Estimating Usage Can Reduce the Stress of Social Networking

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Abstract

Social networks are increasingly popular and provide benefits such as easy peer group communication. However, there is evidence that they can have negative consequences, such as increased stress levels. For two weeks, we provided participants with an objective measure of their social network usage and also asked them for a daily estimate of their usage over the previous 24 hours. Although their social network usage did not significantly change, participants' perception of this activity was transformed, with a reduction in perceived stress, an increase in satisfaction and more generally an increase in their perception of control over time. We demonstrate the potential of combining both estimates and objective measures of activity usage in personal informatics systems: it can result in a

transformation of attitudes towards the activity and a reduction in the stress associated with it.

Author Keywords

Social networking; stress reduction; activity estimation.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Social network sites are increasing in popularity, with Facebook having almost 600 million daily active users in 2012. However, there is evidence that using social network sites can sometimes have negative consequences, including social overload [1] and interruption of work patterns [6], both of which can lead to increased stress levels [2]. Students are the primary user group of social networking sites, with 50% using them more than once per day [10]. Although 95% report that using Facebook has a positive effect on their social lives, 80% also report that it has a negative impact on their academic studies [9]. Junco and Cotton [4] found a negative relationship between Facebook usage and time spent preparing for class. Similarly, Stollak and colleagues [11] found that students with higher GPAs spent significantly less time on social network sites than students with lower GPAs.

We investigated whether a personal informatics technology [7] could alleviate the stress that university students can experience due to social network usage. We focused on this group because they are the largest active user group of social network sites and are more likely to be faced with stress from social overload [8] and academic demands [5, 11].

We hypothesised that people are often not aware of how much time they spend on social network sites as it is easy to become absorbed in activities where there are positive rewards, such as receiving messages from friends, and this can result in a distortion of time perception [3]. We therefore provided participants with an objective measurement of their social network usage. We did not explicitly ask participants to reflect on their usage, but each day we did ask them to estimate the time they had spent on social networks over the previous 24 hours. We asked for retrospective, rather than prospective, estimations of usage because we did not want participants to feel there was a goal to aim for, worrying that this might increase their stress levels further if their actual usage exceeded their estimation. We hypothesized that as participants' predictions became more accurate, their perceived control over their social network usage would increase and their perceived stress associated with this activity would also reduce.

Study

16 university undergraduates, aged between 19 and 22, were asked to install RescueTime (https://www.rescuetime.com/), a time management application, on their own smartphones and PCs. They were informed that it would measure and visualize the amount of time that they actively used applications, websites and documents. They were not initially told that we would be asking them to estimate their social networking usage.

We hypothesized that there was a good chance that participants might change their behavior simply as a result of having their activities measured by RescueTime. In order to minimise this effect, for the first two weeks after installation participants were not able to access RescueTime and we did not record any data. At the beginning of week three, we interviewed the participants and recorded: firstly, their attitude to social networks, asking them to rate on a 7 point Likert scale their satisfaction with their social network usage; secondly, the extent to which they found social networks stressful, also on a 7 point Likert scale; thirdly, their time management skills using the Time Management Questionnaire (http://psycnet.apa.org/journals/edu/82/4/760/); and fourthly, their perceived level of stress using the Perceived Stress Scale (http://www.ncsu.edu/assessment/resources/perceived_stress_scale.pdf). For the next two weeks (that is, weeks three and four of the study), participants were telephoned at random times of day (between 12 noon and midnight) and asked to estimate the duration of their social network usage in the previous 24 hours. They were not given feedback on the accuracy of their estimations. RescueTime recorded participants' actual social network usage each day and participants could view the statistics about their active application, website and document usage whenever they wanted using their mobile phones or PCs. We did not explicitly ask them to use RescueTime but we did record how much time they used this application for. Using RescueTime we recorded how much time they spent on social network sites each day. At the end of week four, participants completed an exit interview, which again investigated their attitudes towards social networks and measured their time management skills and perceived level of stress associated with social network usage.

Results

We calculated the accuracy of participants' estimates of their social network usage as the difference between their actual usage and their estimations. The accuracy of participants' estimates of social network usage increased significantly over the two week period ($F_{(1,13)}= 14.038$, $p<0.001$). There was no significant change in the amount of time participants actively spent on social network over the course of the two weeks ($r^2=0.1$, $F_{(1,12)}=1.332$, $p=0.271$).

There was no significant correlation between participants' estimation accuracy and the time they spent using RescueTime during the experiment. We hypothesized that this could be because participants primarily used RescueTime at the beginning of the study to improve their estimation accuracy and then used it infrequently. However, even in the first week that participants could access RescueTime (week three of the study) there was not a significant correlation between estimation accuracy and time spent on RescueTime ($r_{(224)}=-0.007$, $p=0.912$ to $r_{(112)}=-0.140$, $p=0.142$).

Paired sample t-tests were used to compare participants' attitudes toward social networks, time management skills and their perceived level of stress at the beginning of week three and the end of week four. Participants' perceptions of social networks as a stressor significantly decreased ($t_{(15)}=-3.569$, $p<0.05$) and their satisfaction with their social network usage significantly increased ($t_{(15)}=3.530$. $p<0.05$). Although there was no significant difference between participants' initial and final overall scores for time management skills, their perceived control over time, which is one of the four subscales within the

questionnaire, significantly increased over the two week period ($t_{(15)}=3.394$, $p<0.05$).

Discussion

This study provides a new method of eliminating the stress that can result from social network usage. Providing participants with objective measurements of their social network usage combined with asking them to do a daily retrospective estimation of that usage leads to a positive transformation in the perception of stress and satisfaction associated with social network usage. As participants' estimation of their daily social network usage improved, their perceived control over this behaviour increased, leading to a perceived increase in time management skills. The actual time that participants spent on social networks did not decrease, but their perception of this activity was positively transformed. In a future experiment we will use a between subjects design to do a comparison of three conditions and their impact on social network usage: prospective estimation (what will the usage be in the next 24 hours) combined with an objective measure; retrospective estimation (what was the usage in the previous 24 hours) with an objective measure; and an objective measure without estimation. We will also investigate when and how often people use RescueTime to get an objective measurement of their social networking usage when doing estimations. This method may be applicable to other stressful activities where people may not be aware of the amount of time they spend on the activity, for example, email usage.

Summary

Retrospective estimation of time spent on social networks, combined with access to an objective measurement of the usage, led to a reduction in

perceived stress and an increase in satisfaction associated with the activity, as well as an increase in the perception of control over time. Although the perception of social network usage was positively transformed, the actual time spent on social networks did not significantly change. Our study demonstrates the effectiveness of combining regular activity usage estimations with a personal informatics systems that provides an objective measure of the activity usage.

This approach can result in the transformation of attitudes towards an activity and a reduction in the stress associated with it. Our future research will explore how this technique could be applied to other activities. For example, email usage, is frequently quoted as being a stressor and we predict that many people will be poor at estimating the amount of time they spend on this activity.

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