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The Associations among Computer Mediated Communication, Relationships, and Well-being

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Abstract

Social support provided by interpersonal relationships is one of the most robust correlates of well-being. Self-disclosure serves as a basic building block of these relationships. With the rapid growth of the internet in recent years, the question remains how self-disclosure, and subsequently relationships and well-being, differ when people communicate over the internet rather than in person. The purpose of this article is to describe current internet usage patterns as well as explore the association of internet usage and well-being. Additionally, it directly compares the perceived benefits of face-to-face communication and computer mediated communication. A questionnaire was administered to 99 undergraduates to measure internet usage patterns, communication partners, self-disclosure, extraversion, and subjective well-being. Although internet communication was found to be common, individuals *perceived* computer mediated communication to be less useful than face-to-face communication. In addition, increased internet usage was associated with decreased well-being. Implications are discussed in terms of a new internet paradox in which people increasingly use the internet for communication although they perceive it to be less beneficial than face-to-face interactions and it is associated with reduced well-being.

The Associations among Computer Mediated Communication,

Relationships, and Well-being

Science fiction films from a generation ago often portrayed futuristic technology in which live video feed of the person on the telephone was available. Today, this technology is readily available to anyone with a computer and an internet connection. However, instead of embracing "the future," society has taken a step backward in interpersonal communication that is reminiscent of the telegraph. Despite greater bandwidth, people have resorted to communicating through abbreviated text messages. This unpredicted direction for communication begs the question, how does computer mediated communication (CMC) affect the development and maintenance of interpersonal relationships?

Interpersonal relationships are a key component to generating positive emotions and subsequent well-being (Diener, Suh, Lucas, & Smith, 1999; Fredrickson, 1998, 2001, 2003; Lyubomirsky, King, & Diener, 2005). In an extensive review of literature, Lyubomirsky et al. (2005) concluded that social support provided by interpersonal relationships is one of the most robust correlates of well-being. Social support has been associated with higher self-esteem, better coping skills, as well as increased physical and mental health. Similarly, positive emotions have been found to increase social interactions yielding an upward spiral of social support and well-being (Berry & Hansen, 1996; Fredrickson & Joiner, 2002).

One of the basic building blocks of relationships is self-disclosure (Altman & Taylor, 1973; Subrahmanyan & Greenfield, 2008). Self-disclosure occurs when a person provides (i.e., discloses) information about him/herself to another person. Social

penetration theory suggests that relationships develop through a process of reciprocal self-disclosure resulting in intimacy and a close interpersonal bond (Altman & Taylor, 1973). Self-disclosure is a form of interpersonal communication that is central in the development and maintenance of relationships.

In recent years, the use of the internet for interpersonal communication has expanded rapidly (Bonebreak, 2002; PEW, 2007; Valkenburg & Peter, 2009). In 2007, approximately 86% of young adults reported using the internet occasionally or more frequently (PEW, 2007). Therefore, researchers have begun to examine how self-disclosure, and subsequently relationship formation and well-being, are affected when people participate in computer mediated communication (CMC) rather than face-to-face (FTF) communication.

The research on whether CMC has a positive or negative impact on well-being has been equivocal. Some studies found negative effects of the internet on well-being (Gross, Juvonen, & Gable, 2002; Kraut et al., 1998; van den Eijnden, Meerkerk, Vermulst, Spijkerman, & Engels, 2008; Wolak, Mitchell, & Finkelhor, 2003). Other researchers have identified ways in which the internet can help foster relationships, increase positive affect, and enhance well-being (Boneva, Quinn, Kraut, Kiesler, & Shklovski, 2006; Kraut et al., 2002; LaRose, Eastin, & Gregg, 2001; Liu & LaRose, 2008; McKenna & Bargh, 2000; Mesch, 2001; Tidwell & Walther, 2002).

Given these discrepancies, researchers began to investigate variables that may account for the differences found in the literature. In our review of the research, some key variables emerged that may determine whether or not CMC positively or negatively impacts well-being. These variables include (a) how much the internet is used, (b) the

purpose for which the internet is used, (c) who individuals talk to online (i.e., friends or strangers), (d) what people self-disclose online, and (e) level of extraversion. An overview of the literature on how each of these variables may be related to well-being follows.

Internet Usage

Approximately 86% of adults 18-25 in the United States use the internet (PEW, 2007) with interpersonal communication being the leading use of the internet (Bonebreak, 2002; PEW, 2007; Valkenburg & Peter, 2009). Sheldon (2008) found that people spent 47 minutes per day on social networking sites alone communicating with friends. Some researchers have found that internet use displaces time spent interacting with family and friends as well as developing relationships (Mesch, 2001; Nie, 2001). However, other studies have found that online interaction stimulates both local and distant relationships and subsequent well-being (Ellison, Stenfield, & Lampe 2007; Valkenburg and Peter, 2007b; Ward & Tracey, 2004). Additionally, increased duration and frequency of posting online predicted relationship formation (Parks & Floyd, 1996; Valkenburg, Peter, & Schouten, 2006) with almost 40% of online relationships resulting in FTF interaction in one study (Parks & Roberts, 1998).

Purpose of Internet Usage

In addition to the amount of time spent on the internet, how time is utilized on the internet may also determine its effect on well-being (McKenna & Bargh, 2000). Weiser (2001) conducted a principal components analysis identifying two primary dimensions of internet use: goods and information acquisition orientation as well as a social or affiliative orientation. Research findings have differed on how these two purposes of

internet usage affect well-being. Some research has shown that using the internet for goods and information was associated with reduced stress levels (Leung, 2007) and increased in well-being (Weiser, 2001). Other research has indicated that using the internet for social purposes is associated with better coping skills (Seepersad, 2004) and has a positive impact on well-being (Leung, 2007; Valkenburg & Peter, 2007b). Based on the extensive body of research indicating that social support is central to relationship development and well-being (Diener et al., 1999; Fredrickson, 1998; Lyubomirsky et al., 2005), the social and affiliative uses of the internet show promise for enhancing well-being.

Communication Partner

If the primary usage of the internet is communication purposes, another key variable that may influence the impact of the internet on well-being is who people are talking to when they use the internet (i.e., friends or strangers). Early researchers who found negative outcomes from internet use (Kraut et al., 1998; Mesch, 2001; Nie, 2001) explained them through the reduction hypothesis, which states that using the internet reduces time with family and friends resulting in reduced social ties and well-being. However, these results may be confounded with the fact that many early internet users were primarily communicating with strangers they met in chat rooms and other internet forums due to low internet penetration rates (Valkenburg & Peter, 2009). Early studies indicated that a large percentage of individuals developed online relationships; however, these relationships were found to be shorter in duration and less well developed (Parks & Roberts, 1998). More recent studies have found that online relationships are no less well-developed than those formed in person (Bryant, Sanders-Jackson, & Smallwood, 2006).

Although the advent of communication technologies encouraging social interaction with preexisting friends (e.g., instant messaging and social networking sites) has resulted in less communication with strangers online (Gross et al., 2002; Subrahmanyan & Green, 2008), many studies have found that communication with strangers does have a negative impact on well-being (Gross, et al., 2002; Seepersad, 2004; Valkenburg & Peter, 2007a, 2007c, 2009). Subrahmanyan and Green (2008) noted an exception to this pattern of results; adolescents with social anxiety may benefit from talking with strangers on-line.

Self-Disclosure

Another factor that may affect the impact of internet usage on well-being is the content of information disclosed through CMC versus FTF. Early researchers were concerned that the anonymity afforded on the internet would lead to deindividuation, which would result in negative consequences such as aggressive interactions (Coleman, Paternite & Sherman, 1999). Although issues such as "flaming" (i.e., posting or sending hostile messages on the internet) and cyber-bullying continue to be a public concern and focus of study, experimental research has not supported deindividuation during internet interactions (Joinson, 2001; Matheson & Zanna, 1988).

In contrast, the characteristics of the internet (i.e., anonymity, lack of barriers due to physical distance, lack of visual cues, and more control over self-presentation) identified by McKenna and Bargh (2000) have been found to yield more self-disclosure (Antheunis, Valkenburg, Peter, & Schouten, 2007; Boneva et al., 2006; Coleman et al., 1999; Gross et al., 2002; Joinson, 2001; Schouten, Valkenburg, Peter, & Antheunis, 2006; Tidwell & Walther, 2002), better representation of the true self (Bargh, McKenna,

& Fitzsimmons, 2002), and more positive perceptions of the communication partner (Antheunis et al., 2007; Bargh et al., 2002) online than in person. The high level of self-disclosure observed on the internet indicates that it may be a viable medium for developing intimate relationships and increasing well-being.

Level of Extraversion

A final important factor that emerged in the literature was that characteristics of the internet user have an effect on how internet use impacts well-being. The most frequently studied characteristic was the extent to which someone was introverted or extraverted. There were two competing hypotheses identified in the literature with some support found for both. Some research supported the social compensation hypothesis, which indicates that people who are socially isolated or lonely will benefit from using the internet due to the physical distance between them and the target of communication as well as the control over self-presentation allowed through asynchronous responding (LaRose, Eastin, & Gregg, 2001; McKenna & Bargh, 1999 as cited in McKenna & Bargh, 2000; Mesch, 2001; Valkenburg & Peter, 2007b; Ward & Tracey, 2004; Wolak et al., 2003). However, the majority of studies either found no benefits of internet use among introverted persons (Bonebrake, 2002; Valkenburg & Peter, 2007a) or supported the rich-get-richer hypothesis (Bryant et al., 2006; Kraut et al., 2002; Liu & LaRose, 2008; Ma & Leung, 2006; Peter, Valkenburg, & Schouten, 2005; Sheldon, 2008; Valkenburg & Peter, 2007b; van den Eijnden et al., 2008), which states that extraverted people tend to use the internet for social purposes resulting in positive consequences on well-being. In summary, extraverts have been found to use the internet for more social purposes and experience greater well-being as a result compared to introverts. However,

people who are introverted or socially isolated seem to be able to exhibit greater self-disclosure and obtain additional social support through CMC than FTF communication (Peter et al., 2005; Valkenburg & Peter, 2007b; Ward & Tracey, 2004).

Current Study

College students live in a unique social environment in which FTF communication with peers is readily available through their classes, residence halls, and dining halls. However, despite ample opportunity for FTF interaction, they spend an inordinate amount of time communicating online with their peers. The present study had two primary purposes. First, we wanted to explore the current trends in internet usage among college students. Second, we wanted to examine the impact of CMC versus FTF communication on well-being. Based on a review of the literature, we predicted that the following would have a negative impact on well-being: (a) spending more time on the internet due to the displacement of other social activities; (b) using the internet for goods and services rather than communication purposes; (c) communicating with strangers rather than friends on the internet; (d) having low levels of self-disclosure on the internet; and (e) being introverted rather than extraverted.

Method

Participants

The sample consisted of 99 undergraduate students from a small, public liberal arts college in the mid-Atlantic region who received credit in a general psychology course for their participation. Participants included 75 females and 24 males with a mean age of 19 ($SD = 1.11$). Approximately 80.8% of the participants were Caucasian, 4.0% African American, 8.1 Hispanic, 8.1% Asian or Pacific Islander, 1.0% Alaskan Native,

and 6.1% defined themselves as other. These demographics are representative of the student population at this university.

Materials

Participants were given a questionnaire consisting of measures of subjective well-being, internet usage, level of extraversion, and demographic information as well as some additional measures that were not included in these analyses.

Subjective Well Being. The Satisfaction with Life Scale (SWLS) was used to assess the participants' global life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985). Participants rated five statements (e.g., In most ways, my life is close to my ideal) on a scale of 1, *not at all true,* to 7, *absolutely true.* The SWLS has been shown to have an internal reliability of .87 and a test-retest reliability of .82 (Pavot & Diener, 1993). Cronbach's alpha for this sample was .85.

Internet Usage. A series of questions assessed whether the internet was being used, to what extent (e.g., amount of time spent online per week), and for what purpose (e.g., information gathering and or communication and entertainment). To further investigate online communication, participants were asked to indicate by what means they communicated online (i.e., instant messaging, social networking sites, and e-mail). For each method of communication, participants were asked to rate how often they communicated with five groups of people, on a scale of 1 (*none of the time*) to 5 (*all of the time*) including (a) family members or friends in close proximity, (b) family or friends who live further away, (c) acquaintances (e.g. coworkers, classmates), (d) people they met on the internet and have communicated with for a while, and (e) people they have recently met on the internet.

Self-Disclosure. The Self Disclosure Scale (SDS) was included to examine the type of personal information people disclosed during FTF interactions (Miller, Berg, & Archer, 1983). Participants rated statements on a scale of 1 (*not at all*) to 5 (*fully and completely*) indicating how much they discussed items such as personal habits, deep feelings, and things they are proud of with someone whom they are fairly well acquainted with, but is not their best friend. The SDS has been shown to have an internal reliability of .93. (Miller et al., 1983). Cronbach's alpha in this sample was .91. A modified version of the SDS was also administered that asked respondents about their self-disclosure with a friend online to permit the comparison of self-disclosure in CMC versus FTF communication. Cronbach's alpha for the modified SDS was .93 in this sample.

Perceived Utility of CMC versus FTF. Participants were asked about their perception of the internet for completing various tasks as well as for obtaining social support. Utility items were adapted from Boneva et al. (2006) to investigate the benefits of online versus FTF communication. Participants indicated the degree to which they felt both CMC and FTF communication were useful for items such as exchanging information and making future plans on a scale of 1, *completely disagree,* to 5, *completely agree*. Cronbach's alpha for the Perceived Utility Scale in this sample was .72 for FTF communication and .72 for CMC communication.

Perceived Social Support from CMC versus FTF. A modified version of the Duke-UNC Social Support Scale (SSQ; Broadhead et al., 1998) was used to assess perceptions of social support received online. Participants rated statements from the Duke-UNC SSQ such as "I get useful advice about things that are important in life," and "I get love and affection," on a modified scale to indicate whether they were less likely,

more likely, or about as likely to receive social support online versus FTF. The items

used are found in Table 2. Cronbach's alpha for the modified SSQ was .79 in this

sample.

     Level of Extraversion. The Big Five Inventory (BFI) is used to measure a

participant's personality along 5 dimensions: openness, extroversion, agreeableness,

conscientiousness and neuroticism (John & Srivastava, 1999). The extroversion sub-scale

was used in this study to measure the degree to which participants think that they are

talkative, assertive, energetic etc. on a scale of 1 (*disagree strongly*) to 5 (*agree strongly*).

The reliability of this sub-scale is .88 with a convergent validity of .94 (John &

Srivastava, 1999). Cronbach's alpha for this sample was .86.

Procedure

     The data were gathered on one evening in the Fall of 2008 in two consecutive

groups of approximately 50 participants each. After obtaining informed consent,

participants were given one hour to complete the paper-and-pencil questionnaire. All

participants were treated according to the ethical guidelines of the American

Psychological Association (APA, 2001).

Results

Internet Usage

     Amount of Usage. Descriptive statistics were conducted in order to examine the

extent and for what purpose CMC was being used by participants. All participants

reported using the internet. On average participants used the internet 7 days a week for

almost 3 hours each day or an average of 19.45 (SD = 5.69) hours per week.

Purpose of Usage. Approximately 12% of participants reported primarily spending time gathering information or using the internet for entertainment purposes, while 22% reported primarily using the internet to communicate with others; however, the majority (66%) reported doing each activity equally. About 87% of participants used instant messaging services reporting that they had an average of 106 ($SD = 117$) "buddies" with whom they communicated. The number of buddies was positively skewed ranging from 1 to 600 buddies. About 92% of the sample used social networking sites. These participants reported having an average of 365 ($SD = 287$) "friends" on the social networking site that they used most often.   Finally, approximately 98% of the participants indicated that they used e-mail with 45% of the e-mails being personal correspondence and the remaining 55% were for business purposes.

Communication Partner. Communication with a stranger included both communicating with someone participants had just met on-line or had met on-line and known for awhile either by e-mail, instant messenger, or a social networking site. Approximately one-third (35.2%) of the participants indicated that they communicated online with someone they met on the internet more often than *some of the time*.

Self-Disclosure. A repeated measure t-test was conducted to examine whether there was a significant difference between how much participants self-disclose by means of CMC versus FTF, ($t(97) = -6.25, p = .001$). Participants reported that they were more apt to self-disclose information about items such as personal habits, fears, and relationships FTF ($M = 31.05, SD = 8.46$) than online ($M = 25.62, SD = 8.95$).

Perceived Utility of CMC versus FTF. Repeated measure t-tests were conducted to examine whether participants felt CMC or FTF communication was more useful for

various purposes. Results were evaluated at a corrected alpha level of 0.007 to avoid

increasing the chance of a Type I error. Participants felt that FTF communication was

more beneficial than CMC for getting work done ($t(97) = 5.46, p < .001$), building

interpersonal relationships ($t(95) = 13.78, p < .001$), increasing emotional closeness ($t(95)$

$= 14.81, p < .001$), making plans for the future ($t(97) = 4.4, p < .001$), and was overall

more enjoyable ($t(97) = 7.3, p < .001$). Participants reported no differences in exchanging

information ($t(97) = 2.1, p = .03$) or in discussing embarrassing information between

CMC and FTF communication ($t(96) = -1.37, p = .17$). The means and standard

deviations for these items are presented in Table 1.

 Perceived Social Support from CMC versus FTF. A series of one sample chi-

square tests were conducted to assess the amount (i.e., more, less, or about the same) of

perceived social support participants received by means of CMC in comparison to FTF

interactions at a corrected alpha level of .006. If there were no difference between CMC

and FTF communication, we expected participants to respond equally across the three

response options (33% each). As reported in Table 2, participants were less likely to feel

that someone would care what happens to them (50%) or offer help to them when they

were sick in bed (76%) online compared to FTF. A small percentage of people (~11%)

indicated that they were "more likely" to talk about money online rather than FTF. The

majority of the participants reported that people were just as likely to talk about problems

with work and housework (50%), provide useful advice (53%), and offer an invitation to

go out and do things (54%) through CMC versus FTF. Finally, after the Bonferroni

correction, the percentage of responses for two items (i.e., express love and affection for

you as well as talk about your personal and family problems) did not differ across

response options. In summary, there were no items that participants indicated they were more likely to discuss online rather than FTF.

Level of Extraversion

Overall, participants in the sample had an average score of 25.98 (SD = 6.34) on the introversion/extraversion scale with a range of 14 to 40. The level of extraversion did not correlate with the amount of internet usage, $r(95)$ = .035, p = .37. People did not differ in level of extraversion based on the purpose of internet usage, $F(2,94)$ = .70, p = .50, η^2 = 1.5%. People who used the internet primarily for communication (M = 24.52, SD = 5.48) scored similarly to those who use the internet primarily for information and entertainment (M = 25.83, SD = 6.87) or for both purposes equally (M = 26.42, SD = 6.59). There was also no difference in level of extraversion for people who talked to friends (M = 26.19, SD = 6.22) versus strangers (M = 25.32, SD = 6.71) on the internet, $t(86)$ = .74, p = .54. Finally, level of extraversion was not correlated with amount of self-disclosure online, $r(96)$ = .05, p = .31. However, exploratory analyses were conducted to determine if level of extraversion was related to perceptions of the internet's utility for building and maintaining relationships. A negative correlation was found for enjoyment of communicating online, $r(95)$ = -.25, p = .006; building interpersonal relationships, $r(95)$ = -.34, p < .001; and increasing emotional closeness, $r(95)$ = -.36, p < .001, indicating that people who are more extraverted reported that CMC was less useful for these purposes. There was no correlation between level of extraversion and rating of the internet's utility for exchanging information, $r(96)$ = .07, p = .23; getting work done, $r(96)$ = -.08, p = .21; discussing difficult topics, $r(96)$ = -.13, p = .11; or making plans for future interaction, $r(96)$ = -.12, p = .11.

CMC Usage and Well-being

Several analyses were conducted to examine whether the five key variables identified in the literature were related to well-being. There was a significant negative correlation between the number of hours per week participants used the internet and the SWLS ($r(95) = -0.201$, $p = 0.024$). Well-being did not differ based on the primary purpose for using the internet, $F(2, 94) = 0.79$, $p = 0.46$, $\eta^2 = 1.6\%$. People who used the internet primarily for communication ($M = 4.78$, $SD = 0.97$) scored similarly to those who use the internet primarily for information and entertainment ($M = 4.48$, $SD = 1.31$) or for both purposes equally ($M = 4.90$, $SD = 1.05$). In terms of communication partner, there was not a significant difference on the SWLS between people who reported communicating with strangers frequently versus those who did not, $t(86) = 1.07$, $p = 0.29$. There was also not a significant correlation between the SWLS and the amount of self-disclosure people reported online, $r(95) = 0.076$, $p = 0.45$ or off-line $r(95) = 0.165$, $p = 0.10$. Finally, using a median split to divide participants into introverts and extraverts, the two groups differed in terms of their well-being, $t(97) = 2.15$, $p = 0.03$. People who are more extraverted reported greater well-being ($M = 5.05$, $SD = 0.99$) than those who are more introverted ($M = 4.59$, $SD = 1.12$).

Discussion

The purpose of this study was to describe the internet usage patterns of young adults as well as examine how key variables related to internet use (i.e., amount of use, purpose of use, communication partner, content of communication, and level of extraversion) impact well-being. Patterns of internet usage appear to be changing as new internet technologies are developing that support more social interactions. Although

amount of internet use was found to be related to decreased well-being, the other

variables identified in the literature on internet use were not found to be related to well-

being as predicted. Despite this, participants consistently rated the internet as less

beneficial than FTF communication for maintaining relationships (e.g., self-disclosure

and social support), which are a key element of well-being.

Internet Usage

Virtually all college students have access to the internet and use it several hours a

day for both goods and information acquisition as well as social purposes. People tend to

use instant messaging and social networking sites for social purposes while using e-mail

more for business purposes. The latter is consistent with other research that has indicated

that people find e-mail to be valuable for exchanging information, but not for maintaining

social relationships (Cummings, Butler, & Kraut, 2002). The majority of people are using

the internet to communicate with family and friends who live both close by and more

distantly. However, about one-third of participants indicated that they used at least one

method of internet communication (i.e., instant messaging, social networking sites, or e-

mail) to communicate with strangers (i.e., people they had met online). Although still

higher than may be desirable, there appears to be a decrease in the number of people

talking to strangers on-line compared to earlier studies in which more than two-thirds of

participants reported forming relationships with people they had met on-line (Parks &

Floyd, 1996; Parks & Roberts, 1998).

CMC Usage and Well-being

The amount of internet usage was the only variable identified from previous

research on internet usage and well-being that was found to be significant in the current

study. People who reported spending more time on the internet had lower well-being than those who spent less time online. This finding is consistent with the reduction hypothesis, which states that using the internet reduces social connections and well-being, as well as other studies that have found a negative impact of internet use on well-being (Gross et al., 2002; Kraut et al., 1998; van den Eijinden et al., 2008; Wolak et al., 2003).

The remaining internet variables investigated (i.e., purpose of internet use, communication partner, and content of communication) were not related to well-being. The primary reason we speculate for these findings is that the usage of the internet has changed over time, which may attenuate the negative impact it has on well-being. These changes will be discussed for each variable.

Purpose of Communication. Prior studies have found differences between people who primarily use the internet for goods and information versus those who primarily use it for social purposes (Leung, 2007; Seepersad, 2004; Valkenburg & Peter, 2007b, Weiser, 2001). However, the majority of people in this study (66%) indicated that they use the internet for both of these purposes equally. Therefore, there may not be two distinct groups of users anymore. This overlap in usage may account for the lack of differences in well-being among the groups. Additionally, communicating online (or by text messaging) has become the norm for the "generation next." Prior generations may have experienced a decrease in well-being as they switched from FTF (or telephone) communication to CMC. However, for people who have always communicated online there may be no distinction between CMC and FTF communication for maintaining relationships or well-being (Bonebrake, 2002).

Communication Partner. Another change in how the internet is used pertains to the communication partner. Early adopters of the internet had no choice but to communicate with strangers because of the low internet penetration rates (Valkenburg & Peter, 2009). However, recent technology such as instant messaging and social networking sites have created a rich environment for maintaining and building existing social relationships. These changes may account for the discrepancies seen in previous research as to whether the internet decreases (Gross et al., 2002; Kraut et al., 1998; van den Eijinden et al., 2008; Wolak et al., 2003) versus increases well-being (Boneva et al., 2006; Kraut et al., 2002; LaRose et al., 2001; Liu & LaRose, 2008; McKenna & Bargh, 2000; Mesch, 2001; Tidwell & Walther, 2002). As social uses of the internet evolve, it may become a widespread mechanism for providing social support, which has the potential to increase well-being.

Self-Disclosure. Self-disclosure is an important building block for relationships, which in turn have an impact on well-being (Altman & Taylor, 1973; Lyubomirsky et. al., 2005). Although multiple experimental studies have shown an increase in self-disclosure when communicating online (Antheunis et al., 2007; Boneva et al., 2006; Coleman et al., 1999; Gross et al., 2002; Joinson, 2001; Schouten, et al., 2006; Tidwell & Walther, 2002), participants' self-reports in the current study indicate that they disclose more via FTF communication than CMC. Despite the difference in the amount of self-disclosure reported by communication mode, self-disclosure was not related to subsequent well-being as predicted. This discrepancy between previous experimental studies and these self-reports calls into question the ecological validity of previous experimental studies. Experimental studies have had strangers "get to know each other"

and have found that more questions are asked in the CMC conduction versus the FTF leading to more self-disclosure. However, if most online communication now occurs with existing friends then, this increase in self-disclosure seen between strangers may not be applicable to existing friendships. If the self-report data are accurate, people may disclose less to their existing friends online as opposed to FTF. Additional research is needed to investigate this possibility further.

An alternate explanation for the discrepancy found between the experimental studies on self-disclosure and the current finding that people report less self-disclosure online than FTF is that people may not be accurately reporting the amount they self-disclose online. Although, there is a perception that CMC may be superficial in nature, studies have shown that the content is meaningful (Boneva et al. 2006). The question then is whether the actual amount of self-disclosure or the perceived amount of self-disclosure is what is meaningful in determining relationship formation and subsequent well-being. Research on perceived versus actual stress (Cohen, Kamarck, & Mermelstein, 1983) as well as perceived versus actual similarity in relationships (Hendrick, 1981; Thomas, Fletcher, & Lange, 1997) indicates that the perception seems to be more critical than actual behavior in determining outcomes. Additional research is also needed to examine the role of perceived versus actual self-disclosure in relationship formation online.

Perceptions of CMC for Social Purposes

Similar to the negative perceptions of online self-disclosure, people had negative perceptions of CMC for other social purposes when compared to FTF interactions. There was not a single aspect of social support that respondents indicated was more likely to be

provided online as compared to in person. Given that self-disclosure is a foundational element of relationship development (Altman & Taylor, 1973) and social support provided by relationships is the most robust predictor of well-being (Lyubomirsky et al., 2005), it is surprising that self-disclosure and other aspects of internet usage were not related to well-being. Finally, participants indicated that FTF communication was more useful than CMC for items pertaining to both the exchange of information as well as relationship maintenance. Similar to previous research (Boneva et al., 2006), they also considered FTF communication to be more enjoyable than CMC. These relationships were especially noticeable among persons with higher levels of extraversion who rated CMC as less enjoyable as well as less useful for building relationships and increasing emotional closeness than people with lower levels of extraversion.

Level of Extraversion

Although people with higher levels of extraversion were found to report greater well-being, a robust relationship in the literature (Lyubomirsky et al., 2005), level of extraversion did not relate to the amount of internet usage, the purpose of usage, communication partner, or self-disclosure. One possible explanation is that prior research often referred to the negative impact of the internet for people with social anxiety or loneliness (LaRose et al., 2001; McKenna & Bargh, 1999 as cited in McKenna & Bargh, 2000; Mesch, 2001; Valkenburg & Peter, 2007b; Ward & Tracey, 2004; Wolak et al., 2003). Although, the term introverted was often treated synonymously with social anxiety and loneliness in the literature, introversion is a distinct psychological construct referring to lower levels of sociability, warmth, and enthusiasm (John & Srivastava, 1999). Future research should not only examine this personality characteristic further

using other measures of introversion, but also should examine other personality characteristics that may affect internet usage and well-being such as social anxiety, loneliness, and the sex of the user.

Limitations

The results of this study should be viewed in light of some methodological limitations. First, a relatively small and homogeneous group of general psychology students at a small liberal arts college may use the internet in different ways than the general population. Therefore, generalization of the findings to other populations should be made cautiously. Additionally, these cross-sectional data are correlational, which prevents the determination of casual relationships. Finally, the data represent self-reports that are subject to recall bias. Future research should replicate these findings and determine if the relationships persist when multivariate analyses are employed that incorporate additional variables and covariates as well as interactions among the variables studied (e.g., amount of usage and communication partner). In addition, experimental and longitudinal studies must be conducted to draw stronger conclusions about internet usage and well-being.

The New Internet Paradox

Consistent with Kraut et al. (2002) who revisited the internet paradox, the results of this study suggest that the original internet paradox (i.e., a "social technology" that reduces social connections; Kraut et al., 1998) does not apply unless an excessive amount of time is spent on the internet. However, a new paradox emerged. People have fairly negative perceptions of the internet for the maintenance of social relationships as compared to in person interactions, reporting that they disclose less information, get less

social support from others, find it less useful for building relationships and increasing

emotional closeness, as well as find it to be less enjoyable. All of these factors would

suggest that the internet may be adverse for relationships, social support, and well-being.

Thus, a new internet paradox emerges in which individuals report less fulfilling

communication online but continue to increase the amount of time they communicate

with others online, while simultaneously indicating that it has no impact on their overall

well-being.

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Table 1

Means and Standard Deviations of Utility Items for FTF and CMC

Utility Item	Communication Mode	
	FTF	CMC
Useful for Exchanging Information	4.53 (0.65)*	4.32 (0.91)
Useful for Getting Work Done	4.36 (0.80)*	3.57 (1.16)
Enjoyable	4.61 (0.62)*	3.81 (0.92)
For Building Interpersonal Relationships	4.70 (0.55)*	3.01 (0.98)
Increasing emotional closeness to the person	4.58 (0.70)*	2.71 (1.00)
Ease of Discussing Difficult or Embarrassing Information	3.40 (1.22)	3.68 (1.25)
Useful for Making Future Plans	4.42 (0.79)*	3.79 (1.09)

* indicates a significant difference at the .01 level

Table 2

Contingency Table of Percentages of Participant Perceptions of the Likelihood of

Receiving Varying Types of Social Support through CMC versus FTF

Social Support	Less Likely	About as Likely	More Likely
Care about what happens to you	49% *	40%	9%
Express love and Affection for you	46%	27%	25%
Talk about problems with work and housework	19%	49%*	30%
Talk about your personal and family problems	31%	46%	21%
Talk about money matters	43%	44%	11%*
Invite you to go out and do things with other people	17%	54%*	27%
Provide useful advice about important things in life	27%	52%*	19%
Offer help when you are sick in bed	76%*	16%	6%

Note: All expected frequencies were 33%
* indicates significance at the .006 level