



## Full length article

## Anxiety-inducing Facebook behavior is associated with higher rates of upper respiratory infection in college-aged users



Jay Campisi\*, Jeffrey May, Kendra Burch, Kalina Larson, Jessica Doscher, Shannon Doherty, Kaitlin Isaacson, Kelly Sebring, Amie Gahan

Department of Biology, Regis University, Denver, CO, USA

## ARTICLE INFO

## Article history:

Received 20 September 2016  
Received in revised form  
22 June 2017  
Accepted 17 July 2017  
Available online 20 July 2017

## Keywords:

Social media  
Facebook  
Anxiety  
URI

## ABSTRACT

Exposure to chronic stress can suppress immune function and increase susceptibility to infection. Recent evidence indicates that social network use (e.g., Facebook) can serve as a chronic stressor to some users and contribute to poor health, however, mechanisms underlying these interactions remain unclear. In the current study we investigated if Facebook user behavior might help start to explain interactions between Facebook use, stress and health. In this prospective study, healthy college students completed online questionnaires assessing Facebook use, health and then were followed for 10 weeks to track incidence of upper respiratory infection (URI). Subjects who reported that Facebook provoked anxiety/stress demonstrated a significantly higher number of URI than those not reporting Facebook-induced anxiety/stress and having more Facebook friends was associated with increased anxiety/stress and the number of URI. Users who demonstrated anxiety regarding their Facebook use were more likely to demonstrate a pattern of increased number of log-ins to Facebook/day and these anxiety-linked behavior patterns were associated with poorer health. The other health practices and psychological processes assessed (e.g., physical activity levels, sleep, social support) do not appear to explain these associations. These results suggest an association between specific Facebook use, psychological anxiety and health might exist.

© 2017 Elsevier Ltd. All rights reserved.

## 1. Introduction

A growing body of literature indicates a connection between emotions, social networks and physical well-being. For example, individuals with more diverse social networks live longer (House, Landis, & Umberson, 1988), have less incidence of depression (Kawachi & Berkman, 2001), are less likely to develop a cold following exposure to a virus (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997), are more likely to survive myocardial infarction (Berkman, 1995), and are less likely to suffer a recurrence of cancer (Helgeson, Cohen, & Fritz, 1998) than individuals with fewer social relationships. In addition, a number of studies demonstrate correlations between positive affect and health (Davidson, Mostofsky, & Whang, 2010; Pressman et al., 2005; Steptoe, Wardle, & Marmot, 2005). A recent study found that the more social roles people engaged in, the better their lung function (Crittenden et al., 2014). Interestingly, analysis of

specific social roles indicated that happiness generated from the social networks had a strong positive connection to lung function (Crittenden et al., 2014). While positive affect can seemingly improve health, negative affect can worsen health. For example, numerous studies indicate that exposure to chronic stress can suppress immune function and increase susceptibility to some forms of infection (Cohen, 2005; Cohen, Tyrrell, & Smith, 1991), cancer (Ben-Eliyahu, Page, & Schleifer, 2007), and cardiovascular disease (CVD) (Gu, Tang, & Yang, 2012).

Evidence that social networks can modulate emotional states of users, and that emotions can influence health, have led us and others to investigate the relationship between emotions and health in virtual, internet-based social networks (such as Facebook). The few studies that have examined the influence of Facebook on emotions and/or health have been equivocal. One study found that using Facebook affected undergraduate's perceptions of others such that the longer one used Facebook the more likely they were to believe that others were happier and had better lives and the less likely they were to believe that life was fair (Chou & Edge, 2012). A separate study found that spending a lot of time on Facebook was associated with feelings of low self-esteem (Kalpidou, Costin, &

\* Corresponding author. Department of Biology, D-8 Regis University, Denver, CO 80221, USA.

E-mail address: [jcampisi@regis.edu](mailto:jcampisi@regis.edu) (J. Campisi).

Morris, 2011). In contrast, a recent report suggested that larger social networks predicted higher levels of life satisfaction and perceived social support on Facebook (Manago, Taylor, & Greenfield, 2012). In addition, studies have indicated that using class-based groups in Facebook can promote a positive atmosphere that enhances strong relationships ties both in the physical and virtual environments in college students (Chang, Lin, Lin, Chang, & Chong, 2014). In another study of undergraduates, researchers found that Facebook use resulted in users' positive affective state (Mauri, Cipresso, Balgera, Villamira, & Riva, 2011), while our previous results indicate that many Facebook users find the use of social networking to be stressful (Campisi et al., 2012). These seemingly contradictory results might be explained by research that suggests that emotional states can be transferred to others via emotional contagion (Coviello et al., 2014; Kramer, Guillory, & Hancock, 2014). Researchers observed that the emotional content displayed in user News Feed in Facebook influenced the posting behavior of the user. When positive expressions were reduced, users produced fewer positive posts and more negative posts; when negative expressions were reduced users produced greater positive posts and fewer negative posts (Coviello et al., 2014; Kramer et al., 2014). Collectively, these results suggest that virtual social networks have the ability to modulate emotional states of users for better or worse.

While the long-term health effects of Facebook-induced modulation of emotions is largely yet to be determined, a small number of studies demonstrate that users of Facebook who feel stressed by the experience have increased risk of disease. For example, a recent case study provides evidence that a Facebook-induced stress response can serve as a trigger for asthma attacks (D'Amato, Liccardi, Cecchi, Pellegrino, & D'Amato, 2010). In a separate study, individuals reporting higher incidence of chronic Facebook-induced stress demonstrated an increased likelihood of developing an upper respiratory tract infection (URI) than users not stressed by Facebook (Campisi et al., 2012). In this study, virtual social network size (number of Facebook friends) was significantly related to the rate of URI such that the larger the social network, the greater the incidence rate of URI. In addition, the effects of Facebook-induced stress on incidence of URI varied across social network size such that the impact of stress on URI incidence rate increased with the size of the social network. These results suggest that having a large number of Facebook friends was stressful to users and this chronic stress might have contributed to the increased incidence of URI reported (Campisi et al., 2012).

It appears, therefore, that Facebook use has the potential to activate the physiological stress response and, given that exposure to chronic stress (a stress that persists for several hours a day for weeks or months) can be immunosuppressive and detrimental to health, Facebook-induced stress might modulate user health. Finally, virtual social network size might have the ability to modulate the user experience. It remains unclear, however, which Facebook user experiences were associated with increased risk of URI, stress, and modulation of the interaction between stress and URI. Moreover, it remains unknown if other factors might explain these previous findings. For example, health practices such as physical activity and sleep are both known to modulate psychological and physical well-being (Berkman & Syme, 1979; Cohen, 1988; House et al., 1988; Umberson, 1992). Moreover, psychological processes, such as perceived social support and perceived stress can also impact health (Cohen, 1988; Thoits, 1995; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Thus, while previous results suggest that Facebook-induced stress may have immunocompromised users resulting in increased susceptibility to URIs, alternative explanations may exist that have yet to be explored.

In the current study we started to address these questions by examining: 1) if virtual social network size (number of Facebook

friends) was significantly related to the rate of URI and if anxiety/stress modifies this interaction, 2) if other components of Facebook use (minutes/day, log-ins/day, behavior) were associated with stress and/or increased risk of URI, and 3) if user health practices (physical activity, sleep), and/or psychological processes (feelings of perceived stress, social support, life satisfaction) were associated with increased risk of URI. We hypothesized that a subset of Facebook users would find Facebook activity anxiety provoking/stressful, that these individuals would have a larger virtual social network, and would have an increased risk of URI. In addition, we hypothesized that certain Facebook behaviors indicative of causing chronic stress (e.g., constantly checking Facebook notifications) would be associated with a higher risk of URI. Lastly, we predicted that user health practices and psychological process would impact the incidence of URI in this population. With the popularity of social-networking web sites such as Facebook and Twitter continuing to increase, and individuals reporting spending significant time connecting through internet-based social networks (D'Amato et al., 2010), understanding how social network usage might influence emotions and health is of great importance.

## 2. Materials and methods

### 2.1. Participants

Participants were college undergraduates ( $n = 89$ ; 15 men and 74 women) aged 18–33 years who responded to in-class recruitment solicitations during the Fall 2013 semester (see Table 1). This particular demographic was chosen because they represent the single largest group of users interacting through social networks (D'Amato et al., 2010) and previous results have found conflicting reports regarding the impact of social networks on health in this population. Although most of the subjects studied were females, previous reports suggest that female college students are more likely to interact via virtual social networks compared with their male counterparts (Manago et al., 2012). All reported no chronic or acute illness, no regular medication regimen (with the exception of birth control), and good health prior to study onset. All procedures were approved by the University Institution Review Board.

### 2.2. Procedures

All participants completed an informed consent and then

**Table 1**  
Demographic characteristics of participants.

Characteristic	Number (%)
<b>Sex</b>	
Male	15 (17)
Female	74 (83)
<b>Age</b>	
18–19 years	54 (61)
20–21 years	29 (33)
22–24 years	2 (2)
24 + years	4 (4)
<b>Class Level</b>	
Freshman	0 (0)
Sophomore	63 (71)
Junior	22 (25)
Senior	4 (4)
<b>Race/Ethnicity</b>	
Caucasian	60 (67)
African American	2 (2)
Hispanic or Latino	15 (17)
Asian	8 (9)
Other	4 (5)

Download English Version:

<https://daneshyari.com/en/article/4937419>

Download Persian Version:

<https://daneshyari.com/article/4937419>

[Daneshyari.com](https://daneshyari.com)