewed for each variable to assess normality. Overall

SSI, Likability and Rapport, and Relative preference all exhibited normal distributions

with skewness less than 1.00 and kurtosis less than 2.00 (Garson, 2012). Information

communication technology frequency was significantly non-normal (skewness = 1.439,

kurtosis = 1.491; Garson, 2012). A square root transformation was applied to ICT

frequency after which the variable exhibited a normal distribution (skewness = .703,

kurtosis = -0.273; Bartlett, 1947). A Bonferroni correction was applied to each analysis

to adjust for the number of analyses performed on the data (Tabachnick & Fidell, 2007).

Thus, the adjusted alpha for this study was α = .0083.

The first research question asked whether there was a relationship between

frequency of ICT use and social skills as measured by the Social Skills Inventory. It was

also hypothesized that frequency of ICT use would exhibit a mild negative correlation

with total social skill scores on the Social Skills Inventory. This hypothesis was not

supported since frequency of ICT did not show a significant correlation with SSI (p =

.107, r = .154).

The second research question asked whether there was a relationship between

relative ICT preference and social skills as measured by the Social Skills Inventory. It

was also hypothesized that relative preference for ICT would exhibit a negative

correlation with total social skill scores on the Social Skills Inventory and the negative

correlation between relative preference for ICT and social skills would be stronger than

the negative correlation between frequency of ICT use and social skills. This hypothesis

was not supported since relative preference for ICT showed no significant relationship

with overall SSI (p = .834, r = -.02).

The third research questions asked whether there was a relationship between

Social Skills and scores of Total Likability across communication conditions. It was also

hypothesized that individuals with higher social skills would not experience a difference in Total Likability across communication conditions and individuals with lower social skills would demonstrate lower Total Likability ratings in-person than in-text. No significant interaction effect was found between social skills and communication conditions on Total Likability, $F(1,116) = .723, p = .397$. Main effects analysis showed significant effects for both SSI, $F(1,116) = 4.902, p = .029$, and Test Condition, $F(1,116) = 8.428, p = .004$. After application of the Bonferroni correction ($\alpha = .0083$), only Test Condition was considered statistically significant.

The fourth research question asked whether there was a relationship between ICT preference and scores of likability and rapport across communication conditions. It was also hypothesized that individuals with a preference for ICT would experience lower Total Likability in-person than in-text and individuals with a FTF preference would experience no differences in Total Likability across conditions. No significant interaction effect was found between ICT preference and communication conditions on Total Likability, $F(1, 105) = .267, p = .606$. Simple main effect analysis showed no significant difference in Total Likability based on ICT preference, $F(1, 105) = .018, p = .894$. Thus, this hypothesis was not supported. Main effects analysis showed people in the in-text condition had significantly higher Total Likability, $F(1, 105) = 9.549, p = .003$). After application of the Bonferroni correction ($\alpha = .0083$), this relationship was considered statistically significant.

The fifth research question asked whether there was a relationship between ICT preference and Total Likability across social skill levels. It was hypothesized that individuals with a preference for ICT would exhibit lower Total Likability than

individuals with a preference for FTF regardless of social skill. No significant interaction effect was found between social skills and ICT preference on Total Likability, $F(1, 105)$ =.035, p = .853. Simple main effects analysis showed a significant difference in Total Likability based on social skills, $F(1, 105)$ =5.192, p = .025. After application of the Bonferroni correction (α = .0083), social skills no longer showed a significant relationship to Likability. No significant main effect was found for relative preference, $F(1, 105)$ =.125, p = .724. Thus, the hypothesis was not supported.

The sixth research question asked whether there was a relationship between Social Skills and Total Likability for high frequency ICT users. It was also hypothesized that two distinct groups of high frequency ICT users would emerge from the data--one with low social skills and one with high social skills; the low socially skilled group would demonstrate lower Total Likability and the higher socially skilled group would exhibit higher Total Likability. A median split was performed on ICT frequency (median of 27), which resulted in 55 participants with high ICT use and 56 with low ICT use. Cross tabulation showed 23 participants with low social skills and 32 with high social skills. An ANOVA was performed with high ICT use individuals to assess the relationship between social skills and Total Likability within this group. No significant relationship was found, $F (1, 54)$ =2.886, p = .095. Thus, while two separate groups of high frequency users existed, no significant relationship was found between their level of social skill and Total Likability.

Summary

This study asked if use of ICT had any relationship with the social skills of an individual. Neither frequency of ICT use nor calculated relative preference for ICT use

had any significant relationship with social skills. Thus, it could be said that neither ICT use nor preference was shown to be a factor in the level of social skills an individual possesses. This study demonstrated no significant relationship between ICT preference or frequency and Total Likability. Thus, use of ICT either in quantity or preference did not have an effect on one's perceived likeability. Before a Bonferroni correction, social skills showed a significant positive relationship to Total Likability in two analyses though was no longer considered significant after the correction. Test condition was shown to be significantly related to Total Likability in two analyses. Participants were seen as more likable in the In-Text condition regardless of social skill or ICT preference. This study predicted the presence of two groups of high frequency ICT users who differed in social skill. While two distinct groups were found of high and low social skills for high frequency ICT users, their group membership had no effect on how likable they were perceived to be.

DISCUSSION

Demographics of the Sample

The majority of participants in this study were in either the High or Moderately High social skill range, which might be due to sampling bias. Participants higher in social skills and thus more comfortable in social interactions might be more likely to sign up for a study that asked them to engage in a social task. The majority of participants also indicated a preference for face-to-face interactions, which might be related to the aforementioned sampling bias. Individuals who prefer interacting in person might be more likely to sign up for a study that requires they physically attend the study and interact in person. Individuals with lower social skills or individuals who prefer to take

online surveys using the SONA system might not have been well represented in this sample.

Social Skills and Information Communication Technology

Ishii (2006) and several other studies used ICT preference over ICT frequency as a predictor of ICT's effect on its users. This study examined the utility of both and found that neither was significantly related to social skills. This might indicate the near ubiquitous adoption of at least some level of ICT use by younger generations and diluted any differences in ICT use by social skill due to the overwhelming social convention of ICT use.

This study found social skills were positively related to likability in a social task. Independent of the communication medium, participants with higher social skills were more likely to be rated positively by their partners than were those with lower social skills. While the relationship was no longer significant after a Bonferroni correction, this suggested social skills might play a role in positively mediating a person's likability. In this manner, the rich-get-richer hypothesis was supported: higher socially skilled (rich) individuals perform better in a social task and thus are rated as more likeable, whereas less socially skilled (poor) individuals perform worse and are thus rated less likeable.

Communication Medium

This study showed participants were significantly more likely to be rated as likable over texting than in-person. This was true even after accounting for social skills, ICT frequency, and ICT preference. Thus, it could be said people are either more likable using ICT or less likeable in person. It is also possible that for the in-text condition, a lack of visual and vocal cues led a participant to believe their conversation was similar to

themselves. Some research suggested perceptions of dissimilarity harm likability and perceptions of similarity increase likability (Rosenbaum, 1986; Smeaton, Byrne, & Murnen, 1989). Text-only ICT might provide users with both a lack of dissimilarity cues and assumptions of similarity, which might aid likability in this ICT medium. Information communication technology provides asynchronous communication, giving its user time to consider his/her partner, formulate an ideal response, and communicate that response while experiencing his/her own private reactions to the interaction. In this case, an individual can convey only the most desirable aspects of themselves in the absence of partner scrutiny or pressure of conversation maintenance.

Interacting in such a way might also help mediate the conversational differences between introverts and extroverts noted by Lieberman and Rosenthal (2001). The increased time available for response might reduce the multitasking demand for introverts, allowing them to engage in both conversation maintenance and reflected appraisal. This might provide introverts the opportunity to perform as well as extroverts in interaction tasks using ICT.

Face-to-face interactions not only have the additional pressures of being synchronous, they also involve significant nonverbal factors (Trimboli & Walker, 1987). Face-to-face participants were subject to each other's physical appearance, attractiveness, hygiene, gender, age, etc., as well as both conveying their own and perceiving their partner's nonverbal reactions during the interaction. There simply might have been more opportunities to garner negative impressions in FTF interactions. Joseph Walther's (1996) hyperpersonal communication theory asserted that reduced nonverbal cues encouraged increased self-disclosure and reduced interpersonal inhibitions. Antheunis,

Valkenburg, and Peter's (2011) study found interpersonal attraction was higher in text-only interactions than FTF and suggested increased self-disclosure and increased direct questioning behaviors contributed to the result. Their finding supported this study's results that people are in general more likeable in an ICT context.

This study's results supported the rich-get-richer theory; both high and low socially skilled individuals might be attracted to ICT due to its positive perception bias but only the highly skilled (rich) are likely to be considered likable in both conditions. A person with low social skills might be rated as more likable in an ICT interaction than FTF; however, they will be less likeable than a person with high social skills in an ICT context. Social network theory suggests individuals are more likely to use ICT to increase their social connections due to its availability and ease of use. Additionally, the above result also suggested a potential positive perception bias for online use. Thus, people might be more likely to consume ICT not only because of its practical utility but also because it paints both the individual and those with whom they interact in a more favorable light.

A recent meta-analysis conducted by Shapiro and Margolin (2014) found adolescents with high social skills were most likely to have more online connections and to experience more benefits to their well-being than less socially skilled adolescents. In contrast, adolescents "who post more negative messages, which may include those with low self-esteem or poor social skills, open themselves up to negative feedback from others" (Shapiro & Margolin, 2014, p. 9). Weidman et al. (2011) found, in contradiction to social compensation theory, that "individuals higher in social anxiety feel more

comfortable when communicating online…such behavior may be associated with poorer well-being" (p. 194).

It is clear this study and recent research did not fully support social compensation theory; namely, compensatory use of ICT was not always effective and did not provide a functional alternative to FTF interactions. Social networking theory appeared to provide a logical framework for the expansion of ICT use since it represented a convenient and efficient method of social communication. This study also suggested a positive perception bias might also be a factor in ICT's attractiveness as a communication medium. While further research is needed, this study's results supported the rich-get-richer theory. Socially skilled individuals tend to benefit more from any communication medium and experience further increased likability using ICT. Recent studies also suggested individuals with lower social skills might experience more negative interactions online, providing further support that in addition to the rich getting richer, the poor also get poorer.

Clinical Applications

The therapeutic alliance is said to be responsible for as much as 30% of change in clients (Lambert & Hill, 1994). While the therapist is largely considered responsible for the creation of this alliance (Baldwin, Wampold, & Imel, 2007), practitioners must be aware of forces that shape communication and thus rapport building of both themselves and their clients. This study indicated individuals with higher social skills were more likely to be seen as likeable. This is especially applicable to therapist training since therapist factors are superordinate to client factors in alliance building (Ulvenes et al., 2012).

This study showed that, in general, people are viewed as more likeable over text. This suggested traditional FTF therapy might already be at a rapport building disadvantage due to either the advantages of asynchronous communication for ICT, the presence of potentially negative interpretations of nonverbal content, or some combination thereof. However, therapy might differ from other FTF interactions since clinical training usually includes significant attention to nonverbal cues. While the therapist might still be subject to negative evaluation based on appearance, gender, hygiene, etc., they might be at a slight advantage in FTF rapport building compared to non-clinical interactions due to the intentional inclusion of rapport building, nonverbal behaviors.

Therapists must also be cautious in their interpretations of clients' use of ICT and examine their own assumptions about its effect on users. Recent studies suggested online game playing did not actually represent a function deficit in social skill or well-being (Kowert & Oldmeadow, 2013). It is important to consider a client's level of social skill across all types of interactions and encourage relational skills that could generalize across media when social interactions are a focus of therapy. For clients who prefer online interaction, therapists must not immediately assume this represents a compensatory social behavior. Clinicians must understand the temptation to use ICT not only due to its ease of use but the significant positive perception bias ICT affords by both its asynchronous nature and lack of potentially negative nonverbal cues.

This study has several implications for counseling psychologists. Clinicians must consider including social skills training as part of their clinical development. Regardless of the medium and independent of client social skill, a psychologist's level of social skill

strongly influences their likability and thus therapeutic alliance formation. Training programs for counseling psychologists should consider social skills as imperative to trainee selection, development, and evaluation. Psychologists engaged in supervision should consider both how their own social skills contribute to the supervisory relationship and how their supervisee's social skills might impact clinical work. Community engagement and social justice are integral to counseling psychology, involve multiple types of interactions over ICT and FTF media, and require strong social skills. Psychologists might even take advantage of the positive perception bias inherent in ICT and make initial contact, especially for potentially contentious interaction over text-based ICT. As ICT becomes more commonly used for both professional communications and delivery of services, it is vital psychologists be aware of its effect on those interactions.

Limitations

In this study, ICT frequency was non-normally distributed and had a few significant outliers. This might have skewed analyses that included ICT frequency as a variable. Additionally, this study used a summation of several types of ICT that might have introduced more error into participant self-assessments.

This study relied heavily on self-reported data and questionnaires. Despite some evidence participants could accurately self-assess their technology use, there was some discrepancy in participants' estimates in this study as discussed above. Self-report questionnaires, while convenient and often recommended by educational researchers, are imperfect (Glass & Hopkins, 1996). Self-reported measures are subject to face validity and offer participants the opportunity to engage in impression management.

In both conditions, participants were asked to converse for 10 minutes. While previous research has used the same time interval, participants had specific problem solving tasks to complete (Iacovelli & Valenti, 2008). Perhaps without a specific task, participants' quality and quantity of engagement varied between dyads, which might have affected their perceived likability independent of condition or social skill and introduced error. The short time interval might also have been a limitation for this study. Ambady, Bernieri, and Richeson (2000) argued that people are adept at making complex conclusions about others personality characteristic from "thin slices," i.e., 4-10 minutes of observations. However, these judgements were made by passive observation and involved no interaction with their subjects. It is possible that during an interaction task where conversation maintenance, reflected appraisal, and impression management were simultaneous tasks, a short, non-directed interaction might not be sufficient for social skill and likability differences to emerge.

Research Implications

While the current study and those discussed above largely supported the rich-get-richer theory, it is important to consider that to truly examine this theory we must see the effect these factors have on participants *over time*. Thus, without a longitudinal component, we cannot assess if these were merely static functional differences in skill and context or if ICT users with different characteristics saw changes in their use and social skill as they continued to consume ICT over a period of years.

This study was able to make statements about how ICT and social skills affected a person's likability in different communication media. However, it was not able to predict a person's likability based on ICT use and various characterological factors. Future

studies should seek to predict the effect of the above ratios for different ages, genders, races, and ethnicities. Different pairings of participant factors should be examined such as pairing people with low social skills together or people with high ICT use together. The SSI provides for a much more detailed interpretation than was used in this study. Future research should attempt to determine what specific facets of social skills, e.g., control, sensitivity, and expressivity, interact with ICT.

CONCLUSIONS

Most of the studies discussed above assessed the effect ICT use/preference had on users. However, could this effect be accurately assessed in a generation reared from infancy with ICT incorporated into multiple daily activities? We must ask ourselves, how are social skills acquired? If social skills are acquired by observing others and ICT is a part of the fabric of the observed society, a distinct effect might not be clear. A trend could already be seen in the literature of differing effects on users based on the time frame in which the study was conducted (Kraut et al., 1998, 2002). This study and others like it represent a snapshot in time and can only describe changes in trends rather than draw specific conclusions and causality about ICT. Even ICT is changing--to both integrate with FTF (Google Glass, Facial Recognition applications) and to mimic FTF interactions by replication its features (Virtual Reality, FaceTime, Skype). The qualitative distinction between FTF and ICT communication might continue to shrink. Future research should seek to describe not only current trends but to look across the decades of ICT and see the dynamic interplay between the adoption of a new ICT, its incorporation into everyday life, and eventual relegation to invisibility due to ubiquity.

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