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The Curse of Online Friends: The Detrimental Effects of Online Social Network Usage On Well-Being

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Abstract

In the pursuit of happiness, it has been conventionally accepted that more friends would bring us a better quality of life. However, with the advent of social networking sites, unprecedented social influence has pervaded our daily lives. Across two studies we show that even though people feel more satisfied with their lives when they view the friends added on Facebook, reading friends' posts reduces their well-being. This is because the more friends people have on Facebook, the more ostentatious information they see. The resultant drop in life satisfaction occurs because people fail to draw a connection between the number of friends and the amount of ostentatious information. Moreover, this decrease in life satisfaction is mediated by envy. We contribute to the literature on consumer well-being by identifying a novel and ubiquitous phenomenon of making social comparisons with hundreds of people, a phenomenon that arose with the advent of social networking and was previously outside the scope of social comparison literature.

Keywords: subjective well-being, social networking sites, Facebook, envy, social-comparison

160/175 words limit

*“Take heed you harbour not that vice call'd Envy,
lest another's happiness be your torment,
and God's blessing become your curse.”*

*Wellins Calcott
Thoughts Moral and Divine, 1761*

Introduction

The presence of friends in our lives is generally considered a blessing—from the joyful moments shared by Tom and Huck in Mark Twain's novels to Durkheim's more profound reflections on how social life is the fabric that prevents man from self-destruction (Durkheim, 1951). The fundamental need of humans to belong and feel connected propels us to form connections which in turn make our lives meaningful and increases our subjective well-being (Aaker, Rudd, & Mogilner, 2011; Chancellor & Lyubomirsky, 2011; Dunn, Gilbert, & Wilson, 2011; Myers, 1999; Nicolao, Irwin, & Goodman, 2009; Van Boven & Gilovich, 2003). Having a large network of friends with weak ties is even prescribed by social theorists such as Granovetter (Granovetter, 1973). In the light of conventional wisdom and these academic traditions, it seems obvious that we prefer to have more friends than fewer.

With the proliferation of social networking sites such as Facebook, the phenomenon of accumulating a large friend network has gained even more importance. Thus in an online environment, the number of friends grows exponentially, much to the user's glee. But is this connectivity good for consumers? Or can too many friends on social networking sites be detrimental to people's well-being? If so, what are the conditions under which too many friends wreak havoc in our lives? These are the questions we seek to pursue in this research.

With Facebook permeating the daily lives of a billion people worldwide (“Facebook Newsroom,” 2012), social networking is a phenomenon that has cast its spell on people

everywhere. Something hitherto inconceivable, like having a network of thousands of friends and being constantly informed about their activities, has been rendered not just possible, but normal. However, it is possible that the rules of interaction have changed at a much faster pace than the conventional wisdom that more friends translate to a better life.

In this research, we report two experiments to demonstrate that people with a large number of Facebook friends tend to experience a decrease in life satisfaction when reading their friends' updates. We find that the more Facebook friends people have, the more ostentatious information they see. Additionally, we find that when people make life-satisfaction judgments, they tend to neglect the relationship between number of Facebook friends and ostentatious posts. As a consequence, people feel more envious and less satisfied with their lives after using Facebook when they have a large (vs. small) number of friends. Finally, we also find that when people add new friends on Facebook, they feel more satisfied with their lives, regardless of the number of friends they have. This gives an insight into why people are prompted to increase their online friend count in the first place.

This research makes three main contributions. First, we contribute to the literature on consumer well being (Aaker et al., 2011; Chancellor & Lyubomirsky, 2011; Dunn et al., 2011; Nicolao et al., 2009; Van Boven & Gilovich, 2003) by demonstrating how social networking sites impact the well-being of individuals. Contrary to conventional wisdom and literature, our research establishes that in an online social networking context, having a large number of friends may be detrimental to people's well-being. People may feel good about adding new friends, but subsequently feel envious and find their life satisfaction diminished when viewing Facebook content, due to the increased ostentatious information engendered by additional friends. Considering that Facebook has more than one billion users, this research has important

implications for the life satisfaction of many. Second, on a related note, we contribute to the emerging body of literature on how social networking sites such as Facebook can predict behavior and impact people's lives (Fernandez, Levinson, & Rodebaugh, 2012; Saslow, Muise, Impett, & Dubin, 2012; Seder & Oishi, 2012; Wilcox & Stephen, 2013). Although much of this research stream has focused on how Facebook improves the life of people by lending a therapeutic hand (Buechel & Berger, 2011; Gonzales & Hancock, 2011), our research contributes towards understanding the potential negative effects of Facebook usage on well-being. While recent research (Wilcox and Stephen, 2013) has focused on how Facebook can lower self-control, its subsequent impact on well-being remains to be established, which is one of the main contribution of our research. Finally, we show that the inability to make a connection between the number of Facebook friends and the amount of ostentatious information that appears on Facebook biases individuals' social comparison processes. In doing so, this research brings to light the representativeness of the information that engenders social comparison and is one of the first studies to focus on the nature of the informational cues people use to make social comparisons.

Social Comparison, Envy and Well-being

Our perception of how great (or otherwise) our lives are is often based on our comparisons to other people's lives (Corcoran, Crusius, & Mussweiler, 2011; Festinger, 1954)—their achievements, purchases, adventures, travels, etc. With the proliferation of social networking sites, our ability to get a glimpse of others' lives is greatly magnified, with a plethora of information available at our fingertips. This phenomenon is exacerbated as people accept and send requests to old school friends, former colleagues, and other acquaintances. However, the representativeness of the information that people come across on social networking sites is

questionable. In fact, people have a tendency to selectively share information about themselves that is self-enhancing (Chou & Edge, 2012; Manago, Graham, Greenfield, & Salimkhan, 2008). When individuals read the information provided by their friends online, they may compare their lives to this information to assess how well they are doing (Wood, Taylor, & Lichtman, 1985; Wood, 1996). However, people do not have perfect information about others (Prentice & Miller, 1993). When judging life satisfaction in particular, people need to make inferences about the actual quality of others' lives based on sampled pieces of information. In the context of social networking sites in particular, the amount of ostentatious information that people view on their home page depends on the number of friends they have on that site. The greater the number of friends, the greater the number of the ostentatious posts they are likely to see. When people go on to judge how great their lives are, they are confronted by the seemingly sublime posts of their online friends. On finding that they do not match up to the collective hedonism and achievements of their online friends, they feel bad about their own lives. Thus, we hypothesize that people rely on the number of informational cues to make social comparison judgments, ignoring the number of friends they have. Social comparisons based on this information could result in disproportionately negative judgments of one's own life if one has a large number of friends. We further hypothesize that people feel less satisfied with their lives after reading others' ostentatious posts because they feel *envious* of their Facebook friends (Salovey, 1991). Interestingly, if people do feel bad after reading content on Facebook, why are they prompted to add more friends and increase their online network? Research through the ages has indeed shown that people who have the benefit of close relationships enjoy better lives (Cohen, Mermelstein, Kamarck, & Hoberman, 1985; Pavot, Diener, & Fujita, 1990). Thus, when people think about a friend they have added to their online social network, they might focus on the

immediate positive feelings associated with increasing their network as is characterized by the focusing illusion (Schkade & Kahneman, 1998), and fail to take into consideration the likely downstream consequences of having a larger network (Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000). This results in an ironic process whereby people are prompted to add friends to their online network but as a consequence of this inflated friend network, they view a greater quantity of ostentatious posts from their Facebook friends. When people feel envious of others' accomplishments, their life satisfaction plummets. Thus even though popular wisdom might suggest that having more friends makes for a better life, we hypothesize that this benefit is mainly enjoyed on online social networks in the short run, when people send or accept friend requests.

Study 1

The first study was a field experiment designed to establish the phenomenon in a real-world setting. In this study, we tested our main hypothesis: viewing friends' updates has a negative effect on the satisfaction of people with a large (vs. small) number of friends on social networking sites, while viewing the names of friends added increases people's life satisfaction, irrespective of the number of friends they have.

Method

Participants were 238 Facebook users (131 women, 107 men, $M_{age} = 32$, age range: 18-60 years) recruited online on Amazon Mechanical Turk. They were randomly assigned to one of three conditions: view-friends, view-updates, or control. In the view-updates condition, participants were asked to go to their home page and list five recent updates posted by their friends. They categorized these updates as purchase/travel-related, professional/personal achievements,

quotations, jokes, videos, everyday things, etc. We operationalize ostentatious information as the sum of purchase/travel-related and professional achievements updates, as these categorizations are closely associated with self-enhancement. In the view-friends condition, participants were asked to go to their Facebook page and view the name of the last friend they had added or accepted on Facebook. They categorized the nature of the relationship with this Facebook friend—school friend, work colleague, neighbor, etc. The participants then indicated the strength of this relationship. Following the manipulation, participants responded to the five-item satisfaction with life scale (Diener, Emmons, Larsen, & Griffin, 1985; SWLS; $\alpha=0.91$) which was the main dependent variable, the social comparison orientation scale (Gibbons & Buunk, 1999) (CO; $\alpha=0.87$) and social desirability scale (Crowne & Marlowe, 1960). The control participants only completed the dependent measures. Demographic information and the number of Facebook friends were also collected.

Results and Discussion

First, confirming our basic assumption, we found a positive correlation between the number of ostentatious updates and the number of Facebook friends ($r = 0.29$; $p < 0.001$). A pilot study conducted with a different sample of 28 participants from the same population further supported our assumption ($r = 0.47$; $p < 0.05$).

A regression analysis was conducted to study the impact of the experimental conditions (view-friends, view-updates vs. control), number of Facebook friends, and their interactions on life satisfaction. CO was included as a control variable ($\beta = -0.212$; $p < 0.05$), as was gender ($\beta = 0.38$; $p < 0.05$) and social desirability ($\beta = 0.13$, $p < 0.001$). There was a significant interaction between number of Facebook friends ($M = 220$, $SD = 219$) and the view-updates condition

($t(229) = -2.28$; $p < 0.05$). We followed the procedure recommended for cases when a continuous variable interacts with an experimental factor, thus to that effect a spotlight analysis (Aiken & West, 1991; Irwin & McClelland, 2001; McClelland & Irwin, 2003) was conducted to compare the effect of reading updates (vs. control) on participants' life satisfaction with a large number (one *SD* above the mean) and small number (one *SD* below the mean) of Facebook friends.

When the number of Facebook friends was small, viewing-updates did not have an impact on life satisfaction ($\beta = -0.002$; $t(229) = -.006$; $p = 0.50$). However, when the number of Facebook friends was large, viewing-updates produced a decrease in life satisfaction relative to control participants ($\beta = -0.88$; $t(229) = -11.99$; $p < 0.001$). There was also a significant main effect of view-friends ($t(229) = 2.024$; $p < 0.05$) and this was not qualified by any interactions. Thus, when people viewed the recently acquired friend on Facebook, they reported an increase in life satisfaction irrespective of the number of friends they had.

This implies that whenever people are prompted to add friends or accept friend requests on Facebook, they tend to focus on the positive feelings associated with increasing their network on Facebook. (Wilson et al., 2000) The benefits of doing so, however, may not last long. The large friend pool leads to people viewing more ostentatious information online and this in turn lowers their life satisfaction.

Importantly, this study was conducted with Facebook users in a realistic setting where they read their friends' posts and thought about connecting to their actual friends. Thus, this study establishes an important and previously undocumented phenomenon—that having too many online friends might reduce life satisfaction. One of the limitations of this study, however, was that the number of friends was measured and not manipulated. Even though research has shown that the number of Facebook friends is not dependent on personality characteristics such as

extraversion (Ross et al., 2009), which could influence both the number of friends and life satisfaction, the nature of this study does not allow us to rule out alternative explanations. We follow up this study with a controlled experiment designed to disentangle number of friends and ostentatious posts and to gather process evidence.

Study 2

Since the first study was a field experiment, the number of friends and number of ostentatious posts individuals saw were correlated. In the second study with a 2 (number of friends: high vs. low) X 2 (ostentatious updates: many vs. few) design, we disentangle the effect of number of friends and number of ostentatious posts and also seek to provide unequivocal experimental evidence of the hypothesized process i.e. envy generated by viewing ostentatious posts reduces life satisfaction.

Method

All the 245 participants (118 women, 127 men, $M_{age} = 29$, age range = 18-60 years) were Amazon Mechanical Turk (Mturk) workers (Mturkers). They were led to believe they were reading updates by people in an *ad-hoc* social network.

To create a sense of membership, as in a social network, all participants read a passage that talked about various facts related to the Mturk community (see Appendix 1) and indicated the number of times the word “Mturk” appeared in it. To keep the cover story, participants were told they would be randomly assigned to the role of a poster or a reader. In reality, all participants were assigned the role of reader. After this task participants were assigned to a number of friends (high vs. low) condition. Participants in the high (low) number-of-friends condition were told that 320 (40) Mturkers from the US had agreed to update their status as they would on Facebook and this would be presented to them in the subsequent screens. The participants were then

assigned to one of the two ostentatious updates conditions (many, few). Participants in the many (few) ostentatious updates condition were presented with 15 updates out of which 8 (2) were ostentatious in nature. To make sure the participants read the posts we asked them to categorize the posts similarly to study 1. Following the manipulations, respondents completed the SWLS ($\alpha = 0.93$) and envy scale ($\alpha = 0.86$) adapted from Van Dijk et al. (Van Dijk, Ouwerkerk, Goslinga, Nieweg, & Gallucci, 2006), which served as our main dependent variables.

Results and Discussion

Two pretests with different samples from the same population were conducted to test our manipulations. In the first pretest ($N = 91$) we confirmed that, collectively, updates in the many ostentatious condition ($M = 4.5$) were perceived as significantly more self-enhancing, boastful and showing-off than updates in the few ostentatious condition ($M = 3.63$).

A second pretest ($N = 80$) with an identical design to study 2 was conducted to test the number-of-friends manipulation. The only difference between this pretest and the study was that instead of completing the satisfaction with life scale after reading the updates, participants reported the number of people in their online social network. The results confirmed that participants correctly recalled the number of friends in the high-number-of-friends condition ($M = 231.33$) as significantly greater than in the low-number-of-friends condition ($M = 42.68$). This finding clarified that the people were well aware of the size of the social network they were presented with in the study.

Finally, we tested if the manipulations' impact on life satisfaction was mediated by envy using a bootstrapping procedure (Preacher & Hayes, 2004; Zhao, Lynch, & Chen, 2010) with a 95% confidence interval and 10,000 samples. An indirect effect of ostentatious updates on satisfaction with life via envy was obtained ($CI_{95\%} = [-.351, -0.028]$), providing evidence for a full

mediation. First, there was a significant effect of ostentatious updates on envy ($\beta = 0.78$; $t(241) = 3.58$; $p < 0.01$). Second, there was a significant main effect of envy on satisfaction with life ($\beta = -0.20$; $t(241) = -2.58$; $p < 0.05$; See Figure 1). There were no other significant main or interaction effects.

<Insert Figure here>

Therefore, this study unequivocally implicates the number of ostentatious posts as a cause for a significant decrease in life satisfaction. The results reported here support our hypothesis that people feel bad about their lives after reading ostentatious posts because they feel envious of the self-enhancing information posted by their online friends. This in turn reduces life satisfaction. Thus using only experimental data we demonstrate that our findings hold even within a fictitious social networking environment. This is a conservative test since people are more likely to compare to others close to them (Festinger, 1954; Salovey, 1991)

General Discussion

Movies, media and even literature extol the virtues of being connected. So it is no surprise that when it comes to having fewer or more friends, people prefer to shuffle toward the latter. A large amount of effort is expended by people in ensuring happiness in their lives and one way of increasing happiness is by connecting with others. Research also establishes that friendships enhance well-being of individuals (Myers, 1999), thus the well-established notion of more connections being better for us finds much credence among individuals. In the cyber world, more friends implies connecting with people through social networking sites. However, this penchant for increasing friend count comes at a cost. We now do what was previously unthinkable: connecting online with thousands of people. This makes use privy to information about others' adventures, purchases, and intimate details. As our studies show, people feel great about their

lives when they think about the added connections. However, as people accumulate online connections, they are bombarded with more and more ostentatious information. Moreover, people forget to consider that a large online friend network is responsible for an over-enthusiased panorama of ostentatious posts, which they are obliged to view. Ostentatious posts are often used as an indicator of others' awe-inspiring quality of life. Finally, as they themselves come nowhere near matching this ostentatious display, people end up feeling bad about their own lives. These judgments of life satisfaction are, as evidenced in study 2, caused by the envy people experience after reading updates (Study 2). By shedding light onto this counter-intuitive phenomenon, our research contributes to the literature on consumer well-being (Aaker et al., 2011; Chancellor & Lyubomirsky, 2011; Dunn et al., 2011; Nicolao et al., 2009; Van Boven & Gilovich, 2003) and provides straightforward recommendations: consumers should remember (or be reminded) that the more connections they have on Facebook, the larger the number of ostentatious posts they will be exposed to. Failing to take this information into account can lead them to feel dissatisfied with their lives.

Finally, we contribute to the emerging literature (e.g. Wilcox & Stephen, 2013) on potential negative effects of online social networking. Our studies add to this literature by showing a decrease in subjective well-being caused by social comparisons when people are unaware that the number of connections can influence the information they are exposed to, and ultimately, feelings of envy.

However, one of the limitations of our studies was that all the participants who viewed Facebook updates were asked to elaborate on them by categorizing and listing examples, which may have artificially inflated participants' involvement with Facebook. If our task increased involvement,

then our findings are more likely to be representative of people with higher levels of involvement with Facebook or with their friends, or both.

Conclusion

With social media weaving its way into the fabric of our day-to-day existence, and being increasingly used by businesses to promote their brands, the implications stemming from our findings will find credence not only among users but also among marketers. This research is a forerunner in garnering evidence about how Facebook may have the ability to influence people's emotions (for example, by inducing envy) and reduce well-being. How this in turn impacts consumer behavior (e.g. conspicuous consumption), among other questions, forms an exceedingly ripe opportunity for future research.

Full Text Word Count: 3398/4000 (not including references, appendix)

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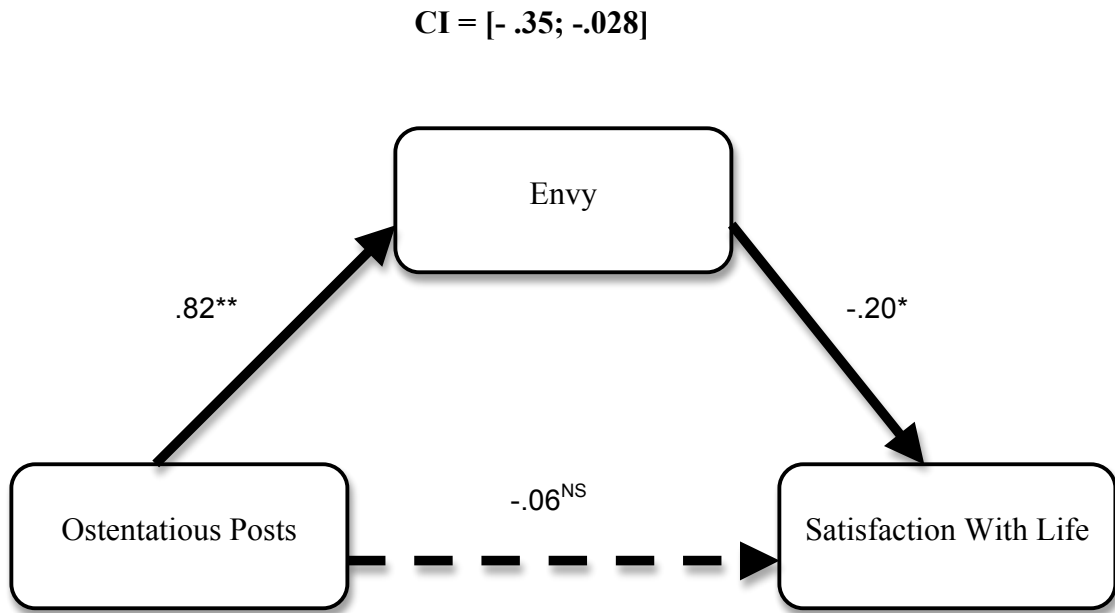
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Note— * = $p < 0.05$; ** = $p < 0.01$.

Fig. Mediation Via Envy.

Appendix- 1: “Mturkers”

Mechanical Turk (Mturk) is an online labor market. Employers called requesters recruit employees, who are sometimes referred to as Mturkers. Mturkers help research by taking part in studies and answering surveys online. The Mturkers from the US comprise 64.85% females and 35.15% males. The average Mturker is 36 years old. However, the age of Mturkers ranges from 18 to 81. Among Mturkers, 61.4% report that earning additional money is a great driver in accessing the website. However, Mturkers also report that they participate on the website for non-monetary reasons such as entertainment (40.7%). The reported education level of Mturkers from the US is at least similar to or higher than that of the general population. On average Mturkers complete anything between 20 and 100 human intelligence tasks (HITs) per week (Paolacci, Chandler, & Ipeirotis, 2010).