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Compulsive YouTube usage: A comparison of use motivation and personality effects

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Abstract

This paper explores compulsive use of YouTube by university students and investigates how the uses and gratifications perspective and the personality perspective work together to explain compulsive use of the social medium. It compares the effects of motivation to use YouTube for information with motivation to use the platform for entertainment, and examines how the different motivational effects compare with those of personality. It also explores the influence of compulsive use of YouTube on academic motivation. Data from 807 students at a Malaysian university were analysed using hierarchical multiple regression. Stronger motivation to use YouTube for information and learning is associated with lower compulsive use, while stronger motivation to use YouTube for entertainment is associated with higher compulsive use. Entertainment motivation has a stronger effect than information motivation. Although tendency to compulsive use differs with personality traits, the motivation effects are independent of personality. Compulsive YouTube use negatively influences academic motivation. While educators can take risks of compulsive use into account when they propose YouTube resources to their students, information literacy education and training can play an additional role in risk reduction by alerting social media users to the risks of compulsive use and helping them to develop self-management strategies.

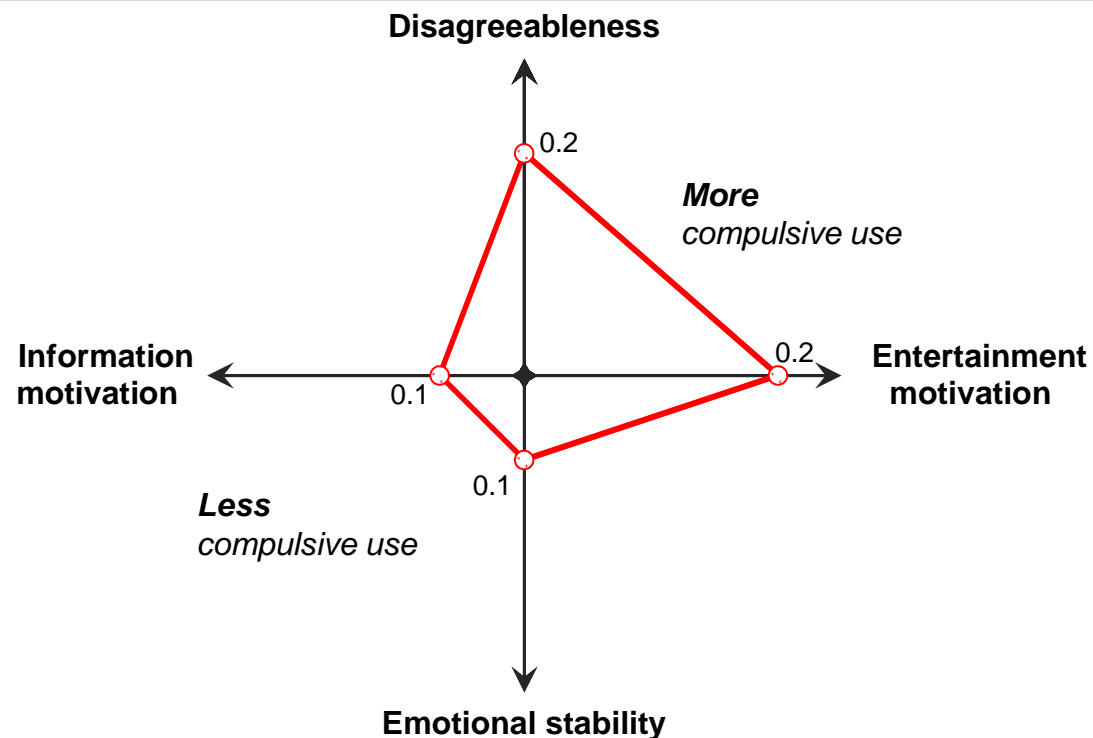
Keywords

social media, compulsive use, YouTube use, use motivation, self-regulation, information literacy

Relative influence of YouTube use motivation (horizontal dimension) and personality (vertical dimension) on compulsive YouTube use

- *Disagreeableness* and *entertainment motivation* both *increase* compulsive use;
- *Emotional stability* and *information motivation* both *decrease* compulsive use;
- The effects that increase compulsive use are twice as strong as those that decrease it.

Academic motivation declines with increases in compulsive YouTube use.



Compulsive YouTube usage: A comparison of use motivation and personality effects

Abstract

This paper explores compulsive use of YouTube by university students and investigates how the uses and gratifications perspective and the personality perspective work together to explain compulsive use of the social medium. It compares the effects of motivation to use YouTube for information with motivation to use the platform for entertainment, and examines how the different motivational effects compare with those of personality. It also explores the influence of compulsive use of YouTube on academic motivation. Data from 807 students at a Malaysian university were analysed using hierarchical multiple regression. Stronger motivation to use YouTube for information and learning is associated with lower compulsive use, while stronger motivation to use YouTube for entertainment is associated with higher compulsive use. Entertainment motivation has a stronger effect than information motivation. Although tendency to compulsive use differs with personality traits, the motivation effects are independent of personality. Compulsive YouTube use negatively influences academic motivation. While educators can take risks of compulsive use into account when they propose YouTube resources to their students, information literacy education and training can play an additional role in risk reduction by alerting social media users to the risks of compulsive use and helping them to develop self-management strategies.

Keywords

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1. Introduction

The social media platform, YouTube, is a popular Internet platform for information and entertainment. Although YouTube's entertainment content is viewed by more users than its formal educational content Social Blade (2016), it has become an important open information resource, of value for enhancing topic knowledge (Zahn, Krauskopf, Hesse, & Pea, 2010), learning how to undertake procedural tasks (Lee & Lehto, 2013) and supporting university study (Orús et al., 2016). At the same time, research on problems associated with student use (Glass, Suhong, & Rong, 2014; Wohn & LaRose, 2014) and employee use (Moqbel & Kock, 2018) of other Internet social platforms suggest that there might also be a 'dark side' to YouTube use. In this paper, we focus on one form of problematic use, compulsive use, that is, usage that the user is unable to limit or control.

Research on problematic Internet use tends to take one of three perspectives: a uses and gratifications perspective, which implies that users exercise some reasoned choice to gratify

certain needs (such as an information motivation or entertainment motivation) (e.g. Basak & Calisir, 2015; Dhir, Khalil, Lonka, & Tsai, 2017); a personality perspective, which assumes that problematic use is in some ways automatic or natural behaviour for people with certain personality characteristics (e.g. De Cock et al., 2014; van der Aa et al., 2009); or an environmental perspective, which considers social influences such as norms and community identification (Chiang & Hsiao, 2015). These perspectives are rarely combined. This paper takes a first step toward a combined view by focusing on the first two perspectives, which appear to propose competing views of individual choice or agency for use: the uses and gratifications perspective which assumes choice and the personality perspective, which assumes use is a more automatic behaviour. The paper examines if and how these two perspectives work together to explain compulsive use of YouTube.

The research is conducted in the context of YouTube use by university students. In this context, two potentially rival motivations for YouTube use exist: use for information and learning (information motivation) and entertainment use (entertainment motivation). This research answers the call to distinguish between adaptive and maladaptive use in academic settings (Doleck, Bazalais, & Lemay, in press) Furthermore, because personality has been found to play a role in problematic Internet use (Kuss, Griffiths, & Binder, 2013; Nichols & Nicki, 2004) and problematic use of social media (Griffiths, 2013; van der Aa et al., 2009), it can be expected to have an effect on compulsive use of YouTube. These observations give rise to the first two questions that guide the research: (1) What are the relative effects of motivation to use YouTube for information and entertainment on compulsive YouTube use among university students? (2) How do these motivational effects compare with the effects of personality traits that have been associated with use of other Internet social platforms? Following earlier studies of maladaptive and problematic Facebook use by university students, a third question considers the potential for compulsive YouTube use to negatively affect students' academic motivation: (3) How does compulsive YouTube use affect academic motivation? This question addresses the lack of previous research on impacts of social media use on academic motivation (Akçayır & Akçayır, 2016).

2. Background

2.1. YouTube as content resource and social medium

YouTube makes videos available across the Internet, mostly free of charge or need to register and login. Videos are uploaded to YouTube by registered users, including institutional content providers (educational institutions, traditional and digital media firms, musicians, gamers, and others), professional and semi-professional 'vloggers' who can earn significant income from the videos they upload to their own YouTube channels, and other individual users. The platform's social characteristics centre around features that permit users to follow selected content providers and view videos in a sequence that delivers a new video automatically at the end of the currently showing video or by clicking on one of the prominently displayed links to related videos. YouTube uses an algorithm to determine related videos to display, based in part on the audience appeal of similar videos (measured in terms of views, votes and other use-related

data) and, for subscribers, their profile, viewing history and formal and informal social connections to providers and other users (Gielen & Rosen, 2016; YouTube Creator Academy, 2017). Social relationships can form around video content, with viewing patterns and user preferences driving social connections (Khan & Vong, 2014). At the time of writing, YouTube was the second most frequently visited Internet platform in the world (Alexa, 2018) and the YouTube app had become the third most popular app for mobile devices (Statista, 2018).

2.2. Compulsive use

The content and social networking characteristics of the Internet and its social platforms are associated not only with positive outcomes such as learning, but also with problematic user behaviours (Griffiths, 2013; Hsiao, Shu, & Huang, 2017). Although terminology and definitions vary, most work on problematic Internet use is inspired by clinical definitions of mental illness. The two most significant problems discussed are addiction and compulsive use. Addiction occurs when a user, who is unable to limit their use of the platform and needs increasing interaction for gratification, experiences significant negative effects on their physical or mental health, relationships, or other aspects of their life (Griffiths, 2013). Compulsive use occurs when users are unable to limit their use (Quiñones-García & Korak-Kakabadse, 2014; Wohn & LaRose, 2014). Thus, compulsive use is a component of Internet addiction, but can also exist on its own if the user does not experience major negative effects in their life as a result of use (Griffiths, 2013). Despite controversy about the level at which these conditions should be measured for clinical diagnosis, empirical studies have identified addiction to, and compulsive use of, specific Internet social platforms and activities, including the social networking service, Facebook, and gaming. Drawing on this literature, we define compulsive YouTube use as when a user has an inability to self-regulate use; for example, they are unable to control the frequency of use or time spent on the platform.

Each Internet platform or activity has specific features that permit compulsive use. As Kuss and Griffiths (2011) point out, platforms such as Facebook and LinkedIn promote opportunities for personal and professional advancement; for users of these platforms, a perceived increase in opportunities can motivate increased use, and thus the potential for compulsive use. Of particular concern for educators who prescribe or recommend YouTube videos as learning resources for their students is the potential for social platforms to distract them from study (Balakrishnan & Griffiths, 2017; Kirschner & Karpinski, 2010). Learners who are consistently unable to control their impulses to follow the sequence or who continue to select related videos that look interesting, even if not related to the original, informational video, demonstrate symptoms of compulsive use.

2.3. Use motivation and compulsive YouTube use

Motivation for use of traditional and online media and Internet social platforms is, according to the uses and gratifications approach (Katz, Blumler, & Gurevitch, 1973), directed by users' needs for gratification (Ruggiero, 2000). Differences in use of Internet social platforms reflect different motivations for use (Kuss & Griffiths, 2011), and YouTube has been found to meet three of the four needs for gratification that Gan (2016) proposes drive choice of social media: information

gratification associated with use of informational content; hedonic gratification through use of entertainment content and, in some contexts, social gratification through implicit or explicit social connections related to content (Haridakis & Hanson, 2009). Individual learning provides a strong motivation for YouTube use (Khan, 2017) and videos that are entertaining at the same time as being informative and entertaining might provide even stronger motivation for use (Schneider, Weinmann, Roth, Knop, & Vorderer, 2016).

While research on other Internet platforms suggests that social and entertainment motivations have the potential to result in compulsive use, there is no particular reason to propose that motivation to use YouTube as an information resource would have a similar effect, and consistent with this Yang and Tung (2007) found that, while Internet addicted high school students had higher levels of entertainment motivation, they did not have higher levels of information motivation. If anything, given the demonstrated value of YouTube in learning and teaching (Orús et al., 2016), motivation to use YouTube for information might reduce distraction from the social and entertainment use that can become compulsive. In order to test if information motivation is associated with compulsive use, we hypothesise that:

H1. Stronger motivation to use YouTube for information results in less compulsive use.

Kim, LaRose, and Peng (2009) observed that use of the Internet for entertainment is associated with compulsive use. It therefore seems likely that user motivation to use YouTube, a specific Internet source of entertainment media, is a predictor of compulsive YouTube use, and we hypothesise that:

H2. Stronger motivation to use YouTube for entertainment results in more compulsive use.

2.4. Personality and compulsive YouTube use

Tendency toward compulsive use of the Internet and its social platforms has been found to vary with personality. Much of the research on personality and Internet use is based on the Five-Factor Model (Ross et al., 2009), which proposes that an individual's personality can be evaluated using five dimensions: agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience (McCrae & John, 1992). There is a wide range of research on how personality affects different aspects of social platform use, ranging from choice of platform (e.g., Hughes, Rowe, Batey, & Lee, 2012) to time spent using a platform (e.g., Amichai-Hamburger & Vinitzky, 2010; Correa, Hinsley, & De Zuniga, 2010; Liu & Baumeister, 2016). In their review of the literature of problematic Internet social network services (SNS) and their use, Kuss and Griffiths (2011) suggested that the higher SNS usage associated with certain personality characteristics puts people with these characteristics at risk of problematic use.

Studies of compulsive Internet use have found that personality plays an identifiable role. De Cock et al. (2014) estimated that 20% of the variance in compulsive SNS use is associated with personality. Van der Aa, et al. (2009) observed that neuroticism, intraversion (the reverse of extraversion), and disagreeableness (low levels of agreeableness) predispose young people to develop compulsive Internet use. Therefore we hypothesise that:

H3. Certain personality characteristics more strongly affect compulsive YouTube use than others.

To test which personality characteristics are associated with compulsive YouTube use, we establish a specific hypothesis for each characteristic identified in the Five-Factor Model (Ross et al., 2009), as follows.

Agreeableness is associated with friendliness, kindness, and concern for social cohesion. Several studies have found that agreeableness is negatively associated with Internet addiction (Kuss et al., 2013; Servidio, 2014) and compulsive Internet use (van der Aa et al., 2009). This is mirrored in studies of SNS use: people with higher levels of agreeableness are less likely to be problematic (Glass et al., 2014) or compulsive (De Cock et al., 2014) users of SNS. To test for an effect of agreeableness on compulsive YouTube use, we hypothesise that such an effect would be in the same direction as the effect of agreeableness on problematic Internet and SNS use:

H3a. Higher agreeableness results in lower compulsive use of YouTube.

Conscientiousness refers to a person's self-discipline and focus on achievement. Previous research has found that people with higher levels of conscientiousness are less likely to be problematic (Glass et al., 2014) or compulsive (De Cock et al., 2014) SNS users. To test for an effect of conscientiousness on compulsive YouTube use, we hypothesise that such an effect would be in the same direction:

H3b. Higher conscientiousness results in lower compulsive use of YouTube.

Extraversion is characterised by sociability and energetic behavior. Its converse, introversion, has been associated with Internet addiction among university students (Servidio, 2014), but there is mixed evidence about the relationship between extraversion/introversion and compulsive use. Although compulsive Internet use has been observed among university students with low extraversion/high introversion (McIntyre, Wiener, & Saliba, 2015; van der Aa et al., 2009) extraversion appears not to be associated with compulsive SNS use (De Cock et al., 2014), even though extraverts spend more time on SNS (Correa et al., 2010; Wilson, Fornasier, & White, 2010). In order to test the effect of extraversion on compulsive use of YouTube, we hypothesise:

H3c. Higher extraversion results in lower compulsive use of YouTube.

Neuroticism is a tendency toward negative emotion, anxiety, and low mood. Several studies have found that people with higher levels of neuroticism use SNS more frequently for social purposes (Hughes et al., 2012; Ryan & Xenos, 2011). Neuroticism is a strong personality predictor of Internet addiction (Kuss et al., 2013) and compulsive Internet use (van der Aa et al., 2009), and a recent study by Hsiao (2017) found that neuroticism positively influences compulsive mobile SNS use. To test for an effect of neuroticism on compulsive YouTube use, we hypothesise that such an effect would be in the same direction as the effect of neuroticism on compulsive Internet use and on compulsive mobile SNS use:

H3d. Higher neuroticism results in higher compulsive use of YouTube.

Openness to experience is characterised by a tendency for intellectual curiosity, independent thought, and novelty seeking. Openness has been found to be positively associated with time spent on SNS (Correa et al., 2010) and compulsive mobile SNS use (Hsiao, 2017). However, in several large sample studies it was not associated with compulsive Internet use (van der Aa et al., 2009) or compulsive SNS use (De Cock et al., 2014). Similarly, Servidio (2014) found that openness was positively associated with Internet addiction among university students, although Kuss et al. (2013) did not. In order to test the role of openness in compulsive YouTube use, we hypothesise:

H3e. Higher openness results in higher compulsive use of YouTube.

2.5. *Academic motivation*

Studies of Facebook use among university students suggest that compulsive Internet platform use is related to academic motivation and academic performance, although the extent and nature of these relationships is not yet clear (Doleck & Lajoie, 2018). In one US study, Facebook users had lower grade point average (GPA) than non-users (Kirschner & Karpinski, 2010). Another study suggests that this effect extends to the amount of time spent on the platform: Junco (2012) found that the time students spent on Facebook had a strong negative relationship to grade point average (GPA).

The effect of compulsive use on academic performance appears, however, to be indirect, and Wohn and LaRose (2014) found that compulsive use of Facebook did not affect academic performance directly, but rather indirectly by having a negative effect on academic motivation. This observation is consistent with some, but not all, studies of academic motivation and performance. Although Kappe and van der Flier (2012) did not find an association between motivation and performance, other studies have found low academic motivation to be associated with other indicators of academic performance, including procrastination, reduced control over the learning process and reduced engagement (Lee, 2005), and student retention (Allen & Bir, 2012) as well as academic performance itself (Guay, Ratelle, Roy, & Litalien, 2010). Further insight is provided by recent studies that examine problematic technology use and academic motivation. Of particular interest is Janković, Nikolić, Vukonjanski, and Terek's (2016) observation that academic motivation is not only negatively associated with time spent using smartphones, but that students are more likely to "sacrifice" academic work than smartphone or Facebook use when pressed for time.

Academic motivation is a multi-faceted concept associated with the self-determination theory (SDT) of Deci and Ryan (Clark & Schroth, 2010). Of particular interest for this study are SDT researchers' observations that (a) autonomous motives, such as placing high value on attending university (as distinct from controlled motives, such as attending university to meet parental expectations) are associated with intrinsic rather than extrinsic motivation to pursue goals (Deci & Ryan, 2000; Vansteenkiste, Lens, & Deci, 2006), and (b) intrinsic motivation is associated with higher quality learning and stronger academic performance than extrinsic motivation (Vansteenkiste et al., 2006). Consistent with the autonomous motives view, we

define academic motivation for this study as the intrinsic value that learners place on participation in, and completion of, a university degree.

The autonomous motives view provides an explanation of Wohn and LaRose's (2014) observation that compulsive use of Facebook affected academic performance by reducing academic motivation. This suggests that, in the academic environment, compulsive Internet use is symptomatic of poor self-regulation of academic activities, an academic "motivation guzzler" (Martin, 2001), however given the lack of prior studies to confirm this, further research is required. In order to test the effect of compulsive YouTube use on academic motivation, we hypothesise:

H4. Compulsive YouTube use has a negative effect on academic motivation.

3. Material and methods

The research was conducted in Malaysia, where YouTube use is high. A survey was used to gather data from students at a Malaysian university, and hierarchical multiple regression was used to test the hypotheses.

3.1. YouTube use by young Malaysians

A 2015 Google survey of YouTube use in Malaysia found that, as the local press put it, Malaysians "watch more YouTube than anyone else in the world": an average of 80 minutes a day, "double the global average" (Kaur, 2016). Although most of this use was for entertainment, videos for procedural learning were also popular. Young Malaysians (aged 16 to 34) prefer YouTube to cable or broadcast television, and by 2015, 75% of use took place on smartphones (Chu, 2016).

3.2. Participants and procedure

Participants were students currently enrolled in a well-ranked research and teaching university in Kuala Lumpur, Malaysia. As university students, the participants were likely to have information needs that could be met by YouTube, as well as entertainment needs.

In order to obtain data from students in different fields and different levels of study, with different levels of Internet and computing skills, and to enable a visual check that respondents were likely to be current university students, a convenience sample was taken in person from students at different locations across the university. Because it was necessary to gather data on several multi-item scales (as discussed below) a questionnaire survey was used. Although it would have been possible to use computer-assisted interviewing, a paper-and-pencil questionnaire was preferred as part of a non-coercive ethical protocol, as it permitted students who did not want to overtly state they were not interested in participation to return an incomplete form. Only current students of the university who used YouTube were eligible to complete the survey.

The printed questionnaire was distributed to students by research assistants who visited the university library, faculty buildings, student dormitory and bus station on several occasions and different times of day. Students who agreed to participate were asked to complete the questionnaire and return it directly to the research assistant who was waiting at the location. Of the 1,000 distributed questionnaires, 822 (82.2%) were returned. Approval was provided by [a participating university's] human research ethics approval procedure to analyse the data.

Fifteen questionnaires (1.8%) were excluded from analysis following data screening because they were either missing responses essential to the analysis, or provided inconsistent answers to demographic questions. The number of cases available for analysis was therefore 807, which exceeds the minimum sample of 320 required to enable us to identify a small effect with statistical significance of .05 and statistical power of .95 (estimated using G*Power 3.1.9.2, Faul (2014)).

Participant characteristics are summarised in Table 1. In common with the university population, there were more females than males, more undergraduates than postgraduates, and the vast majority of participants were 25 or younger. Participants were also drawn from the different ethnic populations in Malaysia; in common with the student population, there were proportionally more ethnic Chinese than ethnic Malays, and relatively few participants from other ethnic backgrounds.

Table 1
Participant characteristics ($N = 807$)

Characteristic	Group	n	%
Gender	Female	528	65.4
	Male	279	34.6
Level of study	Undergraduate	743	92.0
	Postgraduate	65	8.0
Age	under 20	65	8.1
	20-25	682	84.5
	Over 25	60	7.4
Race	Malay	348	43.1
	Chinese	383	47.5
	Other	76	9.4

3.3. Measurement

With one exception, all variables included in the hypothesis tests were measured with multi-item scales derived from other researchers, as discussed in this section. The items, other than those for the standard personality instrument used in this study, are listed in full in the Appendix. All items were measured on a 5-point Likert scale from a "strongly disagree" to 5 "strongly agree".

3.3.1. Compulsive use

Items to measure compulsive use were adapted from Wohn and LaRose (2014). Two original items, "I have made unsuccessful attempts to stop using [platform]" and "I am unable [revised to "not able"] to reduce the amount of time I spend on [platform]" were retained. One item, "I have tried to stop using [platform] for long periods of time" was split into two to remove ambiguity: "I have tried to stop using YouTube"; "I am not able to stop using YouTube". The final Wohn and LaRose (2014) item, "I think of [platform] as a problem in my life" was measured in a revised form as "My use of YouTube has become a problem in my life". Although this item performed well in tests of reliability and discriminant validity, it is not specific to compulsive use. When the item was omitted, the reliability of a scale formed from the four remaining items remained good ($\alpha = .807$). Compulsive use was therefore calculated as the mean of the four compulsive use-specific items.

To examine the prevalence of compulsive YouTube use among the students, we divided the sample into two groups based on the students' compulsive use scores. Students whose compulsive use score was above 3 had agreed (or strongly agreed) with all or most items in the compulsive use scale. These students were classified as compulsive YouTube users. All other students were classified as non-compulsive users.

3.3.2. YouTube use motivation

A new scale was developed to measure motivation to use YouTube as a source of information or for learning (*information motivation* from here). The four candidate items were developed by the research team, which included experienced educational technology researchers, an information scientist, teachers and student researchers, and pilot tested, along with the other scales, in the student population. The items formed a reliable scale (Cronbach's α of .87). Information motivation was measured as the mean of the four items.

Items to measure motivation to use YouTube for entertainment (*entertainment motivation* from here) were drawn from Kaye's (1998) nine item scale to measure use of the World Wide Web for "entertainment". The nine items formed two factors in our sample: six items associated with entertainment and three items associated with relaxation (details available from the authors). Because our study is concerned with entertainment, rather than relaxation, we omitted the relaxation items. The six entertainment items formed a reliable scale (Cronbach's $\alpha = .85$). Entertainment motivation was measured as the mean of these items.

3.3.3. Academic motivation

For data collection, we adopted Wohn and LaRose's (2014) scale for academic motivation unchanged. After omitting one item with low item-total correlation, Cronbach's α was marginal at .63. Although not as reliable as desired, we created an academic motivation scale by calculating the mean of the three retained items.

3.3.4. Discriminant validity and factor structure

Because we introduced a new use motivation scale for information, it was important to test that it could be measured independently of the other motivation scales in our study. We used factor analysis to do this: we used the principal factor extraction algorithm in SPSS software to extract all factors with eigenvalue > 1 , and rotated the factors using varimax rotation.

The results are shown in Table 2. Four factors emerged. Discriminant validity was confirmed, with items loading as expected on each factor. Diagnostic statistics were satisfactory (KMO = .84; ratio of sample to items = $807/17 = 47.47$, which exceeds 10). All factors explained more than 5% of variance. The first factor extracted accounted for less than half of the explained variance, indicating that common method variance was not a problem in this sample, according to Harman's single factor test. There was a moderately weak correlation between information motivation and entertainment motivation ($r = .33$, $p < .001$).

Table 2

Validity and reliability of measurement scales (principal factor extraction with varimax rotation)

Item	Factor			
	<i>Entertainment motivation</i>	<i>Information motivation</i>	<i>Compulsive use</i>	<i>Academic motivation</i>
ENT1 - exciting	.79			
ENT3 - amusing	.76			
ENT2 - thrilling	.73			
ENT4 - entertaining	.70			
ENT6 - enjoyable	.64			
ENT5 - like to access it	.50			
LM2 - solve problems		.86		
LM3 – answer questions		.79		
LM1 - learn about my courses		.75		
LM4 - to learn new things		.68		
CM2 - unable to reduce time			.79	
CM1 - unable to control			.71	
CM4 - unable to stop use			.66	
CM3 - tried to stop use			.59	
AM1 - not motivated to study				.69
AM2 - doubt value of a degree				.61
AM4 - low interest in coursework				.45
Variance explained	18.15	14.93	12.48	6.86
Cronbach's alpha	.851	.867	.807	.629

3.3.5. Personality

Personality was measured using John and Srivastava's (1999) 44 item Big Five Inventory. The five dimensions measured by this well-established scale are measured as the mean score of the items for each dimension; we followed that convention.

3.3.6. Control variables

To more accurately distinguish compulsive use from time-intensive and frequent, but not compulsive use, we controlled for time and frequency of use. The full measurement scale and distribution of responses for time and frequency of use are provided in Table 3. For parsimony of analysis, we collapsed time per login to three levels: less than 30 minutes, more than 30 minutes but less than 2 hours, and 2 hours or more. Frequency of use was also collapsed to three levels: several times a day, several times a week, and no more than once a week. Both time and frequency were represented in the analyses as dummy variables.

We also controlled for age, gender, race and level of education. The control for age used a dummy variable, under 25 vs 25 or older. Two dummy variables were used to control for race: Malay or not Malay, and Chinese or not Chinese.

3.4. Data analysis

To examine the characteristics of compulsive and non-compulsive users in the sample, we compared the demographic characteristics and usage statistics of students in each group. We used chi-square to test for patterns of compulsive use across the different groups.

Hypotheses 1 to 3 were tested with hierarchical multiple regression in which the control variables were entered in the first model (Model 0) which served as the baseline for measurement of the effects of information motivation and entertainment motivation (Model 1, hypotheses 1 and 2) and personality (Model 2, hypotheses 3a to 3e) on compulsive use. Use motivation and personality were also combined a final model (Model 3), which allowed comparison of their relative effects.

Hypothesis 4 was also tested with hierarchical multiple regression in which the control variables were entered in the null model (Model 0). Compulsive use was then regressed on academic motivation in Model 1.

4. Results

4.1. Descriptive statistics

Participant use of YouTube is summarised in Table 3. Almost half of the students used YouTube at least once a day, and only 6.1% used it no more frequently than once a month. Usage varied from less than 10 minutes to more than three hours on days that the student logged in. While two-thirds of the students reported use of less than an hour a day, 12.8% used YouTube for more than two hours each day. The wide range of these statistics suggests that a small number of heavy users might have skewed the Malaysian YouTube use statistics obtained by Google

(Kaur, 2016). Nonetheless, YouTube use is substantial among the student participants in our study.

Table 3

YouTube usage

Usage measure	Reported usage	<i>n</i>	%
Login frequency	Several times a day	202	25.0
	About once a day	178	22.1
	Several times a week	268	33.2
	About once a week	63	7.8
	About every 2-3 weeks	47	5.8
	About once a month	30	3.7
	No more than 10 times a year	19	2.4
Time per login day	less than 10 minutes	124	15.4
	10-30 minutes	244	30.2
	More than ½ but less than 1 hour	181	22.4
	1 to under 2 hours	155	19.2
	2 to under 3 hours	75	9.3
	More than 3 hours	28	3.5

Descriptive statistics for use motivation, compulsive use and academic motivation appear in Table 4. All variables were normally distributed. Motivation to use YouTube for both information (3.89) and entertainment (3.71) were both quite high. Compulsive use was moderately low (at 2.52, below the midpoint of the scale). Academic motivation was modest (at 3.15, only a little above the midpoint).

Table 4

Descriptive statistics for compulsive use, use motivation and academic motivation

	M	SD
Compulsive use	2.52	0.77
Information motivation	3.89	0.74
Entertainment motivation	3.71	0.64
Academic motivation	3.15	0.76

Note. 1 = lowest to 5 = highest.

The distribution of participant personality characteristics is shown in Table 5. Agreeableness was relatively high, while the lowest mean score was for neuroticism, which was close to the mid-point of the scale. The Higher and Lower columns in Table 5 show the split between participants who score above, or at or below the midpoint of the scale, respectively. Participants in the Higher column are classified as having the associated personality trait, while those in the Lower column are classified as having the opposite trait; for example, 67.4% of participants are classified as extraverts, while 32.6% are classified as introverts.

Table 5
Distribution of personality characteristics

	M	SE	Higher		Lower	
			N	%	N	%
Agreeableness	3.48	0.41	743	92.1	64	7.9
Openness	3.31	0.36	683	84.6	124	15.4
Conscientiousness	3.13	0.46	555	68.8	252	31.2
Extraversion	3.11	0.41	544	67.4	263	32.6
Neuroticism	3.03	0.51	472	58.5	335	41.5

4.2. Characteristics of compulsive and non-compulsive users

The majority of participating students (653, or 80.9%) were classified as non-compulsive YouTube users, while almost 20% (154, or 19.1%) were classified as compulsive users. Almost 60% (92, 59.8%) of the compulsive users reported that they are easily distracted by videos not associated with their original purpose, compared to fewer than 40% (253, 38.7%) of non-compulsive users.

Table 6 compares the characteristics of the compulsive and non-compulsive users. It shows males are more likely to report compulsive use than females. There was, however, no difference by age, race or level of education.

Table 6
Characteristics of compulsive and non-compulsive student users of YouTube

		Compulsive YouTube user (%)		χ^2 ^a	DF	p
		No	Yes			
Gender ^a	Males	75.6	24.4	7.213	1	.007
	Females	83.7	16.3			
Age ^a	25 or less	89	19.1	.000	1	1.00
	Over 25	81.7	18.3			
Race ^a	Malay	78.7	21.3	3.339	2	.19
	Chinese	83.6	16.4			
	Other	77.6	22.4			
Course level ^a	Undergraduate	87	19.3	.089	1	.77
	Postgraduate	83.1	16.9			
Login frequency	No more than once a week	84.3	15.7	29.838	2	< .001
	Several times a week	85.9	14.1			
	Several times a day	67.3	32.7			
Session length	Less than 30 mins	85.9	14.1	14.364	2	.001
	30 mins to under 2 hours	78.9	21.1			
	2 or more hours	69.9	31			

Note ^a = Continuity corrected chi-square test reported.

On the other hand, usage pattern is clearly associated with compulsive use. One-third of students who logged in to YouTube more than once a day were compulsive users, and almost one-third of students who used YouTube for two or more hours per session were compulsive users. Observable risk categories for compulsive use are, therefore: male, uses YouTube more than once a day, and YouTube use sessions last two or more hours.

4.3. Motivation and personality effects on compulsive YouTube use

The results of our tests of the effects of use motivation and personality on compulsive YouTube use are shown in Table 7. The baseline model (Model 0) identifies the effects of frequency of use and prolonged use observed in other studies of problematic Internet use, and confirms that these effects should be controlled for when examining other effects on compulsive use. Gender and race had very small effects. This model explained 9% (R-square = .09) of the variance in compulsive use.

Table 7

Effects of YouTube use motivation and personality on compulsive YouTube use, standardized coefficients

	Model 0	Model 1	Model 2	Model 3
	Control	Use motivation	Personality	Use motivation + personality
Control variables ^a				
Frequent use (several times a day) ^b	.17***	.11*	.17***	.11
Prolonged time (2 or more hours) ^c	.15***	.12*	.12**	.09
Moderate time (30 mins to under 2 hours) ^c	.10**	.07*	.10**	.07*
Female	-.10**	-.08*	-.08*	-.06 ^{ns}
Chinese ^d	-.08*	-.06 ^{ns}	-.07 ^{ns}	-.05 ^{ns}
YouTube use motivation				
Information	-	-.10**	-	-.08*
Entertainment	-	.24***	-	.24***
Personality				
Agreeableness	-	-	-.20***	-.21***
Conscientiousness	-	-	-.07*	-.07 ^{ns}
Extraversion	-	-	.004 ^{ns}	.01 ^{ns}
Neuroticism	-	-	.10*	.08*
Openness	-	-	.07 ^{ns}	-.04 ^{ns}
R-square	.09	.13***	.16***	.20***
R-square increase ^e	-	.047***	.073***	.043***
Adjusted R-square	.08	.12	.15	.19

Note. All models, F significant at $p < .001$. ns = not significant. ^a Only categories significant in at least one model shown. ^b Reference category = Low use (no more than once a week). ^c Reference category = Short time (less than 30 minutes per session). ^d Reference category = Malay. ^e Models 1 and 2 = increase from Model 0; Model 3 = increase from Model 2. * $p < .05$, ** $p < .01$, *** $p < .001$.

Model 1 provides support for hypotheses 1 and 2. Although the effects are small (jointly 4.7% when the effect of the control variables is taken into account; R-square increase = .047), information motivation is negatively associated with compulsive use (stronger information motivation is associated with less compulsive use) and entertainment motivation is associated with more compulsive use. The effect of entertainment motivation is almost three times stronger than that of information motivation. Although residuals were distributed about a mean of 0 with a range of -2.12 to 2.34, there was a strong pattern, indicating that one or more additional factors, not included in this model, would improve our explanation of compulsive YouTube use.

Model 2 confirms that personality characteristics are associated with compulsive use of YouTube, supporting H3. As expected, agreeableness (H3a) and conscientiousness (H3c) are associated with less compulsive YouTube use, while neuroticism (H3d) is associated with more compulsive use. There is no support for the hypotheses that extraversion (H3b) and openness (H3e) are associated with compulsive YouTube use. Similar to Model 1, residuals were distributed about a mean of 0, with a range of -2.34 to 2.45, but in a pattern that suggests personality and control variables are insufficient to explain compulsive YouTube use.

Model 3 shows that YouTube use motivation and personality together provide a better explanation of compulsive use than either use motivation or personality alone. The effect of adding use motivation is almost exactly the same as in Model 1 (R-square increase = 0.043, compared to 0.047), indicating that the effect of use motivation on compulsive YouTube use is independent of that of personality. Residuals for this model are randomly distributed about 0 (range of -2.25 to 2.15); the lack of a systematic pattern in the residuals suggests that, together with the control variables, use motivation and personality explain all non-random variation in compulsive YouTube use in our sample, even though the total variance explained is modest at 20% (R-square = .20).

Examination of the regression weights in Model 3 shows that Malaysian university students who are more strongly motivated to use YouTube for information are less likely to become compulsive users of YouTube, while students who are more strongly motivated to use YouTube for entertainment and have a tendency to be neurotic are at greater risk of compulsive use.

4.4. Effect of Compulsive YouTube use on academic motivation

Compulsive use of YouTube was, as hypothesised in H4, associated with lower academic motivation, as shown in Table 8. Residuals were distributed around a mean of 0 with a range of -2.21 to 1.94. The effect, although small (10.7%), is large enough to raise concern.

Table 8

Effect of compulsive YouTube use on academic motivation, standardised coefficients

	Model 0 Control	Model 1 Compulsive use
Control variables ^a		
Prolonged time (2 or more hours) ^b	-.13**	-.08*
Compulsive use	-	-.34***
R-square	.03**	.14***
R-square increase	-	.107***
Adjusted R-square	.02	.12

Note. ^a Only significant effects shown. ^b Reference category = Short time (less than 30 minutes per session). * $p < .05$, ** $p < .01$, *** $p < .001$.

4.5. Summary of hypothesis test results

The results of the hypothesis tests are summarised in Table 9.

Table 9

Summary of hypothesis test outcomes

Hypothesis no.	Hypothesised relationship	Conclusion
H1	Stronger motivation to use YouTube for information results in less compulsive use	Supported
H2	Stronger motivation to use YouTube for entertainment results in more compulsive use	Supported
H3	Certain personality characteristics more strongly affect with compulsive YouTube use than others	Supported
H3a	Higher agreeableness results in lower compulsive use of YouTube	Supported
H3b	Higher conscientiousness results in lower compulsive use of YouTube	Partially supported. Effect is non-significant when use motivations are taken into account.
H3c	Higher extraversion results in lower compulsive use of YouTube	Not supported. No effect.
H3d	Higher neuroticism results in higher compulsive use of YouTube	Supported
H3e	Higher openness results in higher compulsive use of YouTube	Not supported. No effect.
H4	Compulsive YouTube use has a negative effect on academic motivation	Supported

5. Discussion

This study compared the effects of use motivation and personality on compulsive use of YouTube among Malaysian university students. We found that compulsive YouTube use can have a negative impact on academic motivation, similar to that of compulsive Facebook use (Wohn & LaRose, 2014). Understanding what influences compulsive YouTube use in students in order to help reduce it, is important. The research described in this paper provides insights that have the potential to help both instructors and students manage YouTube use.

Despite the theoretical and empirical links between academic motivation and performance (e.g. Means, Jonassen, & Dwyer, 1997; Wohn & LaRose, 2014), very little research on networked technologies examines academic motivation. The inconsistent results of research on the effects of networked technologies and academic performance, as shown by recent literature reviews (e.g. Doleck & Lajoie, 2018; González, Gasco, & Llopis, 2016) suggest that moderation effects play a role; academic motivation is likely to be a component of the moderating mechanism, and motivating elements of the teaching and learning environment deserve further research. Given that YouTube has demonstrated value in learning and teaching (Lee & Lehto, 2013; Orús et al., 2016), it provides a valuable context for this research.

Almost 20% of the students in our study reported sufficient lack of control of their YouTube use to be classified as compulsive users. This proportion did not vary by age group, race or course level, but compulsive YouTube use was more prevalent among males (just under one-quarter, 24.4% of them) than females (16.3%) (see Table 6). Almost one-third of YouTube users who logged in more than once a day, and a similar proportion of those who spent two or more hours per session on YouTube, were compulsive users. These results suggest that quite a high proportion of Malaysian university students, particularly males, could find it very difficult to limit their use of YouTube. Furthermore, compulsive users are more likely than others to be distracted from information seeking tasks by linked videos.

Different, potentially conflicting, motivations exist for using YouTube. We proposed that motivation to use YouTube for information and learning and motivation to use YouTube for entertainment would have opposing effects on compulsive YouTube use, and found this to be the case, with the entertainment motivation effect on compulsive use three times as strong as the opposing information motivation effect. Thus, although being motivated to use YouTube for information and learning can reduce the likelihood of compulsive use, this effect is much weaker than the opposing force of motivation to use YouTube for entertainment.

Personality is also associated with compulsive YouTube use. While agreeable and conscientious students are better able to resist the temptations of compulsive YouTube use, neurotic students are more inclined to be compulsive users. We found no effect of extraversion or openness on compulsive use. When we compare the personality effects observed in our study with studies of problematic Internet and SNS use some patterns emerge. Our results are most similar to those of De Cock et al. (2014), who studied compulsive SNS use and found the same pattern of effects. On the other hand, our results (and those of De Cock, et al.) show a different pattern to some studies of problematic use of the Internet in general (McIntyre et al.,

2015; van der Aa et al., 2009), in which extraversion is important (no effect in our study) and conscientiousness has no effect (weak, but significant in our study).

More conscientious university students appear less likely to be compulsive users of SNS (De Cock et al., 2014) or content-rich platforms such as YouTube as shown in this study, even though their conscientiousness may have no relationship to compulsion or addiction to the Internet at a generic level. Extraverted students appear to use SNS and YouTube in similarly healthy (or unhealthy) ways, even though they are less likely to be compulsive users of the Internet (Servidio, 2014). At the same time, disagreeableness is associated with problematic use of Internet platforms (Kuss et al., 2013; Servidio, 2014), suggesting a social basis for compulsive use (e.g., poor ability to manage social relationships and 'fit in'). University students who are more friendly and concerned with social cohesion appear to be less likely to have psychological problems with Internet use, including use of SNS, and social media such as YouTube. On the other hand, openness does not seem to be a relevant personality characteristic for understanding compulsive use of YouTube, even though there is mixed evidence about its role in compulsive use of the Internet (Servidio, 2014; van der Aa et al., 2009) and SNS (De Cock et al., 2014; Hsiao, 2017).

When we compared the strength of the effect of YouTube use motivations with the effect of personality characteristics on compulsive YouTube use, we found that, not only were personality effects independent of use motivation, but use motivation and personality together provided a more satisfactory explanation of compulsive YouTube use than either reasoned choice or personality alone. Thus, regardless of personality characteristics, users with stronger motivation to use YouTube for entertainment are more likely to be compulsive users, and the small positive effect of motivation to use YouTube for information is still large enough to counter the negative effect of neuroticism.

The relative effects of the use motivation variables (horizontal axis) and the personality variables (vertical axis) can be seen in Fig. 1. Entertainment use and agreeableness have similar effects on increasing compulsive use: the more disagreeable (less agreeable) a student is, and the stronger their motivation to use YouTube for entertainment, the more likely they are to be compulsive users. On the other hand, neuroticism and information motivation have small effects that reduce the likelihood of compulsive use: the more emotionally stable the student is, and the stronger their motivation to use YouTube as an information resources, the less likely they are to be compulsive users.

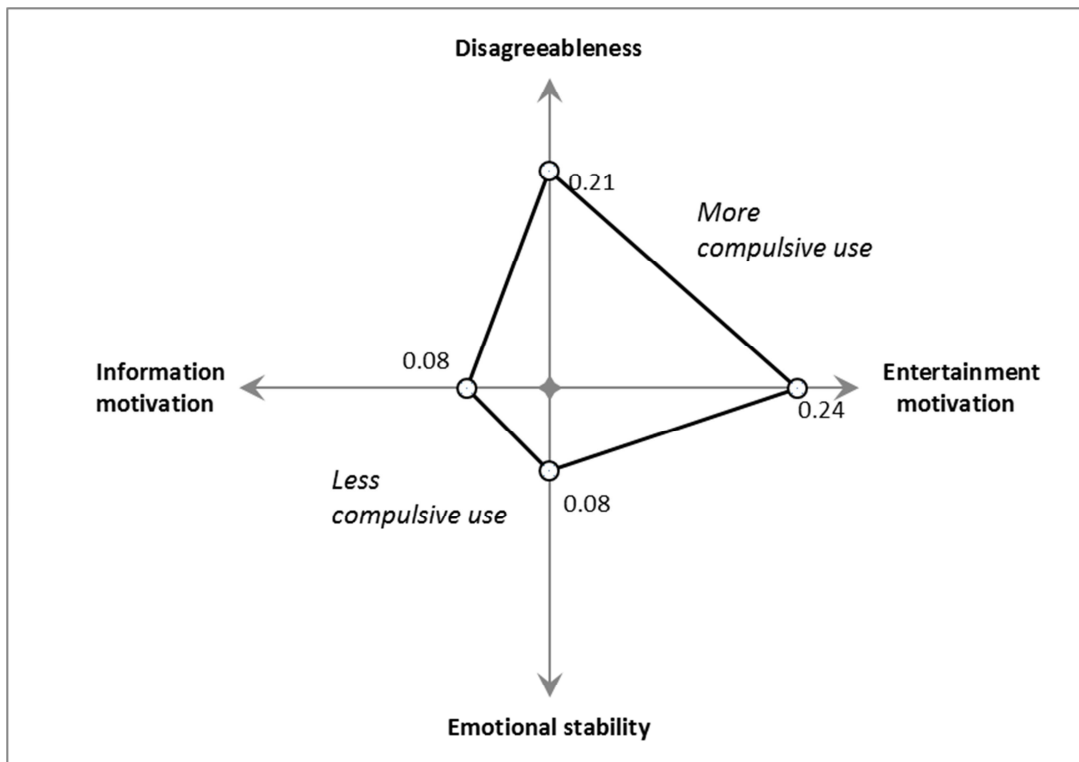


Fig 1. Relative increases (top right quadrant) and decreases (bottom left) in compulsive YouTube use with stronger personality characteristics (vertical axis) and use motivation (horizontal axis)

5.1. Implications, limitations and future research

This section considers the implications of this study for practice and research. The limitations of the study are considered with implications for future research.

5.1.1. Implications for teachers, counsellors and information literacy educators

Given the substantial number of university students that this study and others (Balakrishnan & Griffiths, 2017; Beard & Wolf, 2001; Frangos, Frangos, & Sotiropoulos, 2010; Moghavvemi, Sulaiman, Jaafar, & Kasem, 2017) have found are unable to limit their use of YouTube, instructors who incorporate YouTube into their teaching need to be mindful of the ease with which students who consult recommended educational videos can be drawn in to watching videos for entertainment. Instructors should take the risk of contributing to compulsive use into account when they recommend YouTube resources to their students, and ensure that these resources are carefully embedded into a wider set of engaging learning materials and activities, to reduce the risk of students becoming distracted and using YouTube for entertainment. Future research on pedagogical use of YouTube should include exploration of approaches to mitigating the risks.

The relatively strong effect of low agreeableness on compulsive YouTube use suggests that programs designed to develop social support networks for new college and university

students may also help to mitigate personality-related tendencies to compulsive use of social media such as those identified by Lidy and Kahn (2006). This observation can be taken into account by counsellors and student support advisors both when they identify students who compulsively use YouTube (and, potentially, other Internet platforms) as well as when they design social support programs for college adjustment, including both peer support programs (Mattanah et al., 2010) and social media-based programs (DeAndrea, Ellison, LaRose, Steinfield, & Fiore, 2012).

Our findings also have implications for information literacy education. First, they point to an extension of the understanding of information literacy as “adoption of appropriate information behaviour” (Webber & Johnston, 2017). Students, and others who use content-rich social media such as YouTube, could benefit from understanding how social media algorithms select recommended content and the risks of chaining through recommendations. Information literacy education for “appropriate information behaviour” could usefully incorporate self-management training to help users of content-rich social media learn strategies for controlling the length of time spent following content chains.

5.1.2. Limitations and implications for future YouTube use studies

The results of this study suggest several avenues for further research. Firstly, future research on pedagogical use of YouTube should include exploration of approaches to mitigating the risks. In addition, this study examined the effect of compulsive YouTube on academic motivation but not on academic performance. Future research would be enriched by examining the effect of compulsive use on both motivation and performance.

This research was conducted in a single higher education institution in a single national context (the developing economy of Malaysia, where YouTube use is high, particularly among younger members of society). Although in line with previous Internet platform use studies (Hsiao, 2017), this might account for the modest proportion of variance in compulsive use (20%) explained by motivation and personality in our study, with no obvious evidence of omitted variables (the residuals were normally distributed). The modest effect of compulsive use on academic motivation, although larger than that obtained by (Wohn & LaRose, 2014), might also reflect little variation in other potential effects on compulsive use. Future research that took an environmental perspective (see Chiang & Hsiao, 2015) could consider the extent to which our results might be context-specific and explore the effects of variables that differ across different use contexts.

Finally, our study indicates that different personality factors might be associated with compulsive use of different Internet services and platforms. Caution should therefore be exercised in making assumptions about how personality traits are likely to affect compulsive use of other services and platforms. A systematic comparison of the effects of compulsive and problematic student use of different platforms and their implications for academic motivation and performance would be a useful addition to the literature.

6. Conclusion

YouTube, while a valuable open information resource, is not risk-free: compulsive use of YouTube can result in reduced academic motivation. Users with a tendency toward anxiety and low mood (that is, neuroticism) are a little more at risk of compulsive YouTube use than others. But a greater risk comes from motivation to use YouTube for entertainment, which is much more strongly associated with compulsive use than the weak counter-effect of motivation to use YouTube for information and learning. We recommend that instructors take the risks of compulsive use into account when they propose YouTube resources to their students. Thoughtful selection of resources that are relevant to the topic of study, and carefully embedded into a wider set of relevant and engaging learning materials and activities, should reduce the risk of students becoming distracted by entertainment opportunities – but this is only speculation, and future research on pedagogical use of YouTube could fruitfully test this proposition. At the same time, we encourage user and information literacy educators to extend discussion of the risks associated with social media use to include discussion of video chaining and compulsive use along with strategies for self-management during use. Research that focuses specifically on interventions to improve self-management of social media use would help identify how best to incorporate such training into user education.

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Appendix: Survey items and sources

Items	Source of Items
Compulsive Use	
CU1 – I have made unsuccessful attempts to control my use of YouTube	Wohn and LaRose (2014)
CU2 – I am not able to reduce the amount of time I spend on YouTube	
CU3 – I have tried to stop using YouTube ^a	
CU4 – I am not able to stop using YouTube ^a	
CU5 – My use of YouTube has become a problem in my life ^b	
Information Motivation	
I use YouTube...	Developed for this study
IL1 – To learn about the courses that I am involved in	
IL2 – To learn how to solve problems	
IL3 – To get answers for some questions that I have	
IL4 – To learn new things	
Entertainment Motivation	
I use YouTube...	Kaye (1998)
ENT1 – Because it's exciting	
ENT2 – Because it's thrilling	
ENT3 – Because it amuses me	
ENT4 – Because it entertains me	
ENT5 – Because I just like to access it	
ENT6 – Because it's enjoyable	
Academic Motivation	
AM1 - I am not motivated to study	Wohn and LaRose (2014)
AM2 - I doubt the value of a university degree	
AM3 - I enjoy academic work ^c	
AM4 - Most of my interests are not related to coursework	
Personality	
	John and Srivastava (1999)

Note. ^a = Original item from Wohn and LaRose split into two parts to reduce ambiguity. ^b = Item omitted for lack of specificity to the construct. ^c = Item omitted for low item-total correlation.

Highlights

Computers in Human Behavior

Manuscript Number: CHB-D-18-00377

Manuscript Title: Compulsive YouTube usage: A comparison of use motivation and personality effects

- A rare study of problematic YouTube usage, personality, and motivation.
- Personality effects on compulsive YouTube use are independent of use motivation.
- Disagreeableness and entertainment motivation increase compulsive YouTube use.
- Emotional stability and information motivation lower compulsive YouTube use.
- Increased compulsive YouTube use results in lower academic motivation.