

INDIVIDUAL, TECHNOLOGICAL, SOCIO-CULTURAL FACTORS  
AFFECTING FACEBOOK AND INSTAGRAM USE

by

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## ABSTRACT

This study explores the differences between Facebook and Instagram use by investigating the influence of technology attributes (visualizing elements, the friend recommendation algorithm, privacy settings, openness, perceived ease of use and usefulness), individual factors including innovativeness and motivations/gratifications (social interaction, entertainment, peeking, passing time, need for recognition) in using Facebook and Instagram, and socio-cultural factors (subjective norms, SNS culture) on the general use and use change of both sites. Whether and what kind of different characteristics of using the both platforms exist between younger and older generations were also examined.

The findings of the current study indicate that individual, technological, and socio-cultural factors differently influenced individuals' Facebook and Instagram use. Among the technology attributes, visualizing elements were positively related to Instagram use, and the friend recommendation algorithm was a positive predictor of using Facebook. In terms of the individual factors, while Facebook users were likely to utilize it to get a good reputation and to access it when they want to spend time alone, Instagram users tended to employ it for entertainment. SNS culture, which refers to using Facebook (or Instagram) because it is part of the culture of one's generation, was the only socio-cultural factor that had a significant relationship with Facebook use.

Generational differences of the proposed factors influencing Facebook and Instagram use were also found. More specifically, Instagram's visualizing elements were the only significant predictor of use by younger generations; older people tend to use Facebook and Instagram for

passing time and to fulfill their need for recognition. The findings of the current study expand the theoretical frameworks of the technology acceptance model (TAM), uses and gratifications (U&G), the theory of reasoned action (TRA), and the theory of planned behavior (TPB) by revealing how perceived ease of use and usefulness can differently activate the level and change of Facebook and Instagram use; which motivations/gratifications can significantly stimulate the two stages (general use and use change) of Facebook and Instagram use; and how subjective norms differently influenced level of using Facebook or Instagram. Further specific findings will be valuable assets for practical social media industries.

## DEDICATION

I dedicate my thesis to my parents, wife, and lovely twins who currently live in South Korea. I will always appreciate all that they have done to support my academic advancements.

## LIST OF ABBREVIATIONS AND SYMBOLS

$\alpha$	Cronbach's index of internal consistency
$t$	t-test value to determine means differ
$M$	Mean
$SD$	Standard Deviation
$p$	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
$r$	Pearson product-moment correlation
$\beta$	Measure of how strongly each variable influences a dependent variable
$<$	Less than
$=$	Equal to
$ns$	Non-significant

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## INTRODUCTION

Facebook is the world's largest social networking services (Dhir, Chen, & Chen, 2015; Lai & Yang, 2014). In particular, 72% of online adults in the United States used Facebook in 2015 (Duggan, 2015), and 71% of all teens 13 to 17 used Facebook in 2014 (Lenhart, 2015). However, some statistical data show that Facebook's growth has slowed since 2012 and even slightly decreased since 2014 (Olson, 2015); meanwhile, the growth of Instagram between 2012 and 2015 is outstanding (see Lenhart, 2015).

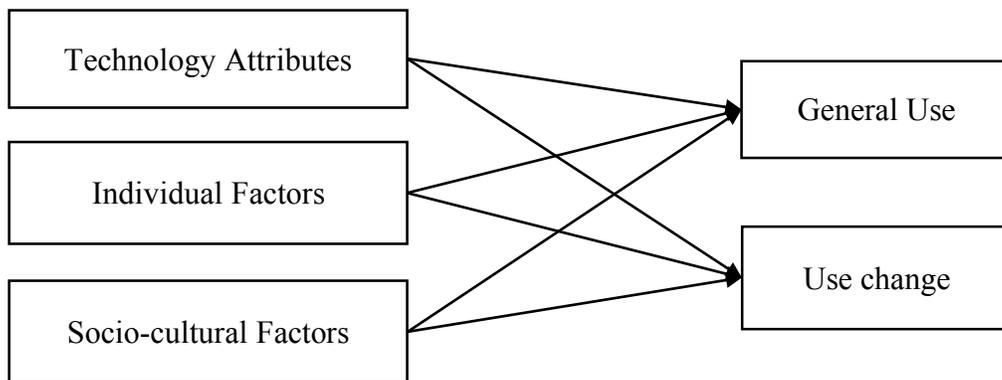
Due to the popularity of SNSs, communication scholars have mainly attempted to (a) enumerate what types of motivations or gratifications SNS users have (e.g., Malik, Dhir, & Nieminen, 2016; Smock, Ellison, Lampe, & Wohn, 2011), (b) investigate how individuals perceive technological features of SNSs (e.g., Kwon, Park, & Kim, 2014; Rauniar, Rawski, Yang, & Johnson, 2014), and (c) analyze what contents they generally post (e.g., Hu, Manikonda, & Kambhampati, 2014). However, the current literature has not satisfactorily explained (a) what variables or factors mainly influence individuals to spend their time to use particular SNS platforms; and (b) which variables or factors lead users to increasingly or decreasingly use certain SNSs.

This study contends that Facebook's and Instagram's technology features, individual innovativeness and motivations/gratifications, and socio-cultural factors may account for the growth and popularity of the two platforms. First of all, the technology features of Facebook and Instagram attract individuals to use the sites. Facebook and Instagram offer different functions: Facebook offers unique features such as news feed, the friend recommendation algorithm,

privacy settings, games, and so forth, while Instagram provides location-based information, editing and filtering of photographs, and so on. Thus, the extent to which people use Facebook and Instagram can be different depending on what technology features they prefer. Secondly, there is a significant relationship between individuals' attributes, especially innovativeness, and media adoption (Hunt, Lin, & Atkin, 2014; Lin, 2004), and their motivations or gratifications can influence their use level of Facebook and Instagram. As Facebook and Instagram users have diverse motivations and gratifications such as self-presentation, information, social interaction, entertainment, peeking, and need for recognition (see Ha, Kim, Libaque-Saenz, Chang, & Park, 2015; Malik et al., 2016; Smock et al., 2011), the extent to which they use the sites may fluctuate based on how much they want to fulfill their own motivations and gratifications. Finally, socio-cultural factors might be significant predictors of use level. For example, a subjective experience of feeling pressured and urged by others can influence people to engage in certain behaviors, such as creating a profile on a SNS (Brown, Clasen, & Eicher, 1986). In sum, the factors that influence individuals' levels of Facebook and Instagram use can be summarized into three types: technology attributes, individual factors, and socio-cultural factors. With the explosive popularity of SNSs, therefore, it is very important to investigate which variables or factors affect use level and how they differently influence the use of Facebook and Instagram.

The principal aims of the current study are to empirically investigate (a) how individuals perceive the technological features provided by Facebook and Instagram, and whether and how their perception about the technology features can be associated with their amount of Facebook and Instagram use; (b) how individuals' innovativeness and motivations/gratifications for Facebook and Instagram use significantly influence their use of the both platforms; (c) whether and how socio-cultural factors can also be associated with the use level of Facebook and

Instagram; and (d) whether there are any different characteristics between Facebook and Instagram use. More importantly, this study investigates not only general SNS use in light of technology attributes, individual factors, and socio-cultural factors, but also whether and how the level of Facebook and Instagram use has changed during the past three months. To investigate to what extent individuals use the two platforms, this study specifically examines the amount of time spent on Facebook/Instagram use per day and frequency change in using the platforms during the past three months. Finally, based on the literature indicating generational differences in social media use (Duggan et al., 2015; Perrin, 2015), whether there are unique characteristics related to using Facebook and Instagram will also be examined. The research model for this study is shown in Figure 1.



**Figure 1.** Research Model.

## LITERATURE REVIEW

### **Theoretical Approach to Facebook and Instagram Use**

Facebook is not only the most popular SNS platform (Duggan et al., 2015), but it is also the largest and fastest growing photo-sharing SNS platform (McLaughlin & Vitak, 2012). In 2015, more than half (56%) of Facebook users in the U.S. users accessed the site every day (Duggan et al., 2015), and Facebook is reputed to be the world's largest social network (Dhir et al., 2015; Lai & Yang, 2014). Instagram, which launched more recently in 2010, has also been popular. Instagram users are able to post photos and videos using mobile devices and employ filters that transform the appearance of an image, add captions or hashtags, tag or mention other users, capture photos, follow any number of other users, and so forth (Lup, Trub, & Rosenthal, 2015). According to the Pew data, about 13% of online users used Instagram in 2012, but 28% employed the platform in 2015 (Duggan, 2015). Furthermore, Instagram not only increased in overall user numbers but also saw significant growth in almost every demographic group (Duggan et al., 2015; Lenhart, 2015). As it has recently become more popular, the scholarship about Instagram has only emerged since 2015 (e.g., Lee, Lee, Moon, & Sung, 2015; Lup et al., 2015; Smith & Sanderson, 2015). To better understand why individuals use Facebook and Instagram or which variables/factors can affect the usage of the two platforms, this study reviewed which theoretical frameworks have been applied.

In the academic field of communication, many scholars have modified the technology acceptance model (TAM) when examining the adoption of social media platforms (e.g., Acarli & Sağlam, 2015; Paris, Lee, & Seery, 2010), especially the concepts of *perceived ease of use* and

*perceived usefulness* from the model. The uses and gratification perspective (U&G) has also been applied to explain what gratifications individuals seek and obtain from social media use (e.g., Dhir et al., 2015; Gibbs, O'Reilly, & Brunette, 2014; Ha et al., 2015), what types of motivations social media users have (e.g., Holton, Baek, Coddington, & Yaschur, 2014; Lee et al., 2015; Park & Lee, 2014), and which personal traits can be associated with motivations and social media use (e.g., Ross et al., 2009; Seidman, 2013). However, there has been little examination of whether and how various motivations/gratifications can influence Facebook and Instagram use.

In addition, previous studies have examined whether external variables or factors can influence the usage of new media technologies by applying the theory of planned behavior (TPB), which hypothesizes that an individual may be influenced by other people to perform certain behaviors (Ajzen, 1991). Similarly, the theory of reasoned action (TRA) was proposed by Ajzen and Fishbein (1980). Whereas TPB emphasizes three types of antecedent variables that may influence certain behavioral intention (i.e., attitudes, subjective norms, and perceived behavioral control), TRA focuses on two antecedent variables (i.e., individuals' attitudes and subjective norms) that are predictors of behavioral intention and in turn influence actual behaviors. Finally, Venkatesh, Morris, Davis, and Davis (2003) unified previous technology acceptance research (e.g., TRA, TPB, and TAM) and proposed the unified theory of acceptance and use of technology (UTAUT). In this theoretical framework, the antecedent variables (a) performance expectancy, (b) effort expectancy, and (c) social influence along with facilitating conditions are predictors of individuals' behavioral intention. Gender, age, experience, and voluntariness of use can act as moderators.

Theoretically, this study utilizes the concepts of perceived ease of use and usefulness of TAM, individual motivations/gratifications from U&G, and subjective norms (e.g., “certain people influence one’s behaviors”) proposed by TRA, TPB, and UTAUT as shown in Table 1.

**Table 1.** Theoretical Approach for the Current Study

Theories/Theoretical model	Principal Constructs	Current study
Technology acceptance model (TAM)	Perceived ease of use Perceived usefulness	Perceived ease of use Perceived usefulness
Uses and gratification (U&G)	Gratifications Motivations Personality and attributes	Gratifications Motivations Certain attributes
Theory of planned behavior (TPB)	Subjective norms Attitude toward behavior Perceived behavioral control	
Theory of reasoned action (TRA)	Subjective norms Attitude toward behavior	Subjective norms
The unified theory of acceptance and use of technology (UTAUT)	Performance expectancy Effort expectancy Social influences Facilitating conditions	

### **Technology Acceptance Model (TAM)**

TAM is one of the most respected theoretical frameworks to help understand user acceptance of information and communication technologies (ICTs; Davis, 1986). It was developed from Fishbein and Ajzen (1975)’s theory of reasoned action (TRA) but is somewhat different. Whereas the TRA focuses on explaining general human behaviors, the TAM clarifies the particular determinants of computer acceptance (Davis, 1989). The theoretical model fundamentally attempts to account for the determinants of technology acceptance as well as to predict the relative importance of particular factors of technology (Davis, Bagozzi, & Warshaw, 1989). Specifically, the TAM is employed to discover the factors that influence individuals’ behavioral intention to use ICTs. Two variables, *perceived usefulness* and *perceived ease of use*,

play key roles to link technological features with users' attitudes, behavioral intentions, and actual adoption/use (Davis, 1986). The definition of perceived usefulness is "the degree to which an individual believes that using a particular system would enhance his/her general performance" (Davis, 1989, p. 320), and perceived ease of use is defined as "the degree to which an individual believes that using a particular system would be free of physical and mental efforts" (p. 323).

Most scholars have applied TAM but revised its original path model based on the purposes of their studies. For example, Rauniar et al. (2014) examined whether perceived ease of use is significantly associated with perceived usefulness, which in turn influences actual use of social media. Zhao, Chen, and Wang (2016) also revised the model and tested the relationship between antecedents (e.g., perceived control, perceived usefulness, and ease of use) and outcomes (e.g., continuance of usage) in using SNSs. Acarli and Sağlam (2015) added several variables (e.g., subjective norms, image, and voluntariness) to the original TAM path model. However, there is no literature investigating whether and how particular technology attributes of SNSs can influence individuals' use level.

### **Technological Attributes of SNS Platforms**

To better understand whether and how SNSs such as Facebook and Instagram influence individuals' usage of the platforms, it is important to know what unique technological attributes Facebook and Instagram offer to users. Table 2 presents a summary of the similarities and differences between Facebook and Instagram.

This study argues that Facebook and Instagram users may perceive these technology attributes differently, which can influence the use level of each platform. Eveland (2003) categorized six attributes of new media technology: interactivity, organization (or structure), control, channel, textuality, and content. Specifically, all media platforms can be evaluated based

on the extent to which they encourage interactivity (Eveland, 2003). Organization (or structure) can be an important predictor to produce media effects (Eveland & Cortese, 2004; Eveland, Marton, & Seo, 2004). Control refers to the extent to which media users can adjust the time to use and media content such as images and stories (Eveland & Dunwoody, 2001), and the attribute of channel is based on the senses employed to receive messages (Eveland, 2003).

**Table 2.** Technology Features of Facebook and Instagram

	Facebook	Instagram
Same/Similar Features	- Edit profile	- Edit profile
	- Find friends	- Find friends
	- Like/Comment/Share/Link	- Comment/Like
	- Add photo/videos	- Post/edit photo/videos
	- Make friends with users	- Follow other users
	- Tag people in one's post	- Tag people
	- Send others' postings	- Send others' contents
	- Set privacy	- Set privacy
Different Features	- Share contents to other SNSs (e.g., Instagram, Twitter)	- Explore others' posts
	- Create and post events	- Share contents to other SNSs
	- Games	- Add location photo/information
	- Create photo album	- Watch popular postings (e.g., trending)
	- News Feed	
	- Send messages	
	- Update status	

Likewise, the degree to which individuals use Facebook and Instagram can vary depending on which technological attributes Facebook and Instagram mainly offer them. Sundar (2004) demonstrates that the only thing that can change media adoption is how individuals perceive and rate technology features. Indeed, although Facebook and Instagram offer similar features, they have different and unique interfaces as shown in Table 2. Given this, it is important to know what types of technological attributes Facebook and Instagram mainly offer because the ways those who use the platforms perceive their technological features may be associated with use level of the platforms.

Facebook users utilize its functions to post their photos and identity on their profile, manipulate their privacy settings, search other people's Facebook postings, modify personal information in their profiles, post photos containing location information, tag their friends in pictures, send automated notification messages to tagged friends, play games with other Facebook users, and so forth (Kwon et al., 2014). On the other hand, Instagram users are able to use filters that transform the appearance of an image, add captions or hashtags, tag or mention other users, capture photos, and follow any number of other users (Lup et al., 2015). This study attempts to categorize what attributes are similarly or commonly applied in both Facebook and Instagram as follows.

**Visualizing elements.** Visualizing elements such as photos/videos are fundamental features in both Facebook and Instagram. Malik et al. (2016) demonstrate that SNS users fulfill their desire for self-presentation and nurture social relationships by employing the visualizing elements of photo-based SNS platforms. Furthermore, using visualizing elements on Facebook or Instagram is highly associated with having fun or entertainment (Nightingale, 2007), and photo sharing on social media has emerged as one of the fundamental reasons why individuals use social network sites (Joinson, 2008). Malik et al. also state that photo sharing on Facebook enhances attention and affection from other users. For example, Facebook users create photo albums with their personal photographs and often update their profile photos as well as post photos/videos on the Facebook main page (Meier & Gray, 2014).

As text-only content cannot be created on Instagram, this platform is “image first and text second” and encourages a visual-oriented culture (Lee et al., 2015, p. 552). Specifically, Instagram users can employ filter functions before posting photos or videos. They edit photo styles and colors and know who is in photos because Instagram provides a “face detection”

function that can recognize other people by name and age (Bakhshi, Shamma, & Gilbert, 2014). In light of Facebook's and Instagram's photo-based functions, this study proposes visualizing elements as one of the technology attributes of the two platforms.

**Friend recommendation algorithm.** SNS platforms offer interpersonal connectivity boosting features such as friend recommendations to help SNS users distribute contents that they post (Yu et al., 2015). The recommendation algorithms suggest new preferable items, information, or people from the analysis of profile description data or the past rating history of SNS users who have similar interests (Yu, 2012). Among a variety of recommendation features such as news feed items and notifications of others' SNS activities, Facebook's friend recommendation feature has been popularly used but is controversial because Facebook scans and collects all the contents that a user posts, everyone that he or she follows, groups that he or she belongs to, and every Facebook page that he or she has liked (Oremus, 2016). Most of the existing recommendation algorithms are implemented based on users' similar profiles or geographical proximity (Chen, Geyer, Dugan, Muller, & Guy, 2009). In particular, Facebook requires permission from users to access email contact information, to know how to access users (e.g., computer or mobile), and to search updated content of users' friends (Oremus, 2016). Each section of the Facebook profile and all of the interactions that users have can be primary sources to implement the recommendation algorithm (Dewey, 2015). Similarly, when Instagram users share photos or videos, both other users and followers on Instagram could find the photos or videos even though its algorithm is different from Facebook's. Basically, Instagram shows other people's photos or videos based on the user's prior searching history. However, scholars have not investigated whether and how the recommendation algorithms of Facebook and Instagram

are associated with the use of both platforms. This study expects that the friend recommendation algorithm could be a significant predictor of Facebook and Instagram use.

**Privacy settings.** Since anyone can access Facebook and Instagram, users' privacy issues have been regarded as important matters for a long time. Scholars have examined the relationship between privacy concerns and the use of SNSs (see Dwyer, Hiltz, & Passerini, 2007; Ellison, Vitak, Steinfield, Gray, & Lampe, 2011). In the social media context, the definition of privacy is the ability to control what information about oneself is available to others (Westin, 2003). Privacy concerns related to SNSs include unintentional exposure of personal information, damaged own reputation, annoying contact and harassment or stalking, surveillance-like structures due to backtracking functions, use of personal data by third parties, and hacking and identity stealing (Boyd & Ellison, 2007). Users who reported privacy invasion were more likely to change privacy settings than those who only heard about others' privacy invasions (Debatin, Lovejoy, Horn, & Hughes, 2009). Further, Chen and Chen (2015) reveal that individuals who have high levels of privacy concerns are likely to avoid showing their visual images to the public.

In answer to these privacy concerns, Facebook and most other SNSs offer privacy settings to allow or deny others access to personal information (Aldhafferi, Watson, & Sajeev, 2013). Facebook offers basic privacy settings and tools that are divided into three types: (a) controlling others' access to one's posted contents, (b) managing settings for how users connect, and (c) reviewing content that others may see. Instagram users can set their privacy settings such that their posted photos and videos are available only to their own followers and require approval from the user to follow (Hu et al., 2014). Aldhafferi et al. (2013) indicate that more than half of SNS users are interested in controlling their privacy settings and have changed the privacy

settings of their own accounts. However, since SNSs have complex privacy settings (Novak & Li, 2012), users are often confused about privacy setting functions (Gundecha, Barbier, & Liu, 2011). Furthermore, it is not clearly understandable how SNS users perceive the privacy settings of Facebook and Instagram and whether the level of concern about privacy settings is associated with the frequency of use of the platforms. Thus, this study attempts to investigate the relationship between privacy setting concerns and general use and use change.

**Openness.** In addition to privacy settings, how open SNSs are has also been an important matter for SNS users. Since personal information (e.g., phone number and email address) can be stored on SNSs, users can be exposed to a variety of spam and phishing attacks (Koroleva, Krasnova, & Gunther, 2010; Kwak, Lee, Park, & Moon, 2010). Furthermore, larger network size can also be negatively associated with the use of SNSs. Dunbar (1993) demonstrates that the limit of a human being's network size is under 150; a larger network than this may cause individuals to feel that their interpersonal network size is burdensome. Jeong (2015) also argues that the total number of social media friends or followers significantly influences the amount of use of SNSs; in other words, users are willing to discontinue if excessive numbers of users request to be friends.

Ha et al. (2015) demonstrate that SNSs can be divided into closed platforms and open platforms. For example, while a SNS named KakaoTalk operates on a closed platform that does not allow users to see the friends of other users, Facebook provides an open service that allows users to see other users' friends and even to visit their accounts. Indeed, one of the differences between Facebook and Instagram is the degree to which the platform is open to users. Facebook allows users to follow any number of other Facebook users, and a reciprocal relationship is called "friend." However, Instagram's relationship is somewhat asymmetrical because a user

may request to follow other Instagram users who need not follow the requester (Hu et al., 2014). This means that an Instagram user can have many followers but not follow each one back. Thus, Instagram users are likely to mainly connect or follow others who are like-minded people (Manikonda, Hu, & Kambhampati, 2014). However, whether and how the different degree of concern about openness between Facebook and Instagram can affect the use amount differently have not been investigated. Therefore, this study examines what level of concern about openness of Facebook and Instagram is significantly related to the level of use and use change.

This study contends that these four types of technological attributes (visualizing elements, the friend recommendation algorithm, privacy settings, and openness) are represented in both Facebook and Instagram, and whether and how these attributes are associated with the general use (the time spent on each platform) and use change (to what extent the amount of use has changed during the past three months) of Facebook/Instagram are investigated. The TAM concepts of perceived ease of use and usefulness are also applied to the relationship, reflecting previous social media studies (Agrifoglio, Black, Metallo, & Ferrara, 2012; Cha, 2010; Rauniar et al., 2014). Given that previous scholars have not explained well whether there are differences in the proposed technology attributes between Facebook and Instagram, this study proposes the following two research questions:

RQ1: To what extent are there differences in individuals' ratings of the technology attributes—visualizing elements, the friend recommendation algorithm, concerns about privacy settings and openness, and perceived ease of use and usefulness—between Facebook and Instagram?

RQ2: To what extent is individuals' rating of the technology attributes associated with the general use of and changes of frequency in using Facebook and Instagram?

## **Individual Innovativeness**

This study focuses on individual innovativeness and investigates whether and how it is significantly associated with the level of Facebook and Instagram use. Innovativeness can be defined as the degree to which individuals are venturesome and receptive to new ideas (Lin, 2004). This attribute was also introduced in the TAM research as new media technologies have been launched. Rogers (2010) demonstrates that those who have high levels of innovativeness are likely to adopt new technologies, and a few scholars have focused on how individual innovativeness can be associated with media adoption. For example, Lin (2004) reveals that individual innovativeness is a significant predictor of increased levels of new media technology use such as Internet webcasting. Cha (2010) also tried to examine the relationship between innovativeness and general SNS use but did not find a significant relationship. Hunt et al. (2014) specifically reveals that those who have a high level of innovativeness positively rate perceived usefulness as well as ease of use. However, although SNSs are relatively newer emerging media platforms than traditional media platforms (see Boyd & Ellison, 2007), some may argue that using SNSs is not innovative anymore as a majority of individuals already employ them. Nevertheless, given that whether innovativeness can be a significant predictor of increasing level of Facebook and Instagram is still unclear, this study empirically tests the relationship between innovativeness and Facebook/Instagram use.

## **Motivations and Gratifications in Facebook and Instagram Use**

Subsequent researchers have started to investigate users' motivations to adopt and use Facebook (e.g., Malik et al., 2016; Quan-Hasse & Young, 2010; Smock et al., 2011). As other photo-based social network sites such as Instagram and Snapchat have become more popular (Lenhart, 2015), scholars have very recently started to investigate why individuals are likely to

use these photo-based SNSs and what gratifications users can obtain while using them (e.g., Lee et al., 2015; Smith & Sanderson, 2015). Given that most scholars employ uses and gratification theory (U&G) to explain why and what for individuals use Facebook and Instagram, this study attempts to shed more light on what specific motivations or gratifications individuals have while using Facebook and Instagram.

U&G has been widely used to explain individual motivations and gratifications in using SNSs. Scholars in mass communication fields have used this theoretical model to explain why individuals use certain media platforms and what they need and want in using the platforms, applying the U&G perspective because it is helpful to understand what social and psychological needs make audiences or users access certain media channels as well as media platforms (Rubin & Perse, 1987). The audience is characterized as active, discerning, and motivated in using media content or platforms (Quan-Haase & Young, 2010). Individuals are motivated to fulfill their needs and wants by taking particular actions or accessing content on selected platforms (Papacharissi & Rubin, 2010). Rubin (2002) proposes the following five assumptions regarding the relationship between audience/users and media adoption in terms of U&G: (a) media adoption is motivated, goal-directed, and purposive behavior; (b) individuals use certain media platforms to fulfill their needs; (c) a variety of individual differences and social factors influence media use behaviors; (d) using a certain media platform is one of the alternatives individuals have; and (e) audiences or users selectively use media platforms such as SNSs. As SNSs have offered diverse technological functions for users not only to communicate with others but also to post user-generated content (Boyd & Ellison, 2007), SNS users can obtain various gratifications such as entertainment and self-presentation through using SNSs.

Previous scholars have revealed a variety of individual motivations in using traditional media and new media such as SNSs. For example, when individuals access print media such as newspapers and magazines, they have motivations such as entertainment, escapism, social interaction, and learning (Donsbach, 2008). TV audiences have motivations such as relaxation, companionship, habit, passing time, entertainment, social interaction, information, arousal, and escape (Rubin, Palmgree, and Sypher (1994). Similarly, Internet users have motivations/gratifications such as interpersonal utility, passing time, information seeking, and entertainment (Papacharissi & Rubin, 2010). Malik et al. (2016) enumerate the motivations for using social media as affection seeking, attention-seeking disclosure, entertainment, habitual pastime, information sharing, social influence, and social interaction. Based on the literature reviewed, as media platforms have been developed and “audiences” watching traditional media platforms have become “users” employing the new media, the types of individual motivations or gratifications have also evolved.

One of the noteworthy distinguishing features between traditional media and digital media platforms is interactivity or social interaction among users (Ha & James, 1998). The relationship between media content consumers and producers is blurred (Quan-Haase & Young, 2010) as SNS users create content as well as communicate with other users. Recent researchers have identified interaction and communication as an especially common or important motivation (see Malik et al., 2016; Park, Kee, & Valenzuela, 2009; Smock et al., 2011). Functionally, furthermore, as photo-based SNSs such as Facebook and Instagram have been launched, a variety of visualized content can be created and shared by users. Hence, recent scholars have also started to focus on why people use photo/video features (e.g., Choi, 2016; Lee & Ma, 2012; Malik et al., 2016; Smock et al., 2011), proposing other motivations such as self-presentation and

self-expression as factors that significantly enhance the use of photo-based SNSs (Hunt et al., 2014).

Although numerous studies have revealed various motivations/gratifications in using Facebook, the number of studies about Instagram is still small. Nonetheless, there have been useful findings so far. For example, Lee et al. (2015) found that individuals use Instagram for social interaction, archiving, self-expression, escapism, and peeking or browsing. Instagram users mainly communicate with their friends or family, record daily events, express personal identification or show off their physical appearance, use it to forget about stressful work, and browse other users' pictures. Table 3 presents a summary of previous findings about why individuals use Facebook or Instagram and what motivations and gratifications are commonly involved in the use of both SNSs.

**Table 3.** Common Motivations/Gratifications in Facebook and Instagram

Gratification	Operational Definition	Facebook-related studies	Instagram-related studies
Social interaction	Communicating with others to generate new relationships or maintain existing ones	Chen and Kim (2013), Choi (2016), Ha et al. (2015), Lee & Ma (2012), Smock et al. (2012), Malik et al. (2016), Park et al. (2009), Quan-Haase and Young (2010)	Chen and Kim (2013), Lee et al. (2015)
Information sharing	Sharing information about personal issues and social events happening around the world	Chen and Kim (2013), Smock et al. (2011), Malik et al. (2016), Park et al. (2009), Papachrissi and Mendelson (2010)	Chen and Kim (2013), Lee et al. (2015)
Archiving	Recording and updating daily events	Lee et al. (2015)	Lee et al. (2015)

Self- presentation	Sharing personal information or stories with other users	Chen and Kim (2013), Hunt et al. (2014), Malik et al. (2016), Papachrissi and Mendelson (2010)	Chen and Kim (2013), Smith and Sanderson (2015)
Passing time	Unintentional and regular behaviors or activities	Malik et al. (2016), Quan-Haase and Young (2010), Sheldon (2008), Smock et al. (2011), Papachrissi and Mendelson (2010)	
Entertainment	Relaxing and enjoying while using a medium	Cha (2010); (Choi, 2016; Ha et al., 2015), Lee and Ma (2012), Malik et al. (2016), Park et al. (2009), Sheldon (2008), Smock et al. (2011), Zhang et al. (2011), Papachrissi and Mendelson (2010)	
Self- expression	Expressing and sharing one's personal identity	Hunt et al. (2014)	Lee et al. (2015)
Escapism	Forgetting about stressful situations	Smock et al. (2011)	Lee et al. (2015)
Peeking	Searching or looking at other people's lives	Zhang et al. (2011)	Lee et al. (2015)
Need for recognition	Posting content to get recognition from others	Choi (2016), Malik et al. (2016), Zhang, Tang, and Leung (2011)	

Though various individual motivations/gratifications have been found, Facebook and Instagram users are most likely to use these photo-based platforms to (a) interact and

communicate with others, (b) enjoy themselves, (c) ritually watch photos/videos by using mobile phones, (d) see what others are doing, and (e) get recognition from the public. In this study, thus, the gratifications of social interaction, entertainment, peeking, passing time, and need for recognition will serve as representative common factors for using Facebook and Instagram, and these motivations/gratifications will be investigated to determine whether and how they are indeed associated with the use of these platforms.

**Social interaction.** One of the primary motivations or gratifications of SNS use is for interacting and communicating with other users (Malik et al., 2016; Smock et al., 2011). Social interaction via SNSs can be categorized as (a) creating new relationships and (b) maintaining existing relationships (Ellison, Steinfield, & Lampe, 2007). Generally, using SNSs encourages users to connect to heterogeneous people online (Kim & Chen, 2016; Kim, Hsu, & Gil de Zúñiga, 2013), which leads to a variety of interpersonal relationships (Valenzuela, Park, & Kee, 2009). Many scholars have demonstrated that SNS use for news consumption is positively associated with social interaction (e.g., Choi, 2016; Lee & Ma, 2012). Photo/video-based content can be a more significant factor to increase the level of social interaction because posting personal images to distant friends or family members helps users keep up with one another's lives (Van House, Davis, Ames, Finn, & Viswanathan, 2005).

**Entertainment.** Entertainment is one of the most important reasons why SNS users share photos and videos. There is empirical evidence that individuals use SNSs such as Facebook for entertainment and fun (Choi, 2016; Ha et al., 2015; Malik et al., 2016; Smock et al., 2011). For example, Ha et al. (2015) indicate that hedonic gratification (e.g., aesthetic or entertainment) is positively associated with the use of Facebook. When consuming news and information via Facebook, the constructs of entertainment are categorized as passing the time when users do not

feel like doing anything else, relaxing, and relieving boredom (Choi, 2016). Similar to the gratification constructs of news consumption, sharing visual content for entertainment also refers to relaxation, fun, and enjoyment while participating in social media activities (Malik et al., 2016).

**Peeking.** It is an ordinary behavior for social media users to take a look at other users' accounts. Facebook offers a recommendation algorithm to suggest certain people whom one may know (Oremus, 2016), and Instagram has a similar algorithm to recommend certain people based on one's previous searching history. Through these functions, Facebook and Instagram users can glimpse other users' photos and videos and know how people live and behave. In addition, users can access popular people's accounts on Facebook and Instagram; for example, they can take a look at celebrities' private photos and videos and watch commercial brands' advertising at any time. Since anyone can simply upload and share any open visual contents (Lup et al., 2015), users do not have to spend much time to read long comments or news stories and can access more content within a short time. Moreover, mobile-based applications enable users to browse more people, which in turn may lead to increased levels of peeking at others when using only Instagram (Lee et al., 2015).

**Passing time.** Although SNSs users have specific reasons to use media, others use SNSs without particular purposes. That is, they use SNSs as unintentional and ritual behaviors (see Malik et al., 2016; Smock et al., 2011). SNSs such as Facebook and Instagram offer a mobile interface (Ha et al., 2015) that makes it possible for users to conveniently and easily access SNSs (Lee & Cho, 2011). Quan-Haase and Young (2010) indicate that Facebook users use the platform to pass the time, and Smock et al. (2011) reveal that passing time is significantly associated with the frequency of Facebook wall posts.

**Need for recognition.** One of the frequently revealed motivations in using Facebook and Instagram is to obtain recognition or popularity with others (Choi, 2016; Utz, Tanis, & Vermeulen, 2012). This is displayed in individuals' motivations to use social media to make themselves appealing to the public (Santor, Messervey, & Kusumakar, 2000). Need for recognition involves establishing personal identity, gaining respect, building confidence, and publicizing one's expertise (Leung, 2009). Utz et al. (2012) demonstrate two characteristics of social media use for obtaining recognition: (a) social media users can present themselves by selecting their profile information or pictures, and (b) users can reach a large number of other users within a short time. Due to the convenience of implementing self-presentation on the Internet and through online communication technology (Smith & Sanderson, 2015), social media users join Facebook to present or express their thoughts or personal information about themselves, which is positively related to level of recognition (Zhang et al., 2011). Krasnova, Wenninger, Widjaja, and Buxmann (2013) also argue that lack of recognition from other users (e.g., lack of comments, likes, and feedback) significantly influences the decision to discontinue social media use.

Previous scholars investigating SNS users' motivations have revealed that as the level of individual motivations increases, the use of SNSs also increases. For example, Smock et al. (2011) indicate that SNS users' motivations are positively associated with their use of different features such as status updates and wall posts. Bazarova and Choi (2014) found that the degree of individuals' pursuit of self-disclosure is positively related to the degree of Facebook status updates, wall posts, and private messages. Quan-Haase and Young (2010) found that among individuals' gratifications such as passing time, affection, fashion, sharing problems, sociability, and social information, the frequency of Facebook use and Facebook profile updates is

significantly associated with passing time, affection, and sociability. However, given that recent scholars have mainly enumerated why people use SNSs, more sophisticated investigation is necessary to shed light on whether the representative individual factors in using Facebook and Instagram are also related to the decrease or increase of use of both platforms. This study therefore proposes the following research questions:

RQ3: To what extent are there differences of individuals' ratings of individual motivations/gratifications (social interaction, entertainment, peeking, passing time, and need for recognition) between Facebook and Instagram?

RQ4: To what extent are individual innovativeness and motivations/gratifications associated with the general use of and changes of frequency in using Facebook and Instagram?

### **Socio-Cultural Factors in Facebook and Instagram Use**

The theory of planned behavior (TPB), which extends from the theory of reasoned action (TRA), has been successfully applied to the understanding of individual acceptance and usage of different technology (Harrison, Mykytyn Jr, & Riemenschneider, 1997). TPB proposes the following three types of constructs: (a) attitude toward behavior; (b) subjective norm, which refers to the social pressure to take an action; and (c) perceived control of behavior, which is identified as an individual's perceived ability to perform the behavior (Ajzen (1991). TRA has two types of constructs: (a) subjective norms and (b) individuals' attitude toward behavior (Venkatesh et al., 2003). In TPB and TRA, scholars demonstrate that subjective norm as a social factor can affect individuals' attitude and behaviors toward ICTs (Kim, 2011; Park, 2010). In this regard, this study investigates whether and how the construct of subjective norms in terms of social influences can be associated with the use of Facebook and Instagram.

**Subjective norms.** The definition of subjective norm in TRA is “the person’s perception that most people who are important to him think he should or should not perform the behavior in question” (Fishbein & Ajzen, 1975, p. 302). In other words, it refers to perceived social pressure to perform or not perform certain behaviors (Ajzen, 1991). Subjective norm as an additional predictor has been also employed in revised TAM frameworks (e.g. Venkatesh & Davis, 2000). Subjective norms can be explained in the following statements: (a) “individuals who influence my behavior think that I should use a certain system,” and (b) “individuals who are important to me think that I should use the system” (Ajzen, 1991; Davis et al., 1989; Fishbein & Ajzen, 1975).

Previous scholars have attempted to investigate how subjective norms can be significant predictors of behavioral intentions, and some have found that they are significantly associated with the level of behavioral intention in organizational settings (Davis, Bagozzi, & Warshaw, 1992; Hartwick & Barki, 1994). In recent social media studies, scholars have examined subjective norms and the usage of social media platforms. Pelling and White (2009) tested whether the level of subjective norms can be a significant variable to influence intention, which in turn leads to an increased level of SNS use among young people, and found positive relationships between the predictors and the usage of SNSs. Baker and White (2010), however, did not find that subjective norms of adolescents predicted intention to use SNSs. Kim (2011) tested subjective norms among three groups (family/friends, peers, and systems) and found that perceived norms of friends significantly enhanced the level of blog adoption. Cheung, Chiu, and Lee (2011) reveal that a higher level of subjective norms leads to a higher level of participation in SNSs. Furthermore, Quan-Haase and Young (2010) found that peer pressure in social groups

is regarded as the most important predictor of joining Facebook; people join because their friends suggest it and because everyone they know is on Facebook.

Given that second-hand opinions and information from primary reference groups such as family members and friends are important for usage decisions (Cheung et al., 2011), subjective norms can be an important predictor of using SNSs. For example, if a majority of individuals use Facebook and Instagram, a certain number of people would also participate in Facebook or Instagram activities because they need to do so in order to interact within their relationships. In this study, whether and how subjective norms can influence general use and change in use of these SNSs is also empirically tested.

**SNS culture.** Human beings have a fundamental sense of belonging that leads them to form and maintain significant interpersonal relationships (Baumeister & Leary, 1995). SNSs offer a venue in which users can fulfill this need to belong through using services that enable various activities such as communication, information seeking, expression, and so forth. Social media users in particular may be able to join user-generated content sites such as Facebook to maintain relationships with friends and others (Gangadharbatla, 2008). Schoder, Gloor, and Metaxas (2013) emphasized collaborative behaviors on SNSs and demonstrate that individuals achieve collective intelligence that draws on user-generated content and the sharing of information, knowledge, and thoughts based on active interacting behaviors on SNSs. Indeed, as more than 1.55 billion active Facebook users communicate and interact with each other around the world (Zephoria.com, 2015), SNSs have led to fundamental paradigm shifts in the ways people communicate, collaborate, consume, and generate information (Schoder et al., 2013). That is, accessing SNSs may enable users to see how people are currently living and find out about socio-cultural issues around the world. Thus, this study expects that as using SNSs is a sort

of contemporary cultural phenomenon, it might be an optimal way to keep up with social and cultural issues all over the world.

However, the current literature does not explain whether and how SNSs can represent individuals' cultural activities. That is, there has been no investigation of whether individuals use Facebook and Instagram to follow and share with their friends about current cultural values, objects, products, and so forth. Based on the literature regarding the role of media and culture (see Van Dijck, 2013) and subjective norms on SNS adoption (e.g., Cheung et al., 2011; Kim, 2011), this study assumes there is a significant relationship between socio-cultural factors (subjective norms and SNS culture) and general Facebook and Instagram use and use change. The following research questions are proposed:

RQ5: To what extent are there differences in individuals' ratings of socio-cultural factors—subjective norms and SNS culture—between Facebook and Instagram?

RQ6: To what extent is individuals' rating of the socio-cultural factors associated with the general use of and changes of frequency in using Facebook and Instagram?

### **Generational Differences in Facebook and Instagram Use**

This study finally attempts to test whether there are different characteristics of Facebook and Instagram use depending on age and what these characteristics are. According to Pew data, 90% of young adults (18 – 29) used general SNSs, while only 35% of all those 65 and older used the platforms in 2015 (Perrin, 2015). Lenhart (2015) emphasized that the frequency of accessing SNSs can be different depending on the user's age. In the communication research fields, several scholars have also demonstrated a positive relationship between younger people and online media. For example, Bakker and de Vreese (2011) discovered that younger generations are likely to heavily use online media communication tools (the Internet), and Quan-Haase and Young

(2010) found that younger generations tend to more frequently use Facebook. Others have emphasized young generations' SNS use and its effects (e.g., Ellison et al., 2007; Valenzuela, Arriagada, & Scherman, 2012).

However, little is known about why older generations use SNSs, which variables or factors are significantly related to their SNS use, and whether there are distinctive differences in using SNSs between younger and older generations. Therefore, this study split participants into two groups (18-29 and 30+) in an attempt to investigate whether the level of general Facebook and Instagram use is different between the two generations. The following research question will be examined:

RQ7: How are the proposed technology attributes, individual factors, and socio-cultural factors differently associated with general Facebook and Instagram use between younger generations (18-29) and older generations (30 and older)?

## METHOD

### **Sample**

To test the proposed research questions, an online survey was administered to adults (18 and over) in the United States. The dataset used in the current study comes from the results of a Qualtrics survey questionnaire which was linked to Amazon Mechanical Turk (<https://www.mturk.com>). Data were collected from March 27 to April 2, 2016. For more accurate data analysis, a data screen was also conducted. The initial number of survey respondents was 814, but the actual participant number for data analysis was 613 after eliminating respondents who only have either Facebook or Instagram accounts or neither platform. All survey respondents were asked about demographic characteristics such as their age, gender, ethnicity, educational background, and income level at the end of the survey questionnaire.

### **Operationalization of Variables**

There are three types of independent variables: technology attributes of Facebook and Instagram, individual factors, and socio-cultural factors. Technology attributes of Facebook and Instagram are categorized as: visualizing elements, recommendation algorithms, privacy setting, openness, perceived usefulness, and perceived ease of use. In this factor, privacy settings and openness measured to what extent individuals were concerned about those features offered on each platform. Next, individual innovativeness and motivations/gratifications (social interaction, entertainment, peeking, passing time, and need for recognition) in using Facebook and Instagram were asked about. Socio-cultural factors are composed of subjective norms and SNS culture. In

the case of the dependent variables, two types of Facebook and Instagram use were tested: (a) general use (the time spent on Facebook/Instagram use) and (b) use change (to what extent people have changed the use of Facebook/Instagram in the past three months). Among the set of demographic factors, gender, age, and ethnicity were controlled.

## **Measurements**

*Visualizing elements.* In order to test perceptions of the technological attributes of Facebook and Instagram, this study adopts semantic differential scales about each feature of the platforms. The items for visualizing elements were phrased in 5-point semantic differential forms and asked respondents to rate the following items: agitated/pleasant, useless/useful, inconvenient/convenient, unfavorable/favorable, and old-fashioned/innovative. The scores for the items were averaged to create an index of visualizing elements (Facebook:  $\alpha = .90$ ,  $M = 3.93$ ,  $SD = .79$ ; Instagram:  $\alpha = .93$ ,  $M = 4.02$ ,  $SD = .85$ ).

*The friend recommendation algorithm.* The scales for testing the recommendation algorithm reflected the current technological attributes of Facebook and Instagram. Participants also ranked to what extent Facebook's or Instagram's algorithms are: agitated/pleasant, useless/useful, inconvenient/convenient, unfavorable/favorable, and old-fashioned/innovative. The scores for the items were averaged to form an index of the friend recommendation algorithm (Facebook:  $\alpha = .92$ ,  $M = 3.27$ ,  $SD = .92$ ; Instagram:  $\alpha = .93$ ,  $M = 3.54$ ,  $SD = .95$ ).

*Privacy setting concerns.* In the case of privacy settings, survey participants were asked about their Facebook or Instagram experiences with three items measured on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*): "I am concerned about my privacy on Facebook (or Instagram)," "I have a concern that my personal information on Facebook (or Instagram) could be misused," and "I am concerned about my private postings that could be distributed on

Facebook (or Instagram).” The scores for the items were averaged to form an index of privacy setting concerns (Facebook:  $\alpha = .90$ ,  $M = 3.52$ ,  $SD = 1.05$ ; Instagram:  $\alpha = .95$ ,  $M = 2.98$ ,  $SD = 1.14$ ).

*Openness concerns.* On a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*), participants rated how they think and feel about the characteristics of Facebook and Instagram with five statements: “I am concerned that it is possible that people I don’t even know could see my Facebook (or Instagram) activities,” “I have a concern that my postings could be seen by unknown users,” “I am worried that people I don’t know can see all of my photos/videos,” “I think Facebook (or Instagram) is too open to too many people,” and “I have an experience to hesitate to post my content on Facebook (or Instagram). The average score of the items was calculated for an index of openness concerns (Facebook:  $\alpha = .93$ ,  $M = 3.31$ ,  $SD = .98$ ; Instagram:  $\alpha = .89$ ,  $M = 3.02$ ,  $SD = 1.07$ ).

*Perceived ease of use.* Adapted from previous scales (e.g., Hunt et al., 2014; Rauniar et al., 2014), the level of perceived ease of use was tested with three items measured on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*): “It is easy for me to use Facebook (or Instagram),” “The process of using Facebook (or Instagram) is clear and understandable,” and “Most functions on Facebook (or Instagram) are easy.” The average score of the three items was used to create an index of perceived ease of use (Facebook:  $\alpha = .84$ ,  $M = 3.61$ ,  $SD = .76$ ; Instagram:  $\alpha = .91$ ,  $M = 3.25$ ,  $SD = .85$ ).

*Perceived usefulness.* As one of the principal variables of the technology acceptance model (TAM), the level of perceived usefulness was tested with four items adapted from previous studies (e.g., Hunt et al., 2014). On a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), participants were asked to rate to what extent they agree or disagree with the

following statements: “Using Facebook (or Instagram) is very helpful for my everyday life,” “Most functions on Facebook (or Instagram) are useful,” “Facebook (or Instagram) is beneficial to my life,” and “Facebook (or Instagram) is efficient for communicating with my friends.” The four items were averaged to form an index of perceived usefulness (Facebook:  $\alpha = .81$ ,  $M = 4.20$ ,  $SD = .65$ ; Instagram:  $\alpha = .83$ ,  $M = 4.00$ ,  $SD = .79$ ).

*Innovativeness.* Participants were asked about their own personal traits with three statements ranked on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*): “I like to take on new challenges,” “I am a curious person,” and “I like to keep up with new innovations.” The scores for the three items were averaged to form an index of innovativeness ( $\alpha = .71$ ,  $M = 4.09$ ,  $SD = .61$ ).

*Social interaction.* Social interaction was measured with the following six items adapted from previous measurement scales (e.g., Malik et al., 2015; Smock et al., 2015): “I use Facebook (or Instagram) to (a) often interact with my close friends; (b) connect with people whom I know; (c) communicate with friends or family; (d) communicate with distant friends; (e) keep in touch with friends and family; and (f) keep in touch with people I don’t have enough time to see in person.” The six items were measured on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), and the scores were averaged to form an index of social interaction (Facebook:  $\alpha = .87$ ,  $M = 4.20$ ,  $SD = .62$ ; Instagram:  $\alpha = .93$ ,  $M = 3.45$ ,  $SD = .97$ ).

*Entertainment.* The scale for entertainment was constructed with three items adapted from Choi (2016), with answers ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Participants were asked to rate to what extent they agree or disagree with the following statements: “I use Facebook (or Instagram) because it is (a) enjoyable; (b) fun; and (c)

entertaining.” The three items were averaged to form an index of entertainment (Facebook:  $\alpha = .92$ ,  $M = 3.88$ ,  $SD = .85$ ; Instagram:  $\alpha = .92$ ,  $M = 3.93$ ,  $SD = .82$ ).

*Peeking.* Adapted from Lee et al. (2015), peeking was measured with three items ranked from 1 (*strongly disagree*) to 5 (*strongly agree*) as follows: “I use Facebook (or Instagram) (a) to see what other people are doing; (b) to peek at others’ daily lives; and (c) because I wonder what others do.” The three items were averaged to form an index of peeking (Facebook:  $\alpha = .86$ ,  $M = 3.76$ ,  $SD = .88$ ; Instagram:  $\alpha = .88$ ,  $M = 3.70$ ,  $SD = .95$ ).

*Passing time.* The scale for passing time used the following items adapted from Quan-Haase and Young (2010). On a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), participants were asked to rate to what extent they agree or disagree with the following statements: “I use Facebook (or Instagram) (a) to pass the time when I have nothing to do; (b) to get away from pressures and responsibilities; and (c) to put off something I should be doing.” The three items were averaged to form an index of passing time (Facebook:  $\alpha = .68$ ,  $M = 3.20$ ,  $SD = .92$ ; Instagram:  $\alpha = .87$ ,  $M = 2.91$ ,  $SD = 1.19$ ).

*Need for recognition.* The measurement scales for testing need for recognition were adapted from previous studies (e.g., Choi, 2016; Zhang et al., 2011). On a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), participants were asked to rate to what extent they agree or disagree with the following statements: “I use Facebook (or Instagram) (a) to get recognition from other users; (b) to make me more popular; and (c) to enhance my personal reputation.” The scores of each item were averaged to form an index of need for recognition (Facebook:  $\alpha = .91$ ,  $M = 2.46$ ,  $SD = 1.16$ ; Instagram:  $\alpha = .93$ ,  $M = 2.58$ ,  $SD = 1.20$ ).

*Subjective norms.* The measurement scales for subjective norms were adapted from previous scales (Kim, 2011; Venkatesh et al., 2003). On a scale ranging from 1 (*strongly*

*disagree*) to 5 (*strongly agree*), survey respondents were asked to rank their agreement with the following statements: “My friends expect me to use Facebook (or Instagram),” “My friends would criticize other people if they don’t use Facebook (or Instagram),” “Since people who are important to me use Facebook (or Instagram), I should use it too,” “People who influence my life might think that I should use Facebook,” and “I feel I use Facebook (or Instagram) because most of my colleagues use Facebook (or Instagram).” The scores were averaged to form an index of subjective norms (Facebook:  $\alpha = .80$ ,  $M = 3.07$ ,  $SD = .84$ ; Instagram:  $\alpha = .90$ ,  $M = 2.58$ ,  $SD = .98$ ).

*SNS culture.* The measurement scales for testing SNS culture were created based on the current SNS phenomenon. On a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), participants were asked to rate to what extent they agree or disagree with the following statements: “Facebook (or Instagram) is a popular trend today,” “I think I can keep up with social trends through Facebook (or Instagram),” and “Using Facebook (or Instagram) is a sort of culture in my generation.” The average score of the three items was used to create an index of SNS culture (Facebook:  $\alpha = .69$ ,  $M = 3.89$ ,  $SD = .70$ ; Instagram:  $\alpha = .75$ ,  $M = 3.75$ ,  $SD = .82$ ).

*General use.* The index of general Facebook (or Instagram) use was measured with a single item asking about how much time respondents spend using Facebook (or Instagram) on a typical day on a scale from 1 (*none at all*) to 6 (*5 hours or more*) (Facebook:  $M = 3.23$ ,  $SD = 1.11$ ; Instagram:  $M = 2.45$ ,  $SD = .91$ ).

*Use change.* In order to measure Facebook (or Instagram) use change, a single item was also employed, asking respondents how often they use Facebook (or Instagram) now compared to how often they used it three months ago using a 7-point scale ranging from 1 (*Much less*

*frequently visit Facebook (or Instagram)) to 7 (Much more frequently visit Facebook (or Instagram))* (Facebook:  $M = 3.73$ ,  $SD = 1.27$ ; Instagram:  $M = 3.61$ ,  $SD = 1.43$ ).

*Control variables.* A set of demographic questions was included at the end of the survey, as previous studies have demonstrated that several demographic factors are significantly related to the frequency of SNS use (Amichai-Hamburger & Vinitzky, 2010; Gil de Zúñiga, Jung, & Valenzuela, 2012; Panek, Nardis, & Konrath, 2013; Quan-Haase & Young, 2010). Among demographic factors in the survey questionnaire, this study controlled gender (male = 43.7%, female = 56.3%), age (18-29 = 45.2%, 30-49 = 47.6%, 50 or more = 7.2%), and ethnicity (recoded into 1 = *White*, 25.7%, and 2 = *other races*, 74.3%).

### **Statistical Analysis**

First of all, exploratory factor analyses (EFA) were conducted for individual innovativeness and motivations/gratifications (social interaction, entertainment, peeking, passing time, and need for recognition) for Facebook and Instagram use and socio-cultural factors (subjective norms and SNS culture). The factor loading was set with eigenvalues greater than 1.0. To examine the proposed research questions, this study employed *t*-tests for RQ1, 3, 5 and OLS regression models for RQ2, 4, 6, 7. Specifically, paired samples *t*-tests were conducted together to compare mean differences in individuals' ratings of the proposed technology attributes, individual factors, and socio-cultural factors between Facebook and Instagram. In addition, hierarchical regression models were employed to separately investigate the relationship between the independent variables and the use of Facebook and Instagram. Control variables—age, gender, ethnicity—were entered in Block 1, followed by the technology attributes in Block 2, individual factors in Block 3, and socio-cultural factors in Block 4.

## RESULTS

In order to confirm the reliability and validity of the independent variables, factor analyses (principal component) were conducted and three items for innovativeness were combined into a single factor. This analysis was also conducted with the 19 statements addressing respondents' own motivations/gratifications for Facebook use.

**Table 4.** Factor Analysis for Motivations/Gratifications of Facebook Use

Questions	Factor Loadings				
	1	2	3	4	5
“I use Facebook”					
<b>Social Interaction</b>					
to communicate with friends or family	<b>.796</b>	-.086	.117	.073	.111
to keep in touch with friends and family	<b>.789</b>	-.015	.177	.079	.098
to communicate with distant friends	<b>.753</b>	.058	.095	.067	.003
to interact with my friends	<b>.751</b>	-.014	.292	.166	-.019
to connect with people whom I know	<b>.733</b>	-.035	.278	.150	.020
to keep in touch with people I don't have enough time to see in person	<b>.705</b>	.035	.027	.158	-.007
<b>Need for Recognition</b>					
to make me more popular	-.109	<b>.902</b>	.013	.073	.147
to enhance my personal reputation	-.033	<b>.897</b>	.042	.086	.088
to get recognition from other users	-.048	<b>.854</b>	.052	.059	.268
<b>Entertainment</b>					
because it is fun	.231	.147	<b>.886</b>	.147	.088
because it is enjoyable	.293	.093	<b>.854</b>	.174	.109
because it is entertaining	.240	.059	<b>.831</b>	.222	.105
<b>Peeking</b>					
to peek at others' daily lives	.119	.135	.161	<b>.870</b>	.141
because I wonder what others do	.148	.178	.136	<b>.813</b>	.183
to see what other people are doing	.290	.069	.214	<b>.782</b>	.021
<b>Passing Time</b>					
to put off something I should be doing	.016	.433	-.034	.113	<b>.740</b>
to get away from pressures and responsibilities	.031	.387	.151	.062	<b>.738</b>
to pass the time when I have nothing to do	.165	-.113	.281	.382	<b>.615</b>

*Note.* Extraction method: Principal component analysis.  
Rotation method: Varimax with Kaiser Normalization.

As a result, the five individual motivations/gratifications (social interaction, entertainment, peeking, passing time, and need for recognition) were extracted from 18 out of 19 items. Meanwhile, individual motivations/gratifications for Instagram use were also extracted for the five factors from 17 statements: One statement each for passing time (“I use Instagram to pass the time when I have nothing to do.”) and need for recognition (“I use Instagram to present myself.”) was not included (see Table 4 and 5).

**Table 5.** Factor Analysis for Motivations/Gratifications of Instagram Use

Questions	Factor Loadings				
	1	2	3	4	5
“I use Instagram”					
<b>Social Interaction</b>					
to keep in touch with friends and family	<b>.883</b>	.080	.074	.095	.141
to communicate with friends or family	<b>.879</b>	.026	.097	.110	.075
to communicate with distant friends	<b>.846</b>	.101	.162	.070	.121
to keep in touch with people I don’t have enough time to see in person	<b>.841</b>	.091	.112	.148	.154
to connect with people whom I know	<b>.770</b>	.083	.229	.241	-.011
to interact with my friends	<b>.729</b>	.160	.279	.142	-.073
<b>Need for recognition</b>					
to enhance my personal reputation	.140	<b>.918</b>	.094	.083	.138
to make me more popular	.126	<b>.917</b>	.030	.086	.203
to get recognition from other users	.083	<b>.871</b>	.094	.167	.219
<b>Entertainment</b>					
because it is entertaining	.187	.067	<b>.868</b>	.236	.043
because it is fun	.254	.080	<b>.866</b>	.242	.077
because it is enjoyable	.229	.082	<b>.842</b>	.257	.100
<b>Peeking</b>					
to peek at others’ daily lives	.174	.126	.219	<b>.859</b>	.100
because I wonder what others do	.172	.163	.208	<b>.832</b>	.138
to see what other people are doing	.226	.067	.333	<b>.787</b>	.062
<b>Passing Time</b>					
to get away from pressures and responsibilities	.145	.248	.117	.128	<b>.881</b>
to put off something I should be doing	.113	.291	.056	.124	<b>.871</b>

*Note.* Extraction method: Principal component analysis.  
Rotation method: Varimax with Kaiser Normalization.

Factor analyses (Varimax rotation with the absolute value below .60) were also conducted to extract the socio-cultural factors—subjective norms and SNS culture. As shown in

Tables 6 and 7, the five statements about subjective norms in Facebook and Instagram use were combined as a single factor, and the factor analyses uncovered a single factor for SNS culture.

**Table 6.** Factor Analysis for Socio-cultural Factors on Facebook Use

	Factor Loadings	
	1	2
<b>Subjective Norms</b>		
People who influence my life might think that I should use Facebook.	<b>.794</b>	.178
Since people who are important to me use Facebook, I should use it too.	<b>.747</b>	.185
I feel I use Facebook because most of my colleagues use Facebook.	<b>.723</b>	.092
My friends would criticize other people if they don't use Facebook.	<b>.700</b>	-.031
My friends expect me to use Facebook.	<b>.687</b>	.274
<b>SNS culture</b>		
Facebook is a popular trend today.	-.036	<b>.809</b>
I think I can keep up with social trends through Facebook.	.203	<b>.767</b>
Using Facebook is a sort of culture in my generation.	.247	<b>.727</b>

*Note.* Extraction method: Principal component analysis.  
Rotation method: Varimax with Kaiser Normalization.

**Table 7.** Factor Analysis for Socio-cultural Factors on Instagram Use

	Factor Loadings	
	1	2
<b>Subjective Norms</b>		
People who influence my life might think that I should use Instagram.	<b>.849</b>	.209
Since people who are important to me use Instagram, I should use it too.	<b>.839</b>	.202
My friends would criticize other people if they don't use Instagram.	<b>.835</b>	-.024
My friends expect me to use Instagram.	<b>.822</b>	.188
I feel I use Instagram because most of my colleagues use Instagram.	<b>.810</b>	.157
<b>SNS culture</b>		
Instagram is a popular trend today.	-.044	<b>.846</b>
Using Instagram is a sort of culture in my generation.	.205	<b>.787</b>
I think I can keep up with social trends through Instagram.	.294	<b>.770</b>

*Note.* Extraction method: Principal component analysis.  
Rotation method: Varimax with Kaiser Normalization.

Further, prior to the *t*-tests and hierarchical regression models, correlation tests were run using the proposed independent and dependent variables as well as the control variables (Table 8 and 9). First of all, age and ethnicity among the control variables were not significantly correlated with general Facebook use ( $r = .03, p = ns$ ;  $r = .05, p = ns$ ), but gender was ( $r = .13, p < .01$ ). Among technology attributes, visualizing elements ( $r = .29, p < .01$ ), the friend

recommendation attributes ( $r = .22, p < .01$ ), perceived ease of use ( $r = .41, p < .01$ ), and perceived usefulness ( $r = .19, p < .01$ ) were positively correlated with Facebook use. In addition, individual innovativeness ( $r = .08, p < .05$ ), social interaction ( $r = .22, p < .01$ ), entertainment ( $r = .29, p < .01$ ), peeking ( $r = .22, p < .01$ ), passing time ( $r = .29, p < .01$ ), and need for recognition ( $r = .26, p < .01$ ) among the individual factors had positive correlations with general Facebook use. Finally, subjective norms and SNS cultures of the socio-cultural factors were also positively correlated with Facebook use ( $r = .19, p < .01$ ;  $r = .28, p < .01$ ).

Turning to the relationships between independent variables and change in use, visualizing elements ( $r = .15, p < .01$ ), the recommendation algorithm ( $r = .22, p < .01$ ), and perceived ease of use and usefulness ( $r = .33, p < .01$ ;  $r = .12, p < .01$ ) were positively correlated with Facebook use change. However, privacy setting concerns and openness concerns ( $r = -.09, p < .05$ ;  $r = -.14, p < .01$ ) were negatively correlated with it. Among individual motivations/gratifications, entertainment ( $r = .23, p < .01$ ), peeking ( $r = .16, p < .01$ ), passing time ( $r = .18, p < .01$ ), and need for recognition ( $r = .27, p < .01$ ) had positive correlations. Lastly, subjective norms and SNS culture were also positively correlated with Facebook use change ( $r = .15, p < .01$ ;  $r = .20, p < .01$ ).

**Table 8.** Correlation Matrix for Facebook Use

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Age	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Gender	.04	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Ethnicity	.12 <sub>a</sub>	.06	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	VE	.09 <sub>b</sub>	.16 <sub>a</sub>	-.01	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	FRA	-.06	-.08	-.05	.45 <sub>a</sub>	1	-	-	-	-	-	-	-	-	-	-	-	-	-
6	PC	.07	.02	.00	-.11 <sub>a</sub>	-.17 <sub>a</sub>	1	-	-	-	-	-	-	-	-	-	-	-	-
7	OC	-.00	.07	.05	-.09 <sub>b</sub>	-.21 <sub>a</sub>	.70 <sub>a</sub>	1	-	-	-	-	-	-	-	-	-	-	-
8	PE	.10 <sub>b</sub>	.08	-.02	.51 <sub>a</sub>	.38 <sub>a</sub>	-.13 <sub>a</sub>	-.14 <sub>a</sub>	1	-	-	-	-	-	-	-	-	-	-
9	PU	.05	.14 <sub>a</sub>	.01	.42 <sub>a</sub>	.18 <sub>a</sub>	-.14 <sub>a</sub>	-.17 <sub>a</sub>	.48 <sub>a</sub>	1	-	-	-	-	-	-	-	-	-
10	IN	.03	.01	-.03	.17 <sub>a</sub>	.07	.07	.00	.20 <sub>a</sub>	.26 <sub>a</sub>	1	-	-	-	-	-	-	-	-
11	SI	.17 <sub>a</sub>	.17 <sub>a</sub>	-.02	.35 <sub>a</sub>	.12 <sub>a</sub>	.02	-.01	.42 <sub>a</sub>	.47 <sub>a</sub>	.30 <sub>a</sub>	1	-	-	-	-	-	-	-
12	EN	.10 <sub>b</sub>	.14 <sub>a</sub>	-.03	.41 <sub>a</sub>	.29 <sub>a</sub>	-.12 <sub>a</sub>	-.15 <sub>a</sub>	.58 <sub>a</sub>	.43 <sub>a</sub>	.19 <sub>a</sub>	.49 <sub>a</sub>	1	-	-	-	-	-	-
13	PK	.00	.14 <sub>a</sub>	-.05	.28 <sub>a</sub>	.23 <sub>a</sub>	-.04	-.05	.39 <sub>a</sub>	.30 <sub>a</sub>	.18 <sub>a</sub>	.38 <sub>a</sub>	.45 <sub>a</sub>	1	-	-	-	-	-
14	PT	-.08	.12 <sub>a</sub>	-.07	.19 <sub>a</sub>	.18 <sub>a</sub>	-.01	.02	.33 <sub>a</sub>	.16 <sub>a</sub>	-.01	.18 <sub>a</sub>	.34 <sub>a</sub>	.42 <sub>a</sub>	1	-	-	-	-
15	NR	-.14 <sub>a</sub>	-.09 <sub>b</sub>	-.11 <sub>a</sub>	.10 <sub>b</sub>	.22 <sub>a</sub>	.01	.01	.28 <sub>a</sub>	-.08 <sub>b</sub>	-.04	-.04	.16 <sub>a</sub>	.23 <sub>a</sub>	.48 <sub>a</sub>	1	-	-	-
16	SN	-.12 <sub>a</sub>	-.08	-.01	.10 <sub>b</sub>	.21 <sub>a</sub>	.08	.05	.37 <sub>a</sub>	.04	.06	.13 <sub>a</sub>	.18 <sub>a</sub>	.16 <sub>a</sub>	.26 <sub>a</sub>	.41 <sub>a</sub>	1	-	-
17	SC	-.01	.03	-.00	.32 <sub>a</sub>	.31 <sub>a</sub>	-.02	-.05	.43 <sub>a</sub>	.42 <sub>a</sub>	.16 <sub>a</sub>	.34 <sub>a</sub>	.42 <sub>a</sub>	.32 <sub>a</sub>	.24 <sub>a</sub>	.09 <sub>b</sub>	.35 <sub>a</sub>	1	-
18	GU	.03	.13 <sub>a</sub>	.05	.29 <sub>a</sub>	.22 <sub>a</sub>	-.06	-.07	.41 <sub>a</sub>	.19 <sub>a</sub>	.08 <sub>b</sub>	.22 <sub>a</sub>	.29 <sub>a</sub>	.22 <sub>a</sub>	.29 <sub>a</sub>	.26 <sub>a</sub>	.19 <sub>a</sub>	.28 <sub>a</sub>	1
19	UC	-.01	-.06	.06	.15 <sub>a</sub>	.22 <sub>a</sub>	-.09 <sub>b</sub>	-.14 <sub>a</sub>	.33 <sub>a</sub>	.12 <sub>a</sub>	.06	.08	.23 <sub>a</sub>	.16 <sub>a</sub>	.18 <sub>a</sub>	.27 <sub>a</sub>	.15 <sub>a</sub>	.20 <sub>a</sub>	.37 <sub>a</sub>

Note:  $N = 613$ ;  $p < .01$  is indicated as subscript a;  $p < .05$  is as subscript b; VE = Visualizing elements, FRA = The friend recommendation algorithm, PC = Privacy setting concern, OC = Openness concerns, PE = Perceived ease of use, PU = Perceived usefulness, IN = Innovativeness, SI = Social interaction, EN = Entertainment, PK = Peeking, PT = Passing time, NR = Need for recognition, SN = Subjective norms, SC = SNS culture, GU = General use, UC = Use change

**Table 9.** Correlation Matrix for Instagram Use

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Age	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	Gender	.04	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	Ethnicity	.12 <sub>a</sub>	.06	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	VE	-.07	.12 <sub>a</sub>	.09	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	FRA	-.12 <sub>a</sub>	-.02	-.08 <sub>b</sub>	.45 <sub>a</sub>	1	-	-	-	-	-	-	-	-	-	-	-	-	-
6	PC	.10 <sub>b</sub>	-.07	.04	-.12 <sub>a</sub>	-.12 <sub>a</sub>	1	-	-	-	-	-	-	-	-	-	-	-	-
7	OC	.07	.01	.06	-.08 <sub>b</sub>	-.11 <sub>a</sub>	.76 <sub>a</sub>	1	-	-	-	-	-	-	-	-	-	-	-
8	PE	-.07	.09 <sub>b</sub>	-.07	.40 <sub>a</sub>	.32 <sub>a</sub>	.05	-.00	1	-	-	-	-	-	-	-	-	-	-
9	PU	-.15 <sub>a</sub>	.04	-.06	.43 <sub>a</sub>	.22 <sub>a</sub>	-.09 <sub>b</sub>	-.08 <sub>b</sub>	.44 <sub>a</sub>	1	-	-	-	-	-	-	-	-	-
10	IN	.03	.01	-.03	.18 <sub>a</sub>	.11 <sub>a</sub>	-.06	-.05	.11 <sub>a</sub>	.19 <sub>a</sub>	1	-	-	-	-	-	-	-	-
11	SI	.03	.12 <sub>a</sub>	-.09 <sub>b</sub>	.35 <sub>a</sub>	.24 <sub>a</sub>	.08	.09 <sub>b</sub>	.61 <sub>a</sub>	.28 <sub>a</sub>	.14 <sub>a</sub>	1	-	-	-	-	-	-	-
12	EN	-.07	.18 <sub>a</sub>	-.07	.53 <sub>a</sub>	.28 <sub>a</sub>	-.15 <sub>a</sub>	-.13 <sub>a</sub>	.48 <sub>a</sub>	.49 <sub>a</sub>	.19 <sub>a</sub>	.46 <sub>a</sub>	1	-	-	-	-	-	-
13	PK	-.14 <sub>a</sub>	.16 <sub>a</sub>	-.11 <sub>a</sub>	.40 <sub>a</sub>	.26 <sub>a</sub>	-.03	-.04	.44 <sub>a</sub>	.36 <sub>a</sub>	.16 <sub>a</sub>	.42 <sub>a</sub>	.57 <sub>a</sub>	1	-	-	-	-	-
14	PT	-.15 <sub>a</sub>	.04	-.07	.12 <sub>a</sub>	.15 <sub>a</sub>	.06	.03	.35 <sub>a</sub>	.13 <sub>a</sub>	-.01	.28 <sub>a</sub>	.24 <sub>a</sub>	.32 <sub>a</sub>	1	-	-	-	-
15	NR	-.26 <sub>a</sub>	-.09 <sub>b</sub>	-.13 <sub>a</sub>	.16 <sub>a</sub>	.24 <sub>a</sub>	.03	.02	.41 <sub>a</sub>	.09 <sub>b</sub>	.02	.27 <sub>a</sub>	.23 <sub>a</sub>	.31 <sub>a</sub>	.50 <sub>a</sub>	1	-	-	-
16	SN	-.22 <sub>a</sub>	-.06	-.16 <sub>a</sub>	.17 <sub>a</sub>	.28 <sub>a</sub>	.11 <sub>a</sub>	.09 <sub>b</sub>	.58 <sub>a</sub>	.17 <sub>a</sub>	-.00	.43 <sub>a</sub>	.26 <sub>a</sub>	.27 <sub>a</sub>	.41 <sub>a</sub>	.52 <sub>a</sub>	1	-	-
17	SC	-.19 <sub>a</sub>	.06	-.08 <sub>b</sub>	.47 <sub>a</sub>	.27 <sub>a</sub>	-.03	.00	.42 <sub>a</sub>	.50 <sub>a</sub>	.17 <sub>a</sub>	.35 <sub>a</sub>	.52 <sub>a</sub>	.46 <sub>a</sub>	.18 <sub>a</sub>	.24 <sub>a</sub>	.36 <sub>a</sub>	1	-
18	GU	-.20 <sub>a</sub>	.08 <sub>b</sub>	-.12 <sub>a</sub>	.25 <sub>a</sub>	.23 <sub>a</sub>	-.10 <sub>b</sub>	-.07	.34 <sub>a</sub>	.18 <sub>a</sub>	.03	.28 <sub>a</sub>	.30 <sub>a</sub>	.25 <sub>a</sub>	.26 <sub>a</sub>	.29 <sub>a</sub>	.32 <sub>a</sub>	.27 <sub>a</sub>	1
19	UC	-.07	.03	-.06	.23 <sub>a</sub>	.19 <sub>a</sub>	-.09 <sub>b</sub>	-.09 <sub>b</sub>	.31 <sub>a</sub>	.11 <sub>a</sub>	-.01	.18 <sub>a</sub>	.21 <sub>a</sub>	.23 <sub>a</sub>	.17 <sub>a</sub>	.16 <sub>a</sub>	.25 <sub>a</sub>	.22 <sub>a</sub>	.34 <sub>a</sub>

Note:  $N = 613$ ;  $p < .01$  is indicated as subscript a;  $p < .05$  is as subscript b; VE = Visualizing elements, FRA = The friend recommendation algorithm, PC = Privacy setting concern, OC = Openness concerns, PE = Perceived ease of use, PU = Perceived usefulness, IN = Innovativeness, SI = Social interaction, EN = Entertainment, PK = Peeking, PT = Passing time, NR = Need for recognition, SN = Subjective norms, SC = SNS culture, GU = General use, UC = Use change

Secondly, as shown in Table 9, correlation analysis was conducted on Instagram use. Among the control variables, age and ethnicity were negatively correlated with general Instagram use ( $r = -.20, p < .01$ ;  $r = -.12, p < .01$ ), but gender was positively correlated ( $r = .08, p < .05$ ). Next, visualizing elements ( $r = .25, p < .01$ ), the friend recommendation algorithm ( $r = .23, p < .01$ ), perceived ease of use ( $r = .34, p < .01$ ), and perceived usefulness ( $r = .18, p < .01$ ) among the technology attributes had a positive relationship with general use, but privacy setting concerns ( $r = -.10, p < .05$ ) was negatively correlated. In addition, all the proposed individual motivations/gratifications were positively correlated with Instagram use: social interaction ( $r = .28, p < .01$ ), entertainment ( $r = .30, p < .01$ ), peeking ( $r = .25, p < .01$ ), passing time ( $r = .26, p < .01$ ), and need for recognition ( $r = .29, p < .01$ ). Finally, subjective norms ( $r = .32, p < .01$ ) and SNS culture ( $r = .27, p < .01$ ) among socio-cultural factors were significantly correlated with Instagram use.

In terms of the change in Instagram use, among the technology attributes, visualizing elements ( $r = .23, p < .01$ ), the friend recommendation algorithm ( $r = .19, p < .01$ ), and perceived ease of use and usefulness ( $r = .31, p < .01$ ;  $r = .11, p < .01$ ) were positively correlated with Instagram use change, but privacy setting concerns and openness concerns ( $r = -.09, p < .05$ ;  $r = -.09, p < .05$ ) were negatively correlated with it. Next, among individual motivations/gratifications, social interaction ( $r = .18, p < .01$ ), entertainment ( $r = .21, p < .01$ ), peeking ( $r = .23, p < .01$ ), passing time ( $r = .17, p < .01$ ), and need for recognition ( $r = .16, p < .01$ ) were positively correlated with use change. Finally, subjective norms and SNS were also positively correlated with use change ( $r = .25, p < .01$ ;  $r = .22, p < .01$ ).

## Differences in Variables between Facebook and Instagram

In order to examine to what extent there are differences in each variable of the three factors between Facebook and Instagram (RQ 1, 3, 5), paired-samples *t*-tests were conducted. As shown in Table 10, the results showed that the technology attributes were significantly different between Facebook and Instagram.

**Table 10.** Differences in Variables between Facebook and Instagram

Variables	Facebook (M)	Instagram (M)	Mean Difference	FB – IS <i>t</i> - value
<b>Technology Attributes</b>				
Visualizing elements	3.93	4.02	-.08	-2.59**
The friend recommendation algorithm	3.28	3.54	-.27	-7.69***
Privacy setting concerns	3.52	2.98	.54	12.66***
Openness concerns	3.31	3.03	.28	7.96***
Perceived ease of use	3.61	3.25	.36	10.48***
Perceived usefulness	4.20	4.00	.20	6.45***
<b>Individual Motivations/Gratifications</b>				
Social interaction	4.20	3.45	.75	19.50***
Entertainment	3.88	3.93	-.04	-1.29
Peeking	3.76	3.71	.05	1.36
Passing time	3.20	2.91	.29	7.40***
Need for recognition	2.46	2.58	-.13	-3.41**
<b>Socio-cultural Factors</b>				
Subjective norms	3.07	2.58	.49	14.14***
SNS culture	3.89	3.75	.14	4.09***

Note: \*\*  $p < .05$ ; \*\*\*  $p < .001$

Users rated Instagram's visualizing elements ( $t(612) = -2.59, p < .05$ ) and friend recommendation algorithm ( $t(612) = -7.69, p < .001$ ) higher than Facebook's, and users were more concerned about levels of Facebook's privacy settings ( $t(612) = 12.66, p < .001$ ) and openness ( $t(612) = 7.96, p < .001$ ) than Instagram's. In terms of the individual factors, respondents regarded Facebook as good for social interaction ( $t(612) = 19.50, p < .001$ ) and passing time ( $t(612) = 7.40, p < .001$ ), but they saw Instagram as more appropriate for getting recognition ( $t(612) = -3.41, p < .001$ ). Finally, significant differences between Facebook and

Instagram use were also discovered in the socio-cultural factors: subjective norms ( $t(612) = 14.14, p < .001$ ) and SNS culture ( $t(612) = 4.09, p < .001$ ). Specifically, the mean scores for Facebook use were higher than for Instagram use. The largest mean difference for Facebook and Instagram use was discovered in the variable of social interaction among the individual factors ( $t(612) = 19.50, SD = .87, p < .001$ ).

### **The Effect of Independent Variables on Facebook and Instagram Use**

This study also explored the relationship between the three independent variables and three dependent variables (RQ 2, 4, 6): (a) general use indicates the time spent on Facebook (or Instagram) use and (b) use change indicates to what extent individuals have used Facebook (or Instagram) during the past 3 months. To test these relationships, hierarchical regression models were conducted for each independent factor on the proposed dependent variables. Before conducting the regression models, control variables (age, gender, and ethnicity) were recorded: (a) age in the data set was recoded as four groups (1 = 18 – 29, 2 = 30 – 40, 3 = 41-50, and 4 = 50 +); (b) gender was coded as a categorical variable (1 = male, 2 = female); (c) ethnicity was also re-categorized (1 = White and 2 = non-White). These were entered in Block 1 of the regression model 1 (to test the relationship between independent variables and general use (the time spent on use). In Block 2, the variables (visualizing elements, the friend recommendation algorithm, privacy setting concerns, openness concerns) of technology attributes were entered (incremental  $R^2 = 17.1$ ), followed by individual innovativeness and motivations/gratifications for Facebook and Instagram use (incremental  $R^2 = 3.9$ ), and finally socio-cultural factors (subjective norms and SNS culture) in Block 4 (incremental  $R^2 = 1.0$ ). Regression model 1 explained 24% of the variance in general use (Table 11).

**Table 11.** The Effect of Independent Variables on General Use

	Time Spent on Facebook Use (Model 1)	Time Spent on Instagram Use (Model 2)
<b>Block 1: Control Variables</b>		
Age	.02	-.19***
Gender	.14**	.09**
Ethnicity	.04	-.10**
Incremental $R^2$ (%)	2.1	5.6
<b>Block 2: Technology Attributes</b>		
Visualizing elements	.07	.11**
The friend recommendation algorithm	.07	.07#
Privacy setting concerns	.02	-.14**
Openness concerns	-.02	.06
Perceived ease of use	.36***	.29***
Perceived usefulness	-.04	-.05
Incremental $R^2$ (%)	17.1	13.4
<b>Block 3: Individual Factors</b>		
Innovativeness	.01	-.03
Social interaction	.06	.08
Entertainment	.02	.11**
Peeking	-.02	-.04
Passing time	.09**	.10**
Need for recognition	.16**	.09**
Incremental $R^2$ (%)	3.9	3.5
<b>Block 4: Socio-cultural Factors</b>		
Subjective norms	-.04	.08
SNS culture	.13**	.04
Incremental $R^2$ (%)	1.0	.5
Total $R^2$ (%)	24.0	23.0

Note:  $N = 613$ ; Cell entries are final-entry OLS standardized coefficients.

#  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

As shown in Table 11, gender among the control variables was significantly associated with time spent on Facebook use ( $\beta = .14, p < .01$ ). Next, in the relationship between technology attributes and general use (the time spent on Facebook use), only perceived ease of use was significantly related to the time spent after controlling demographic variables (age, gender, ethnicity,  $\beta = .36, p < .001$ ). This result suggests that although individuals access Facebook every day and think it is easy to use, they might not consider it to be a useful media platform in their daily life.

Moving to the effects of individual factors on general use, individual motivations/gratifications of passing time and need for recognition were positively associated with the time spent on Facebook use ( $\beta = .09, p < .01$ ;  $\beta = .16, p < .01$ ). That is, Facebook users are likely to utilize it to get a good reputation with other users and access it when they want to spend time alone.

Finally, only the socio-cultural factor of SNS culture had a significant relationship with general use ( $\beta = .13, p < .01$ ), which means that using Facebook is regarded as a sort of socio-cultural performance that participants should be doing for interaction/communication in their everyday lives.

Another hierarchical regression analysis was also conducted to examine to what extent the proposed independent variables are significantly associated with general Instagram use (Table 11). Regression model 2 for investigating the relationships between the independent variables and general use (the time spent on Instagram use) explained 23.0% of the total variance after inputting the control variables in Block 1 (incremental  $R^2 = 5.6$ ), technology attributes in Block 2 (incremental  $R^2 = 13.4$ ), individual factors in Block 3 (incremental  $R^2 = 3.5$ ), and socio-cultural factors in Block 4 (incremental  $R^2 = 0.5$ ). Regression model 2 explained 23% of the variance in general Instagram use.

The result for model 2 showed that while age and ethnicity among the control variables were negatively related to general Instagram use ( $\beta = -.19, p < .001$ ;  $\beta = -.10, p < .01$ ), gender was positively associated with it ( $\beta = .09, p < .01$ ). In the second block for testing the relationship between the technology attributes and general use, perceived ease of Instagram use was highly associated with the time spent on the platform ( $\beta = .29, p < .001$ ), and visualizing elements were also positively related to general use ( $\beta = .11, p < .01$ ). Of the technology

attributes, Instagram's recommendation algorithm had a slight significant relationship with general use ( $\beta = .07, p < .10$ ). However, the negative relationship between privacy setting concerns and general Instagram use ( $\beta = -.14, p < .01$ ) indicates that Instagram users are likely to be concerned about privacy settings, which in turn decreases their level of Instagram use. In terms of individual factors, entertainment was the most meaningful predictor of using Instagram ( $\beta = .11, p < .01$ ), followed by passing time ( $\beta = .10, p < .01$ ) and need for recognition ( $\beta = .09, p < .01$ ). Socio-cultural factors (i.e., subjective norms and SNS culture) were not significantly associated with usage.

In summary, regarding the differences in general use (the time spent), visualizing elements of the technology attributes was positively associated, but the level of concern about privacy settings was negatively related to the time spent on Instagram use. A difference between Facebook and Instagram was discovered in the individual factor of entertainment as there was a positively significant relationship between entertainment and the time spent on Instagram use but not on Facebook use. Lastly, the socio-cultural factor of SNS culture was only positively associated with general Facebook use.

### **The Effect of Independent Variables on Use Change**

As shown in Table 12, this study also investigated how each variable of the factors is related to the frequency of Facebook use, comparing 3 months ago and the present moment. Regression model 1 explained 17.4% of variance by entering control variables in Block 1 (incremental  $R^2 = .8$ ), technology attributes in Block 2 (incremental  $R^2 = 12.6$ ), individual factors in block 3 (incremental  $R^2 = 3.3$ ), and socio-cultural factors in Block 4 (incremental  $R^2 = .7$ ).

**Table 12.** The Effect of Independent Variables on Use change

	Facebook Use change (Model 1)	Instagram Use Change (Model 2)
<b>Block 1: Control Variables</b>		
Age	-.02	-.06
Gender	-.06	.02
Ethnicity	.07	-.06
Incremental $R^2$ (%)	.8	.8
<b>Block 2: Technology Attributes</b>		
Visualizing elements	-.04	.14**
The friend recommendation algorithm	.10**	.04
Privacy setting concerns	.05	-.07
Openness concerns	-.11**	-.03
Perceived ease of use	.32***	.27***
Perceived usefulness	-.03	-.09**
Incremental $R^2$ (%)	12.6	11.6
<b>Block 3: Individual Factors</b>		
Innovativeness	.02	-.06
Social interaction	-.05	-.06
Entertainment	.07	-.00
Peeking	.01	.12**
Passing time	.01	.07
Need for recognition	.18***	-.04
Incremental $R^2$ (%)	3.3	1.8
<b>Block 4: Socio-cultural Factors</b>		
Subjective norms	-.06	.11#
SNS culture	.10**	.07
Incremental $R^2$ (%)	.7	1.0
Total $R^2$ (%)	17.4	15.1

Note:  $N = 613$ ; Cell entries are final-entry OLS standardized coefficients.

#  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

Among the technology attributes that influenced use change, the friend recommendation algorithm and perceived ease of use were positively associated with the level of use change during the past three months ( $\beta = .10, p < .01$ ;  $\beta = .32, p < .001$ ), but the result that the level of concern about the openness of Facebook was negatively related to Facebook use change ( $\beta = -.11, p < .01$ ) indicates that those who are concerned about the openness mechanism of Facebook tend to avoid using Facebook frequently. Turning to the relationship between the individual factors and use change, only need for recognition had a significant relationship with Facebook

use change ( $\beta = .18, p < .001$ ). Finally, in terms of the effect of socio-cultural factors on the dependent variable, Facebook users who perceived that using Facebook as a popular trend today reported that they visit Facebook more frequently compared to three months ago ( $\beta = .10, p < .01$ ).

In light of the relationships between the proposed independent variables and Instagram use change (the degree to which Instagram users have changed their use of Instagram), regression analysis was conducted (see Model 2 in Table 12). It explained 15.1% of the total variance after entering control variables in Block 1 (incremental  $R^2 = .8$ ), followed by technology attributes in Block 2 (incremental  $R^2 = 11.6$ ), individual factors in block 3 (incremental  $R^2 = 1.8$ ), and socio-cultural factors in Block 4 (incremental  $R^2 = 1.0$ ).

Of the technology attributes, Instagram's visualizing elements were positively related to use change ( $\beta = .14, p < .01$ ), and perceived ease of Instagram use was significantly associated with use change ( $\beta = .27, p < .001$ ). However, there was a negative relationship between perceived usefulness and Instagram use change ( $\beta = -.09, p < .01$ ). Only one variable of the individual factors, peeking among individual motivations/gratifications, was positively associated with use change ( $\beta = .12, p < .01$ ). Finally, with respect to socio-cultural factors, subjective norms in using Instagram had a slight positive relationship with the dependent variable ( $\beta = .11, p < .10$ ).

With respect to the differences in use change between Facebook and Instagram, although the friend recommendation algorithm was positively related to Facebook use change, a significant relationship was not discovered for Instagram use change. Further, the degree of concern about the openness of Facebook was negatively associated with use change, but did not influence the level of Instagram use change. Next, among individual motivations/gratifications

for Facebook and Instagram use, need for recognition by using Facebook was significantly associated with use change during the past three months, while Instagram users frequently employed it to see what other people are doing and because they wonder what others do. Finally, in light of the differences of socio-cultural factors between Facebook and Instagram, while Facebook users tend to employ it to keep up with social trends and because using Facebook is popular, Instagram users used it because of most of their friends and colleagues do.

### Generational Differences in Facebook and Instagram Use

The current study finally examined whether there are any different characteristics of using Facebook and Instagram use between younger and older generations. OLS regression sheds light on the difference based on the generation gap. The total number of participants categorized as younger generations (18-29) is 277 and that of older generations (30+) is 336.

**Table 13.** Generational Differences in Facebook and Instagram Use

	Facebook		Instagram	
	Younger	Older	Younger	Older
<b>Block 1: Control Variables</b>				
Gender	1.48**	.12**	.09	.09
Ethnicity	.00	.06	-.06	-.17**
Incremental $R^2$ (%)	.02	.02	.01	.04
<b>Block 2: Technology Attributes</b>				
Visualizing elements	.09	.05	.17**	.06
The friend recommendation algorithm	.07	.07	.05	.08
Privacy setting concerns	.01	.02	-.14	-.15#
Openness concerns	.08	-.10	.08	.05
Perceived ease of use	.37***	.33***	.30***	.30***
Perceived usefulness	-.08	.00	-.05	-.02
Incremental $R^2$ (%)	.18	.17	.16	.14
<b>Block 3: Individual Factors</b>				
Innovativeness	.03	-.01	-.01	-.06
Social interaction	.01	.06	.16**	.02
Entertainment	.05	.00	.13#	.09
Peeking	.01	-.05	-.03	-.06
Passing time	.04	.15**	.10#	.13**
Need for recognition	.12#	.17**	.11#	.05
Incremental $R^2$ (%)	.02	.06	.06	.03

**Block 4: Socio-cultural Factors**

Subjective norms	-.06	-.05	.13#	.02
SNS culture	.15**	.12#	.09	.01
Incremental $R^2$ (%)	.01	.01	.01	.00
Total $R^2$ (%)	.19	.26	.24	.20

Note: Sample size = 613 (younger 18-29 = 277, older 30+ = 336); Cell entries are final-entry OLS standardized coefficients.

#  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

As shown in Table 13, both younger and older users who perceive it is easy to use Facebook were likely to spend more time on Facebook ( $\beta = .37, p < .001$ ;  $\beta = .33, p < .001$ ). However, only younger people perceived that using Facebook is necessary to keep up with popular social trends, revealing the positive relationship between SNS culture and younger people's Facebook use ( $\beta = .15, p < .01$ ). Among the proposed individual motivations/gratifications for Facebook use, older people were likely to use Facebook for passing their time ( $\beta = .15, p < .01$ ) and developing a good reputation ( $\beta = .17, p < .01$ ).

Meanwhile, the results showed that both younger and older generations who regard using Instagram as being easy to use were likely to spend more time on Instagram ( $\beta = .30, p < .001$ ;  $\beta = .30, p < .001$ ). However, Instagram's visualizing elements were the only significant predictor of increased use for younger generations ( $\beta = .17, p < .01$ ). Next, younger people tend to use Instagram for social interaction ( $\beta = .16, p < .01$ ), but older generations use it for passing time ( $\beta = .13, p < .01$ ), which indicates that Instagram use is distinctive based on generational differences.

## DISCUSSION

The principal goal of the current study was to explore whether and how individuals differently perceive or think about the technology attributes (visualizing elements, the friend recommendation algorithm, privacy setting, openness) between Facebook and Instagram, and to what extent there are differences in individual innovativeness and their own motivations/gratifications (social interaction, entertainment, peeking, passing time, need for recognition) for Facebook and Instagram use and socio-cultural factors (subjective norms and SNS culture) in the use and change of use of Facebook and Instagram. In addition, the current study attempted to explore three types of factors that are differently associated with general Facebook/Instagram use (the time spent) and use change (to what extent the usage amount has changed during the past three months). Finally, in accordance with age differences, whether there are unique characteristics related to using Facebook and Instagram was also examined.

First of all, individuals' ratings of Facebook's technology attributes of privacy settings, openness, ease of use and usefulness were significantly higher than their ratings of Instagram's. These findings indicate that although Facebook users perceive the platform to be easier and more useful than Instagram, they tend to be more concerned about their exposure to the public on Facebook compared to Instagram, which is consistent with previous findings that reveal that those who have high levels of privacy concerns are likely to avoid showing their visual images and to control privacy settings of SNS platforms (Aldhafferi et al., 2013; Chen & Chen, 2015). In addition, these findings provide empirical evidence that Facebook users have a high degree of concern about openness. In other words, the openness of Facebook can be burdensome for users

and negatively activate them to continue to use it. This is not surprising given that closed SNS platforms that share content with only accepted friends have more hedonic gratifications than open SNS platforms (Ha et al., 2015).

Moreover, this study reveals that users' ratings of visualizing elements and the friend recommendation algorithm of Instagram were higher than their ratings of those attributes of Facebook. These findings provide empirical evidence that individuals who use both Facebook and Instagram prefer to employ Instagram's visualizing functions such as filtering and face detection and the recommendation algorithm for other people's photos or videos based on the user's prior searching history. It is known that Instagram's visualizing features have mainly contributed to the rapid growth of the platform (eMarketer.com, 2016; Lup et al., 2015). As shown in the results of the regression model, those who positively perceive visualizing elements are likely to frequently use Instagram. This finding can provide implications that the longevity or success of SNS platforms may depend on how their visualizing features are activated and developed. In particular, present social media practitioners or developers should pay attention to this finding of the current study.

Regarding the individual factors, while scores for social interaction and passing time were higher for using Facebook, need for recognition was higher for using Instagram. These results expand the findings of the current literature (Chen & Kim, 2013; Lee et al., 2015), revealing that individuals have different purposes for using either Facebook or Instagram. For example, since Instagram emphasizes photo-based functions, users are able to edit and post their photos and to know who liked the photos. On the other hand, because the majority of individuals are on Facebook, numerous people might perceive that Facebook is one of the most appropriate tools for interacting or communicating with other people.

Secondly, this study also investigated whether and how the proposed three types of factors can influence general use (the time spent) and use change (during the past three months). The visualizing elements of technology attributes were significantly associated with general Instagram use and use change. Indeed, Instagram users post photos using various filters that enrich or beautify photos (Lup et al., 2015) and they can instantly edit photos after taking them with a mobile phone. Furthermore, given that little is known about whether and how the friend recommendation algorithm is associated with Facebook or Instagram use, the finding of a positive relationship between the algorithm and Facebook use is important. Although Facebook's friend recommendation feature is controversial because Facebook scans and collects all the content users post (Oremus, 2016), this study proves that this algorithm can encourage users to frequently use the platform.

This study also found a negative relationship between the level of concern about privacy settings and the time spent on Instagram use. While Facebook has offered privacy settings such as controlling others' access to one's posted contents, managing settings for how users connect, and reviewing content that others may see, Instagram has not yet offered these features for protecting users' privacy. As previous studies found that privacy concern limits profile visibility (Chen & Chen, 2015) and continuance of usage of SNSs (Zhou & Li, 2014), this study also proved that there was a negative relationship between the level of concern about privacy settings and general Instagram use, which can support the findings of the current social media studies.

Moving to the individual motivations/gratifications for Facebook and Instagram use, users employ Instagram for entertainment, getting good reputation, and passing time while users use Facebook for spending their time alone and getting recognition from others. Further, peeking or glimpsing other users' photos and videos and knowing how people live and behave is a

significant predictor of using Instagram more during the past three months, but Facebook users mostly used the platform to get recognition in the past three months. Given that most prior scholars have emphasized that one of the fundamental reasons to use SNSs is interaction/communication with other users (e.g., Donsbach, 2008; Quan-Haase & Young, 2010), these findings suggest that most SNS users nowadays are more likely to care about self-presentation and impression management rather than social interaction (Hall, Pennington, & Lueders, 2013; Hunt et al., 2014). The findings that need for recognition positively influences the use time and frequency of Facebook and Instagram use can also support this consideration. This study emphasizes that recent SNS users act as “content senders” because they tend to make an effort to show who they really are to the public.

Thirdly, regarding the relationships between socio-cultural factors and general use/use change, the only positive relationship was between SNS culture and Facebook. Some previous scholars demonstrate that SNSs such as Facebook have led to fundamental paradigm shifts in the ways people communicate, collaborate, consume, and generate information (Schoder et al., 2013). Indeed, as tremendous numbers of people around the world use Facebook (Zephoria.com, 2015), it is possible for users to see how people are currently living and what types of socio-cultural events and issues are happening around the world. However, little is known about whether using Facebook is really a sort of culture in certain generations. In this sense, this finding provides empirical evidence that individuals tend to perceive Facebook use as a popular trend these days, which consequently leads to an increased level of their own Facebook use.

This study finally investigates whether there are any different generational characteristics in using Facebook and Instagram. Specifically, visualizing elements were the only significant predictor of using Instagram for younger generations, meaning that younger people were more

likely than older people to use it because of its visualizing features. Further, one of the main differences between younger and older generations was that while older people are likely to use SNSs for passing their time, younger generations tend to use SNSs, especially Instagram, for interacting/communicating with other users. One of the interesting findings is that older people use Instagram to earn a good reputation with others. Previous studies indicate that individuals use Facebook because it is helpful for their professional future and for building interpersonal networks with professional contacts (Papacharissi & Mendelson, 2010; Smock et al., 2011). This finding that older people use Instagram to strengthen their reputations also supports the prior findings (e.g., Utz et al., 2012) and emphasizes that it is important especially for older generations to earn a good reputation or recognition with others for professional promotion or advancement.

There are three main theoretical contributions of the current study that shed more light on the role of specific variables (perceived ease of use and usefulness of TAM, motivations/gratifications of U&G, and subjective norms of TPB, TRA, UTAUT) in Facebook and Instagram use. First, this study examined how perceived ease of use and usefulness (concepts borrowed from the TAM) can differently activate the two stages of Facebook and Instagram use. Most previous scholars tend to investigate whether perceived ease of use influences intention to use, which in turn leads to actual use (Cha, 2010; Donsbach, 2008; Quan-Haase & Young, 2010). However, the current findings that SNS users can perceive the platforms differently in terms of general use and use change would be meaningful to current TAM-related literature.

Secondly, this study more clearly found which motivations/gratifications in terms of U&G can significantly stimulate general use (time spent on Facebook or Instagram use) and use

change (to what extent the usage amount has changed during the past three months). Given the numerous prior studies on various motivations/gratifications in using Facebook, examining whether the representative individual motivations/gratification for Facebook and Instagram use are related to the decrease or increase of use of both platforms makes a meaningful contribution to the current literature.

Thirdly, the present study discovered that subjective norms (a concept taken from TRA, TPB, and UTAUT) can differently influence the level of using Facebook or Instagram. In order for subjective norms to be significant, how long a certain SNS has been used and how popular or general it is may be important matters. Indeed, given that more than 70% of adults in the United States used Facebook in 2015 (Duggan, 2015), socio-psychological factors can be meaningful for contemporary social media users because their colleagues, friends, and coworkers significantly influence their own adoption and use of Facebook.

The findings of the current study also make contributions to practice in the current social media industries. Practitioners should take a hard look at the relationships between technology attributes and the time spent on Facebook/Instagram as well as use change: (a) only Instagram's visualizing elements positively influence younger people's Instagram use; (b) Facebook users are very concerned about Facebook's open service that allows users to see others' postings and accounts; and (c) Instagram users are concerned about the level of privacy settings. Although Facebook and Instagram remain the most popularly used photo-based SNS platforms (Utz, Muscanell, & Khalid, 2015), the growth of other SNSs such as Snapchat and Pinterest is outstanding (Duggan et al., 2015; Lenhart, 2015). Each offers different and unique visualizing features; for example, Snapchat photos/videos disappear after a few seconds, and Pinterest users can post and manage photos with functions known as pins. These new and unique features

provided by other SNSs could be attractive and innovative for users, which can influence the use level of Facebook by drawing users away. Practitioners should take note that younger SNS users put a premium on visualizing elements.

Although new findings are proposed, there are several limitations of the current study. First of all, this study relied on self-report, which has some disadvantages: (a) participants may not answer survey questions truthfully in order to portray themselves as socially acceptable; (b) survey participants might not be able to recall exactly how much they use Facebook or Instagram, which can lead to inaccurate responses. Thus researchers in future studies should consider employing panel data on actual measurements or in-depth interview. Secondly, there was only a single item for testing each dependent variable (use and use change). Future researchers should employ more sophisticated measurement scales to determine the amount of time spent on Facebook/Instagram use or frequency change during certain periods. Thirdly, there could be other important variables/factors that significantly influence the use level of Facebook and Instagram. For example, some of the current literature examines social media use in light of individual personal traits (e.g., extraversion, agreeableness, conscientiousness, emotional stability, openness to new experiences) and other attributes such as narcissism (e.g., Amichai-Hamburger & Vinitzky, 2010; Gosling, Augustine, Vazire, Holtzman, & Gaddis, 2011; Panek et al., 2013). Next, one may argue that other SNS platforms such as Pinterest, Snapchat, and LinkedIn should be included for comparing SNS use levels. This study only focused on one of the largest SNSs (Facebook) and one of the most rapidly growing platforms (Instagram). Future researchers should investigate the proposed variables as well as other potential variables that may influence SNS use such as personality traits.

Despite the limitations, given the explosive popularity and penetration of SNSs into everyday life, the findings of the current study can have meaningful ramifications that reveal which specific variables positively influence the use level of Facebook and Instagram. Further, the examination of variables that can negatively influence users' willingness to discontinue using Facebook and Instagram is also an important contribution to the current academic literature as well as practical social media industries. The current findings serve as a foundation for future studies to investigate whether and how the independent variables can influence particular SNS activities such as sharing, commenting, and tagging. Further study is recommended to investigate how individuals differently perceive the interlocking or interconnected features of SNS platforms as present users can simultaneously post their own contents to other SNSs through a medium.

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## APPENDIX

Thank you for participating in this survey. This survey should be taken by those who use BOTH Facebook and Instagram. If you use only one or neither of these social networks, please exit this survey.

Q1: Do you have Facebook and Instagram accounts?

- 1) I have both Facebook and Instagram accounts.
- 2) I only have a Facebook account.
- 3) I only have an Instagram account.
- 4) I have neither Facebook nor Instagram.

Q2: We would like to ask about yourself. On a scale from 1 to 5 (where 1 is strongly disagree and 5 is strongly agree), please rate how much you agree or disagree with the following statements.

- 1) I like to take on new challenges.
- 2) I am a curious person.
- 3) I like to keep up with new innovations.

Q3: From now on, think about your specific reasons to use Facebook. On a scale from 1 to 5 (where 1 is strongly disagree and 5 is strongly agree), please rate how much you agree or disagree with the following statements.

- 1) to present myself
- 2) because it is enjoyable
- 3) because it is fun
- 4) because it is entertaining
- 5) to interact with my friends
- 6) to connect with people whom I know
- 7) to communicate with friends or family
- 8) to communicate with distant friends
- 9) to keep in touch with friends and family
- 10) to keep in touch with people I don't have enough time to see in person
- 11) to see what other people are doing
- 12) to peek at others' daily lives
- 13) because I wonder what others do
- 14) to pass the time when I have nothing to do
- 15) to get away from pressures and responsibilities
- 16) to put off something I should be doing
- 17) to get recognition from other users
- 18) to make me more popular
- 19) to enhance my personal reputation

Q4: Think about the technological features of Facebook. On a 5-point scale, please mark the number that comes closest to how you feel on each scale.

Facebook offers various visualizing features/elements. For example, Facebook users can create photo albums with their personal photographs and also update their profile photos as well as post photos/videos on the Facebook main page. Please mark the number that comes closest to how you feel when using the photo/video functions of Facebook.

Agitated (1)	(2)	(3)	(4)	Pleasant (5)
Useless (1)	(2)	(3)	(4)	Useful (5)
Inconvenient (1)	(2)	(3)	(4)	Convenient (5)
Unfavorable (1)	(2)	(3)	(4)	Favorable (5)
Old-fashioned (1)	(2)	(3)	(4)	Innovative (5)

Facebook suggests sending friend requests to people that you may know, and users can also make new Facebook relationships after seeing the suggestions. Please mark the number that comes closest to how you feel when Facebook suggests others you may know.

Agitated (1)	(2)	(3)	(4)	Pleasant (5)
Useless (1)	(2)	(3)	(4)	Useful (5)
Inconvenient (1)	(2)	(3)	(4)	Convenient (5)
Unfavorable (1)	(2)	(3)	(4)	Favorable (5)
Old-fashioned (1)	(2)	(3)	(4)	Innovative (5)

Q5: Continue to think about your experiences with the privacy settings in Facebook. On a scale from 1 to 5 (where 1 is strongly disagree and 5 is strongly agree), please rate how much you agree or disagree with the following statements.

- 1) I am concerned about my privacy on Facebook.
- 2) I have a concern that my personal information on Facebook could be misused.
- 3) I am concerned about my private postings that could be distributed on Facebook.

Facebook technically reflects an openness about sharing postings or information about yourself with other users, and it enables everyone to bring information from various web sites and others' pages. Please mark the number that comes closest to how you feel about this characteristic of Facebook.

Q6: Continue to think about your Facebook experiences. For example, think about when you post or read others' posts and how Facebook allows people to see your Facebook friends' activities, including functions such as like, share, comment, etc. On a scale from 1 to 5 (where 1 is strongly disagree and 5 is strongly agree), please rate how much you agree or disagree with the following statements.

- 1) I am concerned that it is possible that people I don't even know could see my Facebook activities.
- 2) I have a concern that my postings could be seen by unknown users.
- 3) I am worried that people I don't know can see all of my photos/videos.
- 4) I think Facebook is too open to too many people.
- 5) I have an experience to hesitate to post my content on Facebook.

Q7: The following questions ask about your thoughts on Facebook. When answering these questions, please keep in mind your use of Facebook.

- 1) Using Facebook is very helpful for my everyday life.
- 2) Most functions on Facebook are useful.
- 3) Facebook is beneficial to my life.
- 4) Facebook is an efficient way to communicate with my friends.
- 5) It is easy for me to use Facebook.
- 6) The process of using Facebook is clear and understandable.
- 7) Most functions on Facebook are easy.

Q8: Think about the following statements related to Facebook use. On a 5-point scale where 1 = strongly disagree and 5 = strongly agree, please rate to what extent you agree with each statement.

- 1) My friends expect me to use Facebook.
- 2) My friends would criticize other people if they don't use Facebook.
- 3) Since people who are important to me use Facebook, I should use it too.
- 4) People who influence my life might think that I should use Facebook.
- 5) I feel I use Facebook because most of my colleagues use Facebook.
- 6) Facebook is a popular trend today.
- 7) I think I can keep up with social trends through Facebook.
- 8) Using Facebook is a sort of culture in my generation.

The following questions ask about your Facebook use. When answering these questions, please keep in mind your use of Facebook.

Q9: On a typical day, how much time do you spend using Facebook?

- 1) None at all
- 2) Less than 30 minutes
- 3) More than 30 min – less than 1 hour
- 4) More than 1 hour – less than 3 hours
- 5) More than 3 hours – less than 5 hours
- 6) More than 5 hours or more

Q10: Think about how often you used Facebook 3 months ago compared to how often you use it now. Do you visit Facebook frequently or less frequently?

- 1) Much less frequently visit Facebook
- 2) Less frequently visit Facebook
- 3) Somewhat less frequently visit Facebook
- 4) Not much different
- 5) Somewhat more frequently visit Facebook
- 6) More frequently visit Facebook
- 7) Much more frequently visit Facebook

Q11. From now on, I'd like to ask about your Instagram use. Think about your specific reasons to use Instagram. On a scale from 1 to 5 (where 1 is strongly disagree and 5 is strongly agree), please rate how much you agree or disagree with the following statements.

- 1) to present myself
- 2) because it is enjoyable
- 3) because it is fun
- 4) because it is entertaining
- 5) to interact with my friends
- 6) to connect with people whom I know
- 7) to communicate with friends or family
- 8) to communicate with distant friends
- 9) to keep in touch with friends and family
- 10) to keep in touch with people I don't have enough time to see in person
- 11) to see what other people are doing
- 12) to peek at others' daily lives
- 13) because I wonder what others do
- 14) to pass the time when I have nothing to do
- 15) to get away from pressures and responsibilities
- 16) to put off something I should be doing
- 17) to get recognition from other users
- 18) to make me more popular
- 19) to enhance my personal reputation

Q12: Think about the technological features of Instagram. On a 5-point scale, please mark the number that comes closest to how you feel on each scale.

Instagram offers various visualizing features/elements. For example, Instagram users can create photo albums with their personal photographs and also update their profile photos as well as post photos/videos on the Instagram main page. Please mark the number that comes closest to how you feel when using the photo/video functions of Instagram.

Agitated (1)	(2)	(3)	(4)	Pleasant (5)
Useless (1)	(2)	(3)	(4)	Useful (5)
Inconvenient (1)	(2)	(3)	(4)	Convenient (5)
Unfavorable (1)	(2)	(3)	(4)	Favorable (5)
Old-fashioned (1)	(2)	(3)	(4)	Innovative (5)

Instagram suggests sending friend requests to people that you may know, and users can also make new Instagram relationships after seeing the suggestions. Please mark the number that comes closest to how you feel when Instagram suggests others you may know.

Agitated (1)	(2)	(3)	(4)	Pleasant (5)
Useless (1)	(2)	(3)	(4)	Useful (5)
Inconvenient (1)	(2)	(3)	(4)	Convenient (5)
Unfavorable (1)	(2)	(3)	(4)	Favorable (5)
Old-fashioned (1)	(2)	(3)	(4)	Innovative (5)

Q13: Continue to think about your experiences with the privacy settings in Instagram. On a scale from 1 to 5 (where 1 is strongly disagree and 5 is strongly agree), please rate how much you agree or disagree with the following statements.

- 1) I am concerned about my privacy on Instagram.
- 2) I have a concern that my personal information on Instagram could be misused.
- 3) I am concerned about my private postings that could be distributed on Instagram.

Instagram technically reflects an openness about sharing postings or information about yourself with other users, and it enables everyone to bring information from various web sites and others' pages. Please mark the number that comes closest to how you feel about this characteristic of Instagram.

Q14: Continue to think about your Instagram experiences. For example, think about when you post or read others' posts and how Instagram allows people to see your Instagram friends' activities, including functions such as like, share, comment, etc. On a scale from 1 to 5 (where 1 is strongly disagree and 5 is strongly agree), please rate how much you agree or disagree with the following statements.

- 1) I am concerned that it is possible that people I don't even know could see my Instagram activities.
- 2) I have a concern that my postings could be seen by unknown users.
- 3) I am worried that people I don't know can see all of my photos/videos.
- 4) I think Instagram is too open to too many people.
- 5) I have an experience to hesitate to post my content on Instagram.

Q15: The following questions ask about your thoughts on Instagram. When answering these questions, please keep in mind your use of Instagram.

- 1) Using Instagram is very helpful for my everyday life.
- 2) Most functions on Instagram are useful.
- 3) Instagram is beneficial to my life.
- 4) Instagram is an efficient way to communicate with my friends.
- 5) It is easy for me to use Instagram.
- 6) The process of using Instagram is clear and understandable.
- 7) Most functions on Instagram are easy.

Q16: Think about the following statements related to Instagram use. On a 5-point scale where 1 = strongly disagree and 5 = strongly agree, please rate to what extent you agree with each statement.

- 1) My friends expect me to use Instagram.
- 2) My friends would criticize other people if they don't use Instagram.
- 3) Since people who are important to me use Instagram, I should use it too.
- 4) People who influence my life might think that I should use Instagram.
- 5) I feel I use Instagram because most of my colleagues use Instagram.
- 6) Instagram is a popular trend today.
- 7) I think I can keep up with social trends through Instagram.
- 8) Using Instagram is a sort of culture in my generation.

The following questions ask about your Instagram use. When answering these questions, please keep in mind your use of Instagram.

Q17: On a typical day, how much time do you spend using Instagram?

- 1) None at all
- 2) Less than 30 minutes
- 3) More than 30 min – less than 1 hour
- 4) More than 1 hour – less than 3 hours
- 5) More than 3 hours – less than 5 hours
- 6) More than 5 hours or more

Q18: Think about how often you used Instagram 3 months ago compared to how often you use it now. Do you visit Instagram frequently or less frequently?

- 1) Much less frequently visit Instagram
- 2) Less frequently visit Instagram
- 3) Somewhat less frequently visit Instagram
- 4) Not much different
- 5) Somewhat more frequently visit Instagram
- 6) More frequently visit Instagram
- 7) Much more frequently visit Instagram

#### Demographics

*Finally, we have a few questions regarding demographic information. The information is required for statistical purposes only and will be kept strictly confidential.*

What's your gender?

- 1) Male
- 2) Female

What is your age?

Open ended: \_\_\_\_\_

What is your final degree of education you have completed?

- 1) Less than high school degree
- 2) High school degree or equivalent
- 3) Some college, no degree
- 4) Associate degree
- 5) Bachelor's degree
- 6) Graduate or professional degree
- 7) Doctorate degree

What is your ethnicity?

- 1) Asian
- 2) Black or African-American
- 3) Hispanic

- 4) Mixed race
- 5) Native American/American Indian
- 6) White
- 7) Others \_\_\_\_\_

Last year, what was your total family income from all sources, before taxes?

- 1) Less than \$10,000
- 2) \$10,000 to under \$20,000
- 3) \$20,000 to under \$30,000
- 4) \$30,000 to under \$40,000
- 5) \$40,000 to under \$50,000
- 6) \$50,000 to under \$75,000
- 7) \$75,000 to under \$100,000
- 8) \$100,000 to under \$150,000
- 9) \$150,000 or more

Office for Research  
Office of the Director of  
Research Compliance



March 1, 2016

Bumsso Kim  
Department of Telecommunication & film  
College of Communication & Information Sciences  
The University of Alabama  
Box 870152

Re: IRB # 15-OR-344 (Revision) "College Students' Motivations and Uses for Digital Media and Life Satisfaction"

Dear Bumsso Kim:

The University of Alabama Institutional Review Board has reviewed the revision to your previously approved expedited protocol. The board has approved the change in your protocol.

Please remember that your approval period expires one year from the date of your original approval, November 6, 2015, not the date of this revision approval.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants.

Good luck with your research.

Sincerely,

Stuart Usdan, PhD.  
Chair, Non- Medical Institutional Review Board  
The University of Alabama



358 Rose Administration Building  
Box 870127  
Tuscaloosa, Alabama 35487-0127  
(205) 348-8461  
FAX (205) 348-7189  
TOLL FREE (877) 820-3066

## CONSENT FORM

**Study title:** Individuals' Motivations for Social Media Use

**Investigator:** Bumsoo Kim, MA student

You are being asked to take part in a research study called "Individuals' Motivations for Social Media Use," conducted by Bumsoo Kim, who is a master's student at the University of Alabama. Professor Yonghwan Kim, who is a professor of Telecommunication and Film at the University of Alabama, is advising Mr. Kim.

**Is this research developing a product that will be sold, and if so, will the investigator profit from it?**

No.

**Does the investigator have any conflict of interest in this study?**

No.

**What is this study about? What is the investigator trying to learn?**

The purpose of this study is to examine what types of digital media motivations individuals have and how they differently use diverse digital media (i.e., social media and mobile phone). Moreover, this study will investigate the relationship between individuals' digital media use activities and their lives. The investigator would like to learn about how the young generation differently uses digital media by comparing to older generations, and whether there is any media preference related to purpose of use.

**Why is this study important or useful?**

This study is very important because it will provide information about what types of media motivation of individuals have and how they use media differently in terms of diverse motivations. Particularly, given that the communication gap between the old and young generations has been regarded as a serious problem, this study has significance for

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understanding the each generation's communication characteristics. The findings will be helpful in facilitating better communication between old and young generation. The more we understand characteristics of young generations, the better communication tools will be occurred.

**Why have I been asked to be in this study?**

You have been asked to be in this study because you voluntarily access the survey website.

**How many people will be in this study?**

300 individuals will be needed in this study.

**What will I be asked to do in this study?**

If you agree to be in this study, you will be asked to complete a short survey about your motivations for using digital media, using behaviors, level of satisfaction and psychological well-being, etc.

**How much time will I spend being in this study?**

It will take 15 minutes for you to complete the web-based survey.

**Will being in this study cost me anything?**

Each survey participant will receive 0.5 dollar after completing the survey.

**Will I be compensated for being in this study?**

This survey will be conducted voluntarily, and each survey participant will receive 0.5 dollar in Amazon Mechanical Turk after completing the survey.

**What are the risks (dangers or harms) to me if I am in this study?**

Any risks will not be foreseen, as the survey questionnaire does not have risky questions.

**What are the benefits (good things) that may happen if I am in this study?**

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Even though you may not much benefit individually from being in the study, your participation in the survey may contribute to a better understanding of the current and potential influences of digital media use and be beneficial to academic developments in the communication discipline.

**What are the benefits to science or society?**

The findings of this study could help university counselors and professors to know more about the each generation's characteristics and to communicate with others.

**How will my privacy be protected?**

Only the investigator will have access to the data. Your individual responses will not be identified. You do not have to answer any questions you do not want to.

**How will my confidentiality be protected?**

We will protect your confidentiality through using a secure web server and incorporating a random ID in the survey collection. In addition, all participants' IP address will not be tracked and recorded.

**What are the alternatives to being in this study? Do I have other choices?**

The alternative to being in this study is not to participate. You can voluntarily decide whether you will participate in this survey or not.

**What are my rights as a participant in this study?**

Taking part in this study is completely voluntary, which means you can freely choose whether you participate or refuse to be in it. If you start the study, you can stop at any time. There will be no effect on your relations with the University of Alabama. The University of Alabama Institutional Review Board ("the IRB") is the committee that protects the rights of people in research studies. The IRB may review study records from time to time to be sure that people in research studies are being treated fairly and that the study is being carried out as planned.

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**Who do I call if I have questions or problems?**

If you have questions, concerns, or complaints about the study right now, please email Mr. Bumsoo Kim at [bkim29@crimson.ua.edu](mailto:bkim29@crimson.ua.edu). If you have questions, concerns, or complaints about the study later on, please call him at 205-239-6526 or email him.

If you have any questions about your rights as a person in a research study, call Ms. Tanta Myles, the Research Compliance Officer of the University, at 205-348-8461 or toll-free at 1-877-820-3066. You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach website at [http://osp.ua.edu/site/PRCO\\_Welcome.html](http://osp.ua.edu/site/PRCO_Welcome.html) or email the Research Compliance office at [participantoutreach@bama.ua.edu](mailto:participantoutreach@bama.ua.edu). After you participate, you are encouraged to complete the survey for research participants that is online at the outreach website, or you may ask the investigator for a copy of it and mail it to the University Office for Research Compliance, Box 870127, 358 Rose Administration Building, Tuscaloosa, AL 35487-0127.

I have read this information sheet. I have had a chance to ask questions. I agree to take part in it.

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