Is the social use of media for seeking connectedness or for avoiding social isolation? Mechanisms underlying media use and subjective well-being

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Abstract

This study provides a resolution for two contrasting hypotheses around media use, the augmentation and the displacement hypotheses. To do this, we conducted an online survey of 300 Korean adults examining the relationships among the social use of media, face-to-face communication, social isolation, connectedness, and subjective well-being. The results indicate that connectedness, not avoiding social isolation, mediates the effects of the social use of media on subjective well-being. On the other hand, both connectedness and avoiding social isolation mediate the effects of face-to-face communication on subjective well-being. These results suggest that the social use of media is limited to seeking connectedness to others, whereas face-to-face communication can facilitate avoiding social isolation as well as seeking connectedness, which can explain why the two contrasting hypothesis, the augmentation and the displacement hypotheses, can be right. In the domain of seeking connectedness, media can augment face-to-face communication. On the other hand, in the domain of avoiding social isolation, media may displace face-to-face communication.

1. Introduction

Given the saturated media environment, media use has become an important part of people's everyday lives. In the domain of media-mediated communication, such as connecting other individuals via media asynchronously (e.g., email, or social networking sites) or synchronously (chatting, texting, or talking on the phone), people make constant use of media to be connected to others, and it is clear that increased connections through media have played a critical role in improving the overall efficiency of diverse societies worldwide. The augmentation hypothesis posits that individuals often use media to develop social relations despite the limited bandwidth of media (Walther, 1996), and media use stimulates users' existing social relations to be enhanced (Valkenburg & Peter, 2007, 2009).

In the domain of media–human interaction, people tend to respond to fictional figures in media like television or films in a way similar to that for responding to real humans (Horton & Wohl, 1956; Klimmt, Hartmann, & Schramm, 2006). When a medium such as a computer provides a social feedback even without anthropomorphic figures, users are likely treat the medium as if it is a social actor (Reeves & Nass, 1996). Using media that embed social cues such as television provides the actual sense of belonging so that consuming media can serve as surrogacy of having social relations (Derrick, Gabriel, & Hugenberg, 2009).

Despite the positive functions of media, however, the social use of media does not always benefit individual users. Lonely individuals who find media to mitigate social isolation often end up aggravating their social isolation (Kim, LaRose, & Peng, 2009). From the perspective of the displacement hypothesis, media use may consume a substantial amount of time sacrificing other valuable activities such as face-to-face communication without providing appropriate functions for facilitating social relations, thereby limiting actual social relations (Kraut et al., 1998; Nie, 2001; Putnam, 1995). Such displacement often leads users to have negative sense of subjective well-being (Stepanikova, Nie, & He, 2010).

Reflecting these contrasting perspectives of the augmentation and the displacement hypotheses, meta-analyses of media use and its effects on well-being support neither the displacement hypothesis nor the augmentation hypothesis. Huang (2010) reported very small correlation ($r = -0.04$) between various Internet use and well-being from 43 independent correlations. Similarly, Shklovski, Kiesler, and Kraut (2006) provided a meta-analysis that Internet use can either facilitate or hinder interactions with friends. Thus, both contrasting hypotheses, augmentation and displacement, have been neither confirmed nor disconfirmed.
The purpose of this study is to provide possible underlying mechanisms for how media use can both augments and displaces valuable social activities such as face-to-face communication, and can both enhances and reduces well-being. To this end, this study will distinguish affect system and human relations into two distinctive systems (approaching rewards versus avoiding threats), and then will argue and provide evidence that media-mediated communication and interaction with media can function mainly for approaching rewards but not for avoiding threats, whereas face-to-face communication can function for both approaching rewards and avoiding threats. In terms of approaching rewards, media use can augment face-to-face communication improving well-being, whereas, in terms of avoiding threats, media use can displace face-to-face communication decreasing well-being.

2. Theoretical background

2.1. Well-being and media

Humans live. Living is not toward mere existence but toward a well-lived life (Keyes & Haidt, 2003). In other words, lives of humans are not just for being but for well-being. Well-being, often referred to as happiness, is not merely some hedonism that seeks short-term pleasure but a superordinate concept that captures both short- and long-term pleasure. Therefore, well-being consists of the cognitive assessment of overall life satisfaction and the affective reflection of happiness represented by frequent experiences with positive affect and infrequent experiences with negative affect (Diener, Suh, Lucas, & Smith, 1999). Because the threefold structure of well-being (i.e., life satisfaction, positive affect, and negative affect) represents an individual’s subjective evaluation of his or her life, well-being has been referred to as subjective well-being.

Many studies have examined the factors that contribute to subjective well-being, including personality traits and cultures (Diener, Oishi, & Lucas, 2003), and found that the core contributor is meaning in life (Diener, Sapyta, & Suh, 1998), which refers to positive functions for actualizing human potential in the domain of private and social lives and can be fulfilled by gratifying fundamental human needs such as autonomy, competence, and relatedness (Deci & Ryan, 2000). Although there is an ongoing debate over whether subjective well-being and meaning in life are distinct constructs (Ryan & Deci, 2001), a reasonable approach to addressing this disagreement is that the latter can be understood as the formulation of well-being or objective means toward well-being, whereas the former is a global indicator of well-being as a function of meaning in life (Diener et al., 1998; Ryan & Deci, 2001).

There is no consensus on what constitutes the core contributors for well-being. Deci and Ryan (2000) proposed three fundamental human needs (i.e., autonomy, competence, and relatedness), and Ryff and Keyes (1995) suggested six components of well-being: autonomy, environmental mastery, personal growth, positive relatedness to others, a sense of purpose in life, and self-acceptance. Among various components of well-being, the present study focuses on relatedness because the purpose of this study is to examine the social aspects of media use. In this regard, we propose the following research question:

Research Question 1 (RQ1): How is media use related to subjective well-being?

2.2. Two distinctive systems of affect and motivation

Subjective well-being composed of not a unitary, but two separate feelings: positive and negative affect (Diener & Emmons, 1984), although, often, positivity is considered as the antithesis of negativity; pleasure is thought to be as a lack of pain, reward is treated as an opposite of punishment, and approach motivation is presumed to the reversal of avoidance motivation. However, deeper understanding human behaviors at the psychological and neural levels suggests that positivity and negativity are not placed along a single bipolar continuum. Positivity and negativity are based on separate biological systems, and constitute distinguishable affective, cognitive, and motivational/behavioral systems.

Biologically, positivity and negativity are the functions of two distinctive neural systems. Evaluating rewarding stimuli is involved in the mesolimbic dopamine pathway projecting from the ventral tegmental area to the nucleus accumbens (Berridge & Robinson, 2003). On the other hand, regulating negativity involved in the serotonergic system projecting from raphe nuclei to all divisions of the brain including the limbic system (Hornung, 2003). Indeed, increasing dopamine, a neurotransmitter that promotes positivity, in the brain by administering dopamine receptor agonist such as Bromocriptine induced positivity but did not influence negativity (Depue, Luciana, Arbisi, Collins, & Leon, 1994). Conversely, increasing serotonin, a neurotransmitter that regulates negativity, in the brain by administering selective serotonin re-uptake inhibitor (SSRI) was related to reduction in negativity without changing positivity (Knutson et al., 1998).

From an evolutionary perspective, humans have to take suitable actions or means to solve problems that they have to deal with repeatedly. Through solving recurrent problems in different domains, humans have evolved discrete behavioral mechanisms (Tooby & Cosmides, 2005). Evolutionary psychologists proposed several key mechanisms such as alliance formation, self-protection, enhancing status, finding mates, maintaining long-term mating bonds, and offspring/kin care (Kenrick & Shoda, 2008). In each of these domain of social life, there are both things to approach (i.e., opportunities) and things to avoid (i.e., threats). For example, in the domain of self-protection, shelters are opportunity to approach and predators are threats to avoid. In the domain of finding mates, high-fitness potential mates are opportunity to approach and same-sex competitors are threats to avoid (Kenrick & Shoda, 2008).

The evaluative space model (ESM) provides integrative accounts for two distinctive systems. The evaluative space model, originally proposed in the domain of attitudes (Cacioppo & Berntson, 1994; Cacioppo, Gardner, & Berntson, 1997), has been developed into a general model of affect and motivation (Cacioppo, Gardner, & Berntson, 1999). The core of the ESM is that positivity and negativity are distinctive such that positivity and negativity do not fall along a single bipolar continuum but in a separate bivariate space. More specifically, the behavioral manifestation of approaching or avoiding is the output of evaluative processes combining two separate bivariate affective systems: one dealing with threatening or aversive (i.e., negative) information and the other, safe or appetitive (i.e., positive) information. The evaluation of either aversive or appetitive information can sometimes occur in parallel. Depending on circumstances, positive and negative affective processes are activated in the following three ways: reciprocally, nonreciprocally, or independently. As such, some antecedents can have differential effects on positive and negative evaluative processes, and the consequences of activating positivity and negativity are not always antithetical (Cacioppo & Berntson, 1994; Cacioppo et al., 1999).

More recently, Sheldon and Guzun (2009) found that the negatively and positively worded subscales of need satisfaction differentially related to the motivation. Only negatively worded subscales measured for the sense of disconnection, not positively worded subscales, predicted to the motivation to make new friends. Extending this finding, Sheldon, Abad, and Hinsch (2011) proposed the two-process view of media use that the sense of
disconnection and the sense of connection have differential functions; the former drives to increase the amount of media use as a coping strategy, whereas the latter provides reward as an outcome. A question arises how lonely individuals who use media to mitigate their negativity does not always successfully solve their problems of social isolation (Kim et al., 2009; Stepanikova et al., 2010), which will be addressed in the following sections.

2.3. Two aspects of relatedness

A sense of belonging is one of the fundamental needs of human beings. Under most conditions, humans are motivated to form social bonds and resist the dissolution of existing relations (Baumeister & Leary, 1995). In line with the idea of two systems of affect and motivation, relatedness has two components: one to avoid social isolation and the other to seek connectedness to others. We now discuss these two aspects of relatedness in greater detail.

2.3.1. Social isolation

Social isolation refers to being ignored or excluded with or without explicit declarations (Williams, 2007). Ostracism, social exclusion, and rejection are often used interchangeably with social isolation. Social isolation functions to maintain order, punish deviance, eliminate burdensome members, and increase social cohesiveness (Gruter & Masters, 1986). Social beings, including humans, are especially sensitive to detecting or anticipating social isolation because they tend to avoid the deprivation of interpersonal relations or group membership (Williams, 2007). Misperceiving a signal as ostracism when it is not can just be a cost. On the other hand, failing to perceive ostracism when it is about to happen is likely to be placed in a predicament. Therefore, humans have evolved to detect social isolation by activating an alarm. Pain is a typical alarm signal for an individual, focusing the individual’s direct attention on possible social isolation and helping him or her to cope with social isolation. Indeed, brief experiences with social isolation activate the pain matrix of neural systems that are shared by the affective component of physical pain (Eisenberger, 2012; Eisenberger, Lieberman, & Williams, 2003; MacDonald & Leary, 2005). The deprivation of social bonds can have various undesirable effects such as the deterioration of well-being. In this regard, social isolation is a potent risk factor in physical and mental morbidity (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006; Williams, 2007).

2.3.2. Connectedness

Connectedness is often treated as the antithesis of social isolation, but connectedness and isolation are engaged in distinct mental representation (Cacioppo et al., 1999; Hawkley, Browne, & Cacioppo, 2005; Sheldon et al., 2011). The affect system involved in social isolation is an aversive or negative evaluative process. Social isolation is a threat to individuals in that those who are about to be excluded typically experience negative affect such as anxiety and fear. On the other hand, the affect system involved in connectedness is an appetitive or positive evaluative process. Connectedness is a reward for individuals in that those who form and maintain social connections typically experience positive affect such as happiness (Cacioppo et al., 2008). Forming and maintaining close relationships (e.g., romantic relationships or friendships) are associated with reward-related neural systems such as the mesolimbic dopamine system (Aron et al., 2005; Guroglu et al., 2008).

In a large-scale study of loneliness, a factor analysis of responses to the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980), distinguished social isolation from connectedness, which consists of relational connectedness such as close relationships between friends or family members and collective connectedness such as collective group membership (Hawkley et al., 2005). The first factor, labeled as “isolation,” consists of items such as “I feel isolated from others” and “I am unhappy being so withdrawn”; the second factor, labeled as “relational connectedness,” consists of items such as “There are people I can turn to” and “There are people I feel close to”; and the third factor, labeled as “collective connectedness,” consists of items such as “I have a lot in common with the people around me” and “I feel part of a group of friends.”

Although connectedness consists of relational and collective connectedness, these two forms of connectedness are not entirely independent of each other but closely intertwined. Therefore, these two forms of connectedness can substitute for each other such that the need for close relationships can be satisfied by collective group membership and vice versa (Baumeister & Leary, 1995; Baumeister & Sommer, 1997; Brewer, 2007; Gabriel & Gardner, 1999). In this regard, the present study considers the following two components of relatedness: social isolation and connectedness.

2.4. Face-to-face communication and media use

The role of media can be categorized based on the following three objectives: communication use, entertainment use, and information use. Communication use refers to the establishment of connections between individuals, including one-to-one, one-to-many, and many-to-many connections. In a broad sense, entertainment use and information use are subdimensions of communication use, but in a narrow sense, communication use can be limited to media-mediated communication that mediates interpersonal interactions between individuals through tools such as e-mail, texts, telephone, and social media (e.g., Twitter and Facebook). Media-mediated can be categorized into types: (1) asynchronous messaging such as sending e-mail messages or posting comments on social networking sites such as Facebook and Twitter; (2) synchronous text-based messaging such as texting or instant messaging; (3) synchronous voice-based messaging such as talking on the phone or video chatting.

Although the communication use of media is quite similar to face-to-face communication, there is a fundamental difference between these two forms of communication. As discussed later, face-to-face communication performs two key functions in social interactions, namely avoiding isolation and seeking connectedness, whereas media-mediated communication has only one function, namely seeking connectedness. Forming social groups is a way of adapting to their environments. In this regard, the function of forming social groups can be divided into the following two goals: to survive by avoiding threats or negative stimuli and to thrive by approaching rewards or positive stimuli (Elliot, 2008).

Direct human contact has long served as an important means of forming societies and enabling individuals to survive and to thrive. In other words, the absence of face-to-face communication means an individual may lose opportunities to approach rewards (i.e., connectedness) and fail to avoid threats (i.e., isolation), and the presence of face-to-face communication means both avoiding threats and approaching rewards. Because face-to-face communication represents both avoiding social isolation and seeking connectedness to others, the amount of time spent on face-to-face communication may reduce social isolation as well as increase connectedness. In this regard, we propose the following hypothesis:

Hypothesis 1a (H1a). The amount of time spent on face-to-face communication is positively related to the degree of perceived connectedness and negatively related to the degree of perceived social isolation.

Because both connectedness and avoiding social isolation are potent sources of subjective well-being, seeking connectedness and avoiding social isolation through face-to-face communication may facilitate subjective well-being. In this regard, we propose the following hypothesis:
Hypothesis 1b \((H1b)\). Both seeking connectedness and avoiding social isolation mediate the effect of face-to-face communication on subjective well-being.

Unlike face-to-face communication, media use and mediated communication especially computer-mediated communication are new additions to human life. Computer-mediated communication helps individuals to extend the scope of face-to-face communication by overcoming spatial and temporal constraints \((\text{Wellman} \& \text{Haythornthwaite}, 2002)\). Media use can broaden one’s opportunities to find friends or mates by increasing communication efficiency. The efficiency of computer-mediated communication well fits the goal to thrive, such as approaching opportunities by overcoming spatial and temporal constraints. By sharing information through communications technologies, individuals can locate, use, and share resources in a more efficient manner than by direct contact.

However, the efficiency of computer-mediated communication may not be applicable to the goal to survive, particularly in terms of avoiding the risk of social isolation. Overcoming social isolation requires not only information on the way to escape social isolation but also emotional support for coping with emotional distress \((\text{Burleson}, 2003)\). Although computer-mediated communication has some advantages in providing social support through increased access to diverse information, more opportunities for editing and crafting messages, and greater anonymity \((\text{Walther} \& \text{Boyd}, 2002)\), these advantages reflect ancillary, not fundamental, functions of emotional support except for those who are marginalized in a society because of some illness or stigmatization that makes communications technologies the only option for connecting to others \((\text{Wright} \& \text{Bell}, 2003)\). Enacting emotional support requires either verbal or nonverbal behaviors or both these behaviors. However, nonverbal forms of emotional support precede verbal ones phylogenetically and ontogenetically, and nonverbal forms of emotional support are basic and universal \((\text{Burleson}, 2003)\). Effective ways of providing emotional support \(\text{(e.g., hugs/touches/pats, hand-holding, focused looks, and soothing sounds)}\) can be quite limited in computer-mediated communication including telephone-mediated communication.

In sum, the function of face-to-face communication includes both seeking connectedness and avoiding social isolation, whereas that of computer-mediated communication is limited to seeking connectedness. If the function of the communication use of media is not to avoid threats but limited to the provision of opportunities for connectedness, then it may be associated with seeking connectedness but not with avoiding social isolation. In this regard, we propose the following hypothesis:

\textbf{Hypothesis 2a \((H2a)\).} The communication use of media is associated with seeking connectedness to others but not with avoiding social isolation.

Entertainment use refers to the use of media for spending leisure time. After the advent of television, video use has become the main entertainment use of media. Although some theorists consider video use as asocial media use \((\text{e.g., Putnam}, 1995)\), there are reasons to treat video use as social use. Individuals tend to respond to media personalities in a way similar to how they respond to humans \((\text{Derrick et al., 2009; Horton, 1956; Klimmt et al., 2006})\). When a medium provides social cues such as voice-like sounds, humans are likely treat the medium as a social actor \((\text{Reeves & Nass}, 1996)\). Previous studies have addressed the question of why humans tend to confuse some characteristics of media with those of actual humans and found that because media represent new additions to human life, humans do not have time to develop the ability of differentiate some features of media that resemble human characteristics from actual human traits \((\text{Kanazawa, 2002; Nass & Moon, 2000})\). In this regard, the video use of media can be associated with seeking connectedness to others in that this use can motivate individuals to perceive social relations even when they have no actual relations with real people.

However, just like the function of communication use, the function of video use may be limited to the provision of opportunities for connectedness. Although individuals may form social relationships with media personalities \((\text{Klimmt et al., 2006})\), consider such relationship as surrogacy as actual relations \((\text{Derrick et al., 2009})\), and treat media as social actors \((\text{Reeves & Nass}, 1996)\), media or media personalities cannot provide them with emotional support as much as can actual human counterparts. If the function of the video use of media is not to avoid threats but limited to the provision of opportunities for connectedness, then this use may be associated with seeking connectedness not with avoiding social isolation. In this regard, we propose the following hypothesis:

\textbf{Hypothesis 2b \((H2b)\).} The video use of media is associated with seeking connectedness but not with avoiding social isolation.

Because relatedness is a fundamental determinant of subjective well-being, seeking connectedness to others through media use may enhance subjective well-being. In this regard, we propose the following hypothesis:

\textbf{Hypothesis 3 \((H3)\).} Seeking connectedness to others through media use influence the degree of subjective well-being.

\section*{3. Method}

\subsection*{3.1. Respondents}

We considered a randomly recruited sample of 300 adults (150 females) whose ages ranged from 19 and 39. We identified these individuals from a research pool managed by a firm specializing in online surveys. We provided the respondents with reward points that could be exchanged for KRW 1,000 (approximately $1). We conducted the survey from May 3 to 11, 2012. The respondents’ ages ranged from 19 to 39 \((M = 29.02, SD = 5.22)\), and all were native Koreans \(\text{(the questionnaire was in Korean). In addition, 64.9% had a college degree, 25.1% were college students, and 10% were high school graduates. Their average annual income was KRW 40,033,333 \((SD = 21,491,207); \text{approximately} \$40,000).}\)
as follows: (1) communication use 1: asynchronous messaging such as sending e-mail messages or posting comments on social networking sites such as Facebook and Twitter (not including chatting on Facebook); (2) communication use 2: synchronous text-based messaging such as texting or instant messaging (including chatting on Facebook); (3) communication use 3: synchronous voice-based messaging such as talking on the phone or video chatting; (4) video use, watching videos (e.g., TV programs, YouTube clips, and movies), and (5) reading use: reading news reports or ebooks. For each category, we asked the respondents the following question: “On an average day, how much time do you spend on using [medium i]?” Here i reflected each of the three media categories. We measured their responses by using a Likert-type scale ranging from 0 to 4.5: “never” (0), “less than one hour” (0.5), “about one to two hours” (1.5), “about two to three hours” (2.5), “about three to four hours” (3.5), and “more than four hours” (4.5). The respondents could not see the numerical value for each choice beside the choice were assigned for analysis, and were not presented to the respondents. Although recalling the amount of time spent on some media use is not a direct measure, it can be an adequate measure for the perception of the relative amount of time spent on some media use is not a direct measure, it can be presented to the respondents. Although recalling the amount of time spent on some media use is not a direct measure, it can be presented to the respondents. Although recalling the amount of time spent on some media use is not a direct measure, it can be presented to the respondents. Although recalling the amount of time spent on some media use is not a direct measure, it can be presented to the respondents. Although recalling the amount of time spent on some media use is not a direct measure, it can be presented to the respondents.

3.3.3. Social isolation and connectedness

We measured the two dimensions of relatedness by using the Revised UCLA Loneliness Scale (Russell et al., 1980). Here we employed a Korean version whose reliability and validity were established using Korean samples (Kim, 1997). We used 11 items (e.g., “You lack companionship”; $x = .93$) social isolation and 9 items (e.g., “You are ‘in tune’ with the people around you”; $x = .89$) for connectedness (Hawkley et al., 2005). The reliability for all 20 items was .92. The original scale instructs the respondent to indicate how often they feel loneliness on a four-point Likert-type scale ranging from “never” (1) to “frequently” (4). We modified this scale to a seven-point Likert-type scale ranging from “strongly disagree” (1) to “strongly agree” (7) ($x = .73$). We measured each item by using a seven-point Likert-type scale from “strongly disagree” (1) to “strongly agree” (7) ($x = .91$). The three items for positive affect varied according to the level of arousal (joyful, happy, and peaceful), and the three items for negative affect also varied according to the level of arousal (irritated, negative, and helpless).

3.3.4.1. Confounders. To control for possible confounders, we assessed the respondents’ demographic backgrounds, including age, gender, education (high school graduates, college students, or college graduates), and income. The respondents had nine options for their annual income (from “below KRW 10 million” to “more than KRW 80 million”).

4. Results

4.1. Descriptive summary

In terms of the three categories of media use and face-to-face communication, the respondents spent the greatest amount of time on communication use ($M = 3.05$, $SD = 2.21$), followed by video use ($M = 2.10$, $SD = 1.30$), face-to-face communication ($M = 1.70$, $SD = 1.35$), games ($M = 1.41$, $SD = 1.32$), and music ($M = 1.08$, $SD = .92$). The respondents’ showed a moderate level of subjective well-being ($M = 4.12$, $SD = 1.03$). Subjective well-being was positively correlated with connectedness, $r(298) = .60$, $p = .000$, and negatively correlated with social isolation, $r(298) = -.66$, $p = .000$. There was a high correlation between connectedness and social isolation, $r(298) = -.72$, $p = .000$.

4.2. Preliminary analyses

Overall, there were some gender differences in the amount of time spent on video use and face-to-face communication. Female respondents spent more time on video use ($M = 2.24$, $SD = 1.30$) than male respondents ($M = 1.96$, $SD = 1.28$), but the difference was not significant, $F(1,298) = 3.44$, $p = .07$. In addition, they spent more time on face-to-face communication ($M = 1.94$, $SD = 1.46$) than male respondents ($M = 1.46$, $SD = 1.19$), and the difference was significant, $F(1,298) = 9.98$, $p = .002$. Age was negatively correlated with media use, particular for communication use, $r(298) = -.34$, $p = .000$, and face-to-face communication, $r(298) = -.16$, $p = .005$. The older the respondent, the less likely he or she was to spend time on face-to-face communication. There was a marginal correlation between video use and age, $r(298) = -.11$, $p = .06$. However, age was not correlated with subjective well-being, social isolation, and connectedness.

4.3. Main analyses

4.3.1. RQ1

RQ1 addressed the relationship between media use and subjective well-being. We conducted a partial correlation analysis to examine this relationship. Here we controlled for age, gender (male = 0; female = 1), income, and education (education 1: high school graduate = 1, college student = 0, college graduate = 0; education 2: high school graduate = 0, college student = 1, college graduate = 0). Communication use was significantly correlated with subjective well-being, $r_p(293) = .12$, $p = .03$. However, subjective well-being was correlated with neither video use, $r_p(293) = .00$, $p = .96$, nor reading use, $r_p(293) = .06$, $p = .34$. Table 1 summarizes the correlations between the other variables.
4.3.2. H1a and H1b
To test the hypotheses, we employed hierarchical regression by following the procedures in Cohen, Cohen, West, and Aiken (2003). We dummy-coded the incontinuous variables, including gender (male = 0; female = 1) and education (education 1: high school graduate = 1, college student = 0, college graduate = 0; education 2: high school graduate = 0, college student = 1, college graduate = 0). We standardized the continuous measures. In the first set of analyses, we regressed the control variables—age, gender, income, education 1 (high school graduate = 1, college student = 0, college graduate = 0), and education 2 (high school graduate = 1, college student = 0, college graduate = 0) on dependent variables. In the second set of analyses, we regressed face-to-face communication on dependent variables.

H1a predicted that face-to-face communication would be positively related to connectedness to others and negatively related to social isolation. As predicted, face-to-face communication had a significant positive relationship with connectedness, $\beta_{.29} = .29$, $t = 4.40$, $p = .000$, and a significant negative relationship with social isolation, $\beta_{-.30} = -.30$, $p = .000$. With connectedness controlled for, face-to-face communication had no effect on subjective well-being, $\beta = .61$, $t = 1.72$, $p = .09$. With connectedness controlled for, face-to-face communication had no effect on subjective well-being, $\beta = .61$, $t = 1.72$, $p = .09$, whereas the effect of connectedness (mediator) remained, $\beta = .59$, $t = 1.73$, $p = .000$. The results of the Sobel test verify the significant mediating effect of connectedness (Sobel's $z = 4.71$, $p = .000$). In addition, the results of bootstrap resampling procedures using 1000 samples verify a significant indirect effect of face-to-face communication on subjective well-being through connectedness, bias-corrected 95% CI [.09,.24].

In the case of social isolation as a mediator, face-to-face communication was a significant predictor of subjective well-being, $\beta_{.29} = .29$, $t = 5.13$, $p = .000$, and connectedness was a significant predictor of subjective well-being, $\beta_{.66} = .66$, $t = 15.16$, $p = .000$. With social isolation controlled for, face-to-face communication had no effect on subjective well-being, $\beta_{.06} = .06$, $t = 1.29$, $p = .20$, whereas the effect of social isolation (mediator) remained, $\beta_{-.65} = -.65$, $t = 14.12$, $p = .000$. The results of the Sobel test verify the significant mediating effect of social isolation (Sobel's $z = 4.93$, $p = .000$). In addition, the results of bootstrap resampling procedures using 1000 samples verify a significant indirect effect of face-to-face communication on subjective well-being through social isolation, bias-corrected 95% CI [.12,.28]. These results provide support for H1a and H1b (see Fig. 1).

4.3.3. H2a and H2b
H2a and H2b predicted that the social use of media such as communication use and video use would be associated with seeking connectedness but not with avoiding social isolation. To test these hypotheses, we conducted hierarchical regression analyses. We first regressed media uses (video use, communication use, and reading use) on either social isolation or connectedness after controlling for confounders (gender, age, income, and education). As predicted, communication use had a significant positive relationship with connectedness, $\beta_{.17} = .17$, $t = .01$, $\Delta R^2 = .04$, but the relationship with social isolation was marginal, $\beta_{-.13} = -.13$, $p = .06$. Video use had a significant positive relationship with connectedness, $\beta_{.12} = .12$, $p = .04$, $\Delta R^2 = .04$, but it had no such relationship with social isolation, $\beta = -.33$, $p = .56$. Reading use (measured as associability media use) was related to neither connectedness, $\beta = .05$, $p = .44$, nor social isolation, $\beta = .6$, $p = .35$. These results provide support for H2a and H2b (see Tables 2 and 3, respectively).

4.3.4. H3
H3 predicted that changes in connectedness through media use would influence the degree of subjective well-being. Before the mediation analyses, we examined the relationship between communication use and subjective well-being and that between video use and subjective well-being. Communication use was a marginal predictor of subjective well-being, $\beta_{.13}$, $t = 1.90$, $p = .06$, $\Delta R^2 = .02$. However, neither video use, $\beta = -.01$, $t = -.21$, $p = .83$, nor reading use, $\beta = .01$, $t = .16$, $p = .88$, predicted subjective well-being.

We conducted a mediation analysis for the effect of communication use on subjective well-being through connectedness. Communication use was a significant predictor of connectedness, $\beta_{.17}$, $t = 2.58$, $p = .01$, and connectedness was a significant predictor of subjective well-being, $\beta_{.61}$, $t = 12.72$, $p = .000$. With connectedness controlled for, communication use was no longer related to subjective well-being, $\beta = .03$, $t = .45$, $p = .65$, whereas connectedness (mediator) still had a significant relationship, $\beta = .62$, $t = 12.62$, $p = .000$. The results of the Sobel test verify the significant mediating effect of communication use on subjective well-being (Sobel's $z = 2.52$, $p = .01$). In addition, bootstrap resampling procedures using 1000 samples verify a significant indirect effect of communication use on subjective well-being through connectedness, bias-corrected 95% CI [.02,.17]. These results provide support for H3 for communication use but not for video use (see Fig. 2).

We examined the effects of communication use on subjective well-being through social isolation. Communication use was a marginal predictor of social isolation, $\beta = -.13$, $t = -1.86$, $p = .06$, and social isolation was a significant predictor of subjective well-being, $\beta = -.66$, $t = -15.16$, $p = .000$. With social isolation controlled for, communication use was no longer related to subjective well-being, $\beta = .05$, $t = -.89$, $p = .37$, whereas social isolation (mediator) still had a significant effect, $\beta = -.66$, $t = -15.00$, $p = .000$. However, the results of the Sobel test indicate no significant mediating effect of face-to-face communication on subjective well-being (Sobel's $z = 1.85$, $p = .06$). In addition, the results of bootstrap
resampling procedures using 1000 samples indicate no significant indirect effect of communication use on subjective well-being through social isolation, bias-corrected 95% CI [-02., 15].

5. Discussion

The social use of media is paradoxical. Although media use, particularly communication use, resembles face-to-face communication, such use of media does not always produce the same results as face-to-face communication. In this regard, this study provides a better understanding of why social technologies that connect people can either facilitate or hinder their well-being. In this study, we focused on two distinct dimensions of relatedness: avoiding social isolation and seeking connectedness. We considered these two dimensions as independent affect systems that do not fall along a single bipolar continuum but in a separate bivariate space.

5.1. Communication use

According to the results, face-to-face communication facilitated both avoiding social isolation and seeking connectedness, whereas the social use of media facilitated only seeking connectedness. Face-to-face communication had an indirect effect on subjective well-being through avoiding social isolation as well as seeking connectedness. Noteworthy is that avoiding social isolation was more prominent than seeking connectedness. Although there were significant changes in the indirect paths of both social isolation and connectedness, noteworthy is that the path of social isolation was more prominent than that of connectedness. On the other hand, communication use had an indirect effect on subjective well-being only through connectedness. The path of social isolation was not significant. Given that social isolation is an avoidance behavior and connectedness is an approach behavior, these results indicate that the social use of media is for seeking connectedness, not for avoiding social isolation.

These results explain why the social use of media cannot replace or substitute the social function of face-to-face communication. To be a substitute for face-to-face communication, the social use of media should be able to facilitate both avoiding social isolation and seeking connectedness. However, the results suggest that the social use of media facilitates only seeking connectedness. This aspect of media use can explain how two contrasting hypotheses, namely the augmentation hypothesis and the displacement hypothesis, can be right. In terms of approaching rewards, media use can augment social interactions by enabling individuals to extend and to maintain social relations. This aspect of media use is consistent with the augmentation hypothesis. On the other hand, in terms of avoiding threats, media use does not likely replace or augment social interactions. It may simply consume the time spent on other valuable social activities such as face-to-face communication without generating the benefits of social interaction such as emotional support. This aspect of media use is consistent with the displacement hypothesis.

Understanding these two aspects of media use has significant implications for media use. In a saturated media environment, it is inevitable to use media. Media help people to find opportunities of connecting other people efficiently. However, there is also a dark side of increasing efficiency of media-driven connection. Such efficiency through enhanced connection paradoxically can reduce meaningful human contacts especially in terms of avoiding threats. Media can mainly contribute increasing efficiency of connection, but media may not be a suitable means to build emotional bonds. This phenomenon is well described by a title ‘alone together,’ suggested by Turkle (2011). Thus, distinguishing two aspects of relatedness can be a guideline for individuals to decide when to connect through media, and when to converse with humans.

These results can also explain the bidirectional nature of media effect. Socially isolated individuals may find that media use can gratify their need for a sense of belonging because media can be easily accessed by those lacking social competence (Kim et al., 2009; Rubin, Perse, & Powell, 1985). However, the social use of media may not be able to gratify this need completely, particularly if the need is based on a desire to escape social isolation. This failure can foster a vicious circle of problematic media use. Social isolation can motivate lonely individuals to find media use as a proxy for face-to-face interactions, but media use cannot completely gratify their needs, which motivates them to increase their media use and thus induces problematic media use (Caplan, 2003; Kim et al., 2009).

5.2. Video use

The results indicate similar as well as different patterns of video use and communication use. Both video use and communication use were significant predictors of connectedness but not of social isolation. This similarity provides support for the notion that the social use of media is for seeking connectedness but not for avoiding social isolation. However, subjective well-being was related to communication use but not to video use. Given that connectedness is a potent factor in subjective well-being, it is surprising that video use, a significant predictor of connectedness, was not related to subjective well-being. In addition, noteworthy is that communication use was highly correlated with face-to-face communication, whereas video use was not.

The inconsistent results for video use may be due to some contrasting mechanisms underlying video use that cancel each other out. That is, one aspect of video use (e.g., improving connectedness) may be positively related to subjective well-being, whereas another aspect may be negatively related. This implies that video use and communication use may predict subjective well-being in different ways. In this regard, further research should identify those elements of video use that influence subjective well-being.

5.3. Loneliness scale

This study's results provide support for the idea that loneliness is not a unidimensional construct but is composed of at least two
dimensions: isolation and connectedness (Hawkley et al., 2005). Many studies have employed the UCLA Loneliness Scale, including those studies examining the relationship between media use and well-being. Huang (2010) provided a meta-analysis and found that 18 studies adopted the UCLA Loneliness Scale as a dependent measure to explore the relationship between Internet use and psychological well-being and treated loneliness as a unidimensional construct. The results of this study imply that many studies might have underestimated the effects of media use on well-being because of their unidimensional approach.

5.4. Limitations

This study has some limitations. First, the results may not be generalizable to the whole population, particularly to adolescents, because we employed a sample of adults whose self-regulatory capacity have generally been matured. Individuals who are vulnerable to the loss of self-regulation, such as children and adolescents, may show detrimental outcomes because of their less mature ability of self-regulation (Pea & et al., 2012).

Second, because of the cross-sectional nature of this study, we could not establish causal relationships. In this regard, there may be alternative paths. Individuals who are connected may have a high level of subjective well-being and, at the same time, may actively seek social interactions online instead of the proposed path (i.e., media use → connectedness → subjective well-being). The results of study cannot rule out alternative paths. Further studies such as longitudinal and experimental studies are required to establish causal links of the proposed path of this study.

Third, this study only focused on relatedness, one of many components of well-being, which limits this study from fully understanding the impact of media use on well-being. In addition to relatedness, theorists proposed various components of well-being such as competence, autonomy, sense of purpose in life, or self-acceptance (Deci & Ryan, 2000; Ryff & Keyes, 1995). The function of media use is not limited to facilitating connections with others. It is possible that media use can help individuals to build competence or autonomy. Future research is required to examine how media use influence, in addition to relatedness, other components of well-being.

6. Conclusion

We considered two dimensions of relatedness, namely isolation and connectedness, and found that the social use of media is for seeking connectedness, not for avoiding social isolation. This distinction can explain why previous studies have produced mixed results for the effects of media use on subjective well-being and rationalized those results by using two contrasting hypotheses: the displacement and augmentation hypotheses. Previous studies'
mixed results imply that both hypotheses may be right, and this study’s results explain why. Media use can lead to displacement because this use reduces the amount of time spent on face-to-face communication without facilitating the avoidance of social isolation, thereby limiting subjective well-being. On the other hand, media use can result in augmentation because it can provide opportunities such as connectedness to others.

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Appendix A.
See Tables 1–3.

References


