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行動即時通訊和主觀幸福感的關聯性：社群網站的使用和社會資本的角色

Understanding the Relationship between Mobile Instant Messaging and Subjective Well-being: The Role of Social Networking Sites and Social Capital

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Abstract

With the emergence of social networking sites (SNS) and mobile instant messaging (MIM) technologies, people nowadays can communicate in real time at nearly no cost. In addition, using multiple social media platforms has become ubiquitous. While most previous studies have focused only on separate media platforms and have not attended to their reciprocal effect, this study explores the effect of LINE and Facebook use on an individual's subjective well-being (SWB) from a social capital context. Furthermore, drawing on the uses and gratification framework, this study also examines how LINE use, with the motivation of social connection, impacts one's SWB.

This research employed data from the Taiwan Communication Survey (TCS) in 2018. Results indicated that LINE use, with high social connection motivation, is negatively associated with individuals' subjective well-being. Secondly, bonding social capital is positively related to SWB. Thirdly, both bonding social capital and bridging social capital did not mediate the relationship among LINE use and SWB. The findings contribute to the understanding of social capital theory in the context of MIM and multiple media usage. It has implications for users who aim to use communication tools in a healthy way. Additionally, it provides several suggestions for practitioners developing instant messaging services in the future.

***Keywords*: Facebook, bonding social capital, bridging social capital, LINE, mobile instant messaging, social networking sites, subjective well-being, uses and gratification**

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摘要

社群媒體網站和即時通訊科技的普及，降低通訊所花費的時間及費用成本，讓人們的溝通更順暢，此外，同時使用多種社群工具也成為逐漸成為趨勢。過去研究亦有不同論點，有研究認為多使用社群媒體能夠增加彼此間的連結，並創造更高的幸福感。然而，也有學者指出，高度使用社群媒體會導致資訊過載(information overload)、與實體社會脫節等影響。然而，過去研究多著重於單一媒介的使用行為及影響，鮮少探討彼此間的相互作用，且多探討 Facebook, Twitter 等對公開的社群平台，較少將通訊為主的即時通訊軟體作為主要研究主體。本研究旨在探討即時通訊軟體 LINE 使用與主觀幸福感的關聯性，社會資本理論(social capital theory) 的中介效果及 Facebook 使用的調節作用也是本研究探究之重點。

本研究採用台灣傳播調查資料庫 2018 年調查資料，結果顯示將 LINE 作為高度通訊使用與主觀幸福感為負相關，而連結式社會資本與主觀幸福感為正相關。然而，橋接式、連結式社會資本對於 LINE 使用與主觀幸福感的中介效果不顯著，Facebook 使用對於中介效果也沒有調節作用。本研究啟發了在使用多種社群媒體下如何維持、創造相對的社會資本，讓用戶可因此增加幸福感，針對即時通訊軟體的通訊使用動機也提供實質建議供參考。

關鍵字：Facebook、連結式社會資本、橋接式社會資本、LINE、即時通訊、社群網路、主觀幸福感、使用與滿足

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Chapter 1. Introduction

The advancement of information communication technology (ICT) has significantly changed human life. In the past, people used the Internet primarily for entertainment, but today, people use it for interpersonal communication. The instantaneous and interactive nature of technological innovations, such as social networking sites (SNS) and mobile instant messages (MIM), have reshaped the way people communicate. People can send real-time messages (including text, audio, and video) to individuals and groups with less cost, allowing them to create and maintain social networks (Lin, 2011).

Media researchers have analyzed the effects of computer-mediated communication (CMC) and have found that communication through SNS and MIM are associated with subjective well-being (SWB) (Best, Manktelow, & Taylor, 2014; Kim & Lee, 2011; Nabi, Prestin, & So, 2013; Reinecke & Oliver, 2016). However, the relationship between the two remains inconsistent. Given that Internet use is a positive predictor of SWB when used for social communication, some studies show that Facebook (FB) and Twitter could fulfill individuals' social connectedness needs and facilitate users' social bonds with existing friends (Huang, 2010). A more recent study also revealed that more frequent use of MIM can lead to higher life satisfaction (Wen, Geng, & Ye, 2016). In contrast, some scholars believe that SNS hinders SWB, due to the replacement of valuable time that could be spent with existing friends (Kraut et al., 1998; Nie, Hillygus, & Erbring, 2002). Other studies regarding MIM use, social capital, and psychological outcomes have led to negative or ambiguous results (Caplan, 2003; Cui, 2016; Jelenchick, Eickhoff, & Moreno, 2013).

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With the development and integration of many social media platforms, it has become more common for individuals to use multiple social media platforms, as opposed to just one. According to Haythornthwaite (2002), due to the differential use of media, new media use can add positive effects to latent ties, strengthening weak ties. Prior research also indicated that using multiple communication platforms can predict closeness with friends (Miczo, Mariani, & Donahue, 2011). However, since previous studies have mostly examined each media separately, there is a lack of research on SNS and MIM, collectively, and their reciprocal effects (Dienlin, Masur, & Trepte, 2017). Particularly in Taiwan, there are a lack of studies on the relationship between MIM and well-being. Using the 2018 Taiwan Communication Survey, a nationally-representative survey of the Taiwanese population, this study explores Taiwanese use patterns on dominant SNS and MIM platforms, FB and LINE.

Compared to face-to-face communication, SNS and MIM have different affordances and can foster different types of user behaviors. MIM and SNS are similar in the sense that they both serve as a tool for spontaneous interactions; however, MIM provide near synchronous communication between one or a few users with a previous, existing relationship. For instance, unlike FB, an open platform where users can view friends' profiles, MIM is a "closed platform" where contacts are private unless users add each other as friends (Aharony, 2015). Additionally, MIM provide synchronous communication between many friends at once, making relationship maintenance stronger (Alison Bryant, Sanders-Jackson, & Smallwood, 2006). This study distinguishes SNS from MIM to address the relationship between social implications and well-being.

Some literature about MIM and SWB suggests that the nature of the relationship

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is multifaceted, indicating no direct relationship between the two (Matei & Ball-Rokeach, 2001; Valkenburg & Peter, 2009). Other past studies have found the mediating role of factors (i.e., self-disclosure and social support) on individuals' SWB, emphasizing the importance of hyperpersonal interaction (Lin, 2011; Valkenburg & Peter, 2009). In the hyperpersonal communication model, Walther (1996) pointed out that in CMC, the message sender can develop a more desirable self-presentation than traditional face-to-face communication, which can be seen as both a risk and benefit of CMC.

When researching social implications, it is necessary to explore the role social capital. Social capital is defined as a kind of social structure resource that can bring convenience to individuals through information exchange and shared visions (Coleman, 1988). In the past, social capital has been built via face-to-face interactions, letters, or phone calls (Putnam, 2000; Williams, 2006). To date, it is widely applied to various SNS and has been used to explain relationship development and maintenance online (Ellison, Steinfield, & Lampe, 2007). Tsai and Ghoshal (1998) indicated that when it comes to information exchange, social capital can not only benefit pro-social behaviors but can also expedite resource changing within a firm.

Putnam (2000) made a vital extension to the notion of social capital through his differentiation of two forms of social capital: bridging and bonding. Bridging social capital deals with "weak ties", or loose connections between individuals who may provide useful information to or new perspectives for one another, usually without emotional support (Granovetter, 1973). Bonding social capital, on the other hand, is found within homogenous networks of cross-pointed people, such as close friends or family. It likely results in emotional support rather than information quality for

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members in the network (Putnam, 2000). Comprising of both a network and other far-reaching benefits, prior research showed that both forms of social capital can yield positive outcomes, such as personal contentment (Valkenburg, Peter, & Schouten, 2006). In addition, Helliwell and Putnam (2004) found that social capital was strongly linked to SWB in several different forms.

As much as MIM increases the convenience in communication, its utilities raise an issue that many researchers have debated: can MIM build online social capital among users? If yes, what kind of benefits can it exert? Several researchers indicated that users can build social relationships and foster interactions with one another, suggesting the importance of understanding social capital in virtual communities (Aharony, 2015; Lin, 2011). According to DiMaggio, Hargittai, Neuman, and Robinson (2001), online social networks affect the development and maintenance of social capital. Most research on online social capital focuses on SNS, such as FB and Twitter (Blanchard & Horan, 1998; Ellison et al., 2007; Hofer & Aubert, 2013). However, little attention is paid to MIM use in terms of social capital and SWB, especially on LINE.

LINE, developed by Naver Corporation, has 21 million active users in Taiwan. According to DMR Business Statistics, with 600 million registered monthly active users, it is one of the most successful social chat applications in terms of the revenue. Different from other SNS implications, LINE focuses on MIM services to generate a rather close and safe social networking platform for users to connect with contacts (Join Extra Crunch, 2013).

The objective of this research is to explore users' media consumption patterns

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regarding LINE and FB, and further examine how using these different media platforms affect individuals' social capital and SWB. Second, this research contributes to literature on social networking by distinguishing MIM and SNS, providing a constructive discussion on MIM use and its effect on social ties and SWB. Third, this study indicates the mediating role of the two forms of social capital, bonding and bridging, which helps deliver a much clearer picture of the indirect relationship amongst the variables. Meanwhile, following to the concept of media complexity, this research also examines the moderating role of the dominant SNS, Facebook, in the model. Lastly, this study particularly examines social connection motivation in LINE use, exploring whether specific communicative usage impacts individuals' SWB via social capital. These findings have implications for educators who aim to promote a "healthy" way of using communication technology. In addition, the results can also provide insights for practitioners to optimize their services and make users engage more with the products.

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Chapter 2. Literature Review

2.1 LINE and Mobile Instant Messaging

According to (Faulhaber, 2002), IM provides text-based, near-synchronous communication between one or few users who are normally known to one another. Similar to SNS, MIM also has utilities of staying in touch with contacts, coordinating events, and keeping up to date with acquaintances' activities (Leung & Wei, 2000). However, compared to other CMC, MIM causes a deeper connection with one's contacts (Alvestrand, 2002). Naver corporation launched LINE, a mobile instant messaging service, in South Korea in 2011; however, great expansion overseas led to a total of 194 million global users by the beginning of 2019 (Global Digital Report 2019- We Are Social, 2020). In Taiwan, with 21 million monthly active users and more than 10 billion messages being sent per day, LINE has become the predominant MIM service (LINE, 2019).

To markedly distinguish MIM from SNS, several points are listed from past literature. First, MIM (i.e., LINE) was originally developed for mobile devices, initially offering messenger services; however, SNS (i.e., FB) began their relationship forming and maintenance services based on the Internet, and then moved onto mobile platforms. Next, LINE initially operated as a closed platform that did not allow users to view others' friends, unlike open services (i.e., Twitter and FB) where users could visit mutual friends' profiles (Alison Bryant et al., 2006; Ha, Kim, Libaque-Saenz, Chang, & Park, 2015)

Nevertheless, LINE has been working on developing new features, such as "open chats" and "timelines", to provide users more in-app services. These features allow users to join and browse chats based on their interests, but also connect with other

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individuals they may not have met. According to a LINE use behavior survey conducted in 2018, the top three purposes respondents used LINE were to communicate and make phone calls (98%), discuss work (51%) and read news (45%). This shows that directive communication in chats and groups is still the main service people use on LINE.

2.2 SNS, MIM and SWB

According to Diener, Suh, Lucas, and Smith (1999), SWB is a broad category of phenomena that includes people's emotional responses, domain satisfactions, and a global evaluation of life satisfaction. It contains individuals' pleasant or unpleasant experiences related to specific events and circumstances. In the past, researchers examined SWB from various aspects, such as cognitive, objective, and demographic factors (Shmotkin, 1990; Wilson, 1967).

From the definition of Ellison et al. (2007), SNS is a digital-mediated space which allows users to construct a public or semi-public profile within a bounded system, see a list of other users with whom they share a connection with, and visit their own and mutual friends' connections' profiles. SNS features of self-presentation and social networks articulation are particularly emphasized, which can be see through various communities, such as work-related (i.e., LinkedIn) and college student (i.e., FB) communities. With the rapid development of the Internet, many services have already expanded beyond these basic features. Researchers have long investigated SNS and its social impact on individuals, yet most of them neglected multiple uses of each medium (Lynn & Witte, 2015).

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More recent research started to explore different SNS platform types and their different main functions. For example, Twitter and YouTube provide open-ended portals for users to connect with those they have not met and recognize. By the definition mentioned above, these services may all be classified as SNS, but they each have defining characteristics that separate them from each other. Particularly looking at the effect of FB use, researchers who found positive attributes said that the Internet fulfilled individual's needs to build and maintain social networks (Kim & Lee, 2011; Nabi et al., 2013; Valkenburg et al., 2006). Additionally, Kim and Lee (2011) and Nabi et al. (2013) discovered that the number of FB friends and self-presentation contents contributed to social support and could also foster more happiness. In contrast, other studies demonstrated that viewing images and updates that selectively portray others positively on FB, Instagram, and Twitter lead people to feel mixed feelings (Jordan et al., 2011; Wirtz, Tucker, Briggs, & Schoemann, 2021). Negative psychological outcomes from SNS use includes negative mood (Chou & Edge, 2012), prolonged stress (Thomée, Eklöf, Gustafsson, Nilsson, & Hagberg, 2007; Wang, Jackson, Gaskin, & Wang, 2014), and reduced life satisfaction(W. Chen, Fan, Liu, Zhou, & Xie, 2016).

When exploring these SNS platforms and effects, most researchers covered the SNS characteristics on social networking portal sites and neglected its messaging functions (Ellison et al., 2007). Sharing similar affordances based on social connections, MIM enables users to instantly create closer ties with others, without having to be in the same place at the same time (Cui, 2016). Particularly looking into the messaging affordances, a study from Wen et al. (2016) found that time spent on WeChat could positively predict users' life satisfaction. Additionally, Bano, Cisheng, Khan, and Khan (2019) found that time spent on WhatsApp had a significant positive

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relationship with university students' psychological well-being. While most of the discussions on SWB have focused on open platforms (i.e., FB, Twitter), few research has mentioned MIM.

In this study, one of the objectives is to understand how LINE use is related to SWB. With respect to the previous multifaceted discussion, the first hypothesis was proposed.

H1: LINE use is associated with individual's subjective well-being.

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2.3 Social Capital Theory

The concept of social capital has been conceptualized in many ways. In the definition of Nahapiet and Ghoshal, social capital is "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (p. 234). Social capital differs from other forms of capital in that it features social network structures and the relationship between people (Chiu, Hsu, & Wang, 2006; Nahapiet & Ghoshal, 1998).

According to sociologist Coleman (1988), social capital explains different collective actions, social behaviors, and community engagement. In his systematic analysis, social capital was viewed as a kind of social structure resource that could bring convenience to an individual through information exchange and shared visions. The concept of social capital has been applied in many contexts with different outcome variables, such as life satisfaction (Elgar et al., 2011), civic participatory behaviors (Gil de Zúñiga, Jung, & Valenzuela, 2012), and performance among different organizations (Lins, Servaes, & Tamayo, 2017). For corporates applications, Tsai and Ghoshal (1998) found that social capital expedites resource exchange and value creation within a firm. In terms of knowledge acquisition, A study done by Yli-Renko, Autio, and Tontti (2002) also showed positive effects of social capital in young technology organizations.

As previously mentioned, Putnam (2000) distinguished bridging social capital from bonding social capital. Bridging social capital exists between groups that are dissimilar but share loose association, such as casual acquaintances, work colleagues, or people of different ethnic or cultural backgrounds. In contrast, bonding social capital is found between individuals in tightly knit, emotionally close relationships, such as family and close friends. The "strong ties" in bonding social capital reinforces exclusive social identities, supporting reciprocity within a group. In

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other words, bonding social capital can be leveraged to help people attain their basic need, whereas bonding social capital can help people achieve a higher goal (Putnam, 2000).

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2.4 MIMs and SNSs and Social Capital

In the era of Web 1.0, the effects of the Internet on social capital have been mixed at best (Uslaner, 2000). For the positive benefits, researchers agreed that the Internet provides a space for people to share common interest with time and place limits (Sproull, Kiesler, & Kiesler, 1991). Additionally, it affords opportunities to contact friends and enhances face-to-face communication as network members. On the other hand, some researchers assert that the Internet diverts people from their true community because online interactions are inherently inferior to face-to-face interactions (Wellman, Haase, Witte, & Hampton, 2001). Concerned that people spend less time in their physical and social surroundings, some scholars worry that online interactions may result in a decline in social capital. In their point of view, once the Internet diverts individuals' attention from their immediate, physical environment, there is a risk of spending less time and being less involved with their family and friends (Nie et al., 2002; Sackman & Nie, 1970). For instance, some evidence pointed out that heavy online game involvement could lead to weakened family ties and less social behaviors in real life (Lee, Son, & Kim, 2016).

However, Bargh and McKenna (2004) found that using new media can develop both weak and strong ties amongst people. A series of investigations have shown that using FB can increase social interactions and lead to higher bridging and bonding social capital (Abbas & Mesch, 2018; Ellison, Gray, Lampe, & Fiore, 2014; Ellison et al., 2007). For example, Abbas and Mesch (2018) demonstrated that both active (direct communication such as wall posting, broadcasting) and passive communication (monitoring others' lives while viewing their posts) on FB led to higher bridging social capital for Palestinian young users. Particularly, on SNS, users converse with more people, comprising of both strong and weak ties. This offers them additional chances

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to obtain non-redundant information that is often associated with weak ties (Haythornthwaite, 2005).

On the other hand, though there were few studies examining the relationship between MIM and social capital, past studies have looked into the communicative affordance on mobile phones and found it particularly suitable for the maintenance of social capital(Chan, 2015). For example, Campbell and Kwak (2010) found that voice and text messages sent via mobile phones were positively related to social leisure activities and active membership in organizations, which enhanced regular contacts and strong ties. Chan (2015) also mentioned that the instant messaging functions on mobile devices provide necessary affordances to maintain bridging social capital for weak ties.

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2.5 FB use and the Moderation Effect

With the proliferation of social media, people live in a life that consists of a multitude of mediated communications. It is common for users to not only use one platform or channel at a time. The media multiplexity theory states that the stronger the tie is, the more means of communication people will use to maintain the relationship (Haythornthwaite, 2002). Miczo et al. (2011) found that using multiple communication media can predict closeness with friends. Since increased quantity and better-quality communications could lead to a "connected presence", individuals would make shorter, more frequent, and less formal communicative gestures (Licoppe, 2004).

FB, one of the most popular SNS platforms in the world, satisfies needs of information, entertainment, and social connection. All of these functions allow users to feel connected to a community and increase knowledge on friends. Existing research has shown a link between FB use and the production of social capital (Phua & Jin, 2011; Valenzuela, Park, & Kee, 2009). For example, Burke and Kraut (2016) found that FB use with strong ties had a direct association with one's SWB. However, few of the past research explores the moderating role of the two kinds of social capital.

This research follows the idea by focusing on the extent to which LINE and FB use are related to bonding and bridging social capital, and how they predict SWB. The following hypotheses were proposed.

H2: FB use moderates the effect of LINE use and (a) bonding social capital and (b) bridging social capital.

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H3: FB use moderates the effect of LINE use and subjective well-being.

2.6 The Mediating Role of Social Capital

Some studies have demonstrated that using SNS is positively associated with perceived social capital because it could expand the size of social circles, enhance social connections in the real world, and develop certain social capital(Burke & Kraut, 2016; Petersen & Johnston, 2015). For instance, Campbell and Kwak (2010) found that CMC can be used to maintain family bonds, meet intimate partners, and organize offline activities. In addition, different characteristics of SNS (i.e., likes, forwards, comments) can enhance interactions between homogeneous users, which also strengthens bonding social capital (Smith, 2010).

While there was evidence that certain uses of the SNS and MIM were positively associate with social capital and SWB, some literature suggests that the relationships are not fully direct and could be multifaceted (Matei & Ball-Rokeach, 2001; Valkenburg & Peter, 2009). When it comes to the mediating role of social capital in political aspects, Zhong (2014) found that using SNS to meet new social ties through civic engagement is partially mediated by social capital among Chinese youth. More recent research from Chan (2015) explored the relationship between mobile use and SWB, finding that both bonding and bridging social capital partially mediated the relationship. Additionally, a study done by Park and Lee (2012) on Korean teenagers showed that bonding relations maintained through CMC, especially in Facebook, was related to concepts closely related to people's SWB (i.e., greater self-esteem, lower levels of loneliness and depression). At the same time, bridging relations were related to higher self-esteem and lower depression.

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Prior discussions were mostly regarding FB and Twitter, where users may have friends of friends who they do not know, thereby extending their bridging social capital. Very few studies covered the role of MIM. Among those studies, some demonstrated that the use of MIM can yield either positive or negative physical and emotional outcomes. For instance, WhatsApp was positively associated with bonding social capital, regarding contact numbers and time spent using MIM (Aharony, 2015; Bano et al., 2019; Wen et al., 2016).

The way(s) in which bonding and bridging social capital act as a mediator in the context of LINE use remains unknown. Hence, the following hypothesis was proposed.

H4. The relationship between LINE use and SWB is mediating by (a) bonding social capital and (b) bridging social capital.

2.7 The Social Connection Motivation, Social Capital and SWB

Previous literature suggests that the relationship between SNS and SWB depends on different media use. Based on the uses and gratifications (U&G) perspective, an individual's underlying needs motivate his or her media use behavior (Blumler & Katz, 1974). This perspective identifies different gratifications that individuals seek to satisfy their psychological and sociological factors (Rubin, 2009). U&G is commonly applied to studies exploring SNS use motivations. These motivations can be categorized as hedonic benefit, cognitive benefit, self-disclosure, social connection, and mobile convenience (Leung, 2009; Papacharissi & Rubin, 2000).

The gratification of social connection represents the need of interpersonal communication. Technology -based systems should provide users a platforms to

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interact with others comfortably (Preece, 2001). Previous research has found that the desire for sociability is the key motivation of using SNS. Specifically, there was a positive effect of SNS social use on psychological well-being (C.-M. Chang & Hsu, 2016; Y. P. Chang & Zhu, 2011; Wang et al., 2014). Furthermore, Guo, Li, and Ito (2014) demonstrated that using SNS for social and informational functions enhances foreign students' perception of bridging social capital and the sense of life satisfaction in Japan.

In terms of MIM, social connection happens in a closed platform with acquaintances, so the information and content tend to be more customized and private (Chiang, 2013). Cui (2016) pointed out that the communicative modality features of MIM contribute to more effective management in a close relationship. On the other hand, Zhan, Sun, Wang, and Zhang (2016) found that using WeChat for communication purposes provide users with multiple social benefits, such as expanding their social circle and obtaining social support, ultimately enhancing life satisfaction. On the other hand, some researchers provided contradictory findings, showing that, depending on the individual's use, using MIM for communication can lead to perceived stress and fatigue (Blabst & Diefenbach, 2017; Lee et al., 2016).

This study aims to identify the difference between LINE use in both high and low social connection motivations, specifically examining the relationship between social capital and SWB. Below are three additional hypotheses.

H5: The effect of LINE use on SWB will only be significant when social connection motivation is high, as opposed to when social connection motivation is low.

H6: LINE use on SWB will only be moderated by FB use when social connection motivation is high, as opposed to when social connection motivation is low.

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H7: LINE use on SWB will only be mediated by (a) bonding social capital and (b) bridging social capital when social connection motivation is high, as opposed to when social connection motivation is low.

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Chapter 3. Methodology

3.1 Hypothesis

This study aims to explore the mediating role of bonding and bridging social capital between different media platform use and SWB. This study used LINE use as an independent variable and FB use as a moderator, expecting to fill the gap in research on how open and closed media platform usage is related to SWB and social capital. The research model was thus formulated below (see Figure 1).

H1. LINE use is associated with individual's subjective well-being.

H2: FB use moderates the effect of LINE use and (a) bonding social capital and (b) bridging social capital.

H3: FB use moderates the effect of LINE use and subjective well-being.

H4. The relationship between LINE use and SWB is mediating by (a) bonding social capital and (b) bridging social capital.

H5: The effect of LINE use on SWB will only be significant when social connection motivation is high, as opposed to when social connection motivation is low.

H6: LINE use on SWB will only be moderated by FB use when social connection motivation is high, as opposed to when social connection motivation is low.

H7: LINE use on SWB will only be mediated by (a) bonding social capital and (b) bridging social capital when social connection motivation is high, as opposed to when social connection motivation is low.

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Figure 1. The research framework of LINE use in general and SWB among social capital and FB use.

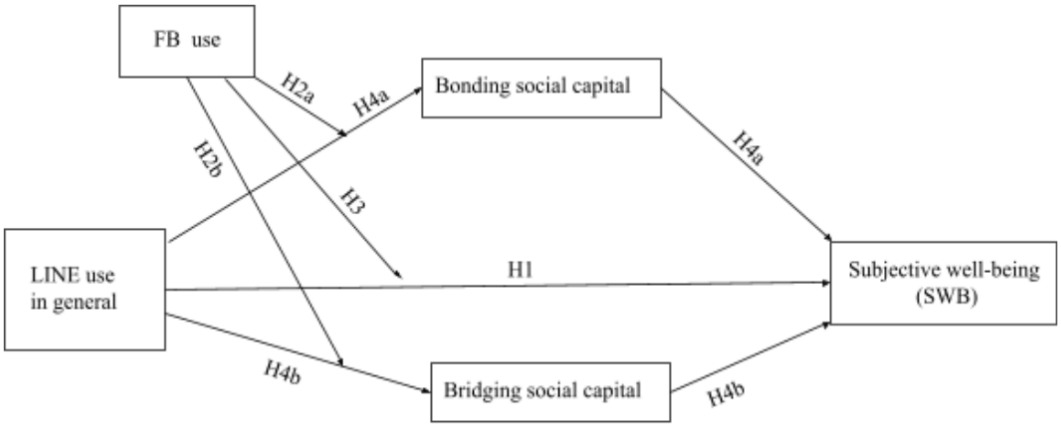
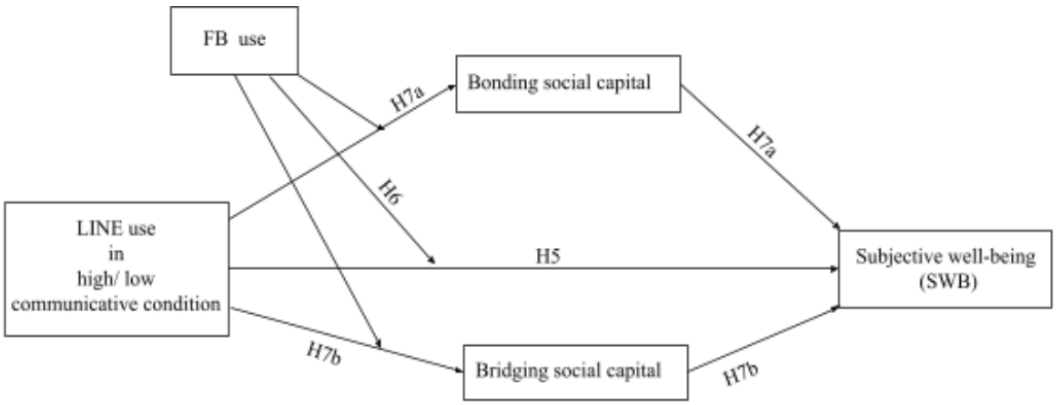


Figure 2. The research framework of LINE use in high and low communicative conditions among social capital and FB use.



3.2 Survey Design, Sampling and Procedure

To test the proposed hypotheses and research question, this study employed a national survey conducted by the Taiwan Communication Survey Team. Since 2010, the TCS team has long investigated media use and implications for individuals' engagement with society, including how people use media to explore, get involved, and connect with society. The 2018 dataset mainly focuses on media use and social implications. The fieldwork of a national survey was implemented from July 4, 2018 to

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October 11, 2018, with a final sample size of 2,028.

In terms of the sampling, a multi-stage sampling approach was used based on the Taiwanese census data. The four-stage stratified probability proportional to size (PPS) sampling was adopted to account for a nationally representative sample of Taiwanese adults in households. The population was stratified into groups based on region, minimum statistical area, house number, age, and so on.

The interviews from which the TCS data was collected were all conducted face to face by a well-trained survey team, led by experienced professors from the TCS team. All data was recorded immediately via tablets that the interviewers brought along with them. A self-developed Computer-Assisted Personal Interviewing (CAPI) software was used to minimize potential errors, such as missing answers, contradicting results, and conflicting responses. Prior to the real survey, trial interviews were employed, and revisions were made accordingly.

3.3 Measurement

3.3.1 Outcome Variable

SWB

Participants' SWB was composed of four items based on the study of Diener, Emmons, Larsen, and Griffin (1985). These four items participants responded to were: (1) In most ways, my life is close to my ideal. (2) The condition of my life is excellent. (3) I have gotten the important things I want in life so far. (4) If the life can start again, I want to change over and restart. The scale of the questions ranged from 1 to 5, with 1 indicating strongly disagree and 5 indicating strongly agree. The reliability of the combined variable improved from 0.67 to 0.85 after (04) "If the life can start again, I

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want to change over and restart" was removed. Therefore, this study used the other three items to create an index for SWB (M = 3.26; SD = 0.78; α= 0.85).

3.3.2 Independent variable

LINE use

LINE use (M = 130; SD = 157.32) served as the only independent variable in this study. Respondents were asked, "On the days you use LINE, how long do you spend on it in a day (only count the time when you actually looking at the screen)?" Responses were converted from hours into minutes, and usage times less than zero were coded as "0" in SPSS to validate the responses.

Social connection motivation.

As the study also intended to know how the communicative motivation in using LINE influence SWB via social capital. The respondents were asked to the following questions to measure the variable: "What are the main motivations when using LINE?" Response categories included: (1) To contact; (2) To maintain the relationship with relatives and friends; (3) To make new friends; (4) To share my mood with friends; (5) To share news or personal opinion; (6) To express my own feature; (7) Be afraid of missing the things and topic among relatives; (8) Be afraid of missing the things and topics among peers; (9) For work or class needs; (10) To arrange activities or schedules; (11) To gain news; (12) To learn new things; (13) To escape things from school or work; 16 (14) To kill time; (15) Entertainment; (16) Habitual use. The respondents checked all that applied.

In terms of social connection motivation, past research found that SNS users mostly used SNS to maintain or form social connections with others (Alhabash, Chiang, & Huang, 2014). Initially, the following four statements were used to create a new index:

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(1) to contact, (2) to maintain the relationship with relatives and friends, (3) to make new friends, and (4) to share my mood with friends. However, the reliability coefficient greatly improved after removing item (4) to share my mood with friends. Therefore, this study used the first three items to create an index for social connection (M = 0.60; SD = 0.20; KR-20 = 0.41). Social connection motivation was recoded from 0 to 3, 0 to 1 as low social connection motivation, and 2 to 3 as high communication motivation.

3.3.3 Mediator

Bonding social capital

To measure *bonding social capital (M = 3.80, SD = 0.72, α = 0.83)*, the respondents were asked to respond to a series of statements: (1) There are several people I trust can help me to solve my problem. (2) There are some people that I feel comfortable to talk about personal problems. (3) When I feel lonely, there are several people I can talk to. The three variables were then combined to form an index. The response category ranged from 1 to 5, with a higher value indicating more agreement

Bridging social capital

This concept was also adopted from the research of Williams (2017). It was measured by asking respondents to respond to a series of statements: (1) Interacting with people makes me want to try new things. (2) Interacting with people makes me interested in knowing how people different from me are thinking. (3) Talking with people makes me curious about other places in the world. The three variables were then combined to form an index. The response category ranged from 1 to 5, with a higher value indicating more agreement (M = 3.41; SD = 0.87; α =.87).

3.3.4 Moderators

FB use

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FB use was measured by asking: "On the days you use FB, how long do you spend on it in a day (only count the time when you actually looking at the screen)?" Similar to LINE use, responses were converted from hours to minutes in order to code the variable consistently. Values equal to or less than zero were coded as "0" in SPSS (M = 100.94; SD =126.36).

3.3.5 Control variables

To avoid a confounding effect, demographic variables such as age, gender, and educational level were included as controls in the analysis. Firstly, to measure age, respondents were asked to indicate their birth year. In terms of gender, male was coded as 1, female as 0. The ratio of men to women was near 1:1, with slightly more women (52.7%). Educational level was calculated with a seven-point scale (1=none or self-study, 2=elementary school, 3=vocational/ junior high school, 4=senior high school and cadet school, 5=open university, junior college of military/police, and junior college, 6=university, college of military/police, 7=master's degree and above) (*M=5.2, SD=1.2)*.

3.3 Analysis Strategy

To examine how LINE use associated with social capital on SWB, Andrew F. Hayes' PROCESS macro was employed in the current research. Hayes' PROCESS was widely recognized as an appropriate method for testing mediation and moderation effects. It performed a bootstrapping technique to analyze both conditional direct and indirect effects, examining the statistical significance, and providing confidence intervals (Hayes, 2017). Particularly, in this study, the researcher would like to examine two parallel mediators at one time. Therefore, adapting Model 8 from Hayes's, the

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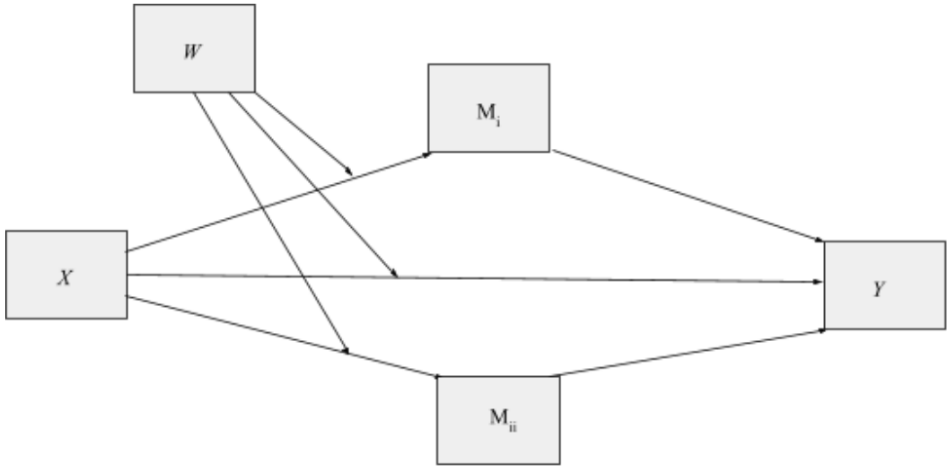
researcher then used a customized syntax to process the research framework (See Appendix A). This customized model could not only perform both mediation and interaction but also include two mediators at the same time. The indirect roles of social capital (H4, H7) and FB use (H2, H3) were then estimated. The bootstrapping analysis was based on 10,000 resampling iterations and the 95% bias-corrected confidence interval in the current study.

This customized model, consisting of two mediators and one moderator, was utilized to test the mediation effects and interaction terms between the antecedent and outcome variable in high and low communicative conditions. As for the analysis, LINE use was taken as the independent variable (X), and SWB served as the outcome variable (Y), while bonding social capital and bridging social capital as mediators (M_i, M_{ii}) and FB use as a moderator (W). Sociodemographic variables such as gender, age and educational level were included as covariates.

Figure 3. The conceptual diagram of the customized model adapting from Andrew Hayes' process macro Model 8 (Hayes, 2018, p.13).



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Chapter 4. Results

4.1 Descriptive Analysis

After removing responses of individuals who did not use LINE and FB, the remaining analytical sample of using LINE were 1,649 respondents, who used LINE for an average time of 130 minutes per day (M = 130; SD = 157.33). On the other hand, 1,333 users reported using FB, for an average time of 100.94 minutes per day (M = 100.94; SD = 126.36). Among them, the respondents had an average age of 48.9 (SD = 16.9), and 50.8% of them were female.

4.2 Hypotheses Testing

This study employed a customized syntax which adapted from Andrew Hayes' PROCESS macro (Hayes, 2017) to test the association between LINE use and SWB on bonding and bridging social capital among Taiwanese users. With SWB served as the outcome variable (Y) and LINE use as the independent variable (X), the current study also examined the mediating effect of two kinds of social capital (M) and the interaction of FB use (W).

Table 1 presents the mediator variable models (the effects of predictors on mediators) and the dependent variable model (the effects of predictors and mediators on the DV). The models used age, gender, and education levels as the control variables. Bonding social capital and bridging social capital were both used as mediators in the model.

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In the mediator model, gender (ß= -.21, p <.001) and education (β=.09, p <.01) were significantly associated with bonding social capital. Females and those with higher education possessed greater bonding social capital in their lives. On the other hand, age (ß= -.00, p <.001) and education (ß= .22, p <.001) were significantly associated with bridging social capital. In other words, younger users and those with higher levels of educational background will have greater bridging social capital by using LINE.

In the dependent variable model, SWB was significantly predicted by age, education, and bonding social capital. Those who are older, and people with a higher education were more likely to have a higher SWB. In addition, people with a higher bonding social capital had higher SWB. H1 proposed a relationship between LINE use and individual's subjective well-being. The result showed that LINE use was not a significant predictor of SWB (B= -.00, SE= .00, p=.0658). As a result, H1 was not supported.

H2a stated that FB use moderates the effect of LINE use and bonding social capital. In the mediator variable model, the interaction effect of LINE use and FB use on bonding social capital (B = .00, SE = .00, p = .73) was not significant, indicating that the mediation was not moderated by the level of FB use. Meanwhile, H2bpredicted that FB use moderated the effects of LINE use and bridging social capital, which was not supported either (B = .00, SE = .00, p = .51).

H3 proposed that the level of FB use moderates the relationship between LINE use and SWB. The dependent variable model from Table 1 shows that the moderation

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was not significant (B=.00, SE=00, p=.45). In other words, there was no interaction effect between LINE use and FB use on SWB. H3, therefore, is not supported.

Table 1. Indirect effect of LINE use (IV) on SWB (DV) through Bonding Social Capital (M1) and Bridging Social Capital(M2) Moderated by FB use (W)

	Mediator Variable Model (DV= bonding social capital)	Mediator Variable Model (DV=bridging social capital)	Dependent Variable Model (DV=SWB)
Predicter	*B*	*B*	*B*
gender	.0000***	.1269	.1632
age	.5652	.0000***	.0000***
education	.0003***	.0000***	.0503*
line use	.3455	.2494	.0658
fb use	.9432	.2380	.5438
bonding	-	-	.0000***
bridging	-	-	.3175
line use X fb use	.7324	.5167	.4579
R^2	.0360	.1140	.2181

Note: B = unstandardized regression coefficients. Bootstrap resamples= 5000.
*p<.05. **p<.01. ***p<.001.

H4a examined the mediating role of bonding social capital on LINE use and SWB. The conditional indirect effects further showed that the indirect effect of LINE use on SWB through bonding and bridging social capital in FB use conditions were nonsignificant (See Table 2). When the 95% confidence interval excludes zero, the

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mediation is considered to be significant. However, in the mediator variable model, the indirect effect of LINE use on SWB through bonding social capital contained zero (B = .00, SE = .0000, 95% CI =- .0000-.0000); therefore, H4a was not supported.

H4b hypothesized that the relationship between LINE use and subjective well-being is mediated by bridging social capital. Based on Table 2, bridging social capital was not a mediator between LINE use and SWB (B=.00, SE= .0000, 95% CI=.0000-.0000). Therefore, H4b was not supported.

Table 2. Conditional Indirect Effects at FB use

Mediator	Conditions	Effect	BootSE	Boot 95% CI
Bonding social capital	FB use	.0001	-.0001	[-.0001-.0002]
Bonding social capital	Non-FB use	.0001	-.0001	[-.0001-.0003]
Bridging social capital	FB use	.0000	.0000	[.0000-.0000]
Bridging social capital	Non-FB use	.0000	.0000	[.0000-.0000]

Note: Bootstrap resamples= 5000.

H5 hypothesized that the effect of LINE use on SWB will only be significant when social connection motivation is high, as opposed to when social connection motivation is low. Table 3 and Table 4 presented the mediator variable models and the dependent variable model. As previously mentioned, this study differentiated the high and low social connection motivation groups through a median split. This study then performed separate regression analyses for the two groups respectively.

In the high social motivation condition (see Table 3), education level was significant in predicting bonding social capital (β=.06, p<.05) and bridging social capital (β=.20, p<.001). Those with a higher educational background tended to have higher social capital. Thus, age was negative and significant in relation to bridging social capital

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(β=-.00, p<.001), showing that younger users would experience higher bridging social capital under high social connection motivation. On the other hand, age was positive and significant in predicting individuals' SWB (β=.01, p<.001). Older users have a higher level of SWB. As for gender, it was found to be negative and significant in predicting bonding social capital (β=-.17, p<.001). Specifically, females tend to have higher bonding social capital than males.

On the other hand, in the low social motivation group (see Table 4), gender (β=-.31, p<.001), age (β=.00, p<.01) and education level (β=.19, p<.01) were significant in predicting bonding social capital. Gender was found to be negative and significant, indicating that females would have higher bonding social capital in a low social connection motivation condition. Moreover, education was positive and significant in relation to bridging social capital (β=.29, p<.001), meaning that those with higher educational levels would have a higher bridging social capital. For the dependent variable model, age (β=.00, p<.01) and education (β=.12, p<.05) were positive and significant covariates in predicting SWB. In other words, respondents who were older and had a higher educational background would experience greater subjective well-being.

The results, as shown in Table 3, showed that the relationship between LINE use in a high communicative condition and SWB was negatively significant (β=-.00, p<.05). In the high social connection motivation group, participants who used LINE more had lower SWB. On the other hand, Table 4 showed that for the low social connection motivation group, using LINE could not predict an individual's SWB ((β=.00, p>.05). Therefore, H5 was supported.

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H6 compared the moderating effect of FB use on LINE use for those with high versus low social connection motivation and SWB. Results showed that the hypothesized interaction effect was not significant for both high social connection motivation (B = .00, SE = .00, p = .44) and low social connection motivation (B = .0003, SE= .0004, p = .8873). Therefore, H6 was not supported.

Table 3. Indirect effect on LINE use (IV) on SWB (DV) through Bonding Social Capital (M1) and Bridging Social Capital(M2) Moderated by FB use (W) when social connection motivation is high.

	Mediator Variable Model (DV= bonding social capital)	Mediator Variable Model (DV=bridging social capital)	Dependent Variable Model (DV=SWB)
Predicter	*B*	*B*	*B*
gender	.0000***	.4143	.2190
age	.3286	.0000***	.0000***
education	.0279**	.0000***	.3129
line use	.9001	.7103	.0175**
fb use	.8290	.4678	.3555
bonding	-	-	.0000***
bridging	-	-	.4496
line use X fb use	.4430	.5546	.9421
R^2	.0291	.1259	.1945

Note: B = unstandardized regression coefficients. Bootstrap resamples= 5000.

*p<.05. **p<.01. ***p<.001.

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Table 4. Indirect effect on LINE use (IV) on SWB (DV) through Bonding Social Capital (M1) and Bridging Social Capital(M2) Moderated by FB use (W) when social connection motivation is low.

	Mediator Variable Model (DV= bonding social capital)	Mediator Variable Model (DV=bridging social capital)	Dependent Variable Model (DV=SWB)
Predicter	*B*	*B*	*B*
gender	.0001***	.0884	.5515
age	.0318**	.2784	.0016**
education	.0011**	.0000***	.0246*
line use	.4013	.5280	.3756
fb use	.8100	.5166	.6717
bonding	-	-	.0000***
bridging	-	-	.4799
line useXfb use	.6377	.3783	.4919
R^2	.0865	.1098	.2962

Note: B = unstandardized regression coefficients. Bootstrap resamples= 5000.
*p<.05. **p<.01. ***p<.001.

Lastly, the mediating role of bonding and bridging social capital on LINE use for people with high and low social connection motivation and SWB were examined for H7 (see Table 5 and Table 6). However, the range of the confidence interval in the mediator variable model contained zero (B = .00, SE = .0001, 95% CI = -.0001-.0002), suggesting that the indirect effects of LINE use on SWB through bonding and bridging social capital were not significant. H7 was not supported.

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Table 5. Conditional Indirect Effects of FB use when social connection motivation is high.

Mediator	Conditions	Effect	BootSE	Boot 95% CI
Bonding social capital	FB use	.0001	.0002	[-.0003-.0005]
Bonding social capital	Non-FB use	.0002	.0002	[-.0003-.0006]
Bridging social capital	FB use	.0000	.0000	[-.0001-.0000]
Bridging social capital	Non-FB use	.0000	.0000	[-.0001-.0001]

Note: Bootstrap resamples= 5000.

Table 6. Conditional Indirect Effects of FB use when social connection motivation is low.

Mediator	Conditions	Effect	BootSE	Boot 95% CI
Bonding social capital	FB use	.0000	.0001	[-.0002-.0002]
Bondingsocial capital	Non-FB use	.0000	.0001	[-.0002-.0002]
Bridging social capital	FB use	.0000	.0000	[.0000-.0000]
Bridging social capital	Non-FB use	.0000	.0000	[.0000-.0000]

Note: Bootstrap resamples= 5000.

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Chapter 5. Discussion

5.1 Discussion

The purpose of this study was to systematically investigate the relationship between LINE use and subjective well-being. This study highlighted MIM features from SNS and further argued that the two different kinds of social capital and time spent on FB can be vital factors in influencing the relationship between individuals' psychological well-being and LINE use. Additionally, this empirical study strives to elucidate the complex relationship between mobile-based interactions and the consequences of happiness.

To begin, in H1, the research found no relationship between LINE use and SWB, meaning that time spent on LINE did not lead to SWB. This result was not consistent with previous findings; however, there are a few possible explanations for this. Firstly, in this research, LINE use was measured as the total amount of time spent on the LINE application. The data did not include the specific amount of time spent on different parts of LINE. The negligence of the different motivations and purposes of using LINE could explain the insignificant outcome. In a review of Kraut et al. (1998), it mentioned that early research on the impact of the Internet tended to treat online activities as interchangeable and ignore the nature of the different ways in which the technology was used. To avoid oversimplifying the measurements, many researchers have suggested that the impact of SNS on SWB should be contingent on a person's goal (Alhabash et al., 2014; Huang, 2010).

Another explanation may be the distribution of the variables. For the time spent on LINE, the percentage of times ranging from 1 minute to 120 minutes was 81.2%, while times from 600 minutes to 1,019 minutes was only 3.1%. Namely, more

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respondents used LINE for an average time of 2 hours per day with some outliers (i.e., extreme users), which may have affected the significance of the results.

To address H2(a) and H2(b), the interaction effect of LINE use and the two kinds of social capital on FB use were non-significant. In the results regarding H3, FB use also did not have an interaction effect on LINE use and SWB. The interaction effect was absent in both of these cases. Similar to the prior explanation, in this study, FB use was assessed by the total amount of time per day spent on the FB application as a whole. In the times they reported, it is unknown as to which exact features of FB the respondents were using.

As for H4(a) and H4(b), the results did not indicate the mediating role of bonding and bridging social capital in the relationship of LINE use and SWB. That is, there is no such indirect relationship among bonding, bridging social capital, LINE use and SWB. The variance in LINE use and the way SWB was measured could be possible explanations for the insignificant findings. Past studies have long debated the effect of using FB; however, this study failed to find the interaction effect on FB and LINE use. Bonding social capital was found to be positively associated with SWB, reinforcing prior findings of bonding social capital being more enduring and psychologically rewarding then bridging social capital (Sheer & Rice, 2017). Another rather unexpected finding was that bridging social capital did not show a significant impact in predicting an individual's SWB. Therefore, using LINE, in general, or with a highly communicative motivation cannot make people feel good or enhance their sense of psychological well-being. This confirms that loose ties from MIM are not enough to improve individuals' evaluation of their well-being.

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In terms of H5, the results indicated that LINE use was negatively associated with SWB for people with a high social connection motivation. According to existing studies, social connection in MIM use could lead to information overload and SNS cognitive fatigue, particularly for work(Hwang, Hong, Tai, Chen, & Gouldthorp, 2020; Lee et al., 2016).

Instant messages on MIM are usually not well-structured and are limited to a few sentences. These messages often reflect the spoken language, with grammatical and spelling mistakes, internet slangs, and shortened forms of words. Thus, with the 4G Internet service, users would access MIM nearly anywhere and anytime. Receiving such great number of messages, from time to time, important messages may be overlooked and workflow can be interrupted (Iversen, Melby, & Toussaint, 2013; Sasaki, Kawai, & Kitamura, 2016). Therefore, more cognitive processing is needed from the people receiving the message, leading to higher levels of cognitive load (C.-H. Chen, Lee, & Huang, 2018).

In addition, when users use MIM for work, the expectation for an immediate response and the public pressure in group chat rooms could result in higher online anxiety and further lead to cognitive fatigue. In a study done by Hwang et al. (2020), it showed that public sector workers in Taiwan who used LINE in the workplace suffered from LINE fatigue and experienced significant disruptions in daily cognitive functioning. These outcomes not only affect employees' job performance, but also bring out the decline of individuals' psychological well-being (Dhir, Yossatorn, Kaur, & Chen, 2018).

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As for H6, the interaction effect between LINE use with a high social connection motivation and FB use was not significant. Moreover, in H7, the research failed to identify the indirect effect regarding bonding and bridging social capital in the relationship of LINE use in high social connection motivation and SWB. These results could also attribute to the distribution of the variance and the measurement issues, as mentioned above.

Altogether, there may have been a gap between the context of the study and the literature reviewed. Results were partially contradictory to prior findings on social capital as a mediator in social implications, such as civic participation and SWB (Chan, 2015; Park & Lee, 2012; Putnam, 2000; Zhong, 2014). One possible reason for this contradictory finding could lie in the operationalized usages, as mentioned above. It is possible that certain types of mobile communication are helpful and directly impact individuals psychologically, while other types of social capital do not become a factor to influences SWB (Sheer & Rice, 2017).

Since TCS is a comprehensive data set that provides a general picture of media usage behaviors, its operational definition of the variables can be different from the conceptual definitions used in previous literature. For example, Park and Lee (2012) found that college students using smartphones can maintain bonding social capital and, ultimately, increase their SWB. However, the result was found in a rather specific context (different motivations of using smartphones). The generality of this data could not be measured in this case.

The extreme values should also be taken into consideration. The skewness values of LINE use and FB use from the original data were 52.73 and 41.13, which were

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positively skewed. The researcher eliminated the extreme values of the two variables by recoding the data, which was larger than 3 standard deviations. Therefore, in LINE use (SD=163.38), values that were larger than 489 were removed. As for FB use (SD=126.63), values larger than 378 were eliminated. The total sample of the valid data was 1324. The customized model was employed in PROCESS Macro to test the framework in both high communicative and low communicative conditions (see Table 7 and Table 8 in Appendix C).

In the high communicative condition, SWB was positively predicted by bonding social capital (β=.49, p<.01). In other words, respondents with a higher bonding social capital had a higher level of subjective well-being.

Addressing the mediator variable model, FB use was negative and significant in predicting bridging social capital (β=-.80, p<.01). Furthermore, the interaction effect of LINE use and FB use on bridging social capital was significant (β=.65, p<.05). That is to say, for higher social connection motivation users, more time spent on FB led to lower bridging social capital. However, these high social communication group LINE users would have a higher level of bridging social capital when using Facebook at the same time.

On the other hand, in a low communicative motivation condition, bonding social capital was found positive and significant in predicting SWB (β=.49, p<.001) in the mediator variable model. For people with a low social connection motivation, bonding social capital enables them to attain higher SWB, which was not that different compared to the previous finding.

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5.2 Limitations

Before discussing the implications and contributions of this study, it is necessary to mention some other limitations that may have influenced the interpretation of the findings. Firstly, there were some items of the variables that could not be measured perfectly. The variables, LINE use and FB use, were assessed by an individual's accumulated time on LINE and FB per day, instead of the amount of time spent on each function. The restricted measurement might not entirely operationalize the variables and may somehow affect the findings.

Secondly, the data employed in the analysis was secondary data, collected by TCS in Taiwan. While the dataset provided a full picture of the media use patterns amongst Taiwanese, the causality between SNS/MIM usage and SWB was not fully confident due to the cross-sectional data.

Thirdly, the data analyzed from the survey questions was based on self-reported answers. Self-reported answers may not precisely assess the real environment of FB and LINE, which may cause people to have difficulties evoking feelings when they come across different ideas. Researchers like Prior (2009) have also mentioned the gap between subjective perception and the societal condition.

Another limitation of this study is related to the obscure line between bonding and bridging social capital alongside MIM. Today, MIM includes more features in addition to its instant messaging functions. For example, since 2016, LINE rolled out TODAY tabs and timelines to provide users news and content they may not be following, but could be interested in. Similarly, WeChat in China has already became a digital lifestyle

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application. The services include calling taxis, purchasing public transportation and entertainment tickets, booking restaurants, paying public utility payments, and making donations (Tech, 2016). All of these integrated services have expanded the functions of MIM and are not merely limited to bonding or bridging social capital from the communicative use. While this study mainly focused on the instant messaging function on MIM, the research can be further observed in different types of usages.

Finally, readers should note that this study focused on mainstream SNS and MIM platforms in Taiwan, but most of the literature cited were from other countries, especially works on online social capital. Research has shown that people from different cultures react differently when using SNS. For example, Yoo (2012) found that compared to American SNS users (i.e., users from an individualistic culture), Korean SNS users (i.e., users from a collectivistic culture) are more concerned about self-presentation on FB and are less likely to disclose their personal information. The dissimilarities across different types of SNS should also be considered. For example, Instagram, Telegram, and Twitter each have their own unique affordances and target different groups of people (Alhabash et al., 2014; Valkenburg & Peter, 2009; Wen et al., 2016).

Contrary to past research concerning the measurement of the research objective, this study found no relationship between LINE use, FB use, and SWB through two kinds of social capital. In order to overcome the limitations, future scholars can refer to the suggestions below in order to expand on this research. First, different gratifications on media use should be considered. Different uses of media may influence the degree of bonding and bridging social capital, ultimately impacting individuals' SWB in various ways (Alhabash et al., 2014; Bano et al., 2019; Chan, 2015). Research

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from Wen et al. (2016) pointed out that intrinsic use of WeChat could predict users' life satisfaction. On the other hand, researchers such as Kross et al. (2013) found that passive usage on FB may negatively influence one's SWB. As a result, future researchers should break down the LINE use and FB use variables based on different gratifications, evaluating an individual's time spent on each medium's feature, such as cognitive, communicative, and hedonic features.

Secondly, in order to respond to the advances in the technology and improve the discrepancies of self-reported measurements, a mixed method with qualitative research should be considered for the future. In this case, face-to-face interviews would allow the interviewers to have more in-depth data and comprehensive insights, providing the researchers with opportunities to probe further explanations of responses directly.

Lastly, responding to the last limitation, the findings should not be generalized to all kinds of SNS and MIM around the world. With newly released SNS features, there are still a few areas that remain rather unexplored regarding the relationship between social capital and SWB. Different SNS and MIM features and mediums appeal to specific users, and also has their own ways to create and maintain social capital. For example, emerging social media platforms like Clubhouse, serve as a voice-based platform for users to join chatrooms, attracting those who enjoy networking with people and have the same interests to actively use the application. These specific features should also be seen on a case-by-case basis and should be taken into consideration.

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Chapter 6. Conclusion and Contribution

This study adopted national representative data from the TCS survey in 2018 and added knowledge about SNS in the social capital context. It specifically explored the mediation and moderation effect among LINE use, FB use, social capital, and SWB, examining the relationship between them all. Although the data did not support the main, proposed hypotheses, the study still shed light in the communication field in several aspects.

Firstly, to the relationship between social capital and SWB has been studied for long time, and the media impact of SNS has become an area of concern (Bano et al., 2019; W. Chen et al., 2016; Chou & Edge, 2012; Ellison et al., 2007). This study is one of the few to have extended this line of research by exploring how MIM use, in general, and on high social connection motivation may lead to distinct dimensions of social capital (i.e., bridging, bonding social capital) and SWB.

According to a report from Taiwan Network Information Center (TWNIC) in 2019, there were 94.8% people using Internet for instant messaging services. LINE, as the leading application in serving instant messaging services in Taiwan, and with nearly two-thirds of Taiwanese using FB, it was symbolic to use these two platforms as research objective for this topic.

Secondly, although this study did not observe bonding and social capital as mediators, it supports the link between bonding social capital and individuals' SWB, which is in line with previous findings (Elgar et al., 2011; Williams, 2006). The results

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also suggest that a close-knit connection in bonding social capital can lead to greater SWB.

Third, after removing the extreme values, when social connection motivation was high, FB use was significant in predicting bridging social capital. In addition, the interaction effect of LINE use and FB use was positive in predicting bridging social capital in high social connection motivation; however, this was not the case when social connection motivation was low. The communicative modality enables users to keep in touch and maintain their social ties. Particularly, in bridging social capital, SNS (i.e., FB) provides a rather public platform for people to report higher level of self-disclosure and allows them to connect through a large network of loose tie (Ellison et al., 2007). As for MIM, Zhan et al. (2016) found that using WeChat for communication purposes allows users to expand their social circle and obtain social support from others. Therefore, these findings confirmed that using multiple communication tools, such as FB and LINE, can increase one's bridging social capital.

Next, given the preliminary evidence in SNS and MIM use and SWB, this study also provides several insights for marketing communication professionals to optimize their communication strategies. Since the results of the main study did not support the association between time spent on LINE and social capital, practitioners should not only focus on developing functions to make users spend more time on the applications. Instead, they should try new ways to increase users' affective commitment to build their continuous consumption to the service. Li, Browne, and Chau (2006) suggested that SNS providers should incorporate features that increase the sense of "belongingness", "personal care", and "community" for users. For example, they can encourage users to

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participate in activities (i.e., games, challenges) with friends to enhance their connectedness between each other.

In addition, with a significant amount of time spent on LINE for high communicative use, practitioners can also try to optimize instant messaging services. This can be done by providing stable, innovative communication channels for users to have a worthwhile experience, while maintaining connections with others.

Lastly, communication technology is central to daily activities in society today. This study can serve as a guide for those who aim to promote a healthy way of using SNS. Although this study may not demonstrate the direct relationship of LINE and FB use to SWB, individuals can make an effort to create and maintain bonding social capital with others, and further develop their SWB.

In summary, this research found social capital as a factor in shaping well-being. It also indicated that merely measuring total time spent on various social media platforms is not enough. Media consumption behaviors should take many factors into consideration. Despite the role of social capital and SWB, extant research on this topic has mainly focus on SNS, such as Facebook. To further examine the context in MIM, the researcher conducted a PROCESS model to further observe its direct and indirect relationship. These findings not only provide ideas for individuals and communication practitioners when using and developing SNS and MIM, but also give future researchers a direction to refer to in this area of research.

DOI:10.6814/NCCU202100707

Reference

Abbas, R., & Mesch, G. (2018). Do rich teens get richer? Facebook use and the link between offline and online social capital among Palestinian youth in Israel. *Information, Communication & Society, 21*(1), 63-79.

Aharony, N. (2015). What's App: a social capital perspective. *Online Information Review*.

Alhabash, S., Chiang, Y.-h., & Huang, K. (2014). MAM & U&G in Taiwan: Differences in the uses and gratifications of Facebook as a function of motivational reactivity. *Computers in Human Behavior, 35*, 423-430.

Alison Bryant, J., Sanders-Jackson, A., & Smallwood, A. M. (2006). IMing, text messaging, and adolescent social networks. *Journal of Computer-Mediated Communication, 11*(2), 577-592.

Alvestrand, H. (2002). Instant Messaging and Presence on the Internet (No. ISOC MEMBER BRIEFING# 9): Internet Society.

Bano, S., Cisheng, W., Khan, A. N., & Khan, N. A. (2019). WhatsApp use and student's psychological well-being: Role of social capital and social integration. *Children and Youth Services Review, 103*, 200-208.

Bargh, J. A., & McKenna, K. Y. (2004). The Internet and social life. *Annu. Rev. Psychol., 55*, 573-590.

Best, P., Manktelow, R., & Taylor, B. (2014). Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children and Youth Services Review, 41*, 27-36.

Blabst, N., & Diefenbach, S. (2017). *WhatsApp and Wellbeing: A study on WhatsApp usage, communication quality and stress.* Paper presented at the Proceedings of the 31st International BCS Human Computer Interaction Conference (HCI 2017) 31.

Blanchard, A., & Horan, T. (1998). Social capital and virtual communities. *Social Science Computer Review, 16*(3), 293-307.

Blumler, J. G., & Katz, E. (1974). The Uses of Mass Communications: Current Perspectives on Gratifications Research. Sage Annual Reviews of Communication Research Volume III.

Burke, M., & Kraut, R. E. (2016). The relationship between Facebook use and well-being depends on communication type and tie strength. *Journal of Computer-Mediated Communication, 21*(4), 265-281.

Campbell, S. W., & Kwak, N. (2010). Mobile communication and social capital: An analysis of geographically differentiated usage patterns. *New Media & Society, 12*(3), 435-451.

DOI:10.6814/NCCU202100707

Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic Internet use and psychosocial well-being. *Communication Research, 30*(6), 625-648.

Chan, M. (2015). Mobile phones and the good life: Examining the relationships among mobile use, social capital and subjective well-being. *New Media & Society, 17*(1), 96-113.

Chang, C.-M., & Hsu, M.-H. (2016). Understanding the determinants of users' subjective well-being in social networking sites: An integration of social capital theory and social presence theory. *Behaviour & Information Technology, 35*(9), 720-729.

Chang, Y. P., & Zhu, D. H. (2011). Understanding social networking sites adoption in China: A comparison of pre-adoption and post-adoption. *Computers in Human Behavior, 27*(5), 1840-1848.

Chen, C.-H., Lee, W.-P., & Huang, J.-Y. (2018). Tracking and recognizing emotions in short text messages from online chatting services. *Information Processing & Management, 54*(6), 1325-1344.

Chen, W., Fan, C.-Y., Liu, Q.-X., Zhou, Z.-K., & Xie, X.-C. (2016). Passive social network site use and subjective well-being: A moderated mediation model. *Computers in Human Behavior, 64*, 507-514.

Chiang, H.-S. (2013). Continuous usage of social networking sites: The effect of innovation and gratification attributes. *Online Information Review*.

Chiu, C.-M., Hsu, M.-H., & Wang, E. T. (2006). Understanding knowledge sharing in virtual communities: An integration of social capital and social cognitive theories. *Decision support systems, 42*(3), 1872-1888.

Chou, H.-T. G., & Edge, N. (2012). "They are happier and having better lives than I am": The impact of using Facebook on perceptions of others' lives. *Cyberpsychology, Behavior, and Social Networking, 15*(2), 117-121.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*, S95-S120.

Cui, D. (2016). Beyond "connected presence": Multimedia mobile instant messaging in close relationship management. *Mobile Media & Communication, 4*(1), 19-36.

Dhir, A., Yossatorn, Y., Kaur, P., & Chen, S. (2018). Online social media fatigue and psychological wellbeing—A study of compulsive use, fear of missing out, fatigue, anxiety and depression. *International Journal of Information Management, 40*, 141-152.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin, 125*(2), 276.

DOI:10.6814/NCCU202100707

Dienlin, T., Masur, P. K., & Trepte, S. (2017). Reinforcement or displacement? The reciprocity of FtF, IM, and SNS communication and their effects on loneliness and life satisfaction. *Journal of Computer-Mediated Communication, 22*(2), 71-87.

DiMaggio, P., Hargittai, E., Neuman, W. R., & Robinson, J. P. (2001). Social implications of the Internet. *Annual Review of Sociology, 27*(1), 307-336.

Elgar, F. J., Davis, C. G., Wohl, M. J., Trites, S. J., Zelenski, J. M., & Martin, M. S. (2011). Social capital, health and life satisfaction in 50 countries. *Health & Place, 17*(5), 1044-1053.

Ellison, N. B., Gray, R., Lampe, C., & Fiore, A. T. (2014). Social capital and resource requests on Facebook. *New Media & Society, 16*(7), 1104-1121.

Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication, 12*(4), 1143-1168.

Faulhaber, G. (2002). Network effects and merger analysis: instant messaging and the AOL–Time Warner case. *Telecommunications Policy, 26*(5-6), 311-333.

Gil de Zúñiga, H., Jung, N., & Valenzuela, S. (2012). Social media use for news and individuals' social capital, civic engagement and political participation. *Journal of Computer-Mediated Communication, 17*(3), 319-336.

Granovetter, M. S. (1973). The strength of weak ties. *American journal of sociology, 78*(6), 1360-1380.

Guo, Y., Li, Y., & Ito, N. (2014). Exploring the predicted effect of social networking site use on perceived social capital and psychological well-being of Chinese international students in Japan. *Cyberpsychology, Behavior, and Social Networking, 17*(1), 52-58.

Ha, Y. W., Kim, J., Libaque-Saenz, C. F., Chang, Y., & Park, M.-C. (2015). Use and gratifications of mobile SNSs: Facebook and KakaoTalk in Korea. *Telematics and Informatics, 32*(3), 425-438.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*: Guilford publications.

Haythornthwaite, C. (2002). Strong, weak, and latent ties and the impact of new media. *The information society, 18*(5), 385-401.

Haythornthwaite, C. (2005). Social networks and Internet connectivity effects. *Information, Community & Society, 8*(2), 125-147.

Helliwell, J. F., & Putnam, R. D. (2004). The social context of well–being. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences, 359*(1449), 1435-1446.

Hofer, M., & Aubert, V. (2013). Perceived bridging and bonding social capital on

DOI:10.6814/NCCU202100707

Twitter: Differentiating between followers and followees. *Computers in Human Behavior, 29*(6), 2134-2142.

Huang, C. (2010). Internet use and psychological well-being: A meta-analysis. *Cyberpsychology, Behavior, and Social Networking, 13*(3), 241-249.

Hwang, M.-Y., Hong, J.-C., Tai, K.-H., Chen, J.-T., & Gouldthorp, T. (2020). The relationship between the online social anxiety, perceived information overload and fatigue, and job engagement of civil servant LINE users. *Government Information Quarterly, 37*(1), 101423.

Iversen, T. B., Melby, L., & Toussaint, P. (2013). Instant messaging at the hospital: Supporting articulation work? *International journal of medical informatics, 82*(9), 753-761.

Jelenchick, L. A., Eickhoff, J. C., & Moreno, M. A. (2013). "Facebook depression?" Social networking site use and depression in older adolescents. *Journal of Adolescent Health, 52*(1), 128-130.

Jordan, A. H., Monin, B., Dweck, C. S., Lovett, B. J., John, O. P., & Gross, J. J. (2011). Misery has more company than people think: Underestimating the prevalence of others' negative emotions. *Personality and Social Psychology Bulletin, 37*(1), 120-135.

Kim, J., & Lee, J.-E. R. (2011). The Facebook paths to happiness: Effects of the number of Facebook friends and self-presentation on subjective well-being. *Cyberpsychology, Behavior, and Social Networking, 14*(6), 359-364.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American psychologist, 53*(9), 1017.

Kross, E., Verduyn, P., Demiralp, E., Park, J., Lee, D. S., Lin, N., . . . Ybarra, O. (2013). Facebook use predicts declines in subjective well-being in young adults. *PloS one, 8*(8), e69841.

Lee, A. R., Son, S.-M., & Kim, K. K. (2016). Information and communication technology overload and social networking service fatigue: A stress perspective. *Computers in Human Behavior, 55*, 51-61.

Leung, L. (2009). User-generated content on the internet: an examination of gratifications, civic engagement and psychological empowerment. *New Media & Society, 11*(8), 1327-1347.

Leung, L., & Wei, R. (2000). More than just talk on the move: Uses and gratifications of the cellular phone. *Journalism & mass communication quarterly, 77*(2), 308-320.

Li, D., Browne, G. J., & Chau, P. Y. (2006). An empirical investigation of web site use using a commitment-based model. *Decision Sciences, 37*(3), 427-444.

DOI:10.6814/NCCU202100707

Licoppe, C. (2004). 'Connected'presence: The emergence of a new repertoire for managing social relationships in a changing communication technoscape. *Environment and planning D: Society and Space, 22*(1), 135-156.

Lin, C.-P. (2011). Assessing the mediating role of online social capital between social support and instant messaging usage. *Electronic Commerce Research and Applications, 10*(1), 105-114.

Lins, K. V., Servaes, H., & Tamayo, A. (2017). Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *the Journal of Finance, 72*(4), 1785-1824.

Lynn, R., & Witte, J. C. (2015). Do Social Network Sites Increase, Decrease, or Supplement the Maintenance of Social Ties? In *Communication and Information Technologies Annual*: Emerald Group Publishing Limited.

Matei, S., & Ball-Rokeach, S. J. (2001). Real and virtual social ties: Connections in the everyday lives of seven ethnic neighborhoods. *American Behavioral Scientist, 45*(3), 550-564.

Miczo, N., Mariani, T., & Donahue, C. (2011). The strength of strong ties: Media multiplexity, communication motives, and the maintenance of geographically close friendships. *Communication Reports, 24*(1), 12-24.

Nabi, R. L., Prestin, A., & So, J. (2013). Facebook friends with (health) benefits? Exploring social network site use and perceptions of social support, stress, and well-being. *Cyberpsychology, Behavior, and Social Networking, 16*(10), 721-727.

Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review, 23*(2), 242-266.

Nie, N. H., Hillygus, D. S., & Erbring, L. (2002). Internet use, interpersonal relations, and sociability. *The Internet in Everyday Life*, 215-243.

Papacharissi, Z., & Rubin, A. M. (2000). Predictors of Internet use. *Journal of Broadcasting & Electronic Media, 44*(2), 175-196.

Park, N., & Lee, H. (2012). Social implications of smartphone use: Korean college students' smartphone use and psychological well-being. *Cyberpsychology, Behavior, and Social Networking, 15*(9), 491-497.

Petersen, C., & Johnston, K. A. (2015). The Impact of Social Media Usage on the Cognitive Social Capital of University Students. *Informing Science, 18*.

Phua, J., & Jin, S.-A. A. (2011). 'Finding a home away from home': the use of social networking sites by Asia-Pacific students in the United States for bridging and bonding social capital. *Asian Journal of Communication, 21*(5), 504-519.

Preece, J. (2001). Sociability and usability in online communities: Determining and measuring success. *Behaviour & Information Technology, 20*(5), 347-356.

DOI:10.6814/NCCU202100707

Prior, M. (2009). Improving media effects research through better measurement of news exposure. *The Journal of Politics, 71*(3), 893-908.

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*: Simon and schuster.

Reinecke, L., & Oliver, M. B. (2016). *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects*: Routledge.

Rubin, A. M. (2009). Uses-and-gratifications perspective on media effects. In *Media effects* (pp. 181-200): Routledge.

Sackman, H., & Nie, N. (1970). The Information Utility and Social Choice; Papers Prepared for a Conference Sponsored Jointly by the University of Chicago, Encyclopedia Britannica and the American Federation of Information Processing Societies.

Sasaki, Y., Kawai, D., & Kitamura, S. (2016). Unfriend or ignore tweets?: A time series analysis on Japanese Twitter users suffering from information overload. *Computers in Human Behavior, 64*, 914-922.

Services of Business (2018, Nov, 08) *LINE 公開 2019 年商務溝通三大趨勢：數據串接、訂製行銷、真實效益 「官方帳號 2.0 計畫」整併藍圖首度揭曉* [Press Release] Retrieved from https://linecorp.com/zh-hant/pr/news/zh-hant/2018/2466

Sheer, V. C., & Rice, R. E. (2017). Mobile instant messaging use and social capital: Direct and indirect associations with employee outcomes. *Information & Management, 54*(1), 90-102.

Shmotkin, D. (1990). Subjective well-being as a function of age and gender: A multivariate look for differentiated trends. *Social Indicators Research, 23*(3), 201-230.

Smith, B. G. (2010). Socially distributing public relations: Twitter, Haiti, and interactivity in social media. *Public relations review, 36*(4), 329-335.

Sproull, L., Kiesler, S., & Kiesler, S. B. (1991). *Connections: New ways of working in the networked organization*: MIT press.

Tech, T. (2016). Report on WeChat influence. In: Retrieved from https://tech. qq. com/a/20160321/007049. htm# p.

Thomée, S., Eklöf, M., Gustafsson, E., Nilsson, R., & Hagberg, M. (2007). Prevalence of perceived stress, symptoms of depression and sleep disturbances in relation to information and communication technology (ICT) use among young adults–an explorative prospective study. *Computers in Human Behavior, 23*(3), 1300-1321.

Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal, 41*(4), 464-476.

DOI:10.6814/NCCU202100707

Uslaner, E. M. (2000). Social capital and the net. *Communications of the ACM, 43*(12), 60-64.

Valenzuela, S., Park, N., & Kee, K. F. (2009). Is there social capital in a social network site?: Facebook use and college students' life satisfaction, trust, and participation. *Journal of Computer-Mediated Communication, 14*(4), 875-901.

Valkenburg, P. M., & Peter, J. (2009). The effects of instant messaging on the quality of adolescents' existing friendships: A longitudinal study. *Journal of Communication, 59*(1), 79-97.

Valkenburg, P. M., Peter, J., & Schouten, A. P. (2006). Friend networking sites and their relationship to adolescents' well-being and social self-esteem. *CyberPsychology & Behavior, 9*(5), 584-590.

Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research, 23*(1), 3-43.

Wang, J.-L., Jackson, L. A., Gaskin, J., & Wang, H.-Z. (2014). The effects of Social Networking Site (SNS) use on college students' friendship and well-being. *Computers in Human Behavior, 37*, 229-236.

We Are Social. (2019) *Global Digital Report 2019.* [Online Report] Retrieved from *https://wearesocial.com/global-digital-report-2019*

Wellman, B., Haase, A. Q., Witte, J., & Hampton, K. (2001). Does the Internet increase, decrease, or supplement social capital? Social networks, participation, and community commitment. *American Behavioral Scientist, 45*(3), 436-455.

Wen, Z., Geng, X., & Ye, Y. (2016). Does the use of WeChat lead to subjective well-being?: the effect of use intensity and motivations. *Cyberpsychology, Behavior, and Social Networking, 19*(10), 587-592.

Williams, D. (2006). On and off the'Net: Scales for social capital in an online era. *Journal of Computer-Mediated Communication, 11*(2), 593-628.

Wilson, W. R. (1967). Correlates of avowed happiness. *Psychological Bulletin, 67*(4), 294.

Wirtz, D., Tucker, A., Briggs, C., & Schoemann, A. M. (2021). How and why social media affect subjective well-being: Multi-site use and social comparison as predictors of change across time. *Journal of Happiness Studies, 22*(4), 1673-1691.

Yli-Renko, H., Autio, E., & Tontti, V. (2002). Social capital, knowledge, and the international growth of technology-based new firms. *International business review, 11*(3), 279-304.

Yoo, J. (2012). Exploring cross-cultural differences in self-presentation and self-

DOI:10.6814/NCCU202100707

disclosure in social networking sites: a comparison of Korean and American SNS Users. *Yoo, JJ, Kim, D., and Moon, J.(2012). Exploring Cross-Cultural Differences in Self-Presentation and Self-Disclosure in Social Networking Sites: A Comparison of Korean and American SNS Users, Journal of Advertising and Promotion Research, 1*(2), 77-118.

Zhan, L., Sun, Y., Wang, N., & Zhang, X. (2016). Understanding the influence of social media on people's life satisfaction through two competing explanatory mechanisms. *Aslib Journal of Information Management*.

Zhong, Z.-J. (2014). Civic engagement among educated Chinese youth: The role of SNS (Social Networking Services), bonding and bridging social capital. *Computers & Education, 75*, 263-273.

DOI:10.6814/NCCU202100707

Appendix A: The syntax of the customized model in SPSS.

PROCESS y=SWB/ m =bonding bridging/X=
lineuse/W=fbuse/cov=gender,newage,ra8/bmatrix=1,1,0,1,1,1/wmatrix=1,1,0,1,0,0/
plot=1/seed=5000.

SELECT IF CM2=1

PROCESS y=SWB/ m =bonding bridging/X=
lineuse/W=fbuse/cov=gender,newage,ra8/bmatrix=1,1,0,1,1,1/wmatrix=1,1,0,1,0,0/
plot=1/seed=5000.

SELECT IF CM2=0

PROCESS y=SWB/ m =bonding bridging/X=
lineuse/W=fbuse/cov=gender,newage,ra8/bmatrix=1,1,0,1,1,1/wmatrix=1,1,0,1,0,0/
plot=1/seed=5000.

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Appendix B: Questionnaire from the TCS dataset

Variables	Questions
Independent variable: LINE use	請問在你有使用 LINE 的那一天，你一整天大概使用多久（只算你眼睛有在看 LINE 螢幕或用 LINE 通話的時間）？ ____時____分 On the days you use LINE, how long do you spend on it in a day (only count the time when you actually looking at the screen)? ____hours _____minutes
Concept Motivations	請問下面哪些是你使用 LINE 的「主要」原因或動機？ (1) 聯絡事情 (2) 維持與親友之間的關係 (3) 交新朋友 (4) 與朋友分享心情 (5) 分享時事或發表個人評論 (6) 展現你個人特色 (7) 怕漏掉親友間發生的事情或話題 (8) 怕漏掉同儕間發生的事情或話題 (9) 工作或課業所需 (10) 安排活動或行程 (11) 獲得新聞訊息 (12) 學習新事物 (13) 逃避學校或工作的事情 (14) 打發時間 (15) 娛樂 (16) 習慣 (88) 其他（請說明） What are the main motivations do you use LINE? (1) To contact (2) To maintain the relationship with relatives and friends (3) To make new friends (4) To share my mood with friends (5) To share news or personal opinion (6) To express my own feature (7) Be afraid of missing the things and topic among relatives (8) Be afraid of missing the things and topics among peers (9) For work or class needs (10) To arrange activities or schedules

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	(11) To gain news (12) To learn new things (13) To escape things from school or work (14) To kill time (15) Entertainment (16) Habitual use (88) Other (Please explain details)
Dependent variable: Subjective well-being	請問你多同意下列說法？ (1) 你目前的生活和你理想中的生活差距不遠 (2)目前你的一切生活狀況都很棒 (3)你已經得到你人生想要的 (4) 若人生可以重來一次，你會想要改變目前擁有的一切 To what degree you agree with the following statements? (1) In most ways, your life is close to my ideal. (2) The condition of your life is excellent. (3) You have gotten the important things you want in life so far. (4) If the life can start again, you want to change over and restart. 01. 非常不同意 Both disagree 02. 不同意 disagree 03. 普通 Average 04. 同意 Agree 05. 非常同意 Very agree
Mediator: Bonding social capital	請問你多同意下列說法？ (1) 當你遇到困難時，你能找到信賴的人幫你解決問題 (2) 當你有私密的問題時，有人可以讓你放心地聊一聊 (3) 當你覺得孤單時，你可以找到其他人說話 To what degree you agree with the following statements? (1) There are several people I trust can help me to solve my problem. (2) There are some people that I feel comfortable to talk about personal problems. (3) When I feel lonely, there are several people I can talk to.

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	01. 非常不同意 Both disagree 02. 不同意 disagree 03. 普通 Average 04. 同意 Agree 05. 非常同意 Very agree
Bridging social capital	請問你多同意下列說法？ (1) 經由和別人來往，會讓你想要嘗試新事物 (2) 經由和別人來往，會讓你想要嘗試新事物 (3) 經由和別人的閒聊，會讓你對世界上所發生的事情感到好奇 (1) Interacting with people makes you want to try new things. (2) Interacting with people makes you interested in knowing how people different from me are thinking. (3) Talking with people makes you curious about other places in the world. 01. 非常不同意 Both disagree 02. 不同意 disagree 03. 普通 Average 04. 同意 Agree 05. 非常同意 Very agree
Moderator: Facebook use	請問在你有使用臉書(Facebook)的那一天，你一整天大概使用多久（只算你眼睛有在看臉書螢幕的時間）？ ____時____分 On the days you use FB, how long do you spend on it in a day (only count the time when you actually looking at the screen)? ____hours _____minutes

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Appendix C: Tables after removing extreme values

Table 7. Indirect effect on LINE use (IV) on SWB (DV) through Bonding Social Capital (M1) and Bridging Social Capital(M2) Moderated by FB use (W) in a high communicative motivation condition after removing extreme value.

	Mediator Variable Model (DV= bonding social capital)	Mediator Variable Model (DV=bridging social capital)	Dependent Variable Model (DV=SWB)
Predicter	*B*	*B*	*B*
gender	.0000***	.3533	.3436
age	.3075	.0000***	.0000***
education	.0270**	.0000***	.3103
line use	.1501	.1322	.7752
fb use	.0656	.0021**	.1828
bonding	-	-	.0000***
bridging	-	-	.3470
line use X fb use	.1326	.0413*	.3241
R^2	.0321	.1297	.1901

Note: B = unstandardized effect size. Bootstrap resamples= 5000.

*p<.05. **p<.01. ***p<.001.

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Table 8. Indirect effect on LINE use (IV) on SWB (DV) through Bonding Social Capital (M1) and Bridging Social Capital(M2) Moderated by FB use (W) in a low communicative motivation condition after removing extreme value.

	Mediator Variable Model (DV= bonding social capital)	Mediator Variable Model (DV=bridging social capital)	Dependent Variable Model (DV=SWB)
Predicter	*B*	*B*	*B*
gender	.0001***	.0594	.4488
age	.0172*	.2229	.0014**
education	.00008***	.0000***	.0141*
line use	.1562	.2429	.6802
fb use	.1532	.9820	.4098
bonding	-	-	.0000***
bridging	-	-	.4834
line use X fb use	.0592	.3605	.8528
R^2	.0944	.1115	.2928

Note: B = unstandardized effect size. Bootstrap resamples= 5000.

*p<.05. **p<.01. ***p<.001.

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