



Snapchat vs. Facebook: Differences in problematic use, behavior change attempts, and trait social reward preferences

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ABSTRACT

Introduction: Facebook and Snapchat employ different features for encouraging repeated, reinforced use of their platforms. Importantly, this repeated use can become maladaptive and problematic. We sought to understand differences between these platforms in regard to problematic use, and its motivations and outcomes. We specifically focused on trait social reward preferences as important yet overlooked motivations. We also focused on quit and use reduction attempts as important yet overlooked outcomes.

Methods: Participants (N = 472) responded to an online survey that assessed their Snapchat and Facebook use, as well as trait social reward preferences.

Results: Our findings, with individuals who used both Snapchat and Facebook, revealed that (a) participants reported more time on Snapchat than Facebook, as well as more problematic use of Snapchat than Facebook, nevertheless (b) they reported more attempts to quit Facebook than Snapchat, with no difference in use reduction attempts between platforms, and (c) trait social reward dimensions – admiration, negative social potency, and sociability – were positively associated with problematic Snapchat use, and only negative social potency was positively associated with problematic Facebook use.

Conclusions: These findings demonstrate the relevance of social media platform features and social reward preferences in problematic social media use. Implications for further research and practice are discussed.

1. Introduction

Almost three billion people worldwide use social networking sites (SNSs) (Statista, 2020). Although Facebook has dominated the United States SNS landscape, for example 80% of 18-to-24 year-olds report using the platform, Snapchat has also become very popular with the same age group, 78% of 18-to-24 year-olds report using the platform (Pew Research Center, 2018b). These SNSs allow users to create online profiles and social networks while interacting with others (Boyd & Ellison, 2007). In particular, users can post content (images, videos, etc.) in various ways, depending on the platform, as well as comment on others' posts.

Importantly, different platforms have different functionality, and this can affect user behaviors. For example, with regard to messaging, Snapchat gamified messaging when they created their “snapstreak” function, which rewards users for messaging with each other daily. Facebook does not currently provide this type of functionality. Accordingly, scholars have begun investigating the effects of differences

between platforms, as well as motivations for using one platform versus another. A qualitative study suggested that Snapchat allows for more personal and intimate communication, in comparison to other social media platforms, like Facebook (Vaterlaus, Barnett, Roche, & Young, 2016). Another study took a uses and gratifications approach to explain differential platform use, demonstrating that college students used Snapchat more intensely than Facebook (Alhabash & Ma, 2017). These individuals were more motivated to use Snapchat than Facebook for reasons such as entertainment, convenience and medium appeal. Neuroscience research has demonstrated, however, that individuals are motivated to use social media to obtain social rewards (Meshi, Morawetz, & Heekeren, 2013; Meshi, Tamir, & Heekeren, 2015), and the extant literature has not yet addressed the contribution of trait social reward preferences in motivating differential use of SNSs.

Social rewards obtained on SNSs act as reinforcers, bringing people back to these sites repeatedly and for considerable periods of time. For example, Facebook recently divulged that the average user spends around 50 min each day across its sites (Stewart, 2016). Importantly,

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for some people these social reinforcers may induce SNS use that is maladaptive and problematic (Griffiths, Kuss, & Demetrovics, 2014). Problematic social media users display symptoms that are similar to substance use disorders, such as experiencing interpersonal conflict due to SNS use, and relapse when SNS users attempt to quit (Griffiths et al., 2014). Also similar to substance use disorders, problematic SNS users display aberrations in decision making (Meshi et al., 2019, 2020; Turel, He, Brevers, & Bechara, 2018), as well as reward-related brain function (Turel, He, Xue, Xiao, & Bechara, 2014) and structure (He, Turel, & Bechara, 2018; He, Turel, Brevers, & Bechara, 2017). Problematic SNS use can be measured as a function of symptoms across several social media platforms (Andreassen, Pallesen, & Griffiths, 2017), or with regard to individual platform use, for example with Facebook (Andreassen, Torsheim, Brunborg, & Pallesen, 2012) or Snapchat (Punyanunt-Carter, De La Cruz, & Wrench, 2017). Importantly, researchers have previously investigated the relationship between problematic SNS use and certain aspects of social reward that could drive this use. For example, studies have revealed a positive relationship between problematic SNS use and one's need to belong and one's need for admiration (Balcerowska, Biernatowska, Golińska, & Barańska, 2019; Casale & Fioravanti, 2018; Ho, Lwin, & Lee, 2017). However, no study has yet compared problematic use between Snapchat and Facebook, or examined differences in trait social reward preferences which would motivate disparate use of these SNSs.

Available social rewards vary in our society and individuals may exhibit a trait preference for one type over another (Foulkes, Viding, McCrory, & Neumann, 2014). These social rewards include: (1) admiration, which describes one's motivation to be flattered and liked by others, (2) negative social potency, which describes one's motivation to be cruel, callous and use others for personal gain, (3) passivity, which describes one's motivation to give others control and allow them to make decisions, (4) prosocial interactions, which describes one's motivation to have kind, reciprocal relationships with others, (5) sexual relationships, which describes one's motivation to have sexual interactions with others, and (6) sociability, which describes one's motivation to engage in group interactions. With this comprehensive social reward framework, researchers can investigate motivations for SNS use because SNSs cater to such needs. For example, key aspects of SNS use include: impression management (Krämer & Winter, 2008), providing "likes" and social support through comments (Hayes, Carr, & Wohn, 2016), and interacting with a users' network by posting to the group (Boyd & Ellison, 2007). Accordingly, these behaviors would be covered by the following, respective social reward categories: admiration, prosocial interactions, and sociability. We can therefore capitalize on these social reward categories to identify which type of social reward is driving the problematic use of different platforms.

With the above in mind, we generated several hypotheses with regard to Snapchat and Facebook use. First, although previous research demonstrated no difference in self-reported time spent on Snapchat versus Facebook (Alhabash & Ma, 2017), these data were collected while participants used an older version of the Snapchat application, before the above-described snapstreak function was implemented (personal communication). The snapstreak function gamifies reciprocal social interactions, which should increase time spent on the Snapchat platform (Burke, 2016; Griffiths, 2018). Therefore, with the snapstreak function and recent trends of SNS use in mind (Pew Research Center, 2018b), we hypothesized that current users of both Snapchat and Facebook would spend more time on Snapchat (H1). In line with this, and with Alhabash and Ma's (2017) finding that individuals already used the older version of Snapchat more intensely, we hypothesized that current users of both Snapchat and Facebook would display more problematic use of Snapchat (H2). This hypothesis is rooted in the assumption that, if Snapchat use is more intense and of a longer duration, its users obtain more social rewards, which motivates more problematic use, compared to Facebook. In addition, because quit attempts are a common response to intense, maladaptive use, we also hypothesized

that simultaneous users of Snapchat and Facebook will have tried to reduce or quit Snapchat more than Facebook (H3). With regard to trait social reward preferences, we theorized that admiration, prosocial interactions, and sociability would be positively related to problematic social media use (H4). This hypothesis is in line with the above-described literature and motivations for using social media. We also explored differences in trait social reward motivation between platforms for problematic use (RQ1), as we had no strong theoretical basis to assume differences between the platforms.

2. Methods

2.1. Procedure

We recruited students at a university in the United States who were enrolled in a large, introductory-level course. We made an in-class announcement, asking them to participate in an online survey about social media use. All students were provided with a link to the online survey, and individuals who completed the survey received course extra credit as compensation.

2.2. Participants

Eligible participants used both Snapchat and Facebook, and our sample consisted of 472 individuals, after excluding 28 participants for failing to provide accurate responses on survey attention checks. All study materials and procedures were approved by the Institutional Review Board of the university.

2.3. Measures

2.3.1. Social media use

We asked participants to estimate how many hours per day they spend on Snapchat and Facebook, respectively. For each item, they responded on a 7-point scale (1 = less than an hour; 7 = six or more hours). We also assessed the frequency of reduce and quit attempts for each platform over the past year, using a 7-point scale for each (1 = never; 7 = at least six times).

To assess problematic use of both Snapchat and Facebook, we had participants fill out respective scales for each platform, adapted from the Bergen Facebook Addiction Scale (BFAS; Andreassen et al., 2012). The BFAS consists of six items, each assessing a core aspect of addiction: salience (preoccupation), mood modification, tolerance, conflict, withdrawal, and relapse (Griffiths et al., 2014). For example, the item concerning withdrawal asks: "Do you become restless or troubled if you are prohibited from using social media?" Reliability and validity of the BFAS have been established (Andreassen et al., 2012). Unlike the original BFAS which used a 5-point scale for each item, we provided participants with a 7-point scale (1 = very rarely; 7 = very often) to be consistent with the other scales that we employed. To assess problematic use of Snapchat, we adapted the BFAS by replacing the word "Facebook" in each item with "Snapchat". As such, we developed a Snapchat Addiction Scale (SAS). The internal consistency for each scale was good (Cronbach's α BFAS = 0.88; Cronbach's α SAS = 0.90). Responses were summed, with a possible range of 7 to 42, such that the score on each scale reflects the frequency of typical problematic behavioral symptoms in relation to either Facebook use or Snapchat use.

2.3.2. Social reward questionnaire

To assess trait social reward preferences, we used the Social Rewards Questionnaire (SRQ; Foulkes et al., 2014). The SRQ is a 23-item survey that consists of six subscales (3 to 5 items each), with each subscale representing a specific type of social reward: admiration, negative social potency, passivity, prosocial interactions, sexual relationships, and sociability. Participants respond to all items on a 7-point scale (1 = disagree strongly; 7 = agree strongly). For example,

an item from the admiration subscale states: “I enjoy being around people who think I am an important, exciting person.” The construct validity and test–retest reliability of the SRQ has been established (Foulkes et al., 2014), and internal consistency for each subscale was acceptable or good (Cronbach’s α admiration = 0.88; Cronbach’s α negative social potency = 0.79; Cronbach’s α passivity = 0.85; Cronbach’s α prosocial interactions = 0.82; Cronbach’s α sexual relationships = 0.85; Cronbach’s α sociability = 0.78).

2.3.3. Demographic characteristics

We asked participants to report: (1) their age, using text; (2) their gender, by selecting one of two options, female or male (coded as 0 or 1 for analysis, respectively); and (3) their university grade point average (GPA) on a 7-point scale (1 = 2.4 and below; 7 = 3.9–4.0). We collected GPA as a general measure of academic performance.

2.4. Data analysis

General statistical analyses were performed with SPSS (IBM Inc., version 24, Armonk, NY, USA). We conducted dependent t-tests to compare measures of Snapchat and Facebook use (provided separately for each platform by the same group of participants). We conducted initial comparisons between all variables (problematic social media use, trait social reward preferences, and demographic variables) with zero-order Pearson product-moment correlations. To address our hypothesis, we then computed third-order Pearson product-moment partial correlations, controlling for age, gender, and GPA as we assessed associations between our measures of problematic social media use and trait social reward preferences.

Additionally, we used a web utility (<http://quantpsy.org>) to statistically compare how relationships to trait social reward preferences may differ between problematic Snapchat use and problematic Facebook use. We performed Fisher’s *r*-to-*z* transformations, estimated covariance calculations, and compared these values using two-tailed asymptotic *z*-tests (Lee & Preacher, 2013).

3. Results

The mean age of our sample was 23.3 years (SD = 4.1), with 191 (40.5%) females and 281 (59.5%) males, and the average GPA was 3.6 (SD = 1.4). We present the means of our social media measures, along with comparisons across social media platforms, in Table 1. Our analyses revealed that participants estimated spending significantly more time on Snapchat than on Facebook (H1). Interestingly, in spite of this, they reported significantly more attempts to quit Facebook than Snapchat (H2). Our analysis revealed no significant difference in use reduction attempts. With regard to maladaptive use of these platforms, our analysis revealed significantly greater problematic use of Snapchat than Facebook (Table 1; H3). SAS scores were significantly higher than BFAS scores. Of note, the effect sizes (Cohen’s *d*) for the above comparisons were small (between 0.2 and 0.5).

Table 1
Means and comparisons of Facebook and Snapchat measures (N = 472).

Variable	Social Media Platform		t-value	Cohen’s d
	Facebook	Snapchat		
1. Estimated Hours Per Day	2.28 (1.57)	2.64 (1.70)	−4.27***	−0.20
2. Quit Attempts	2.01 (1.51)	1.69 (1.39)	4.57***	0.21
3. Reduction Attempts	2.13 (1.69)	2.03 (1.69)	1.30	0.06
4. Problematic Use	11.61 (5.07)	14.00 (6.07)	−8.55***	−0.39

Mean scale responses for 1, 2 & 3 provided on 7-point scale; all measures reported as means (SD); dependent t-tests were performed on measures with separate values per social media platform; **p* < .05. ***p* < .01. ****p* < .001.

We then investigated the relationships between trait social reward preferences and problematic use of the Snapchat and Facebook platforms. To we first examined potentially relevant demographic variables for significant associations with our factors of interest by computing zero-order correlations. Our analyses revealed significant relationships between age and problematic social media use (Snapchat: *r* = −0.24, *p* < .001), age and social reward (admiration: *r* = −0.14, *p* = .002; negative social potency: *r* = −0.11, *p* = .02; sociability: *r* = −0.12, *p* = .01), gender and social reward (sexual relationships: *r* = −0.16, *p* < .001; sociability: *r* = −0.09, *p* = .04), and GPA and social reward (negative social potency: *r* = −0.10, *p* = .03; sociability: *r* = −0.11, *p* = .01). All other correlations between demographic variables and factors of interest were non-significant (*p*’s > 0.05).

Therefore, to address our final hypothesis (H4), we conducted partial correlations between our measures of trait social reward preferences and problematic social media use while controlling for age, gender, and GPA (Table 2). Our analyses revealed significant positive correlations between problematic Snapchat use and admiration, negative social potency, and sociability. The more problematic one’s Snapchat use, the greater their drive to obtain these types of social rewards. We also revealed a significant positive correlation between problematic Facebook use and negative social potency.

Finally, to address our research question (RQ1), we conducted comparisons with these correlations between social media platform type. Our analyses revealed that the associations between problematic Snapchat use and both admiration and sociability are significantly different from the associations between problematic Facebook use and these types of social rewards.

4. Discussion

We investigated Snapchat and Facebook use in college students who use both platforms. We found that these individuals estimate spending more time on Snapchat than Facebook, and also report more problematic use of Snapchat. Interestingly, our survey also revealed that our sample attempted to quit Facebook more often than Snapchat. With regard to trait social reward preferences, we demonstrated that admiration, negative social potency, and sociability are positively associated with problematic Snapchat use, and only negative social potency is positively associated with problematic Facebook use. In the following, we examine each of our findings in turn.

Little previous research has compared the degree of use of different social media platforms, like Snapchat and Facebook, among individuals who use both. For example, Alhabash and Ma used an adaptation of the Facebook Intensity Scale (Ellison, Steinfield, & Lampe, 2007) to demonstrate that college students use Snapchat more intensely than Facebook. Our findings align with this previous work. We had participants estimate their time spent on each platform, with a single-item measure for each platform, as well as complete the BFAS and SAS (which we created by adapting the BFAS for our study). Our results reveal that college students believe they are spending more time on Snapchat, and these students have developed a greater degree of problematic use of Snapchat. We speculate that these small but significant differences can be attributed to specific features of each platform, because the amount of social rewards obtained on each platform vary with the design elements and functionality. For example, Snapchat allows for brief, ephemeral communication, while Facebook has a more permanent aspect. Furthermore, as mentioned above, Snapchat has gamified their messaging functionality, providing rewards for keeping message streaks going each day. This reward drives use of the platform (Throuvala, Griffiths, Rennoldson, & Kuss, 2019). Therefore, it could be that these functions induce both the relatively greater time on the Snapchat platform, as well as the relatively greater problematic use of the Snapchat platform that we observed. Functionality like streaks promotes repeated and potentially problematic use of the platform through reward motivation and reinforcement (Griffiths, 2018). Future research

Table 2

Partial correlations between trait social reward preferences and problematic social media use, controlling for age, gender, and GPA (N = 472).

SRQ Variable	BFAS	SAS	Z-Score
1. Admiration	0.08 [-0.01/0.17]	0.21*** [0.12/0.31]	-2.67**
2. Negative Social Potency	0.13** [0.04/0.22]	0.15** [0.06/0.24]	-0.39
3. Passivity	0.08 [-0.01/0.17]	0.06 [-0.03/0.16]	0.30
4. Prosocial Interactions	-0.04 [-0.13/0.05]	0.05 [-0.04/0.14]	-1.84
5. Sexual Relationships	-0.03 [-0.12/0.06]	0.03 [-0.06/0.12]	-1.17
6. Sociability	0.05 [-0.04/0.14]	0.17*** [0.09/0.27]	-2.61**

Z-scores were calculated from compared asymptotic covariance among transformed Pearson correlation values; * $p < .05$. ** $p < .01$. *** $p < .001$; 95% CI reported in brackets.

can investigate the contribution of these specific functional differences (e.g., streaks) and the role they play in driving intense use of social media.

We also found that college students attempt to quit Facebook more than Snapchat. This small but significant finding was in direct contrast to our hypothesis. We speculate to explain our finding post-hoc, that Snapchat may currently be more integral to social life for college students than Facebook. In addition, recent ongoing developments with the Facebook platform (e.g., privacy concerns, Cambridge Analytica, etc.) may be driving more individuals to attempt to quit. In support of this, a recent survey revealed that 42% of Americans took a break from Facebook last year (Pew Research Center, 2018a). Unfortunately, this survey did not assess people's relationship with Snapchat, so we are unable to compare and interpret. Understanding quit attempts is important, as recent research has demonstrated that abstaining from SNS use can have beneficial mental health effects, such as reduced stress and increased wellbeing (Fioravanti, Probst, & Casale, 2020; Hunt, Marx, Lipson, & Young, 2018; Turel, Cavagnaro, & Meshi, 2018; Whelan, 2020).

Our hypotheses regarding trait social reward preferences and problematic SNS use were only partially supported. Our results revealed that admiration, sociability, and negative social potency are positively associated with problematic Snapchat use, and only negative social potency is positively associated with problematic Facebook use. Our finding that admiration and sociability are only related to problematic Snapchat use and not problematic Facebook use is surprising considering problematic Facebook use has previously been related to one's need for admiration (Balcerowska et al., 2019; Casale & Fioravanti, 2018). This discrepancy could, for example, be due to assessment differences (both of these prior studies used a different measure of admiration) or cultural differences (both of these prior studies were conducted in Europe, while the current study was conducted in the U.S.). Future research will be able to directly compare and better tease apart these differences.

Our finding with negative social potency was surprising as well. As described above, trait negative social potency is one's motivation to be cruel, callous and use others for personal gain. Our results demonstrate that individuals who have a greater preference for these types of rewards display greater problematic use of both platforms. Interestingly, negative social potency has been associated with the "dark triad" of Machiavellianism, narcissism and psychopathy (Foulkes et al., 2014), and this triad has previously been associated with problematic Internet use (Kircaburun, Demetrovics, & Tosuntaş, 2018). It appears that, given the presumably unintended ability of social media sites to cater to people who seek rewards from being cruel, such as through cyberbullying (da Veiga Simão, Ferreira, Francisco, Paulino, & de Souza, 2018) or various aggressive online behaviors (Lenhart et al., 2011), people high in trait negative social potency are more likely than others to engage in repeated, rewarding behaviors – rewarding for them (but that may hurt others) – that may eventually reinforce problematic use.

Despite the insights provided by our findings, the current study has noteworthy limitations. First, we adapted a commonly used scale of problematic Facebook use to assess problematic Snapchat use, however,

we did not validate our adaptation. Therefore, our results should be interpreted with caution. Next, our student sample limits this study's generalizability to other populations. However, given the above-stated prevalence of Snapchat and Facebook use – they are currently the top two platforms used by 18-to-24 year-olds (Pew Research Center, 2018b) – understanding use of these platforms within this particular demographic is important. Finally, this study's cross-sectional design inhibits causal inferences. As the SRQ was designed to assess trait social reward preferences, we have interpreted our findings as such, however we do not know if social media use has influenced individuals' trait social reward preferences. Future research (e.g., with a longitudinal design) will be able to better assess these relationships.

In sum, we found that college students demonstrate more problematic use of Snapchat than Facebook, and that certain aspects of social reward are related to problematic use of these platforms. To the best of our knowledge, the current study is the first to compare problematic SNS use across platforms and to find that one platform can be more problematic than another. Our findings are important because they illuminate platform differences that will guide policy makers and lay the foundation for future academic inquiry. We propose that more research into social media platform differences should be conducted to tease apart discrepancies in problematic use. Furthermore, our novel findings have clinical implications. Clinicians should be aware that problematic Snapchat and Facebook use may be driven by negative social potency, and that differences in other social rewards and specific platforms exist. The better our understanding of problematic SNS users, the more likely clinicians will be able to help these individuals.

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CRediT authorship contribution statement

Dar Meshi: Conceptualization, Supervision, Writing - original draft. **Ofir Turel:** Conceptualization, Investigation, Writing - review & editing. **Dan Henley:** Formal analysis, Data curation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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