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衡量社群網站之幸福感：量表發展與驗證

Measuring SNS Happiness: Instrument Development and Validation

林育慶

Michael Yu-Ching Lin

指導老師：翁崇雄 博士

Advisor: Chorng-Shyong Ong, Ph.D.

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Measuring SNS Happiness: Instrument Development and Validation

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口試委員會審定書

（題目：衡量社群網站之幸福感：量表發展與驗證）

本論文係林育慶君（學號 D95725008）在國立臺灣大學資訊管理學系、所完成之（博、碩）士學位論文，於民國 105 年 7 月 29 日承下列考試委員審查通過及口試及格，特此證明

口試委員：

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中文摘要

在資訊科技用戶的採用後行為研究，很少有人探討幸福感的影響力。目前，滿意度是在 IT 採用後研究中用戶行為的主要預測因數。我們生活在一個社交媒體、行動裝置、互聯網和其他資訊技術已經幾乎融合於我們的生活方式裡的時代。在討論採用後的行為時，只注重滿意度可能已經不足以解釋現況。我們應該考量更多可能包含其他採用後因素的構念，如情感面。有一些研究者已經開始研究幸福感這構念，並確認了其在社群網站採用後行為的影響力(Ong and Lin,2015)。本研究提出持續透過用戶的幸福感這新角度來探討社群網站用戶採用後的行為。目前在社群網站幸福感這領域的文獻有限，我們使用了多元的方式包含了質性與量化的方法來來探討社群網站幸福感，並制定了其測量之量表。質性方法使用了紮根理論的技術在社群網站幸福感這構念找出了 10 個構面。最後經過兩輪的資料收集和分析，也開發，提煉，和驗證了一個包含了 15 個題項的社群網站幸福感量表。

關鍵字 ：幸福感、量表發展、社群網站、臉書、忠誠度、持續意向

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Abstract

Well-being or happiness has rarely been used to discuss the post-adoption behavior of information technology users. Currently, satisfaction is the primary predictor of user behavior in IT post-adoption research. We live in an age when social media, mobile devices, the Internet, and other information technologies have virtually fused with our lifestyles. In discussing post-adoption behavior, focusing only on satisfaction might no longer be satisfactory. We should consider other constructs that might capture additional post-adoption factors, such as the concept of affect. Some researchers have begun to study well-being and confirmed its significance in SNS post-adoption behavior (Ong and Lin, 2015). This study propose to continue the exploration of SNS post-adoption behavior through the new perspective of looking at the influence of the user's happiness. With limited literatures in this area, happiness in SNS is further examined by using mixed-method including qualitative and quantitative approaches to explore the domain of happiness in SNS usage and to develop a scale for its measurement. The result of qualitative approach using grounded theory technique revealed 10 dimensions for SNS happiness. After two round of data collections and evaluation, a SNS happiness scale consisting of 15 items was developed, refined, and validated.

Keywords: happiness, well-being, scale development, social network sites, Facebook, loyalty, continuance intention

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Chapter 1: Introduction

1.1. Background and motivation

While the initial acceptance of an information technology (IT) is an important first step toward the technology's realization of success, the ultimate viability of the technology depends on its continued usage (Bhattacherjee, 2001). Hence, recent studies (e.g., Bhattacherjee, 2001; Limayem and Cheung, 2008; Ruth, 2012; Sun, 2013; Zhou et al., 2012) have shifted their focus to the continued usage of information technologies. A constant construct permeates these studies: user satisfaction.

The power of IT is now in the hands of users, instead of businesses. In the past, businesses tended to adopt IT as a tool that could improve output or lower operational expenses. Research on IT post-adoption has mainly focused on performance-based factors, with satisfaction being the primary predictor of user behavior. Now, with the rise of mobile devices and social computing technologies such as social network sites (SNS), people have become even more reliant on the Internet and information technology. Social computing has created a shift in computing power, transferring it from organizations to individuals, thereby empowering users – who possess relatively limited technical abilities – to create, share, and interact online (Parameswaran and Whinston, 2007).

The evolution of IT has changed the dynamic between technology and its users. For example, SNS have attracted hundreds of millions of users. The majority of American teens and college students frequently visit SNS, spending hours socializing (Greenhow and Robelia, 2009), and many students use multiple SNS (Greenhow et al., 2008). At

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present, Facebook is the world's largest SNS, with over 1.35 billion monthly active users as of September 30, 2014 (Facebook, 2015). Through SNS, IT has expanded its reach beyond workplace and into almost every facet of life, including relationship, entertainment, and education. Being so, the need for IT has evolved beyond the functional and now incorporates a hedonic dimension. Alongside IT's evolution, the predictive power of satisfaction as the main construct in the field of IT adoption might have become limited in this aspect. If so, we need a more complete picture of the IT user. The solution might be to look into the user's happiness, a complex construct that also takes affect into account in addition to satisfaction.

Happiness, also referred to by some researchers as well-being (we will use these terms interchangeably), is a multifaceted construct concerned with optimal experience and functioning (Ryan and Deci, 2001). Feeling happy is fundamental to the human experience (Diener and Diener, 1996), and happiness is a highly valued goal in most societies (Diener, 2000). The rise of positive psychology, the scientific study of well-being, in the past decade has legitimized attention to happiness and other positive states. Happiness has attracted the interest of philosophers since the beginning of written history (McMahon, 2006), but has only recently come to the forefront in scientific research. Researchers across disciplines have begun exploring the concept of happiness and its effect on businesses, psychology, sociology, and economics. Researchers have also begun to look into the influence of the Internet on happiness.

The rising interest in well-being, happiness, positive psychology, and related concepts argues that happiness is central to the human existence and purpose. Though researchers have begun to look into the Internet's impact on well-being, relatively few

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connections have been made between the impact of happiness and IT post-adoption behavior (Ong and Lin, 2015). An important point is that satisfaction is not a surrogate for happiness: a person can be satisfied with a particular information technology or website merely because of the technology fulfilling its intended function. Nevertheless, the user experience can fall short of happiness. The link between IT and happiness is not common in the literature or among IT designers. At present, the constant construct found in most IT or SNS post-adoption studies is still satisfaction. But some researchers have begun to study well-being and confirmed its significance in SNS post-adoption behavior (Ong and Lin, 2015).

1.2. Research question and purpose

As a result of their popularity, social network sites such as Facebook have become successful in substantially incorporating IT into our lives. SNS would be a good starting point to explore hapiness or well-being in IT because Facebook is so ubiquitous. Why is it so part of our life? The reason should be more than just being satisfied with its use or functions. Other IT site providers or websites could learn from Facebook on their success factors. This study propose to continue the exploration of SNS post-adoption behavior through the new perspective of looking at the influence of the user's happiness (Ong and Lin, 2015). More specifically, the following questions will be investigated:

What circumstances or situations would let user feel happiness or well-being while using SNS? What is the essence of SNS happiness and how do we evaluate it?

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With limited literatures in this area, happiness in SNS will be further examined by using mixed-method to find the dimensions of happiness in SNS usage and to develop a scale for its measurement.

1.3. Significance of the study

Our findings have important implications for practitioners because of happiness elements or dimensions we might identify in the context of social network sites. IT site providers or designers could benefit by considering user happiness instead of just satisfaction. If the goal is to increase loyalty, one must reach deeper into the user's mindset and make a sustainable positive emotional connection. SNS have become important tools for firms because SNS create business opportunities for both e-businesses and traditional companies. E-commerce companies can integrate SNS features into their existing web applications to enhance and expand their functions. Traditional organizations can use SNS to optimize their internal operations and to augment their communication with suppliers, partners, and clients. Ong and Lin (2015) have proved the impact of well-being (including a strong positive affect) on SNS usage behavior. This study will develop a scale to measure SNS happiness. A business that uses SNS to communicate with its customers, partners, and suppliers should look into features that would promote user happiness based on the findings and scales developed in this research, especially those that create positive emotions, which lead to an increase in loyalty. For this, some researchers have suggested the use of appealing visuals (Deng and Poole, 2010; Klein et al., 2002), affective mechanisms such as emoticons (Axelrod and Hone, 2006), and forums that allow users to publicly vent frustrations (Klein et al., 2002). Our instrument could be used by practitioners to study to-be-developed, to-be-

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implemented, and existing SNS. For example, companies could use our SNS happiness conceptualization and associated instrument in all phases of the website development process including the investigation phase, analysis and design phase, application implementation phase and application maintenance stage.

Instrument and concepts of SNS happiness to be developed here can also be used for better management of websites especially SNS. Companies and their site managers could try to provide specific content that drives positive affect. Such content includes appealing online events, special promotions, interesting news, and helpful information. Firms could also evaluate user-generated content to assess user happiness. That is, they should evaluate not only whether the users are satisfied but also whether they gain positive affect during usage. The firms can then use these results to adjust site functionalities, firm policies, or strategies.

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Chapter 2: Literature Review

This chapter presents the body of literature containing relevant theories or concepts used in this study to investigate happiness in SNS post-adoption behaviors. This review is divided into three major sections. First, the main IT artifact of this study, social network site, will be explored. Next, the literature on post-adoption behavior is reviewed. This section include three subsections which are the current primary predictor of IT post-adoption, satisfaction, and the two major goals, continuance intention and loyalty. Lastly, the concept of happiness is explored through its definition, its influence on other disciplines and to the field of IT. More specifically, the relationship between the Internet and user happiness and the effect of happiness on IT post-adoption behaviors are examined.

2.1. Social network sites

As a result of their popularity, social network sites such as Facebook have become successful in substantially incorporating IT into our lives. Boyd and Ellison (2008) defined SNS as web-based services that allow individuals to construct a public or semi-public profile within a bounded system, articulate a list of other users with whom they share a connection, as well as view and traverse their list of connections and those made by others within the system. A more recent definition is proposed by Kwon and Wen (2010), who state that SNS are websites that allow building relationships online by means of collecting useful information and sharing it. Users can also create groups that facilitate interaction among users with similar interests. Every SNS contains a short

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description of every user, the user's social links, and a variety of accompanying services. SNS bond people who share interests and activities, regardless of geography, and have recently become a social commerce platform for businesses (Huang and Benyoucef, 2013; Phang et al., 2013). Unlike early online public communities that were structured by topics or interests, SNS are structured with individual users at the core of their own communities (Boyd and Ellison, 2008). Hence, the individual should be the center of attention for researchers studying usage behaviors. Recent researchers have begun to explore the emotional aspects of users, a change from the predominant focus on cognition (Beaudry and Pinsonneault, 2010; Zhang, 2013).

2.2. IT post-adoption behaviors

2.2.1. Satisfaction

Satisfaction was originally defined by Locke (1976) in the context of job performance. His definition was "a positive emotional state resulting from the appraisal of one's job." Oliver (1981) expanded this definition to the context of consumption as "the summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer's prior feelings about the consumption experience." Both definitions emphasize an emotional or mental state resulting from a cognitive appraisal of discrepancies in or confirmation of the expected performance. The concept of satisfaction has been a popular topic and a vital construct in marketing literature exploring consumer repurchase intentions (e.g., Golder et al., 2012; Oliver, 1977, 1980; Parasuraman et al., 1985; Voss et al., 2010) and has recently been applied to IT post-adoption research (Bhattacherjee, 2001; Cyr,

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2008; Ruth, 2012; Zhou et al., 2012). In the IS continuance model (Bhattacherjee, 2001), satisfaction is captured as a positive feeling (satisfaction), indifference, or a negative feeling (dissatisfaction) toward IS use. It is determined by evaluating the expectation of the IS against the confirmation of the expectation following actual use.

2.2.2. Continuance intention

Continuance intention refers to a post-adoption behavior and describes behavior patterns reflecting the intention to continue using a particular IT. In respect to the IS continuance model (Bhattacherjee, 2001), the expectation-disconfirmation theory (EDT; Oliver, 1977, 1980) was introduced for use in IT adoption research. This theory offers a new theoretical perspective to explain continued usage. The model suggests that satisfaction with IS use and perceived usefulness determine a user's continuance intention. User satisfaction is influenced by the confirmation of expectations from prior IS use and by perceived usefulness. Similar to the study of Bhattacherjee (2001), the study of Bhattcherjee and Premkumar (2004) integrated the widely employed technology acceptance model (TAM; Davis et al., 1989) and EDT to understand continuance intention over time. In line with EDT, the results of these two studies not only show satisfaction with IS use to be the strongest predictor of continuance intention but also further highlights the role of satisfaction in driving the change in attitudes and beliefs over time. In current SNS post-adoption research, satisfaction continues to be the proposed primary predictor of continuance intention (e.g., Hsu et al., 2014; Lin et al., 2014). As SNS gains prominence, user affect will start to play an increasingly important role in IT post-adoption behavior (Zhang, 2013). Emotion has been shown to have a significant part in driving online conversations (Berger and

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Milkman, 2012). Recent studies have revealed the impact of emotions in computer-mediated communication and online communication (Huffaker, 2010; Joyce and Kraut, 2006). Happiness has also been proved to have a positive relation with IS use (Beaudry and Pinsonneault, 2010).

2.2.3. Loyalty.

Loyalty refers to an individual's deeply held affective commitment toward a service (Beatty and Kahle, 1988; Oliver, 1999). Oliver (1999) defines brand loyalty as ‘‘a deeply held commitment to re-buy or re-patronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts have the potential to cause switching behavior."

Early loyalty studies typically focused on behavioral dimensions, including repeat purchase behavior and model development for predicting repurchase rates. This was eventually considered insufficient, because it did not differentiate between true customer loyalty and spurious customer loyalty. In the extant literature, the concept of customer loyalty often incorporates both behavioral and attitudinal measures (e.g., Dick and Basu, 1994; Gremler and Brown, 1996; Lin and Wang, 2006). Dick and Basu (1994) posited that true sustainable loyalty could only be achieved when consumers enjoy both a high level of positive attitude toward the object and a high level of repeat patronage behavior. Gremler and Brown (1996) further stressed this concept by affirming that loyalty is determined by both the degree to which a consumer displays repeat purchasing behavior from a provider and a positive attitudinal disposition

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toward the provider. Researches has shown, one of the strongest predictors for loyalty is satisfaction (Chang and Chen, 2009; Chiou, 2004; Cyr, 2008; Lin and Wang, 2006). But in a recent change in studies on users, researchers have begun intensely examining the impact of emotions on their behaviors (Chang and Pham, 2013; Stieglitz and Dang-Xuan, 2013; Yin et al., 2014), including loyalty (Cyr et al., 2006; Gregor et al., 2014).

2.3. Happiness

2.3.1. Defining happiness

Happiness in this study does not refer to the simple emotion of happiness but a multidimensional construct of well-being. In scientific studies, happiness is often referred to as well-being, which is not a short-live emotion of pleasure but a superordinate concept that captures both short-term and long-term pleasure. Well-being consists of the cognitive assessment of overall life satisfaction and the affective reflection of happiness represented by frequent experiences with positive affect and infrequent experiences with negative affect (Diener et al., 1999). Because well-being corresponds to an individual's subjective evaluation of life quality, it has also been referred to as subjective well-being (SWB).

We use the terms happiness and SWB (Diener, 1984) interchangeably. Studies have established that these terms are strongly related (e.g., Frank, 1999; Seligman, 2002) and that ratings of happiness correlate highly with other measures of both psychological and physiological well-being (e.g., Sutton and Davidson, 1997). Researchers generally operationalize SWB as both a predominance of positive affect over negative affect and a global satisfaction with life (Argyle et al., 1995; Diener,

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1984), hence encompassing both affective and cognitive components. Happiness is also conceptualized better as a trait than as a transient emotional state (Veenhoven, 1994). Still, the exact meaning of happiness is still heatedly debated by scholars working from different research paradigms because well-being is complex construct, despite its intuitive simplicity.

According to Ryan and Deci (2001), we have an alternative to the predominant hedonic approach to defining well-being: the eudaimonic approach. In contrast to the hedonic view of happiness, which involves pleasant feelings and judgments of satisfaction, the concept of a eudaimonic well-being is that a happy life entails doing what is right and virtuous, pursing important goals, growing, as well as developing and using one's ability and talents, regardless of one's feelings at any point in time (cf. Seligman, 2002; Sheldon and Elliot, 1999; Warr, 2007). Aristotle (384–322 BC) first articulated the eudaimonic approach as being true to one's inner self. In contemporary psychology this approach is best reflected by the concept of psychological well-being (PWB), which consists of six distinct facets: autonomy, personal growth, self-acceptance, life purpose, mastery, and positive relating (Ryff, 1989). Autonomy emphasize qualities such as self-determination, independence, and the regulation of behavior from within. Personal growth is concerned with self-realization of the individual that involves a continual process of developing one's potential. Self-acceptance is to have positive self-regard. Life purpose is concerned with one's meaning and direction in life. Mastery is about one's ability to choose or create or control one's environment. It has emphasis on finding or creating a surrounding context

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that suits one's personal needs and capacities. Positive relating refers to having a positive interpersonal relationship with others.

Many psychologists have adopted the hedonic approach to conduct empirical research on happiness, focusing on pleasure attainment and pain avoidance (Ryan and Deci, 2001), and SWB currently best encapsulates this approach. As Elliot and Coker (2008) have noted, psychologists generally agree that ultimately, happiness is subjectively understood with individual responses and evaluations of situations outweighing the importance of the situations themselves. By focusing on subjective happiness, researchers avoid dictating to the individual the definition of happiness, instead allowing individuals to define happiness in their own terms. However, in recent study of well-being, there are some researchers that begun to question the validity of distinguishing between the two approaches(Table 1). Studies have considered factors from both approaches at same time and seen strong relations or complementariness between the two(e.g. Waterman et al., 2008; Kashdan et al., 2008; Huppert and So, 2013).

Table 1. Seminal works in the studies of well-being

Authors	Title	Main findings
ED Diener, RA Emmons, RJ Larsen (1985)	The satisfaction with life scale	The development and validation of a scale to measure global life satisfaction, the Satisfaction With Life Scale (SWLS).
CD Ryff (1989)	Happiness is everything, or is it? Explorations on the meaning of psychological well-being	Comparing to six instruments prominent in earlier studies (i.e., affect balance, life satisfaction) , results revealed that positive relations with others, autonomy, purpose in life, and personal growth were not strongly tied to prior assessment indexes, thereby supporting the claim that key aspects of positive functioning have not been represented in the empirical arena.

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CD Ryff, CLM Keyes (1995)	The structure of psychological well-being revisited	A theoretical model of psychological well-being that encompasses 6 distinct dimensions of wellness (Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, Self-Acceptance) was tested and confirmed with data from a nationally representative sample of adults (N = 1,108)
E Diener (2000)	Subjective well-being: The science of happiness and a proposal for a national index	Progress has been made in understanding the components of SWB, the importance of adaptation and goals to feelings of well-being, the temperament underpinnings of SWB, and the cultural influences on well-being.
RM Ryan, EL Deci (2000)	Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being	Three innate psychological needs—competence, autonomy, and relatedness—which when satisfied yield enhanced self-motivation and mental health and when thwarted lead to diminished motivation and well-being.
RM Ryan, EL Deci (2001)	On happiness and human potentials: A review of research on hedonic and eudaimonic well-being	Current research on well-being has been derived from two general perspectives: the hedonic approach and the eudaimonic approach. These two views have given rise to different research foci and a body of knowledge that is in some areas divergent and in others complementary.
S Lyubomirsky, L King, E Diener (2005)	The benefits of frequent positive affect: does happiness lead to success?	Happiness is associated with and precedes numerous successful outcomes, as well as behaviors paralleling success. Furthermore, the evidence suggests that positive affect--the hallmark of well-being--may be the cause of many of the desirable characteristics, resources, and successes correlated with happiness.
AS Waterman, SJ Schwartz, R Conti (2008)	The implications of two conceptions of happiness (hedonic enjoyment and eudaimonia) for the understanding of intrinsic motivation	The distinction between hedonic enjoyment and eudaimonia was evaluated in three data sets involving use of the Personally Expressive Activities Questionnaire—Standard Form (PEAQ-S) with college student samples (n > 200 in each sample). INDICES of these two conceptions of happiness were strongly and reliably related across the three samples.

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TB Kashdan, R Biswas-Diener (2008)	Reconsidering happiness: The costs of distinguishing between hedonics and eudaimonia	Outline the problems and costs of distinguishing between two types of happiness, and provide detailed recommendations for a research program on well-being with greater scientific precision.
E Diener (2012)	New findings and future directions for subjective well-being research	Worldwide predictors of SWB such as social support and fulfillment of basic needs have been uncovered, and there are large differences in SWB between societies. A number of culture-specific predictors of SWB have also been found. An important finding is that high SWB benefits health, longevity, citizenship, and social relationships.
FA Huppert, TTC So (2013)	Flourishing across Europe: Application of a new conceptual framework for defining well-being	By examining internationally agreed criteria for depression and anxiety (DSM and ICD classifications), and defining the opposite of each symptom, study identified ten features of positive well-being. These combine feeling and functioning, i.e. hedonic and eudaimonic aspects of well-being: competence, emotional stability, engagement, meaning, optimism, positive emotion, positive relationships, resilience, self esteem, and vitality.

2.3.2. Happiness in other disciplines

Researchers across disciplines have begun exploring the concept of happiness. Psychologists, sociologists, and economists have taken huge steps in determining the best measures of happiness, the importance of happiness, and ways to increase happiness (Diener and Chan, 2011; Diener and Seligman, 2002; Dunn et al., 2008; Mogilner, 2010). This rising interest in happiness has also affected the realm of business (Devezer et al., 2014; Mogilner et al., 2012), where researchers have begun to investigate the creation of brands that promote consumer happiness (Isen et al., 2004). Organizational researchers have begun to pursue positive organizational scholarship

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(Cameron et al., 2003), positive organizational behavior (Luthans, 2002), and the design of organizations that increase employee happiness (Hsieh, 2010). Managers and supervisors believe that making workforce happier and healthier boost their effort, contributions, and output (Fisher, 2003). Evidence indicates that employee well-being has a major impact on the performance and survival of organizations. Involved factors include organizational citizenship behavior (Podsakoff et al., 2000) and job performance (Wright and Cropanzano, 2000).

2.3.3. Happiness in IT

Internet and Happiness

Researchers have also begun to look into the influence of the Internet on happiness. The Internet has become an integral part of daily life in today's society. In many aspects it has been helpful, such as by enhancing the well-being of marginalized groups, improving the relationships within groups, and allowing for increased individual social recognition (Amichai-Hamburger and Furnham, 2007). An Internet user can improve well-being by strengthening links with close friends and by more easily obtaining information related to the user's particular interests and the community (Sirgy et al., 2006). The opportunities for youth to form and sustain relationships on the Internet have become particularly salient in the past few years as a result of SNS rapidly gaining prominence as venues for relationship development. Studies have established the beneficial potential of SNS communication promoting the well-being of their users (Kim and Lee, 2011). Other research has revealed a positive association between the use of SNSs and the availability of social resources,

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such as social support and social capital (Brandtzæg, 2012; Ellison et al., 2007). This, in turn, constructively impacts well-being (Ellison et al., 2007; Kim and Lee, 2011).

Happiness and IT post-adoption behaviors

In the current SNS post-adoption researches, satisfaction was still proposed as a primary predictor of continuance intention (e.g. Hsu et al. 2014; Lin et al. 2014; Sun et al. 2014). Recent years, researchers did begin their exploration of positive emotions in IT usage primarily through the factor of enjoyment or flow(Appendix D). The emotion of happiness was also shown to have positive relation with IS use (Beaudry and Pinsonneault 2010). Emotions are considered as short-lived affective state as a result of specific stimulus (Zhang, 2013) that is seem as a good starting place to study affect in IT use. There are still very limited researches exploring the effect or the cause of user well-being in the usage behavior of IT or SNS that would incorporate both cognitive component and affective component(Ong and Lin, 2015). Ong and Lin (2015) have proven well-being or happiness does have significant impact on SNS post-adoption behaviors. A survey of 297 college students supplied the Facebook usage data that was entered into a structural equation model. The results from Ong and Lin (2015)'s structural model showed strong support for satisfaction and well-being as influential factors for continuance intention and loyalty (Appendix A). Furthermore, the research showed well-being to have more influence on both continuance intention and loyalty than that of satisfaction on the same constructs. The difference is especially evident for loyalty.

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Although there are currently two approaches to study well-being and some also started to consider both at same time, the present study will take on the hedonic(subjective well-being) approach, mainly because it is presently the most accepted and widely adapted approach by researchers. It's also agreed that an understanding of well-being requires subjective input from the individual as it allows them to define their own happiness. Furthermore, happiness on Internet in the present should be more oriented toward relationship and entertainment, therefore more hedonic or affective in nature. Existent literatures on IT post-adoption has mainly focused on satisfaction as predicator with some that begin to looks into affect-related factors. Ong and Lin (2015) also proven the impact of subjective well-being that look into the holistic effect of satisfaction and affect instead of in piecemeal fashion of previous researches.

Hence, the following definition for happiness is adapted to begin this study:

the state resulting from the cognitive assessment of overall satisfaction with SNS usage and the affective reflection of happiness represented by frequent experiences with positive affect and infrequent experiences with negative affect while using SNS.

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Chapter 3: Methodology

Cronbach and Meehl (1955) define a hypothetical construct as a concept for which there is not a single observable referent, which cannot be directly observed, and for which there exist multiple referents, but none all-inclusive. SNS Happiness is not directly observable, it is a multidimensional construct with different facets. In the present study, we propose to further Ong and Lin's (2015) exploration and confirmation of the influence of happiness in SNS post-adoption behavior by trying to find the dimensions of user happiness while using SNS in order to develop and validate a SNS happiness scale.

3.1. Instrument development process

Currently, the most widely used and respected happiness questionnaire include Satisfaction with Life Scale (Diener et al., 1985), Positive and Negative Affect Schedule (Watson et al., 1988), Subjective Happiness Scale (Lyubomirsky and Lepper, 1999), and Oxford Happiness Inventory (Argyle et al., 1989). However, these scales are designed for individual's life in general and not specific to the context of SNS. We will develop the SNS happiness scale based on Churchill's (1979) robust paradigm. This approach has been widely adopted by marketing researchers (Parasuraman et al., 1988) and IS researchers (Limayem et al. 2007) and has worked well in producing measures with desirable psychometric properties. Furthermore, our development procedure is also updated with suggestions from works of Mackenzie et al. (2011) whom presented a comprehensive construct conceptualization, measure development, and validation procedure that synthesized prior scale development literature (DeVellis

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2011; Straub 1989; Straub et al. 2004) and integrated several methodological strategies for MIS research. Table 2 below summarizes the steps of developing the SNS happiness scale.

Table 2. Overview of Scale Development Procedure
(Adapted from Churchill 1979 & Mackenzie et al. 2011)

Procedures	**Steps**		**Methods**
Conceptualization	Step 1	Domain specification/ Construct definition	Open-ended question survey, Grounded theory techniques
Measure development	Step 2	Item generation	
	Step 3	Content validity assessment	Item sorting
Scale evaluation and refinement	Step 4	Collect data	Survey
	Step 5	Scale purification	EFA, AVE, Cronbach's alpha
Scale validation	Step 6	Collect data	Survey
	Step 7	Reliability and validity assessment	CFA, Cronbach's alpha

3.2. Conceptualization

The first step in the suggested procedure for developing measures involves specifying the domain of the construct. The researcher must be exacting in delineating what is included in the definition and what is excluded. Because the literature on SNS happiness is not yet rich enough to provide a sound conceptual foundation for investigating SNS happiness, an exploratory qualitative study will be undertaken to investigate the concept of SNS happiness. Since our goal is only to define SNS happiness and its possible dimensions, we will develop a survey consist of open-ended question to find out under what circumstances or situation user would feel happiness or well-being while using Facebook. A survey of open-ended questions is proven to be

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useful for the collection of qualitative data (e.g. Blechar et al., 2006; Cao et al., 2006). Our study will adopt this approach because our research goal is singular and a survey format would help us reach a wider population. Moreover, there is no better way to gauge someone's positive experiences, life satisfaction, self-determination, or meaning in life than to directly ask about them. Comparing self-report to other methodologies: other people don't have full access to a target's phenomenological information (informant reports), it is unclear which behavioral observations would exemplify the presence of well-being (temporal and contextual considerations), and neurobiological assessments and coding of facial expressions serve as an important level of analysis that complement rather than replace self-reports.

3.2.1. Data collection

To study the post-adoption behavior of IT users, we chose for our SNS one of most popular and prominent social network sites: Facebook. Facebook has over 1.35 billion monthly active users as of September 30, 2014 (Facebook, 2015). Because one of the largest portions of Facebook users is that in the 18 to 24 age range (Saul, 2014; Tweedie, 2014), we will draw our study sample from college students. One class will be selected randomly from each school in a university.

Both undergraduate and graduate students will participate in our study. As an incentive, extra credit will be offered to every student that completed the survey. To mitigate common method bias, we will take preventive measures to reduce evaluation apprehension and make the participants less likely to edit their responses. Anonymity and confidentiality will be guaranteed to all participants, and they will be

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informed that the questions did not have ‘‘right or wrong’’ answers (Podsakoff et al., 2003). None of the participants should be first-time users of Facebook.

3.2.2. Data analysis method

Grounded theory is to seek to construct or discover a theory from data collected , as opposed to simply verifying one. This methodology relies on a systematic analysis of empirical data, to theorize about what is happening in that situation. The result is a theory that is grounded in evidence rather than developed from existing conceptual frameworks. It is inductive in nature. The theory is created during the data analysis, and the validity of that theory is “grounded” as the data supporting it increases.

For analysis of this study, grounded theory techniques will be adopted. More specifically, Strauss and Corbin’s (1990) open coding procedures will be used to identify conceptually similar themes from our qualitative survey results. Open coding is ‘the analytic process through which concepts and categories are identified and their properties and dimensions are discovered in data’ (Strauss and Corbin, 1998). Naming, comparing and the writing of memos are the key activities that take place in this phase (Locke, 2001). Concepts are the basic building blocks of theory, and so the first task in developing them is to open up the data to reveal and name these concepts (Strauss and Corbin, 1998). The constant comparative method is the means used to achieve this, whereby comparing similarities and differences between data incidents yields discrete concepts, which are then given names (Strauss and Corbin, 1998).

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In this process, data are broken down into incidents, and these compared for similarities and differences (Glaser, 1992). The aim is to assign a common meaning to multiple data incidents (Locke, 2001). As concepts emerge and are named they are compared to other incidents in data, leading to clearer definition of properties of the concepts (Glaser, 1992). Finally concepts are compared to other concepts (Glaser and Holton, 2004). As such, there is a constant iteration between naming and comparing data incident to data incident, data incident to concept, and concept to concept (Locke, 2001; Glaser and Holton, 2004).

Where the names given are sourced directly from the data, they are referred to as ‘in vivo’ codes (Strauss and Corbin, 1990, 1998). Glaser (1992) suggests that naming of concepts be done using either ‘in vivo’ words, or by using sociological constructs derived from an awareness and familiarity with the sociological literature.

In evolved GTM, during open coding, categories are developed by grouping similar concepts together into more abstract explanatory terms (Strauss and Corbin, 1998). Discrete concepts may then become properties or characteristics of a category, or may provide suggestions for such characteristics. The rationale for this higher order grouping is that categories are easier to remember, think about, and develop in terms of properties and dimensions, and can be further differentiated by breaking them down into sub-categories if necessary (Strauss and Corbin, 1998).

3.3. Measure development

3.3.1.Item generation

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During the item development, the codes derived from the exploratory survey will be leveraged. The responses from open-ended questions should have information that would be helpful in designing the initial items. The open codes derived from the survey results will also be helpful during the item creation process because they should include keywords describing the construct domains identified in step 1.

Next, the simplicity and wording of the items will be examined using a face validity check. Face validity checks are useful in situations when items are developed from scratch and have not yet been tested with individuals (DeVellis 2011; MacKenzie et al. 2011; Straub et al. 2004). The face validity check will focus on the items themselves and will not ask participants to rank or respond to the items. A prerequisite for participation in the face validity check is that the participant be a Facebook user, which would ensure that they understood the context of the items. The participants will be provided with a paper-based survey that included all the items. The participants will be asked to examine all items and to comment on the clarity of the questions. To identify weak items, we will ask the participants to flag items whose wording was confusing or vague. The items will then be modified accordingly concurrent to the results and suggestions of the participants.

3.3.2. Assess content validity

Content validity is defined as the extent to which a scale represents all facets of a given construct (Lewis et al. 2005; MacKenzie et al. 2011; Straub et al. 2004). According to MacKenzie et al., researchers should consider two major components

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when assessing the content validity of a survey instrument: (1) Is the individual item representative of an aspect of the content domain of the construct? (2) Are the items as a set collectively representative of the entire content domain of the construct?

In our case, the items generated should have high degree of content validity because it was constructed based on our rigorous procedure of domain specification through grounded theory technique. We will further assess the content validity of new scales by referring to opinion of a panel of judges. By assuming that each item represents a single construct, respondents are asked to assign each item to a single corresponding construct definition. The percentage of items placed correctly into corresponding construct definition would further indicate the degree of content validity.

3.4. Scale evaluation and refinement

3.4.1. Conduct first round data collection

After the development of new items, the psychometric properties, including the convergent and discriminant validity, of the scales should be investigated (MacKenzie et al. 2011; Straub 1989; Straub et al. 2004). For the first round, we will create a survey including instructions for the participants and the items developed as discussed in step 2 earlier. All items will be measured using a seven-point Likert-agreement scale (1 = strongly disagree; 7 = strongly agree). Before collecting data from a large sample, we will ask two individuals to read the instructions and provide feedback on the items and survey structure.

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Similar to our qualitative survey, to conduct first round evaluation, we will also use Facebook as our SNS and draw our study sample from college students. One class will be selected randomly from each school in a university. Both undergraduate and graduate students will participate in our study. Anonymity and confidentiality will be guaranteed to all participants, and they will be informed that the questions did not have ‘‘right or wrong’’ answers (Podsakoff et al., 2003). None of the participants should be first-time users of Facebook.

3.4.2. Scale purification

Purification and refinement of the survey instrument involves a set of statistical tests to evaluate the measurement properties of the scales using the first round data.

Table 3. Iterative Scale Purification Procedure
(Adapted from Churchill 1979 & Mackenzie et al. 2011)

Procedures	**Steps**	
Assess reliability	Step 1	Assess reliability by calculating Cronbach's alpha and item-to-total correlations for each dimension
Assess validity	Step 2	Assess convergent and divergent validity using EFA and AVE
Eliminate problematic items	Step 3	Eliminate items with: 1. low reliability: low item-to-total correlation 2. low validity: low loadings

3.5. Scale validation

Because items are often added and problematic indicators dropped or reworded in the purification process, the next step is to re-estimate the purified scale using a new sample of data. Using this new sample, the refined scale would be re-

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estimated, its fit reexamined, and the psychometric properties reevaluated. Finally, the scale would be validated through assessment of its validity and reliability including the convergent, discriminant, and nomological validity. To evaluate nomological validity of the focal construct, it is important to collect data for constructs that are theoretically related (MacKenzie et al. 2011).

Table 4. Scale Validation Procedure
(Adapted from Churchill 1979 & Mackenzie et al. 2011)

Procedures	**Tests**	**Recommended values**
Assess validity	**CFA**(SEM)	
	Convergent validity	Loadings > 0.70
	Discriminant validity	Sqrt(AVE) > correlation
	Nomological validity	$R^2 > 0.30$
Assess reliability	**CFA**(SEM)	
	Composite reliability	CR > 0.80
	Cronbach's alpha	Alpha > 0.70

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Chapter 4: Results and Analysis

4.1. Conceptualization

We begun our study with step 1 of scale development procedure which is to conceptualize SNS happiness. But because the literature on SNS happiness is not yet rich enough to provide a sound conceptual foundation for investigating SNS happiness, an exploratory qualitative study were undertaken to investigate the concept of SNS happiness. Since our goal is only to define SNS happiness and its possible dimensions, we developed a survey for users consisted of an open-ended question: under what circumstances or situation would you feel happiness or well-being while using Facebook?

As stated in our methodology section, we have attained our study sample from college students. Our target institution is one of largest comprehensive private university in Taiwan with over 20,000 students. One class is selected randomly from each school in this university including management, information technology, communication, law, education and applied language, tourism, design, social sciences, health technology, and international college. Both undergraduate and graduate students participated in our study. To mitigate common method bias, we have taken preventive measures to reduce evaluation apprehension and make the participants less likely to edit their responses. Anonymity and confidentiality were guaranteed to all participants, and they been informed that the questions did not have ‘‘right or wrong’’ answers (Podsakoff et al., 2003). None of the participants were first-time users of Facebook. Of the 341 survey recipients, 255 were found suitable for analysis, giving us a 75% response rate. To ensure

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a high level of validity, incomplete questionnaires were discarded. The gender makeup of our sample was about 46% male and 54% female. All users have at least 6 months of experience using Facebook.

We used grounded theory techniques for analysis of resulting qualitative data. The goal is to try to find theory from data incidents (e.g. FB actions or contents), conceptualized and categorizes to find the reason behind these situations (action or content) which is the dimensions or triggers for happiness (domain for SNS well-being construct). Strauss and Corbin's (1990) open coding procedures were used to identify conceptually similar themes from our qualitative survey results. Open coding entails fracturing the data by describing concepts in the data that may define a significant occurrence, or incident, about the phenomenon. The coding scheme was not predetermined prior to our analysis but emerged inductively and was continually refined through our interaction with the data. Specifically, the constant-comparative method involves the following steps: examining the textual segments, forming concepts, comparing concepts, and achieving concepts saturation or exhaustion, meaning until new data began to confirm rather than shed new light on the existing types of concepts. For example, we began by selecting the first textual segment, read it, and noted its content to form a tentative type of concept. This first segment represented the first entry in the first tentative type of concept. We then selected the next segment, read it, and noted its content. We determined whether its content was essentially similar with the first segment. If so, we placed the second segment with the first concept and proceeded to the third segment; if not, the second segment represented the first entry in a new second tentative concept. As we read each segment, we compared it

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to the existing concepts and, at the same time reflected on the meaning of the concepts. The result was that we constantly clarified our understanding of the types of situation that individuals engaged in when feeling happiness or well-being.

Through this type of coding, we created 47 codes related to 435 textual segments, obtained from the 255 open-ended survey responses. As an example of a coded textual segment, we highlighted a portion of a survey response (i.e., "when my postings are liked") and coded this text segment as "Being affirmed by others." Another example is: “when my friends provide me support whenever I am in an upsetting mood.” The example described here was coded as "Receive spiritual support and encouragement." A sample of the textual segments we open coded appears in Appendix C. Next step requires comparison of the codes to classify them under common themes, thus entailing the creation of hierarchical classifications. For example, we created a relationship between the codes of ‘Receive spiritual support and encouragement’ and ‘Being concerned by other when feeling negative’ and later combined them and other similar codes to form the category "Positivity." In the end, we uncovered 10 determinant categories or evaluative dimensions(Table 5) users use in forming SNS happiness. These 10 dimensions and descriptions served as the basic structure of SNS happiness domain from which items were derived. Next, its scale will be developed based on these results through item generation, refinement, and validation.

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Table 5. Dimensions of SNS Happiness	
Positivity Display positive inclination in online communications; shown positive exchanges	Transmit positive message Receive spiritual support and encouragement Being concerned by other when feeling negative Display positive status Feel others' positive emotion
Self presence The presence or extension of oneself online	Share information Share opinion Share oneself with close ones Transmit message to others Share one's current status
Social presence Being part of others life or community	Track others' location and status Participate in others' mood and life Sense of belonging to a group/community Involvement in close ones' life Receive others' newest status
Emotional outlet Letting out user emotions or moods	Adjustment of user emotion Venting ones' feeling Share ones' mood with others Express or release ones' emotions
Approval Being accepted or approved by others	Being affirmed by others Receiving blessing from others Being approved by others Being follow closely by close ones Feeling one's importance
Relational bonding Connecting to others	Build or rebuilt relation with others Feel others' feelings Enhance relation with close ones Strengthen ones' affection for others Reinforce ones relationship with others
Functionality Technical advantage of SNS	Convenience in contacting others Instant and without regard to distance Rich and variant interactions Useful functions Interact with multiple people at same time
Entertainment Pleasure attainment	Provide entertainment and humor Pass time Shared with attractive visuals Browse funny postings See photo of beautiful people
Self-Growth Improving oneself	Increase knowledge Keep up to date with current events Help solve problem or answer question Learn new information

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Nostalgia Remembering/indulging the past	Record one's life Record group activity Preserve memory Remember past events

4.2. Measure development

Item generation

During the item development, the codes derived from the exploratory survey are leveraged. The responses from open-ended questions have information that helped in designing the initial items. For each of 10 dimensions, four to five items were generated with one to two items worded negatively in accordance to the recommended procedures for scale development (Churchill 1979). In total, 47 items were initially created (Table 6).

Next, the simplicity and wording of the items will be examined using a face validity check. Six individual performed the face validity check. Three Ph.D. students and three administrative staffs whom all are Facebook users volunteered to participate. The participants were provided with a paper-based survey that included all 47 items. They were asked to focus on the items themselves and not to rank or respond to the items. The participants were asked to examine all items and to comment on the clarity of the questions. To identify weak items, we asked the participants to flag items whose wording was confusing or vague. In total, 9 items were identified as too vague or worded unclearly. The items were modified accordingly concurrent to the results and suggestions of the participants.

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Assess content validity

A measuring instrument has content validity if the measurement items cover all the aspects of the variable (domain content) being measured. Content validity exists when "a measure is judged by one or more persons as containing a reasonable and representative sample of items from the construct's theoretical domain" (Schriesheim et al., 1993). In our case, we specified the domain of the construct through grounded theory technique from a dataset of 255 responses and 435 textual segments to generate items that exhausted this domain, thereby, should produce measure which is very much content valid and reliable.

We will further assess the content validity of new scales by referring to the opinions of a panel of judges. By assuming that each item represents a single construct, respondents are asked to assign each item to a single corresponding construct definition. Two PhD students participated in this test and placed over 90% of items into correct corresponding construct definition further validating content validity.

Table 6. SNS Happiness Survey Items (47) [10 Dimensions]		
Positivity	POS1	Facebook allows me to convey positive messages.
	POS2	Facebook allows me to receive spiritual blessing and encouragement from others.
	POS3	When using Facebook, others will show concerns when I have negative feelings.
	POS4	Facebook cannot let me convey my positive status.
	POS5	When using Facebook, I cannot feel positive emotions of others
Self presence	SELFP1	Facebook allows me to share information.
	SELFP2	Facebook allows me to share my views. ◦
	SELFP3	Facebook allows me to share myself with my acquaintances or people close to me.
	SELFP4	When using Facebook, I cannot transmit message to others.
	SELFP5	Facebook does not allow users to share their current status.

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Social presence	SOCP1	Facebook allows me to track the location and status of others.
	SOCP2	Facebook allows me to participate in the mood and the lives of others.
	SOCP3	When using Facebook, I can feel a sense of belonging to a community.
	SOCP4	Facebook cannot helped me to find out about the lives of my acquaintances or people close to me.
	SOCP5	Facebook does not allow users to receive the latest developments of others.
Emotional outlet	EMOT1	When using Facebook, I can adjust my mood.
	EMOT2	When using Facebook, it allow me to vent my emotions.
	EMOT3	When using Facebook, I can share my feelings to others.
	EMOT4	Facebook cannot let me express my emotions. ◦
Approval	APPR1.	When using Facebook, I can feel being affirmed.
	APPR2	When using Facebook, I can receive blessings.
	APPR3	When using Facebook, can make me feel being approved.
	APPR4	Facebook does not allows users to be followed closely by their acquaintances or people close to them.
	APPR5	Facebook cannot make me feel my importance.
Relational bonding	RELA1.	Facebook allows me to build or rebuild relations with others.
	RELA2.	When using Facebook, allows me to feel the emotions of others.
	RELA3.	Facebook allows me to improve relations with acquaintances or people close to me.
	RELA4.	When using Facebook, I cannot advance my feelings for others.
	RELA5.	Facebook cannot let me strengthen relationships with others.
Functionality	FUNC1	Facebook can provide one with convenience of contacting others.
	FUNC2	Facebook features can provide immediacy and no sense of distance.
	FUNC3	Facebook can provide a rich and diverse way for interaction.
	FUNC4	Facebook functions are not very useful.
	FUNC5	When using Facebook, I cannot interact with multiple people.
Entertainment	ENT1	Facebook can provide entertainment and fun.
	ENT2	Using Facebook allows me to pass time.
	ENT3	When using Facebook, I can be shared with attractive images or videos.
	ENT4	When using Facebook, I cannot browse any humorous postings.
	ENT5	When using Facebook, I cannot see any photos of beautiful people.
Self-Growth	SELFG1	When using Facebook, I can grow my own knowledge.
	SELFG2	When using Facebook, I can learn about the current events and conditions of our society.
	SELFG3	When using Facebook, someone can help me answer my questions.
	SELFG4	Facebook does not allow me to learn new information.
Nostalgia	NOS1	Facebook allows me to record my life.
	NOS2	Facebook allows me to record group activities that I'm involved in.
	NOS3	Facebook allows me to retain memories.
	NOS4	Facebook does not allow me to remember past events.

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4.3. Scale evaluation and refinement

Conduct first round data collection

For the first round evaluation, we created a survey including instructions for the participants and the items developed as discussed in step 2 earlier. All items were measured using a seven-point Likert-agreement scale (1 = strongly disagree; 7 = strongly agree). Before collecting data from a large sample, we asked two individuals to read the instructions and provide feedback on the items and survey structure.

As stated in the methodology section, to conduct first round evaluation we also used Facebook as our SNS and draw our study sample from college students (same collection method and criteria as the qualitative study in the step of conceptualization). One class is selected randomly from each school in the university. None of the participants are first-time users of Facebook. The surveys were directly disseminated as an online form. Of the 250 recipients, 220 were found suitable for analysis, giving us an 88% response rate. To ensure a high level of validity, we accepted only questionnaires that were missing fewer than two data points. The gender makeup of this sample was about 49% male and 51% female. All users have at least 6 months of experience using Facebook.

Scale purification

Purification and refinement of the survey instrument involves a set of statistical tests to evaluate the measurement properties of the scales using the first round data (Table 3). We began the purification with the computation of coefficient

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alpha, in accordance with Churchill's (1979) recommendation. It was computed separately for the 10 dimensions because of multidimensionality of SNS happiness construct to ascertain the extent to which items making up each dimensions shared a common core. If Cronbach's alpha is lower than 0.7 for a dimension, certain items might need to be deleted to improve the value. The item's corrected item-to-total correlations is used to decide whether to delete an item with low correlations of less than 0.4 (recommended by Straub et al. 2004).

Next, we conducted the factor analysis using the Promax rotation procedure to assess the initial measurement scale to allow for intercorrelations among the dimensions and to facilitate easy interpretation. Throughout the process of exploratory factor analysis, items were deleted that did not load properly on a particular factor (<0.50) or had cross loadings (see Table 7). When such items were removed from the factor loading matrix, several factors themselves became meaningless because they had near-zero correlations with the remaining items, thereby suggesting a reduction in the presumed dimensionality of the SNS happiness domain. Furthermore, the highest loadings of a few of the remaining items were on factors to which they were not originally assigned. In other words, the factor loadings suggested reassignment of some items. The deletion of certain items and the reassignment of certain others necessitated the recomputation of alphas and item-to-total correlations and the reexamination of the factor structure of the reduced item pool. This iterative sequence of analyses (Table 3) was repeated a few times and resulted in a final pool of 17 items representing five distinct dimensions. The alpha values and factor loadings pertaining to the 17-item instrument are summarized in

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Table 8. Reliability analysis (i.e., Cronbach's alpha) of the extracted five factors was then conducted which exceeded the cutoff value of 0.70. Five factors with eigenvalues greater than 1 were extracted. The sums of squared loadings from the five components had a cumulative value of 76.643% in explaining the total variance in data. In summary, the initial instrument was refined by removing 30 items. The remaining 17 items were retained for the next run of factor analysis. As shown in Table 7 and 8, four of the original ten dimensions(Self-presence, Functionality, Self-growth, Nostalgia) remained distinct. Two of the remaining five dimensions (Positivity and Approval) collapsed into one distinct dimension (Positive support).

Table 7. Results of exploratory factor analysis (First round)

Code	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
POS2	.592				
POS3	.738				
APPR1	.878				
APPR2	.903				
APPR3	.887				
SELFP1		.942			
SELFP2		.907			
SELFP3		.863			
FUNC1			.759		
FUNC2			.976		
FUNC3			.799		
SELFG1					.820
SELFG2					.920
SELFG3					.731
NOS1				.942	
NOS2				.947	
NOS3				.708	

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Table 8. Descriptive statistics and scale properties (First round)

Construct	Cronbach's alpha	CR	AVE	Item	Item total correlation	Std. loading
Positive support	0.884	0.885	0.611	POS2	0.608	0.62
				POS3	0.657	0.69
				APPR1	0.748	0.80
				APPR2	0.796	0.88
				APPR3	0.805	0.89
Self-presence	0.909	0.911	0.773	SELFP1	0.805	0.83
				SELFP2	0.851	0.94
				SELFP3	0.798	0.86
Functionality	0.850	0.852	0.659	FUNC1	0.654	0.78
				FUNC2	0.777	0.93
				FUNC3	0.737	0.84
Self-growth	0.793	0.804	0.582	SELFG1	0.644	0.86
				SELFG2	0.711	0.75
				SELFG3	0.571	0.63
Nostalgia	0.871	0.874	0.699	NOS1	0.759	0.77
				NOS2	0.789	0.84
				NOS3	0.719	0.85

*Scale reliability: CR > 0.80, AVE > 0.50; convergent validity: loadings > 0.70.

Table 9. **Correlations of constructs** (First round)

	POSS	SELFP	FUNC	SELFG	NOS
Positive support (POSS)	**0.78**				
Self-presence (SELFP)	0.52	**0.88**			
Functionality (FUNC)	0.47	0.62	**0.81**		
Self-growth (SELFG)	0.54	0.49	0.50	**0.76**	
Nostalgia (NOS)	0.54	0.65	0.58	0.54	**0.84**

* Discriminant validity: square root of AVE on the diagonal > correlation coefficients.

In our analysis of first round data, we examined the measurement model. To examine the internal validity of the construct, a researcher looks at the loadings on the respective constructs, ensuring that the items indeed measure the constructs they were designed to measure (Chin and Newsted, 1999). The standardized loadings should be greater than 0.7 or at least above 0.6 (Fornell and Larcker, 1981). Table 8 shows the descriptive statistics and construct reliabilities of the items. All of the loadings were over 0.7 except three with loading over 0.6. Items with loadings below 0.6 were dropped because of its poor loading. These values demonstrate sufficient convergent and discriminant validities. We computed Cronbach's alpha

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for each construct to estimate scale reliability. For each construct, Cronbach's alpha reached an acceptable level (>0.7). Further supporting reliability, all composite reliabilities (CR) were over 0.8. Discriminant validity was tested by AVE (Average Variance Extracted) analysis. As Table 9 shows, the square root of the AVE of every construct was greater than the correlation of the specific construct with any of the other constructs.

Besides the preventive steps taken to deal with common method bias, post hoc testing was conducted as well. We performed the Harman one-factor test with an exploratory factor analysis on all questionnaire items. All 17 variables of this study were entered into an principal component factor analysis, which revealed five distinct factors with Eigenvalues greater than 1, rather than a single factor. The five factors collectively accounted for 76.64 percent of the total variance; the largest factor did not account for a majority of the variance. The results of this analysis suggest that common method bias is not of great concern.

The model's overall goodness-of-fit was assessed with multiple measures: the relative chi-square (x2/d.f.) was 2.20 (x2=239.90; d.f.=109), RMSEA was 0.073, SRMR was 0.06, GFI was 0.89, AGFI was 0.84, NNFI was 0.93, and CFI was 0.95. The current model presented a sufficient model fit, for chi-square normalized by the degrees of freedom (x2/d.f.) was at an acceptable ratio: under 5 (Wheaton et al., 1977). In addition, NNFI and CFI both exceeded 0.9, with GFI at just under 0.90, and AGFI over 0.8. RMSEA was at acceptable value: below 0.10 (MacCallum et al., 1996). We concluded that the overall explanatory power of this model was acceptable.

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Table 10. Revised SNS Happiness Survey Items (17) [5 Dimensions]		
Positive Support Receiving positive support or approval from others	POS2 POS3 APPR1 APPR2 APPR3	Facebook allows me to receive spiritual blessing and encouragement from others When using Facebook, others will show concerns when I have negative feelings. When using Facebook, I can feel being affirmed. When using Facebook, I can receive blessings. When using Facebook, can make me feel being approved.
Self presence The presence or extension of oneself online	SELFP1 SELFP2 SELFP3	Facebook allows me to share information. Facebook allows me to share my views. Facebook allows me to share myself with my acquaintances or people close to me.
Functionality Technical advantage of SNS	FUNC1 FUNC2 FUNC3	Facebook can provide one with convenience of contacting others. Facebook features can provide immediacy and no sense of distance. Facebook can provide a rich and diverse way for interaction.
Self-Growth Improving oneself	SELFG1 SELFG2 SELFG3	When using Facebook, I can grow my own knowledge. When using Facebook, I can learn about the current events and conditions of our society. When using Facebook, someone can help me answer my questions.
Nostalgia Remembering/indulging the past	NOS1 NOS2 NOS3	Facebook allows me to record my life. Facebook allows me to record group activities that I'm involved in. Facebook allows me to retain memories.

4.4. Scale validation

Because items are often added and problematic indicators dropped or reworded in the purification process, the next step is to re-estimate the purified scale using a new sample of data. Using this new sample, the refined scale would be re-estimated, its fit reexamined, and the psychometric properties reevaluated. Finally, the scale would be validated through assessment of its validity and reliability including the convergent, discriminant, and nomological validity. Confirmatory factor analysis (CFA) was used to

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rigorously assess the refined instrument over a larger group of Facebook users. As such, a total of 300 surveys were completed using the same sampling procedure as used in the first round study, of which 288 (96% response rate) were usable. To ensure a high level of validity, we accepted only questionnaires that were missing fewer than two data points. The gender makeup of this sample was about 44% male and 56% female. All users have at least 6 months of experience using Facebook.

Before the validation, we began again with the computation of Cronbach's alpha for the five dimensions from the purification phase. If Cronbach's alpha is lower than 0.7 for a dimension, certain items might need to be deleted to improve the value. The item's corrected item-to-total correlations is used to decide whether to delete an item with low correlations of less than 0.4. Next, we conducted the factor analysis using the Promax rotation procedure to assess the measurement scale. Throughout the process of exploratory factor analysis, items were deleted that did not load properly on a particular factor (<0.50) or had cross loadings (see Table 11). The deletion of certain items and the reassignment of certain others necessitated the recomputation of alphas and item-to-total correlations and the reexamination of the factor structure of the reduced item pool. This iterative sequence of analyses was repeated one time and resulted in a final pool of 15 items representing five distinct dimensions. The alpha values and factor loadings pertaining to the 15-item instrument are summarized in Table 12. Cronbach's alpha of the extracted five factors was then conducted which exceeded the cutoff value of 0.70. Five factors with eigenvalues greater than 1 were extracted. The sums of squared loadings from the five components had a cumulative value of 76.714% in explaining the total variance in data. In summary, the instrument was refined by removing 2 more items:

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POS2 and SELFG3. The remaining 15 items were retained for the validation using confirmatory factor analysis. As shown in Table 11 and 12, all five dimensions from results of initial phase remained distinct.

Table 11. Result of exploratory factor analysis (Second round)

Code	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
POS3	.540				
APPR1	.877				
APPR2	.840				
APPR3	.925				
SELFP1			.815		
SELFP2			.857		
SELFP3			.857		
FUNC1				.795	
FUNC2				.919	
FUNC3				.630	
SELFG1					.912
SELFG2					.809
NOS1		.868			
NOS2		.949			
NOS3		.901			

Table 12. **Descriptive statistics and scale properties** (Second round)

Construct	Cronbach's alpha	CR	AVE	Item	Item total correlation	Std. loading
Positive support	0.870	0.877	0.646	POS3	0.564	0.64
				APPR1	0.749	0.85
				APPR2	0.771	0.92
				APPR3	0.822	0.94
Self-presence	0.840	0.842	0.641	SELFP1	0.724	0.80
				SELFP2	0.763	0.87
				SELFP3	0.637	0.75
Functionality	0.747	0.771	0.538	FUNC1	0.512	0.62
				FUNC2	0.698	0.95
				FUNC3	0.529	0.67
Self-growth	0.711	0.712	0.553	SELFG1	0.560	0.66
				SELFG2	0.560	0.72
Nostalgia	0.899	0.9	0.750	NOS1	0.789	0.83
				NOS2	0.829	0.81
				NOS3	0.787	0.76

*Scale reliability: CR > 0.80, AVE > 0.50; convergent validity: loadings > 0.70.

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Table 13. **Correlations of constructs** (Second round)

	POSS	SELFP	FUNC	SELFG	NOS
Positive support (POSS)	**0.80**				
Self-presence (SELFP)	0.54	**0.80**			
Functionality (FUNC)	0.51	0.54	**0.73**		
Self-growth (SELFG)	0.35	0.48	0.50	**0.74**	
Nostalgia (NOS)	0.52	0.62	0.49	0.49	**0.87**

* Discriminant validity: square root of AVE on the diagonal > correlation coefficients.

In our confirmatory factor analysis, we first examined the measurement model. To examine the internal validity of the construct, the standardized loadings should be greater than 0.7 or at least above 0.6 (Fornell and Larcker, 1981). Table 12 shows the descriptive statistics and construct reliabilities of the items. All of the loadings were over 0.7 except four with loading over 0.6. These values demonstrate sufficient convergent and discriminant validities. For each construct, Cronbach's alpha reached an acceptable level (>0.7). Further supporting reliability, all composite reliabilities (CR) were over 0.8 except for two that are at least above 0.7. Discriminant validity was tested by AVE analysis. As Table 13 shows, the square root of the AVE of every construct was greater than the correlation of the specific construct with any of the other constructs.

We also performed the Harman one-factor test with an exploratory factor analysis on all questionnaire items. All 15 variables of this study were entered into an principal component factor analysis, which revealed five distinct factors with Eigenvalues greater than 1, rather than a single factor. The five factors collectively accounted for 76.71 percent of the total variance; the largest factor did not account for a majority of the variance. The results of this analysis suggest that common method bias is not of great concern.

The model's overall goodness-of-fit was assessed with multiple measures: the relative chi-square (x2/d.f.) was 2.70 (x2=215.88; d.f.=80), RMSEA was 0.073, SRMR

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was 0.058, GFI was 0.91, AGFI was 0.87, NNFI was 0.93, and CFI was 0.94. The current model presented a good model fit, for chi-square normalized by the degrees of freedom (x2/d.f.) was at an acceptable ratio: under 5 (Wheaton et al., 1977). In addition, NNFI and CFI both exceeded 0.9, with GFI at 0.91, and AGFI over 0.8. RMSEA was at acceptable value: below 0.10 (MacCallum et al., 1996). We concluded that the overall explanatory power of this model was acceptable.

Table 14. Final SNS Happiness Survey Items (15) [5 Dimensions]		
Positive Support Receiving positive support or approval from others	POS3 APPR1 APPR2 APPR3	When using Facebook, others will show concerns when I have negative feelings. When using Facebook, I can feel being affirmed. When using Facebook, I can receive blessings. When using Facebook, can make me feel being approved.
Self presence The presence or extension of oneself online	SELFP1 SELFP2 SELFP3	Facebook allows me to share information. Facebook allows me to share my views. Facebook allows me to share myself with my acquaintances or people close to me.
Functionality Technical advantage of SNS	FUNC1 FUNC2 FUNC3	Facebook can provide one with convenience of contacting others. Facebook features can provide immediacy and no sense of distance. Facebook can provide a rich and diverse way for interaction.
Self-Growth Improving oneself	SELFG1 SELFG2	When using Facebook, I can grow my own knowledge. When using Facebook, I can learn about the current events and conditions of our society.
Nostalgia Remembering/indulging the past	NOS1 NOS2 NOS3	Facebook allows me to record my life. Facebook allows me to record group activities that I'm involved in. Facebook allows me to retain memories.

As an additional verification of the reliabilities and factor structure of SNS happiness scale, the resulted 15-item instrument with five dimensions from second-stage data set was reanalyzed with the dataset from the first round of collection. The results of

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this reanalysis are summarized in Table 15 and reconfirm the high reliabilities and dimensional distinctiveness of the scale.

Table 15. Result of exploratory factor analysis (Reconfirmation)

Code	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
POS3	.692				
APPR1	.886				
APPR2	.900				
APPR3	.904				
SELFP1		.951			
SELFP2		.915			
SELFP3		.863			
FUNC1			.768		
FUNC2			.988		
FUNC3			.801		
SELFG1					.866
SELFG2					.913
NOS1				.937	
NOS2				.951	
NOS3				.714	

Table 16. **Descriptive statistics and scale properties** (Reconfirmation)

Construct	Cronbach's alpha	CR	AVE	Item	Item total correlation	Std. loading
Positive support	0.885	0.889	0.670	POS3	0.596	0.66
				APPR1	0.778	0.81
				APPR2	0.801	0.87
				APPR3	0.837	0.90
Self-presence	0.909	0.911	0.773	SELFP1	0.805	0.83
				SELFP2	0.851	0.94
				SELFP3	0.798	0.86
Functionality	0.850	0.852	0.659	FUNC1	0.654	0.78
				FUNC2	0.777	0.93
				FUNC3	0.737	0.84
Self-growth	0.784	0.800	0.671	SELFG1	0.655	0.94
				SELFG2	0.655	0.71
Nostalgia	0.871	0.737	0.697	NOS1	0.759	0.77
				NOS2	0.789	0.84
				NOS3	0.719	0.85

*Scale reliability: CR > 0.80, AVE > 0.50; convergent validity: loadings > 0.70.

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Table 17. **Correlations of constructs** (Reconfirmation)

	POSS	SELFP	FUNC	SELFG	NOS
Positive support (POSS)	**0.82**				
Self-presence (SELFP)	0.50	**0.88**			
Functionality (FUNC)	0.46	0.62	**0.81**		
Self-growth (SELFG)	0.53	0.46	0.45	**0.82**	
Nostalgia (NOS)	0.53	0.65	0.58	0.51	**0.83**

* Discriminant validity: square root of AVE on the diagonal > correlation coefficients.

Table 16 shows the descriptive statistics and construct reliabilities of the items. All of the loadings were over 0.7 except one with loading over 0.6. These values demonstrate sufficient convergent and discriminant validities. We computed Cronbach's alpha for each construct to estimate scale reliability. For each construct, Cronbach's alpha reached an acceptable level (>0.7). All composite reliabilities (CR) were over 0.8 except for one over 0.7. As Table 17 shows, the square root of the AVE of every construct was greater than the correlation of the specific construct with any of the other constructs thereby verified discriminant validity.

The model's overall goodness-of-fit was assessed with multiple measures: the relative chi-square (x2/d.f.) was 1.98 (x2=158.20; d.f.=80), RMSEA was 0.065, SRMR was 0.05, GFI was 0.91, AGFI was 0.87, NNFI was 0.95, and CFI was 0.96. The current model presented a good model fit, for chi-square normalized by the degrees of freedom (x2/d.f.) was under 5 at a good ratio of 1.98 (Wheaton et al., 1977). In addition, NNFI and CFI both more than exceeded 0.9, GFI at 0.91, and AGFI over 0.8. RMSEA was at good value: much below 0.10 (MacCallum et al., 1996), and SRMR showed a good fit at .05(Byrne, 1998; Diamantopoulos and Siguaw, 2000). We concluded that the overall explanatory power of this model was good.

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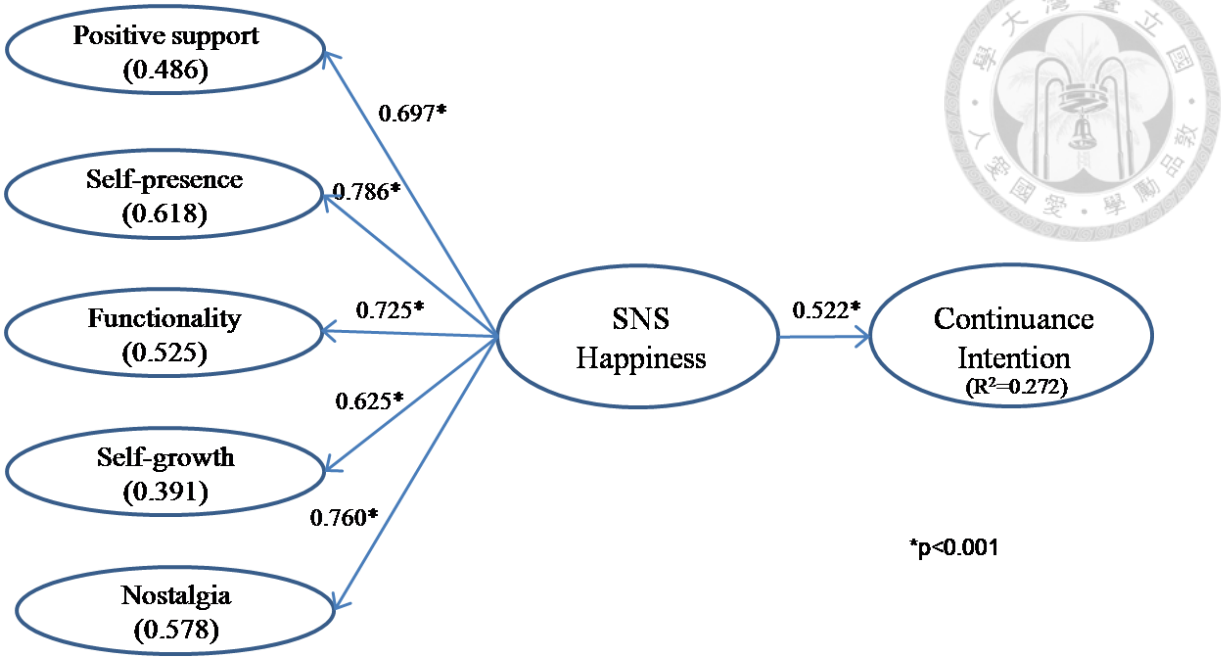

Figure 1. Nomological validity with continuance intention

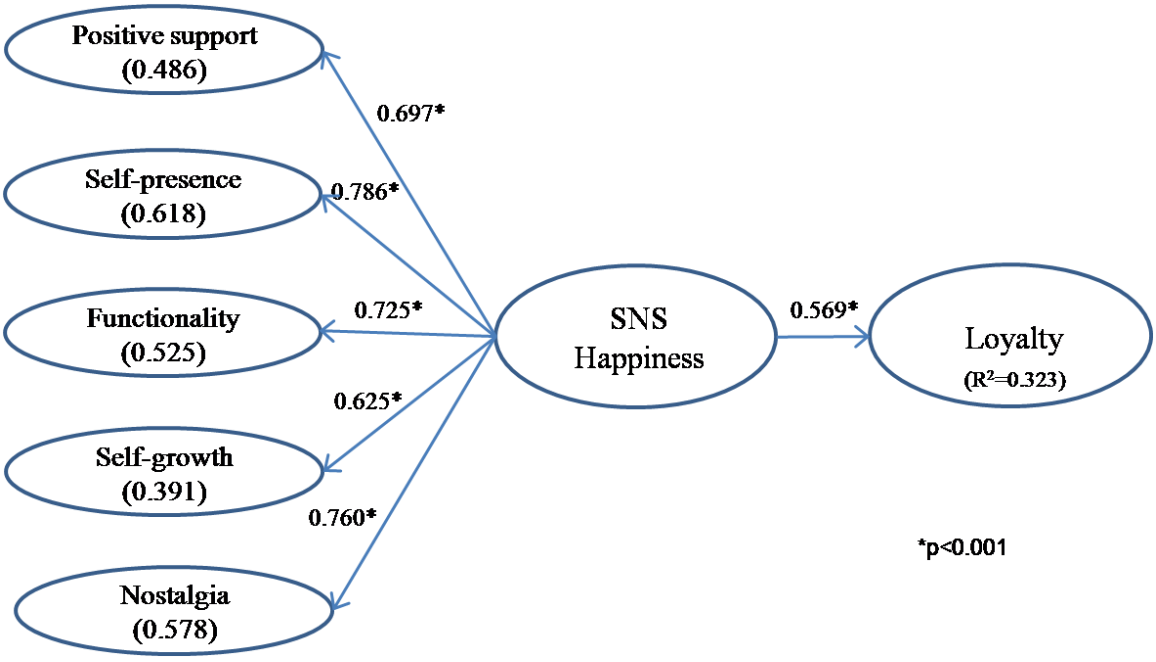

Figure 2. Nomological validity with loyalty

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Lastly, we assessed the nomological validity of the SNS happiness scale in Facebook by examining its relationship with continuance intentions and loyalty. To assess this validity, we used previously published multi-item scales of continuance intentions and loyalty. These two constructs are proven by Ong and Lin (2015) to have significant relations with well-being in the context of social network sites. The Cronbach's alpha and loadings of these two constructs all exceeded their cutoff values of 0.7. The results yielded significant relations from the second-order construct of SNS happiness to continuance intentions and loyalty (see Figure 1 and 2). All lines showed significant path. The Cronbach's Alpha of SNS happiness exceeded recommended value of 0.7 at 0.767. CR is at 0.7886 and AVE is at 0.4288, which are at an acceptable value range. In addition, this study obtained R^2 (the coefficient of determination) of 0.272 for continuance intentions and 0.323 for loyalty, which were significant according to the measure of explained variance defined for R^2 (Straub et al. 2004). These results confirmed the impact of SNS happiness on continuance intentions and loyalty, thereby ensuring nomological validity (see Fig. 1 and 2).

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Chapter 5: Discussion and Conclusions

5.1. Discussion

The purpose of this paper was to develop and validate an instrument for measuring SNS happiness. Because the development of a reliable and valid scale is a fundamental goal of scientific exploration, the SNS happiness instrument advanced in this study makes an important contribution to theory, method and practice. Several rounds of empirical validation supported our formulation of a SNS happiness scale. It also offers interesting insights into how SNS happiness ultimately is reflected in the users' perceptions.

The findings suggest that user of social network sites base their perceptions of happiness on five dimensions: positive support, self-presence, functionality, self-growth, and nostalgia. Positive Support is to receiving positive support or approval from others. Prior researches has revealed a positive association between the use of SNSs and the availability of social resources, such as social support and social capital (Brandtzæg, 2012; Ellison et al., 2007). Self presence is the presence or extension of oneself online. Recent studies have began to explore presence of self in online games or virtual environemnts(Lee, 2004; Jin and Park, 2009; Jin, 2011) and some found its positive relation with well-being (Behm-Morawitz, 2013). Functionality is the technical advantage of SNS. This dimension is similar to aspects of technology acceptance researches such as perceived ease of use and usefulness of the technology (Davis, 1989). Self-Growth is to improve oneself. It approximates personal growth in the field of

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psychology and comes closest in meaning to Aristotle's eudiamonia, as it is concerned with self-realization of the individual and involves a continuous process of developing one's potential (Ryff and Singer, 2008). Nostalgia is to remember or to indulge in the past. It has been described as a positive emotion or feeling that has been explored in the context of advertising and consumer researches (Holbrook, 1993; Holak and Havlena, 1998; Wildschut et al., 2006).

Corresponding to the hedonic approach of well-being, the functionality dimension would represent the cognitive component that is the satisfaction with functional performance of the SNS. Nostalgia and positive support would represent the affective component which is the positive feelings resulting from SNS use. The remaining dimensions would correspond more towards parts of the eudaimonic approach of welling. Self-growth would represent the personal growth dimension of psychological well-being (Ryff, 1989). Self-presence would relate more with the dimensions of autonomy and self-acceptance. Positive support would also relate with postive relating dimension of PWB. The results of these five dimensions shows that not only SNS happiness is explained by the domain of subjective well-being but also parts of psychological well-being. This pattern of involving PWB in addition to SWB would seem to follow the trend of recent well-being researches(see Table 1) that sees strong relation or complementarity between the two happiness approaches.

In developing this scale, we applied the approach of iterative analytic processes using EFA and CFA to confirmed adequate psychometric properties. We also confirmed the nomological validity of the integrated model by identifying the impact of SNS happiness on continuance intentions ($R^2 = 0.272$) and loyalty ($R^2 = 0.323$). More

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specifically, SNS happiness again showed more influence on loyalty as compared to continuance intention as both path and variance explained are higher for loyalty. These results could be highlighting the need to make positive emotional connection and well-being for the loyalty and long-term retention of users.

5.2. Theoretical Implications

This study extends happiness or well-being research by developing and validating a SNS happiness instrument on five dimensions (positive support, self-presence, functionality, self-growth, and nostalgia). By encompassing the combined explanatory power of each component, the SNS happiness scale advances happiness theory in IS research while presenting a parsimonious structure. Specifically, the study contributes in several ways to happiness research. First, it defines all the constructs and their associated measurement instruments against the backdrop of happiness in the social network sites context. Second, it identifies a comprehensive—yet parsimonious—set of items that help to predict the quality of an emerging IT artifact (i.e., SNS happiness), with its impact on user continuance intentions and loyalty. Third, the study reconfirmed continuance intentions and loyalty as a critical outcomes of SNS happiness, which has rarely been investigated before in IT post-adoption research (Ong and Lin 2015).

5.3. Managerial Implications

The implications of this research are highly relevant to the decision makers of SNS platforms, or who are offering such SNS services. The findings suggest that users evaluate SNS happiness at an overall level and a dimensional level (positive support, self-presence, functionality, self-growth, and nostalgia). These findings improve the

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understanding of managers on how users evaluate happiness in the context of SNS services. In particular, such findings suggest that managers can focus on improving the happiness of the SNS services through five dimensions. For instance, the functions, contents, or policies of SNS can be designed to provide or promote these five dimensions. This framework provides a useful road map for making interventions in the social network sites while targeting the improvement of a particular happiness dimension at different levels

The model developed in this study offers managers an understanding of how individual SNS happiness dimensions help in predicting continuance intentions and loyaty of users. The findings of the study suggest that overall SNS happiness is a significant predictor of user continuance intentions (explaining 27% of continuance variance) and loyalty (explaining 32% of loyalty variance). These findings suggest that decision makers consider ‘SNS happiness’ as an important strategic objective to ensure positive continuance intentions and loyalty. Overall, the SNS happiness scale proposed in this study may help providers achieve better well-being for its users and improvement for continuance intentions and loyalty of its user community.

5.4. Limitations and Future Researches

Several limitations are worth noting. This research was conducted within the specific domain of SNS services and in only one university and one age group. Replications in other contexts would increase the confidence in the instrument developed. But future researches could extend the exploration of happiness or well-being into other technolgies or platforms. Because different types of technologies have different

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characteristics and hence might be affected differently by well-being. In addition, research samples could be differentiated to compare users of different age groups. Such an approach could help in the investigation of whether individuals from different age groups are affected differently by well-being. Different age groups might also have different views of wellbeing brought by IT. For example, older users might be happy with stable, consistent IT experiences, while younger users might only be happy if they experience excitement. Furthermore, future researchers could focus on users of different cultures to investigate the effects of cultural differences. For example, the wellbeing of users could have two distinct impacts on continued usage behaviors, dependent upon whether the user is from an individualist or collectivist culture. Lastly, researchers could use the instrument developed here to further explore different aspects of happiness in IT such as investigating the features that can activate happiness in an IT or website through the different dimensions identified in this research.

5.5. Conclusions

The instrument developed in this study can be used to monitor and improve the happiness of an IT artifact, that is, SNS services. The scale development process has successfully integrated the suggestions of seminal instrument development studies (Churchill 1979 and Mackenzie et al. 2011) and extended their contribution by introducing reliability and validity techniques to the context of IT adoption research. The result is a parsimonious 15-item instrument, grouped into five scales, with a strong degree of reliability and validity. Although it was developed in the context of Facebook, this instrument can be applied to assess the degree of happiness of SNS services. The overall findings of the study provide insights for academics and practitioners on scale

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development and validation procedures and to the understanding of impact of happiness or well-being in SNS.

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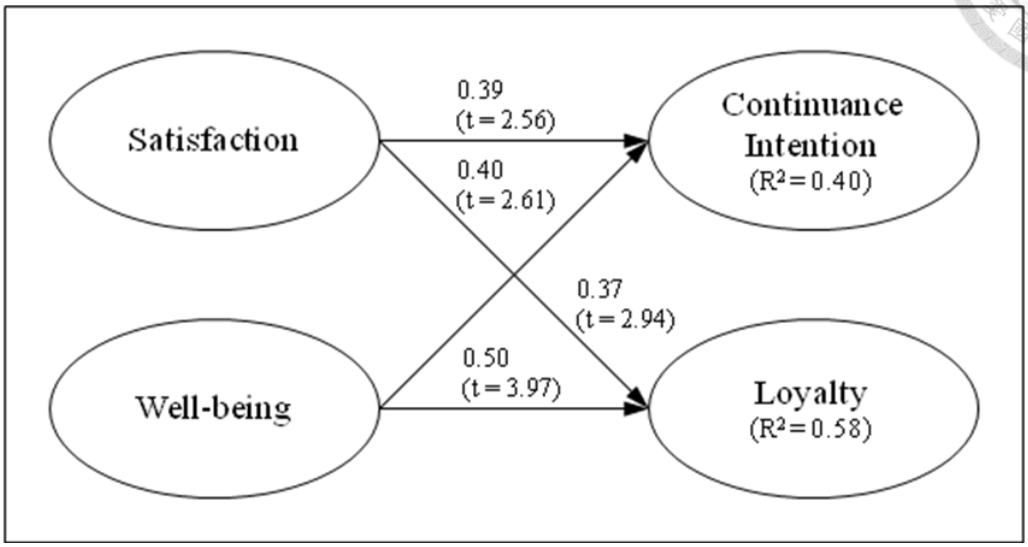
Appendix



Appendix A. Structural model (Ong & Lin, 2015)

Appendix B. Chinese SNS Happiness Survey Items (47) [10 Dimensions]	
Positivity	POS1. 臉書可以讓我傳達正面訊息。 POS2. 臉書可以讓我接受到他人給我在精神上的加持與鼓勵。 POS3. 使用臉書時，當我有負面情緒時會被關心。 POS4. 臉書不能讓我傳達自己的正面狀態。 POS5. 使用臉書時，我不能感受到他人的正面情緒
Self presence	SELFP1. 臉書可以讓我分享資訊。 SELFP2. 臉書可以讓我分享自己的意見。 SELFP3. 臉書可以讓我跟熟人或親近的人分享自己。 SELFP4. 使用臉書時，我不能傳達訊息給他人。 SELFP5. 臉書不能讓使用者分享自己目前的動態。
Social presence	SOCP1. 臉書可以讓我追蹤他人的位置及狀況。 SOCP2. 臉書可以讓我參與到他人的心情及生活。 SOCP3. 使用臉書時，我可以感受到社團上的歸屬感。 SOCP4. 臉書不能讓我了解到熟人或親近的人的生活。 SOCP5. 臉書不能讓使用者接收到他人最新的動態。
Emotional outlet	EMOT1. 使用臉書時，可以讓我調整一下心情。 EMOT2. 使用臉書時，可以讓我發洩自己的情緒。 EMOT3. 使用臉書時，我可以把自己的心情分享給他人。 EMOT4. 臉書不能讓我抒發自己的情緒。

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Approval	APPR1. 使用臉書時，可以讓我感受到被肯定。 APPR2. 使用臉書時，可以讓我得到祝福。 APPR3. 使用臉書時，可以讓我覺得受到認同。 APPR4. 臉書不能讓使用者被熟人或親近的人關注。 APPR5. 臉書不能讓我感受到自己的重要性。
Relational bonding	RELA1. 臉書可以讓我建立或重建跟他人的關係。 RELA2. 使用臉書時，可以讓我感受到他人的情緒。 RELA3. 臉書可以讓我增進與熟人或親近的人的關係。 RELA4. 使用臉書時，不能增進我跟他人的感情。 RELA5. 臉書不能讓我加強跟他人的關係。
Functionality	FUNC1. 臉書能提供聯絡他人的方便性。 FUNC2. 臉書的功能能提供即時性及無距離感。 FUNC3. 臉書能提供豐富及多元的互動方式。 FUNC4. 臉書的功能不太好用。 FUNC5. 使用臉書時，我不能與多人互動。
Entertainment	ENT1. 臉書可以提供娛樂及趣味。 ENT2. 使用臉書可以讓我打發時間。 ENT3. 使用臉書時，我可以被分享到具吸引力的圖像或影片。 ENT4. 使用臉書時，我瀏覽不到任何幽默的發文。 ENT5. 使用臉書時，我看不到任何美麗的人物照片。
Self-Growth	SELFG1. 使用臉書時，我可以增長自己的知識。 SELFG2. 使用臉書時，我可以了解到目前的社會狀況。 SELFG3. 使用臉書時，有人可以幫忙我解答問題。 SELFG4. 臉書不能讓我學習到新的資訊。
Nostalgia	NOS1. 臉書可以讓我記錄自己的生活。 NOS2. 臉書可以讓我記錄參與過的團體活動。 NOS3. 臉書可以讓我保留回憶。 NOS4. 臉書不能讓我紀念之前的事。

Appendix C. Open coding sample	
Text segment	Code
"可以觀察我同學/朋友/家人的生活" "可以公告自己的好消息"	Involvement in close one's life Transmit positive message
"當自己難過時，會有人留言關心" "當自己幸福時，有人能一起分享快樂，令我很開"	Being concerned by other when feeling negative Display positive status
"可知親朋好友近況" "可與親朋好友分享資訊"	Receive others' newest status Share information
"看見他人分享動物相關資訊" "看見他人分享新知，如新聞時事等"	Learn new information Keep up to date with current events

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"聯絡方便" "彼此分享資訊更迅速"	Convenience in contacting others Instant and without regard to distance
"看到許多時事和朋友的動態" "發布自己的照片及動態，當作一種紀錄"	Keep up to date with current events Receive others' newest status Record one's life
"可以沒有距離的知道朋友的資訊" "可以與大家分享自己生活上的喜怒哀樂"	Receive others' newest status Instant and without regard to distance Share ones' mood with others
"看到有趣的貼文、自己的貼文有很多人關注"	Browse funny postings Feeling one's importance
找到失聯已久的老朋友 分享當下的喜悅	Build or rebuilt relation with others Share ones' mood with others
"看到別人的照片影片文章時內容是好笑或幸福的如姊姊 po 超音波照片" "玩臉書遊戲的時候如 candycrush"	Participate in others' mood and life Provide entertainment and humor
"搭車等車想打發時間時" "在使用臉書時發現久未聯絡的朋友"	Pass time Build or rebuilt relation with others
"可以觀察朋友的動態知道他在做些什麼事情,也可以常常看見文章分享,雖然不是每一個都感興趣但是總增添許多趣味"	Track others' location and status Browse funny postings

Appendix D. Positive emotions in the studies of IT use

Authors	Title	Emotion	System
Koufaris, M. (2002)	Applying the Technology Acceptance Model and Flow Theory to Online Consumer Behavior	Flow	Online purchasing
Yi MY and Hwang Y (2003)	Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model	Enjoyment	Blackboard – class management
Hsu Cl and Lu HP (2004)	Why do people play on-line games? An extended TAM with social influences and flow experience	Flow	Online games
Lee MKO, Cheung CMK and Chen Z (2005)	Acceptance of internet-based learning medium: the role of extrinsic and intrinsic motivation	Enjoyment	Internet-based learning
Li D, Chau PYK and Lou H (2005)	Understanding individual adoption of instant messaging: an empirical investigation	Enjoyment	Instant messaging

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Saade R and Bahli B (2005)	The impact of cognitive absorption on perceived usefulness and perceived ease of use in on-line learning: an extension of the technology acceptance model	Flow	Online learning
Cyr D, Head M and Ivanov A (2006)	Design aesthetics leading to m-loyalty in mobile commerce	Enjoyment	Mobile commerce
Hong S and Tam KY (2006)	Understanding the adoption of multipurpose information appliances: the case of mobile data services	Enjoyment	Mobile data services
Sun H and Zhang P (2006)	Causal relationships between perceived enjoyment and perceived ease of use: an alternative approach	Enjoyment	Search engine, university website
Roca JC, Chiu CM and Jose Martinez F (2006)	Understanding e-learning continuance intention: an extension of the technology acceptance model	Flow	e-learning in workplace
Wakefield Rl and Whitten D (2006)	Mobile computing: a user study on hedonic/utilitarian mobile device usage	Flow	Mobile devices
Ha I, Yoon Y and Choi M (2007)	Determinants of adoption of mobile games under mobile broadband wireless access environment	Flow	Mobile games
Chatzoglou PD, Sarigiannidis L, Vraimaki E and Diamantidis A (2009)	Investigating Greek employees' intention to use web-based training	Enjoyment	Web-based training
Ha S and Stoel L (2009)	Consumer e-shopping acceptance: antecedents in a technology acceptance model	Enjoyment	Online shopping
Shen J and Eder LB (2009)	Exploring intentions to use virtual worlds for business	Enjoyment	Virtual worlds (second life)
Shin DH (2009)	Determinants of customer acceptance of multi-service network: an implication for IP-based technologies	Enjoyment	IP TV
Lin HF (2009)	Examination of cognitive absorption influencing the intention to use a virtual community	Flow	Virtual community (yahoo)
Liu SH, Liao Hl and Pratt JA (2009)	Impact of media richness and flow on e-learning technology acceptance	Flow	e-learning

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Lin CP and Bhattacherjee A (2010)	Extending technology usage models to interactive hedonic technologies: a theoretical model and empirical test	Enjoyment	Online video games
Lu Y, Deng Z and Wang B (2010)	Exploring factors affecting Chinese consumers' usage of short message service for personal communication	Enjoyment	Short messaging service
Sun H (2010)	Sellers' trust and continued use of online marketplaces	Enjoyment	Online marketplaces
Turel O, Serenko A and Bontis N (2010)	User acceptance of hedonic digital artifacts: a theory of consumption values perspective.	Enjoyment	Mobile phone ringtones
Gerow JE, Galluch P and Thatcher JB (2010)	To slack or not to slack: internet usage in the classroom	Flow	Non-class Internet use
Lee SM and Chen L (2010)	The impact of flow on online consumer behavior	Flow	e-commerce
Shin DH (2010)	The dynamic user activities in massive multiplayer online role-playing games	Flow	Online role-playing games
Lai HM and Chen CP (2011)	Factors influencing secondary school teachers' adoption of teaching blogs	Enjoyment	Teaching blogs
Lee HH and Chang E (2011)	Consumer attitudes toward online mass customization: an application of extended technology acceptance model	Enjoyment	Online mass customization

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