

Social media addiction: What is the role of content in *YouTube*?

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(Received: June 20, 2017; revised manuscript received: August 24, 2017; accepted: August 25, 2017)

Background: *YouTube*, the online video creation and sharing site, supports both video content viewing and content creation activities. For a minority of people, the time spent engaging with *YouTube* can be excessive and potentially problematic. *Method:* This study analyzed the relationship between content viewing, content creation, and *YouTube* addiction in a survey of 410 Indian-student *YouTube* users. It also examined the influence of content, social, technology, and process gratifications on user inclination toward *YouTube* content viewing and content creation. *Results:* The results demonstrated that content creation in *YouTube* had a closer relationship with *YouTube* addiction than content viewing. Furthermore, social gratification was found to have a significant influence on both types of *YouTube* activities, whereas technology gratification did not significantly influence them. Among all perceived gratifications, content gratification had the highest relationship coefficient value with *YouTube* content creation inclination. The model fit and variance extracted by the endogenous constructs were good, which further validated the results of the analysis. *Conclusion:* The study facilitates new ways to explore user gratification in using *YouTube* and how the channel responds to it.

Keywords: *YouTube* addiction, social media addiction, online addiction, behavioral addiction, addiction gratification

INTRODUCTION

Social media is increasingly being used for communicating, learning, and collaborating, and for a small minority has become a potential problematic, compulsive, and/or addictive habit (Kuss & Griffiths, 2017). Griffiths (1999) noted many years ago that online addictions are primarily about addictions *on* the Internet rather than addiction *to* the Internet, and that most of those with online problematic behavior are addicted to the online content rather than the Internet itself (e.g., gambling, gaming, sex, shopping, social networking, etc.). Of the various types of social media sites, online video-sharing applications have been shown to have the highest interactive level (Khan, 2017). Despite the fact that online videos are included as a key segment even in other types of long-range interpersonal communication sites, dedicated online video-sharing sites allow direct interactions and have elicited enormous interest among social media users.

YouTube is the most well-known video-hosting service in the social media domain. Unlike traditional media, *YouTube* allow users to interact, engage, view, collaborate, and primarily assess their system of communication (Gill, Arlitt, Li, & Mahanti, 2007). *YouTube* is the most popular dedicated video-sharing applications, with more than a billion users, nearly 33% of Internet populace (YouTube, 2016). *YouTube* (2016) reports that hundreds of millions of hours are spent daily on their platform, and result in billions of views every day. The development of multifunctional digital components and devices has encouraged users to engage

with *YouTube* via different hardware platforms and interfaces including television, personal computers, laptops, tablets, and smartphones.

YouTube allows videos in various genres, not only limited to music but also film trailers, video game play, sports, ability, user content, and program recording. The notoriety of this social media domain has empowered social collaboration and participation on a very large scale. *YouTube* allows contents to be viewed, shared, embedded, and discussed (Burgess & Green, 2013). *YouTube* allows two major user functions (i.e., content creation and content seeking). Content seeking is an intuitive user-action that allows users to browse and search for specific videos for individual gratification. In content creation, users make and share their own video content with specific individuals and groups or with the general public. Content creation in online networking terminology is referred to as user-generated content (UGC). UGC allows users to convey their opinions, thoughts, and creative content with others online (Boyd & Ellison, 2007). Meanwhile, *YouTube* serves as a platform for professionals to showcase themselves, which is subjectively stronger in comparison with UGC (Cha, 2014).

While addictions have been reported and analyzed in digital applications, such as online gaming (Beranuy, Carbonell, & Griffiths, 2013; Kim, Kim, Shim, Im, &

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Shon, 2013; Kuss, Louws, & Wiers, 2012; Leménager et al., 2013), online gambling (Gainsbury, Parke, & Suhonen, 2013; McCormack & Griffiths, 2012; McCormack, Shorter, & Griffiths, 2013), and Facebook use (Andreassen et al., 2012; Hong, Huang, Lin, & Chiu, 2014), Chiang and Hsiao (2015) recently proposed a conceptual model defining YouTube “stickiness,” although there have been few studies examining problematic YouTube use among users. Consequently, this study comprehensively examines the role of user gratification and content engagement in addiction to YouTube.

YOUTUBE ADDICTION

Social media can be categorized into many different types including social networking (e.g., Facebook), professional networking (e.g., LinkedIn), video sharing (e.g., YouTube), knowledge-blogging (e.g., personal blogging), and micro-blogging (e.g., Twitter). According to Prensky (2001), Generation Y constitutes the “digital locals” rather than the older generations – the “advanced outsiders.” Although the concept of online networking has existed for a long time, it only became a dynamic phenomenon after 2003 (Boyd & Ellison, 2007). The appeal of online networking among youth has resulted in extensive and extended use of social media. The extensive engagement of youth in social media has resulted in its insurgence into their health and well-being, family life, and work (Bennett, Maton, & Kervin, 2008; Wesner & Miller, 2008). Overuse of social media, directed by the medium’s restricted limit for self-direction and the youths’ natural need for companionship, has resulted in health (and other) issues among children, adolescents, and emerging adults (O’Keeffe & Clarke-Pearson, 2011).

There have been many studies in recent years on addiction to Facebook (Kuss & Griffiths, 2017). Andreassen, Torsheim, Brunborg, and Pallesen (2012) developed the Bergen Facebook Addiction Scale using Griffiths’ (2005) components of addiction (salience, mood modification, tolerance, withdrawal, conflict, and relapse). There have been many Facebook addiction studies since then, which have dealt with various aspects such as clinical disorders (Rosen, Whaling, Rab, Carrier, & Cheever, 2013), uses and abuses (Ryan, Chester, Reece, & Xenos, 2014), personality factors (Andreassen et al., 2013), and subjective vitality and happiness (Uysal, Satici, & Akin, 2013). There have been few studies on addiction to other forms of social networking sites, and in particular, addiction to YouTube. Haridakis and Hanson (2009) discussed two types of user activities on the YouTube platform – content sharing and content seeing. The constant and continuous stream of videos can potentially result in addictive behavior among users. Past literature has identified adolescent’s high involvement toward tobacco, alcohol, and electronic cigarette video content in YouTube (Cranwell et al., 2015; Cranwell, Opazo-Breton, & Britton, 2016; Huang, Kornfield, & Emery, 2016). Many researchers have examined distinct activities, such as seeing, liking, sharing, and commenting on social media content under a common umbrella term of engagement and interaction (De Vries, Gensler, & Leeftang, 2012; Khan, 2017).

YouTube video viewing and creation require quality engagement and they draw upon both individual and interpersonal inspirations. Individual and interpersonal inspirations are believed by several researchers to be imperative causes for addiction (e.g., Caplan, 2003; Chak & Leung, 2004; Shaw & Gant, 2002; Young & Rodgers, 1998). Media propensities and the fundamental inspiration driving them have been investigated in the past, with a few speculations. Yet, the theory of uses and gratification (UG) can explain mass correspondence through social media tools, such as YouTube. Ruggiero (2000) posits that this theory can differentiate between the elements of mass media communications.

UG theory has broadly been used to explore the addiction to personal socialization media, such as Facebook and MySpace (Raacke & Bonds-Raacke, 2008), and interpersonal systems, such as content creation (Shao, 2009). Usage and gratification from the Internet is one of the posited reasons for online addiction (Chou & Hsiao, 2000). YouTube content viewing and content creation could be a result of online gratifications that users perceive when using it. YouTube viewers manifest the states of delight similar to television viewers and users of other such entertainment media. Content creation in YouTube is an inclusive activity, more than being just a consumer-entertainment or as a “passing time” site. Both creating and viewing activities are associated with psychological and interpersonal satisfaction, which for a small minority could lead to an addiction.

YOUTUBE USES AND GRATIFICATIONS

Researchers have used UG theory to explain the adoption and acceptance of the new medium among users (Lin, 1996; Morris & Ogan, 1996). Cha (2014) and Ji and Fu (2013) in their research have indicated the importance to explore UG to understand the pattern of Internet video media. The UG theory concentrates on media correspondence and their applications. Various UG theory constructs have been proposed in the recent past, especially with respect to online satisfaction and addiction. Palmgreen and Rayburn (1979) proposed a satisfaction model that utilizes psychological (need) and sociological (social standards) measures to distinguish media gratifications. A study by Rubin (1983) emphasized content and media channels as effective precursors of gratification. The studies by Rubin (1983) and Palmgreen and Rayburn (1979) were focused on the medium of television, and may not be applicable as such for online studies. Both Korgaonkar and Wolin (2002) and Charney and Greenberg (2002) recognized the uses of Internet as seen by the users. A proportion of the conventional media gratifications, such as entertainment, pass-time, and information-seeking produce online satisfaction. UG theory states that individuals require a technological medium to gratify their needs (Blumler & Katz, 1974). Although there have been many models to explain media gratification, all of them are not entirely appropriate for the digital medium.

Korgaonkar and Wolin (2002) presented new online gratification factors including relationship maintenance, interactivity, problem-solving, search, career, economic

control, status seeking, and coolness for web users. Charney and Greenberg (2002) analyzed different activities including peer identity, novelty, and music/sounds as gratification factors sought by web users. Flanagin and Metzger (2001) recognized personal insight and Song, Larose, Eastin, and Lin (2004) considered virtual group interactions as some online gratification factors. Papacharissi and Rubin (2000) presented a composite idea of online gratification factors comprising interpersonal utility, passing time, information-seeking, convenience, and entertainment. *YouTube* holds certain participatory complications including (i) skill-set acquisition, (ii) following rules and regulations laws, (iii) navigating social conventions, and (iv) dealing with interaction effects both on and off the site (Lange, 2007b). Despite such complications, online users continue to engage in communities. These complications, otherwise, have made the users well prepared for their participation in the online community site.

The UG theory has been used in different perspectives and distinctive hypotheses coordinated for various media. The expectation disconfirmation theory has been integrated with UG to comprehend user expectations and perceived gratification match-up. A series of information systems frameworks have proposed information system expectations and disconfirmation as part of technology gratifications (Bhattacharjee & Sanford, 2009). Elliott and Rosenberg (1987) upheld that the UG hypothesis represents a specialized apparatus to underline the motivations and satisfaction of users. Bakar, Bolong, Bidin, and Mailin (2014) identified four critical *YouTube* gratification factors that impact the satisfaction level of *YouTube* experience (i.e., content gratification, social gratification, process gratification, and technology gratification). Peters, Amato, and Hollenbeck (2007) structured the initial three gratifications as being appropriate for a wireless communication, whereas technology gratification is derived from the research by Venkatesh, Morris, Davis, and Davis (2003).

The UG literature states that individuals contrast in their media use as they vary in their requirements for media utilization, and it is likely that there are particular purposes behind users with well-being-related worries to use *YouTube* (Park & Goering, 2016). The gratifications sought in *YouTube* use are numerous and include elements of both conventional media and those of social networking. *YouTube* can provide all four types of gratification (i.e., content, social, process, and technology). Content gratification is sought through the different genres of videos, social gratification by the aspects of engagement and social collaborations possible, process gratification is sought in the entertainment, and passing time features of *YouTube*, and technology gratification is sought in the convenience of accessing *YouTube* videos. All these four gratifications are important in both content viewing and content creation and may lead to *YouTube* addiction. For this study, the following three research questions (RQs) were proposed to assess *YouTube* addiction through content viewing and content creation.

RQ1: Which of the four gratifications have significant positive relationships with *YouTube* content viewing and content creation inclination?

RQ2: Which factors among *YouTube* content viewing and content creation inclination show high positive significant relationships toward *YouTube* addiction?

RQ3: Does *YouTube* content viewing and content creation inclination impose an indirect effect between the four gratifications and *YouTube* addiction?

HYPOTHETICAL FRAMEWORK

Content gratifications

Users may look for different advantages and personal benefits from online use. Content gratification is concerned with data conveyed by the medium. Access to information is the most important among the various forms of gratifications that clients seek on the web. When information is the main expectation of users, it is called content gratification (Stafford, Stafford, & Schkade, 2004). Content in social media may be of any mode (e.g., text, pictures, emoticons, quizzes, videos, etc.), which can contribute to content gratification. Regardless of the medium, content exploration has risen as a vital gratification among the users (Lin, 1999). *YouTube* content has been recognized to render useful information and valuable engagement to the users (Acar et al., 2016; Sumiala & Tikka, 2015).

YouTube presents videos and comments as sources of information to its users. Content gratification in *YouTube* can extend to creating content in the comment section or as a reply video. *YouTube* supports users to upload or transfer any genre of videos as long as it is original and legitimate without any copyright or legal issues. Thus, content gratification is not limited to content viewing but extends to subsequent meet-up or other original content. *YouTube* helps such activities by allowing creation of unique content, replying, spoofing content, which may be a stand-alone activity or an action resulting from content viewing. Analyzing the studies on content gratification by different researchers (Cutler & Danowski, 1980; Peters et al., 2007; Stafford et al., 2004), we propose hypotheses for content gratification (Liu, Cheung, & Lee, 2010) including two disconfirmation components in particular, disconfirmation of information sharing and disconfirmation of self-documentation. The following hypotheses are proposed.

H1: Content gratification has a significant positive relationship with *YouTube* content creation inclination.

H2: Content gratification has a significant positive relationship with *YouTube* content viewing inclination.

Social gratification

The primary activity of *YouTube* is to allow users to engage in social interactions through video sharing. More recently, universal analytics and cross-gadget engagement have allowed integration of *YouTube* with *Facebook*, *Twitter*, and other social media channels. The structure of communications on *YouTube* and the enormous variety in videos posted online enables a variety of social interactions (Susalra, Barua, & Whinston, 2003). Social gratification

includes intuitiveness with the various gatherings through media (Williams, Rice, & Rogers, 1988). Unlike other traditional forms of media, online networking is generally directed through an influencer hypothesis, which accepts the connection of social relevance, referred to as “effluencers” (Subramani & Rajagopalan, 2003). Researchers have also asserted that social reactions have a greater impact on the content creation part. Moor, Heuvelman, and Verleur (2010) reported that hostility and insults are common in *YouTube* comments. This further leads the users to refrain from uploading videos. Although it escorts different thoughts socially, this may also vary according to the sender and receiver perspective. Lortie and Guitton (2013) pointed out social involvement may have possible impact on the Internet addiction behavior.

Users of social media often take pride in testing, recommending, and/or debating over any social content available in *YouTube*. Users craving for social interactions and engagement can influence the usage and sharing behavior in media (Yee, 2006). Moreover, *YouTube* allows users to negotiate effective exchanges, enlarge the identities, and build social relationships (Lange, 2007c). Both viewing and creation can be influenced by social gratifications sought by users. Social gratification can be assessed using a disconfirmation of social interactions (Liu et al., 2010). Thus, the following hypotheses are proposed.

H3: Social gratification has a significant positive relationship toward *YouTube* content creation inclination.

H4: Social gratification has a significant positive relationship toward *YouTube* content viewing inclination.

Process gratification

Process gratification alludes to the effective utilization of a medium (Cutler & Danowski, 1980). An important difference between *YouTube* and conventional media is interactivity. Interaction upgrades viewer experience and perceived enjoyment among users. Moreover, interaction encourages the process of knowledge acquisition (Kuo & Feng, 2013) via mix of learning and hedonic elements. *YouTube* acts as an effective medium of entertainment and passing time (Haridakis & Hanson, 2009), and can result in expectation and disconfirmation. Content viewing provides amusement and pass-time gratification. Content creation in *YouTube* is an activity for self-expression of users. Process gratification aggregates three expectations – entertainment, passing time, and self-expression (Liu et al., 2010). Users have started using *YouTube* as their homepage, akin to how televisions controlled amusement and passing time in the past (*YouTube*, 2016). Self-expression is not applicable to conventional media, but the interaction feature available in *YouTube* has made it a platform of expression. Both *YouTube* content viewers and content creators enjoy what the channel offers. The following hypotheses are therefore proposed:

H5: Process gratification has a significant positive relationship toward *YouTube* content creation inclination.

H6: Process gratification has a significant positive relationship toward *YouTube* content viewing inclination.

Technology gratification

Technology gratification identifies the comfort and reasonableness of nature with which individuals utilize the media (Venkatesh et al., 2003). Among all media, the Internet is the most sophisticated innovation handler. Technology is a vital instrument for users to appreciate medium gratification at the fullest (Venkatesh et al., 2003). Gratifications sought through technology have extensively been discussed in the recent past (Joo & Sang, 2013; Lee & Lehto, 2013). Users perceive two types of gratification via technology (i.e., medium appeal and convenience; Liu et al., 2010). Convenience sought is determined via various aspects, such as ease of use, user-friendliness, location convenience, etc. Medium appeal is a term relative to other media that users extensively use. Both content viewing and creation activity are technologically supported in *YouTube* (Haridakis & Hanson, 2009). Furthermore, technology support of *YouTube* extends its access through various devices and platforms. Although usage of different devices does not deliver distinct content (Finamore et al., 2011), universal devices may still facilitate specific featured interactions on *YouTube*, which further motivates the user to view and create content in *YouTube*. The following hypotheses are therefore proposed:

H7: Technology gratification has a significant positive relationship toward *YouTube* content creation inclination.

H8: Technology gratification has a significant positive relationship toward *YouTube* content viewing inclination.

YOUTUBE CONTENT VIEWING AND CONTENT CREATION INCLINATION

Many functions are supported by *YouTube*. Watching videos and creation of content are the basic functions from which other functions are derived. Users tend to expect functional or psychological gratifications from *YouTube* content. For example, Park and Goering (2016) attributed *YouTube* as a health-related companion in their study. Websites like *Facebook* and other social media platforms largely acquire unplanned traffic. *YouTube* gets both planned and unplanned traffic, where users' intention to visit the website may not be objective. Planned traffic leads to a focused approach with users. Although focused approaches are rare, this traffic typically results in content creation in *YouTube*. On the other hand, video viewing brings in unplanned traffic. Studies into *YouTube* use have focused more toward video viewing than video sharing (Duncan, Yarwood-Ross, & Haigh, 2013; Lee & Lehto, 2013). In either case, there is a potential risk of a minority of users becoming addicted to *YouTube*.

YouTube viewing and engagement involves entertainment, content seeking, co-viewing, and social interaction (Haridakis & Hanson, 2009). *YouTube* video viewing and creation requires quality engagement and they draw upon

both individual and interpersonal inspiration. Individual and interpersonal inspirations have been considered imperative factors for addiction by various researchers (Caplan, 2003; Chak & Leung, 2004; Shaw & Gant, 2002; Young & Rodgers, 1998). In particular, the affinity to YouTube content can be passion-driven. There is much interaction possible, in the form of commenting or uploading original and/or repeat content. Commenting in an online social platform can be driven by different agendas. In case of YouTube, video makers tend to react to the comments by, reading, responding, cross-commenting in commentator channels, extending friend requests to the commentators, and subscribing to commentator channels (Lange, 2007a). Siersdorfer, Chelaru, Nejd, and San Pedro (2010) infer that comments comprise different sentiments with respect to video types. Berger and Milkman (2012) found that comments can be driven by seven factors – anger, anxiety, awe, sadness, surprise, practical utility, and interest. The same reactions at an extended level can enhance the interactive parameter, leading to video creation and uploading. Such interactions are initially benign but can potentially develop into addiction, much like the compulsive-buying addiction explained by Edwards (1993). Chiang and Hsiao (2015) in their research proposed the role of motivation and sharing behavior in YouTube “stickiness.” With the integration of media into a single digital sphere, the risks of addiction are also potentially higher. It is obvious that the more facilities and features offered, the more time is spent by users on the social medium platform, where engagement could potentially transition into addiction for a minority of users. Figure 1 shows the conceptual model of the study. In light of the above discussion, the following hypotheses were proposed:

H9: YouTube content creation inclination has a significant positive relationship toward YouTube addiction.

H10: YouTube content viewing inclination has a significant positive relationship toward YouTube addiction.

YouTube content viewing and content creation inclination as mediators

The aforementioned discussion proposes a conceptual model that evaluates Hypotheses 1–10. The previous sections explained the role of gratifications toward addiction and on how it extends to social media functions. Also discussed were two important functions in YouTube use, namely, content viewing and content creation inclination. Hypotheses 1–8 propose positive relationships between four gratifications and the two YouTube functions. Hypotheses 9 and 10 propose positive relationships between YouTube addiction and the two YouTube functions. Despite the conceptual model comprehensively framing the hypothetical relationships, it is still necessary to examine the mediating effect that YouTube content viewing and content creation inclination has between the gratifications and YouTube addiction. As discussed above, a plethora of literature has supported the relationship between gratifications and addiction. This study investigates total, direct, and indirect effects that four gratifications and two YouTube functions have upon YouTube addiction. Thus, the final hypothesis proposes that:

H11: YouTube content creation and viewing inclination will mediate the effects of content, social, process, and technology gratifications on YouTube addiction.

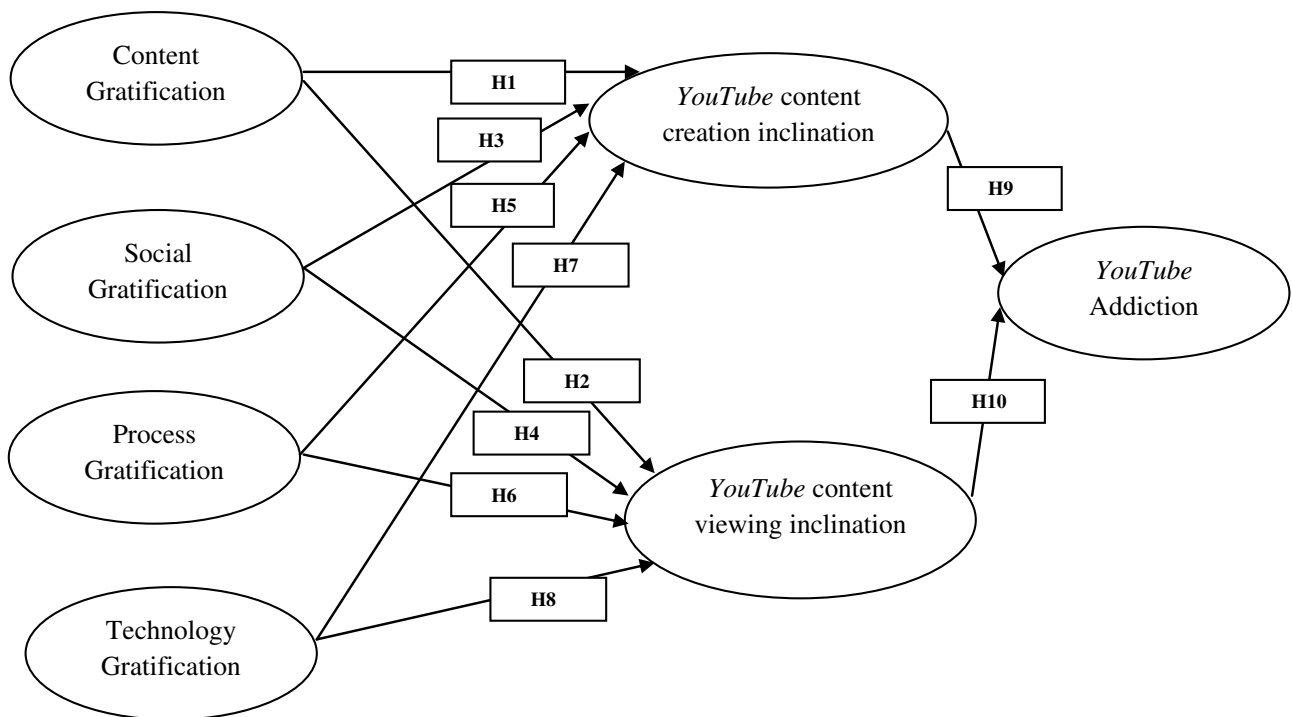


Figure 1. Hypothetical model of this study (H1–H10 represent Hypotheses 1–10)

METHODS

Participants

A total of 410 Indian students participated in a survey study, of which 243 were men (59.3%) and 167 were women (40.7%). Initially, a total of 1,250 *YouTube* users from nine different Indian universities were identified through their device IP addresses. The study respondents spent an average of 44.66 min daily on *YouTube* during working hours and 70.55 min daily on *YouTube* during non-working hours. A questionnaire was circulated to all identified *YouTube* users, from which, a total of 410 usable responses used for analysis. The respondents comprise undergraduate ($n = 219$), postgraduate ($n = 165$), and doctoral ($n = 26$) students (see Table 1 for further detailed descriptive statistics).

Measures

The questionnaire consisted of questions regarding respondent characteristics assessed via nominal and ordinal scales, followed by 38 statements representing the exogenous and endogenous constructs. All the items were rephrased to match the requirements of the study objectives. Initially, Stafford et al. (2004) proposed three gratifications (i.e., content, process, and social gratification); Liu et al. (2010) later added technology gratification to their research.

Table 1. Demographic characteristics of the sample

Characteristics		Frequency	%
Gender	Male	243	59.3
	Female	167	40.7
Education	Undergraduate	219	53.5
	Postgraduate	165	40.2
	Fellow/PhD/Doctoral	26	6.3
Age (years)	16–20	198	48.3
	21–25	150	36.6
	26–30	55	13.4
	Above 30	7	1.7
Minutes engaged in during working hours ^a (min)	16–20	35	8.5
	21–35	105	25.6
	36–50	104	25.4
	51–65	114	27.8
Minutes engaged in during non-working hours ^a (min)	66–72	52	12.7
	20–40	79	19.3
	41–60	85	20.7
	61–80	92	22.4
Favorite category of videos	81–100	75	18.3
	101–122	79	19.3
	Music	49	12.0
	Film and entertainment	44	10.7
	Gaming	65	15.9
Favorite category of videos	Beauty and fashion	53	13.0
	Sports	74	18.0
	Technology	42	10.2
	Cooking and health	24	5.9
	News and politics	59	14.3

Note. Working hours refer to 9 a.m.–6 p.m.

^aAverage minutes engaged with *YouTube* daily (average minutes observed by tracking 15-day-usage data of the respondents).

They also defined the first-order lateral constructs using second-order constructs. The scales were also further discussed in more recent papers (i.e., Mo & Leung, 2015; Weiyang, 2015). Items for *YouTube* content creation, content sharing, and addiction scales were derived from previous research (Andreassen et al., 2012; Haridakis & Hanson, 2009; Rubin, 1983).

The items for content gratification, process gratification, technology gratification, and social gratification were derived from the study of Liu et al. (2010). Content gratification was assessed with two sub-constructs – information sharing (three items) and self-documentation (three items); process gratification was assessed with three sub-constructs – entertainment (two items), passing time (two items), and self-expression (two items); technology gratification was measured with two sub-constructs – medium appeal (three items) and convenience (four items); and social gratification was measured using three items. Participants were asked to rate items following the statement: “Compared with your preexpectation, indicate your perception of experience of using *YouTube* in performing the following functions.” The gratification items were assessed via 5-point Likert scales ranging from “Confirmation – much higher than your expectation” (5) to “Disconfirmation – much lower than your expectation” (1). A 5-item affinity index proposed by Rubin (1983) was used to assess factors, such as *YouTube* content creation affinity (five items) and content viewing affinity (five items). The items were rephrased to meet the requirement of the study. Items for *YouTube* Addiction Scale (six items) were adapted from Bergen Facebook Addiction Scale (Andreassen et al., 2012) based on Griffiths’ (2005) addiction components model by replacing the word “Facebook” with the word “*YouTube*” and validated by Balakrishnan (2017). Consequently, the extreme consequences in this study are conceptualized and operationally defined as “*YouTube* addiction” rather than “problematic *YouTube* use.” The items of *YouTube* content creation affinity, content viewing affinity, and addiction were assessed using 5-point Likert scale where 5 represented “strongly agree” and 1 represented “strongly disagree.” The reliability and validity of the items are outlined in Table 2.

Analysis

This study utilized hierarchical structural equation modeling to test the proposed hypotheses. Unlike other modeling and path analysis testing models, hierarchical structural equation modeling employs a two-step approach. First, the evaluation of the validity of the measurement constructs through the measurement model, followed by the evaluation of the proposed structural hypothetical model. Unlike normal structural models, a hierarchical structural model follows order-wise validation of proposed constructs. The first-order measurement model validates initial latent constructs through the measurement items; the second-order measurement model validates the emerging second-level latent constructs via the first-level constructs. The second-order constructs, content gratification, technology gratification, process gratification are explained via first-order latent constructs. In this study, social gratification,

Table 2. Results of first-order and second-order measurement models

Construct	Items	Mean (SD)	Factor loadings	Composite reliability	AVE (MSV, ASV)
<i>First-order measurement model</i>					
Information sharing	Provide information	3.72 (1.00)	0.78***	0.794	0.562 (0.546, 0.150)
	Share information	3.58 (0.96)	0.70***		
	Information with interests	3.70 (1.01)	0.76***		
Self-documentation	Record learning	3.37 (0.90)	0.73***	0.790	0.556 (0.546, 0.168)
	Tracking	3.28 (1.04)	0.72***		
	Document life	3.38 (0.93)	0.79***		
Social interaction ^a	Sharing values	3.46 (0.93)	0.80***	0.810	0.588 (0.469, 0.128)
	Meet new people	3.31 (0.98)	0.74***		
	Personal connection	3.30 (0.90)	0.76***		
Entertainment	Enjoyment	3.31 (0.99)	0.79***	0.753	0.604 (0.250, 0.096)
	Entertaining	3.39 (1.08)	0.77***		
Passing time	Helps pass-time	3.14 (1.05)	0.69***	0.716	0.559 (0.324, 0.113)
	Nothing to do better	3.21 (1.11)	0.80***		
Self-expression	Show my personality	3.14 (1.18)	0.86***	0.817	0.623 (0.399, 0.234)
	To tell about myself	3.12 (1.09)	0.80***		
Medium appeal	Immediate posting	3.10 (1.27)	0.82***	0.845	0.687 (0.324, 0.113)
	Easy and cost-effective	2.91 (1.18)	0.79***		
	Easier to maintain	3.05 (1.15)	0.80***		
Convenience	Convenient to use	2.95 (1.16)	0.77***	0.832	0.563 (0.399, 0.147)
	Less effort	3.04 (1.15)	0.76***		
	Anytime and anywhere	3.12 (1.11)	0.79***		
	Easier to use	2.98 (1.26)	0.65***		
<i>Second-order measurement model</i>					
Content gratification ^b	Information sharing	3.11 (0.71) ^c	0.83***	0.894	0.809 (0.526, 0.209)
	Self-documentation	3.15 (0.67) ^c	0.86***		
Process gratification ^b	Entertainment	3.11 (0.76) ^c	0.63***	0.763	0.521 (0.203, 0.080)
	Passing time	3.13 (0.77) ^c	0.79***		
	Self-expression	2.84 (0.81) ^c	0.74***		
Technology gratification ^b	Medium appeal	2.75 (0.82) ^c	0.71***	0.852	0.909 (0.203, 0.049)
	Convenience	2.59 (0.78) ^c	0.69***		
	<i>YouTube</i> content viewing affinity ^b	Content viewing priority	3.39 (0.89)		
<i>YouTube</i> content creation affinity ^b	Feel lost without viewing	3.27 (0.98)	0.76***		
	Without <i>YouTube</i> viewing	3.42 (0.95)	0.78***		
	Viewing is more important	3.30 (1.01)	0.80***		
<i>YouTube</i> addiction ^b	Content creation priority	3.11 (1.14)	0.75***	0.862	0.614 (0.462, 0.162)
	Feel lost without content	2.99 (1.13)	0.85***		
	Without <i>YouTube</i> creation	2.88 (1.20)	0.82***		
	Creation is more important	3.19 (1.03)	0.70***		
<i>YouTube</i> addiction ^b	Planned use of <i>YouTube</i>	3.47 (0.97)	0.67***	0.874	0.540 (0.272, 0.089)
	Urge to use <i>YouTube</i>	3.48 (1.03)	0.74***		
	Personal problem resort	3.16 (1.05)	0.69***		
	Tried cut down <i>YouTube</i>	3.46 (1.08)	0.77***		
	Restless without <i>YouTube</i>	3.26 (1.02)	0.81***		
	<i>YouTube</i> impact on job	3.29 (1.03)	0.72***		

Note. First-order fit indices: $\chi^2/df = 2.309$ (good fit < 3); goodness-of-fit index (GFI) = 0.912, comparative fit index (CFI) = 0.928 (good fit > 0.9); root mean square error of approximation (RMSEA) = 0.057 (good fit < 0.06). Second-order fit indices: $\chi^2/df = 1.979$ (good fit < 3); GFI = 0.914, CFI = 0.936 (good fit > 0.9); RMSEA = 0.049 (good fit < 0.06). All loadings are standardized estimates. SD: standard deviation; AVE: average variance extracted; MSV: maximum shared squared variance; ASV: average shared squared variance.

^aSocial interaction is a single subcomponent of social gratification, ^bFactors representing the second-order measurement model, ^cValues denote factor scores of each second-order constructs.

*** $p < .001$.

YouTube content viewing, *YouTube* content creation, and *YouTube* addiction constructs were directly assessed via the first-order measurement items. This study used maximum likelihood method for estimating the structural path coefficients.

In this analysis, it is hypothesized that gratifications will mediate via *YouTube* content viewing and content creation on *YouTube* addiction. Baron and Kenny's (1986) approach of mediation is used in the AMOS (SPSS) program to calculate total, direct, and indirect effects. A structural

equation modeling program is effective when the latent variables and paths are well defined, since the total and direct effects are calculated separately in the model, and the indirect effect and mediation can be calculated effectively (Preacher & Hayes, 2004). This study used 2,000 bootstrap iterations through the bias-corrected percentile method. The model is framed using the factor scores obtained through the second-order modeling. Subsequently, MANOVA and ANOVA were carried out to understand if there were mean differences within the different groups of gender and age.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The study was approved by the first author's university ethics committee.

RESULTS

The first-order and second-order measurement models are explained along with validation requirements, followed by the hypothesis-testing model.

Measurement model

The results of the first-order measurement model satisfied the requirements of convergent and discriminant validity. The reliability of all constructs was above 0.70. The factor loadings of all constructs were more than 0.6, thus satisfying the necessary condition of the content validity (Nunnally, 1978). The measurement model was a good fit and matched the necessary conditions to further test the hypotheses

(see Table 2 for an overview of all the main results). Average variance extracted is another measure that is used to test the strength of convergent and factor item summation errors. In all cases, average variance extracted was more than 0.50, maximum shared squared variance and average shared squared variance, which further validates the convergent validity requirements (Fornell & Larcker, 1981).

Tables 3 and 4 show the interconstruct correlation matrix of the first-order and second-order latent constructs, respectively. In both tables, the square root of average variance extracted is presented across the diagonal. The values in the diagonal demonstrate that most cases are seen to be larger than the respective construct correlation with other factors and therefore satisfy the condition of discriminant validity to a greater extent (Sánchez-Franco & Roldán, 2005). The first-order and second-order measurement model estimates are shown in Table 2. All the loadings presented in Table 2 are standardized. The fit indices of first-order and second-order measurement models met the ideal satisfactory values.

Structural model

Of the proposed 10 hypotheses for the main structural model, six hypotheses were significantly supported. As shown in Table 4, content gratification and social gratification had a significant relationship with *YouTube* content creation inclination. Social gratification and process gratification had a significant relationship with *YouTube* content viewing inclination. Technology gratification was found to have an insignificant relationship with both *YouTube* content creation and content viewing inclination. *YouTube* addiction ($r^2 = .404$), the endogenous construct accounted for 30% of the total variance extracted via its

Table 3. Correlation matrix and $\sqrt{\text{AVE}}$ for the first-order factor model

Variables	V1	V2	V3	V4	V5	V6	V7	V8
Pass-time (V1)	0.748							
Information sharing (V2)	0.017	0.750						
Self-document (V3)	0.016	0.732	0.746					
Social interaction (V4)	0.066	0.613	0.684	0.767				
Convenience (V5)	0.323	-0.059	-0.086	-0.120	0.750			
Medium appeal (V6)	0.342	0.004	-0.154	-0.097	0.836	0.829		
Entertainment (V7)	0.477	0.112	0.178	0.163	0.249	0.228	0.778	
Self-expression (V8)	0.569	-0.113	-0.020	-0.057	0.368	0.283	0.500	0.831

Note. All values represent standardized estimates. The numbers in the diagonal represent $\sqrt{\text{AVE}}$. AVE: average variance extracted.

Table 4. Correlation matrix and $\sqrt{\text{AVE}}$ for the second-order factor model

Variables	CC	SG	CG	TG	PG	CV	YT
Content creation (CC)	0.784						
Social gratification (SG)	0.560	0.767					
Content gratification (CG)	0.680	0.725	0.899				
Technology gratification (TG)	0.053	-0.097	-0.083	0.954			
Process gratification (PG)	0.182	0.060	0.029	0.451	0.722		
Content viewing (CV)	0.016	0.316	0.220	0.146	0.397	0.779	
<i>YouTube</i> addiction (YT)	0.522	0.318	0.331	0.017	-0.041	0.225	0.735

Note. All values represent standardized estimates. The numbers in the diagonal represent $\sqrt{\text{AVE}}$. AVE: average variance extracted.

two immediate exogenous constructs. However, *YouTube* content creation inclination ($r^2 = .410$) and *YouTube* content viewing inclination ($r^2 = .300$) had adequate values to validate the model. The relationship between content gratification and *YouTube* content creation affinity was identified to have highest coefficient ($\beta = 0.569, p < .05$). Social gratification was the only exogenous construct that had a significant relationship with both *YouTube* content creation affinity ($\beta = 0.256, p < .05$) and content viewing affinity ($\beta = 0.281, p < .05$). Overall, the fit indices exhibited a good fit (Table 5).

The 11th hypothesis investigated the indirect effect of *YouTube* content viewing and content creation. The results indicate that *YouTube* content viewing and content creation impose a significant indirect effect between the content, social, and process gratification with *YouTube* addiction. However, the mediators fail to establish an effect between technology gratification and *YouTube* addiction. The detailed values are presented in Table 6. The multivariate analysis of variance results explained that there were no significant differences among the exogenous and endogenous factors within the categories at 95% confidence level,

gender (Wilk's $\lambda = .988, f = 0.701, p = .678$) and age (Wilk's $\lambda = .931, f = 1.361, p = .127$). The univariate analysis of variance also explained that the factors individually were not significantly different within the categories at 95% confidence level, *YouTube* addiction (gender $f = 2.899, p = .089$; age $f = 0.798, p = .496$), *YouTube* content creation inclination (gender $f = 1.754, p = .186$; age $f = 0.481, p = .695$), *YouTube* content viewing inclination (gender $f = 0.150, p = .699$; age $f = 1.077, p = .359$), content gratification (gender $f = 0.823, p = .365$; age $f = 1.622, p = .184$), process gratification (gender $f = 0.402, p = .526$; age $f = 0.722, p = .540$), technology gratification (gender $f = 0.019, p = .890$; age $f = 1.846, p = .138$), and social gratification (gender $f = 1.813, p = .179$; age $f = 1.674, p = .172$).

DISCUSSION

Previous studies have analyzed online addictions in different media, such as *Facebook*, online gaming, etc. There have been few studies that have analyzed user gratification and

Table 5. Maximum likelihood estimates for the hypothetical model

Endogenous factor (dependent)	Exogenous factor (independent)	Standardized coefficient	r^2	Hypothesis
<i>YouTube</i> content creation inclination	Content gratification	0.660***	.410	H1 – supported
	Social gratification	0.294***		H3 – supported
	Process gratification	0.135 ^{ns}		H5 – not supported
	Technology gratification	0.042 ^{ns}		H7 – not supported
<i>YouTube</i> content viewing inclination	Content gratification	0.008 ^{ns}	.207	H2 – not supported
	Social gratification	0.277***		H4 – supported
	Process gratification	0.442***		H6 – supported
	Technology gratification	0.005 ^{ns}		H8 – not supported
<i>YouTube</i> addiction	<i>YouTube</i> content creation inclination	0.512***	.404	H9 – supported
	<i>YouTube</i> content viewing inclination	0.319***		H10 – supported

Note. Model fit: $\chi^2/df = 2.406$ (good fit < 4); normed fit index (NFI) = 0.864, comparative fit index (CFI) = 0.888 (good fit > 0.85); root mean square error of approximation (RMSEA) = 0.059 (good fit < 0.08). ns: non-significant relationship. ***Significant at 99% confidence level.

Table 6. The total, direct, and indirect effects on *YouTube* addiction

Effects on <i>YouTube</i> addiction	Exogenous variables					<i>YouTube</i> content creation	<i>YouTube</i> content viewing
	Content gratification	Social gratification	Process gratification	Technology gratification	<i>YouTube</i> content creation		
Effect a	0.222**	0.163**	-0.121**	0.121**			
SE	0.080	0.081	0.049	0.049			
LB	0.064	0.005	-0.217	0.025			
UB	0.376	0.319	-0.026	0.216			
Effect b	-0.413***	-0.068 ^{ns}	-0.487***	0.096**	0.936***	0.528***	
SE	0.066	0.063	0.046	0.036	0.039	0.044	
LB	-0.549	-0.188	-0.575	0.022	0.860	0.438	
UB	-0.289	0.059	-0.394	0.163	1.014	0.612	
Effect c	0.636***	0.231***	0.366***	0.025 ^{ns}			
SE	0.066	0.057	0.043	0.033			
LB	0.507	0.121	0.284	-0.041			
UB	0.769	0.345	0.451	0.090			

Note. All the effects are standardized. These are calculated through factor scores imputed from the measurement models. Effects a, b, and c denote total, direct, and indirect effects. $n = 410$; bootstrap iterations = 2,000; bias-corrected percentile bootstrap method. SE: standard error; LB: lower bound effect; UB: upper bound effect; ns: not significant.

** $p < .05$. *** $p < .001$.

addiction to *YouTube* use. This study examined the addiction among *YouTube* users, from their expected confirmed gratification. The mean values of *YouTube* addiction scale were high enough to justify the user's perceived addiction. The data are representative of both male and female *YouTube* users.

Traditional media gratifies viewer expectation on information-seeking and entertainment. Television has been known as a successful entertainment media for many years. It is already a challenge to manage the zipping and zapping mechanism (fast forwarding through commercials) to attract viewers, especially with the advent of multidevice integration (Taylor, 2015). There have been numerous researchers who have investigated the effect of media and its flow toward addiction among viewers. In the recent past, there has been a paradigm shift among the users/viewers from traditional media to the online medium, especially to social media, where users are engaged in numerous functions. The multiple functions offered by *YouTube* have attracted many users to it. Thus, the possibility of getting addicted is equal to, if not more, in *YouTube* than in the traditional television medium. The uniqueness of *YouTube* as an entertainment medium is that it facilitates both content viewing and creation activities. Both features can induce users to spend considerable time on the site. This study explored the effect of *YouTube* content creation and viewing on *YouTube* addiction. Both content creation and viewing were found to have considerable effect on addiction, with content creation having a slightly higher coefficient of influence. Content creation is a dynamic activity that incorporates both personal satisfaction and social approval. User-uploaded videos posted range from original shows such as those on *Vevo* to user-edited videos such as parodies and spoofs. Apart from creating original video content for *YouTube*, users also spend considerable amount of time in activities, such as commenting on and sharing videos. Haridakis and Hanson (2009) consider *YouTube* content creation as a "co-viewing" activity, but the assessment of "co-viewing" is more concerned with engagement and participation with family and friends.

This research offered a broader perspective of content creation. It is also surprising to see that the addiction construct was highly correlated with content creation affinity compared with content viewing affinity. Content creation is an enhanced function of user engagement. Although there is no monetary reward associated with content creation, users create video content on *YouTube* to create and share videos exhibiting their interest and passion and comment on those that pique their interest. Content creation is a passionate activity, unlike content viewing, which is largely passive. Any activity driven by passion can create addiction (Burke & Fiksenbaum, 2009). This justifies the observed relationship. Although users tend to spend more time on viewing *YouTube* content, their involvement and passion in content creation in *YouTube* can lead users to addiction in a minority of cases.

The results confirm the role of gratifications toward *YouTube* content viewing and creation affinity. Social gratification was seen to have significant relationship with content creation and content viewing affinity. Caplan and High (2010) postulate that online users compensate for their

real-life disappointments through online messages and networking. Real-life difficulties, such as introversion and difficulty in social expression, are overcome in the virtual medium of social networking, which can potentially lead to addiction (Ferris, 2001). Indeed, pleasure obtained through communication is found to have high correlation with Internet addiction (Chou & Hsiao, 2000).

Communication and content are the basics for building a social interpersonal relationship. In this research, it was found that content gratifications had a significant positive relationship with *YouTube* content creation affinity, but there was no significant relationship with *YouTube* content viewing affinity. Content gratification comprises of two first-order constructs – information sharing and self-documentation. Previous literature has examined information sharing as a dependent behavior to flow and satisfaction experienced by users (Lu, Lin, Hsiao, & Cheng, 2010). Similarly, self-documentation is dependent upon content. Content viewing is like hedonic activity (Olney, Holbrook, & Batra, 1991), but content creation is an informing and self-explaining activity. The above rationales are justified through the obtained results.

Surprisingly, technology expectations were found not to have a significant relationship with *YouTube* content viewing as well as content creation affinity. Technology is an important factor that encourages users to engage in any social media domain. The results of technology gratification are a unique observation with reference to *YouTube*, which warrants further investigation. Technology acceptance is subjective to the experience of users, user beliefs, usage pattern, usefulness, system design, trust, risk, etc. (Davis, 1993; Pavlou, 2003; Venkatesh, 2000; Venkatesh & Davis, 2000). The composite mean values of technology gratification were higher than average, which shows that there was no disappointment in terms of technology expectations among users. Even so, technology failed to establish a linear pattern with *YouTube* affinity.

Process gratification was found to have a significant relationship with *YouTube* content viewing affinity but not with *YouTube* content creation affinity. As discussed earlier, content creation is a passionate activity rather than mere entertaining activity. Content viewing in *YouTube* is predominantly due to a hedonic expectation from users. The results from this study justify the above premise. *YouTube* content viewing affinity is more of an entertainment and passing time activity, whereas content creation may be more than merely entertaining; further investigations are required to better understand the relationship between passing time and content creation affinity.

The results of the mediation analysis demonstrated that content, process, and social gratifications are well enhanced via *YouTube* content viewing and content creation inclination contributing to higher *YouTube* addiction scores. Table 6 explained that the gratifications have a direct effect on *YouTube* addiction, but that the indirect effects are relatively higher with the aforementioned three gratifications, which imply strong partial mediation. Consequently, analysis also demonstrated that technology gratifications had no mediation or strong total effect toward *YouTube* addiction. These results imply that content is a strong instrument that enables *YouTube* addiction among students.

The MANOVA and ANOVA results established that there were no significant differences among the factors within gender and age groups. This appears to demonstrate that the factors are observed the same across all categories of age and gender. The results of mediation, MANOVA, and ANOVA provide new insights for new research to understand the relationship between gratification, content, and addiction, as well as how it is standard across different demographic segments.

CONCLUSIONS

The emergence of social media and its diversified functions has led to extensive exploration and content creation by users for personal and social gratification. Although various researchers have investigated the role of social media content in various perspectives, the present research sought to understand the relationships between gratification and *YouTube* content viewing and creation. Findings of this study will stimulate researchers to investigate social media addiction in various new dimensions and platforms. This study also provides valuable insights to social media practitioners and researchers, especially in knowing the role of content in the addiction process. Moreover, the research explores addiction behavior in new dimensions, which will offer more value to psychological research.

YouTube is more than a video sharing and viewing channel. It has created career for new talents in the field of education, arts, business, psychology, medicine, entertainment, etc. The success of *YouTube* is a reflection of what the channel has offered to the users and how the users have availed of it. This study mainly focused on the role of user gratifications and their content viewing and creation inclination toward *YouTube* addiction. Studying different functions of social media users through theoretical and practical constructs has always been a challenge. Literature discussed in this study has suggested a potentially valuable framework to conceptualize as a hypothetical model. The results are consistent with past research, and there is no major deviation from past literature. On the other hand, it is surprising to see that technological gratifications did not significantly relate to the content inclination. This is an important call for social media practitioners to keep updated technologically, failing in which may not arouse users in their social media function. Addiction can be examined from a number of perspectives. Here, in the view of psychology, it is as an excessive function, and in the view of practitioners, it is as an enlarged function. This study conceptualized the model from both these perspectives.

Limitations and future research

In spite of numerous contributions, this study is not without limitations. First, the study was confined only to content viewing and content creation as major variables of *YouTube* addiction. Future studies may explore other *YouTube* functions, which can result from gratification seeking and attempt to explore its role toward *YouTube* addiction. This study utilized a non-clinical convenience Indian-student sample with age group from 16 to 34 years, which may

affect the generalizability of the study results from an age, cultural, and clinical perspective. Future studies should aim to replicate the findings presented here with studies involving clinical and non-clinical samples from other countries with other age ranges. In addition, the data were self-report and self-selected, and subject to biases (such as recall biases and social desirability biases). Although students are considered to be the relevant sample for the study objectives, future studies may want to focus on examining the functions of addiction among mature age groups. This study also investigated addiction to *YouTube* vis-à-vis gratification. Addiction is a continuum-based activity, which from a technological perspective can incorporate other theories (e.g., flow theory). Future studies could integrate the flow mechanism of *YouTube* and its integration with other social media platforms. Users of social media sites, such as *YouTube*, seek various types of gratifications. This study attempted to explore four gratifications. Future studies can explore more gratifications and can study content creation and content viewing activity separately to provide a better analytical perspective. Comparing the addiction level of *YouTube* users across different countries may also provide extra insights to the results reported in this study.

Funding sources: None.

Authors' contribution: Both authors contributed to the preparation of this manuscript.

Conflict of interest: The authors declare no conflict of interest.

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