
Achieve: Evaluating the Impact of Progress Logging and Social Feedback on Goal Achievement

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Abstract

Goal progress logging and social feedback have been shown to motivate individuals to achieve their goals. However, little controlled study has been done to evaluate the relative effects of these features. We developed a simple goal achievement application, Achieve, to examine the effects of progress logging and social feedback on goal completion.

Results of an in-progress study suggest that both progress logging and social feedback had positive effects on goal completion. However, surprisingly, social feedback has no significant advantage over progress logging. Further, participants who gave and received social feedback had a higher level of annoyance toward the study. We discuss possible reasons for this and propose insights for adding social components to goal achievement systems.

Author Keywords

Goal Achievement; Progress Logging; Social Feedback

ACM Classification Keywords

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

Introduction and Related Work

Technologies designed to help people achieve their goals are becoming increasingly common in areas such

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CSCW'14 Companion, Feb 15-19 2014, Baltimore, MD, USA

ACM 978-1-4503-2541-7/14/02.

<http://dx.doi.org/10.1145/2556420.2556498>

Welcome, UserP1 | [Log out](#)

UserP1's Goal: Try to avoid stress eating by eating appropriate healthier meals regularly.

Please post an update on the status of your goal every day for at least 12 of the 14 days during the study period.

Contact Zach at zip2@cornell.edu if you have any questions.

UserP1 [04/11/13 9:29 AM]: Had the idea of going to seven-eleven to buy snack last night when I'm anxious but replaced it with grapefruit.

UserP1 [04/11/13 10:28 PM]: Failed today...due to stress from prelim, ate two donuts after tonight's prelim.:(

UserP1 [04/13/13 10:31 PM]: Had a brunch and dinner today. Didn't eat under stress since I didn't do any serious work today.

UserP1 [04/14/13 9:43 PM]: Didn't eat regular meal due to busy schedule. Bad daily routine.

Welcome, UserS1

All users' goals | [Your goal](#) | [Log out](#)

UserS2's Goal: Exercise more

Please post an update on the status of your goal and add comments on two or more other participants' goals every day for at least 12 of the 14 days during the study period.

Contact Zach at zip2@cornell.edu if you have any questions.

UserS1 [04/10/13 3:03 PM]: My advice is to setup a schedule and stick to it. Don't go too crazy, gradually increase your exercise. The trick is being consistent, and having a plan.

UserS5 [04/10/13 5:38 PM]: Do something indoors if the weather is bad like jumping jacks.

UserS2 [04/10/13 6:45 PM]: Started out by going on a long walk today.

UserS3 [04/11/13 11:31 AM]: That is a very good start

as productivity support, personal information management, and healthy living. A common feature of these tools is progress logging. For instance, StepGreen allows users to write down everyday action to track their green behavior toward sustainability goals[5]. Such logging may motivate people to achieve their goals because it increases the awareness of the goals and allows them to reflect on their past behavior, allowing them to improve future performance [4]. Seeing one's goal physically recorded can also directly serve as a motivating factor [3]. How these effects transfer to goal achievement applications, however, is less clear.

Goal achievement applications also commonly include social elements such as finding "goal buddies", sharing progress, or giving encouragement and suggestions to others. The idea is that social pressures, commitments, or support might improve goal performance. For instance, Burke & Settles [2] proved in their study that early social identity feedback motivated people's songwriting behavior in a community aimed at songwriters. However, there is little controlled study evaluating the effects of other kinds of social interaction in goal achievement apps.

Here, we report on our initial study investigating the effects of progress logging and social feedback on motivating (or demotivating) individuals. We developed a system, Achieve, focusing on these two features: 1) People could write down daily progress towards achieving the goals (Figure 1, top); 2) People could give feedback to and receive feedback from others (Figure 1, bottom).

Our initial experiment had a total of 30 people. Ten of them simply wrote down their goal at the beginning of the study. The other 20 used one of two versions of Achieve: one in which they logged their progress privately every day, and one in which they both logged progress and got feedback and suggestions from others in their group daily.

Although many of the results are not yet significant because of the small sample size, the trend is that both progress logging and social feedback improved goal performance, but that social feedback did not further significantly improve the outcome—in part, we think, because social participants had to expend more effort than those who simply logged progress. We are continuing to run more subjects, but even these initial findings raise important design considerations for adding social components to goal achievement tools.

Experiment

Participants and design

To evaluate the two features of Achieve, we conducted a between-subjects design among 32 participants from Cornell University. Participants were divided into 3 groups: the control group (n=10), the private group (n=11), and the shared group (n=11). One participant in each of the private and shared groups dropped out, resulting in 3 groups of n=10. Figure 1 shows an example of the private and shared conditions.

Procedure

Participants were asked to record a goal at the beginning of the study. We asked them to set a goal with a medium difficulty level that could be achieved with a reasonable amount of effort within two weeks. Examples are "study French for at least 1 hour every

Figure 1. From top: (1) Individuals in the private group wrote down their daily progress; (2) Individuals in the shared group also gave feedback to and received feedback from others.

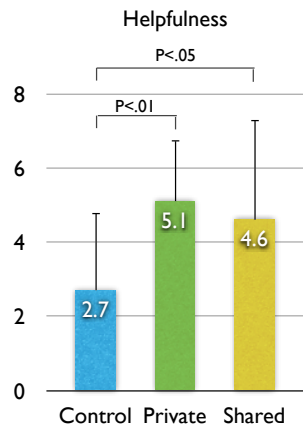


Figure 2. People in the private and shared group found this study more helpful.

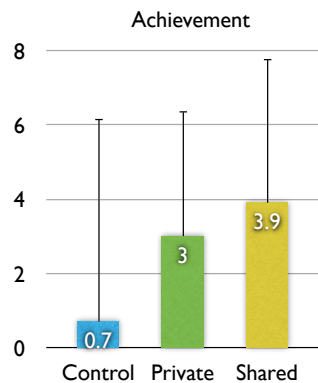


Figure 3. People in the private and shared group made more progress.

day” or “sleep 8 hours every day”. Participants in the control group recorded a goal at the beginning of the study and were not contacted for two weeks. Participants in the private group were asked to post their progress daily using Achieve over the course of the 2-week study. Participants in the shared group were asked to both record their progress and give feedback daily to at least 2 shared group participants.

Participants in the private and shared groups were assigned random usernames that would allow for anonymous participation out of privacy concerns. These participants received daily emails with a reminder to sign in and record their progress in the Achieve application; such reminders have been shown to increase compliance with similar applications [1].

Survey

After two weeks, all participants were asked to fill out a survey that asked about the helpfulness of the study (“Was this study helpful towards accomplishing your goal”), their goal achievement (“How far did you get towards achieving your goal”) and their annoyance level (“Did you find the study annoying”). Responses to the helpfulness and annoyance questions were based on a likert scale ranging from 1 (not at all) to 10 (very); for achievement, the scale ranges from -10 (worse off than at the beginning) to 10 (achieved the goal). We also provided free response text boxes for open comments for each question.

Hypotheses

H1: Logging progress in Achieve helped individuals achieve their goals.

H2: Giving and receiving feedback in Achieve helped individuals achieve their goals.

Results

To address H1 and H2, we conducted an ANOVA comparing responses to the questions asking about helpfulness of the study and goal achievement.

Helpfulness of the study towards achieving the goal

Results showed that people in both the private and shared groups found this study helpful towards accomplishing their goals, $F_{2,27}=3.29$, $p=0.05$, Figure 2. Post hoc tests indicated that the mean of helpfulness is significantly higher in the private group ($M=5.1$, $SD=1.66$) and shared group ($M=4.6$, $SD=1.88$) than in the control group ($M=2.7$, $SD=2.11$). No significant difference was found between the private and shared group.

Goal achievement

Both the private and shared groups reported higher goal achievement than the control group, $F_{2,27}=1.35$, $p=0.28$, Figure 3. Since this is the first wave of subjects who have completed the study, the differences were not statistically significant, although the trend is similar to that for helpfulness.

Taken together, H1 was supported by our results, while H2 was not significantly supported.

To better understand why social feedback wasn’t as helpful as we expected, we also conducted an ANOVA to compare the groups’ annoyance with the study. Results showed that people in the shared group had a higher level of annoyance than the private and control groups, $F_{2,27}=6.97$, $p<.005$, Figure 4.

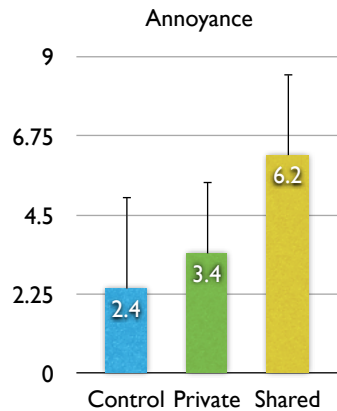


Figure 4. People in the shared group found this study more annoying than the other groups.

Discussion

The higher annoyance level in the shared group may help explain why social feedback did not show a significant advantage over progress logging on improving goal performance. Based on comments from participants in the shared group, both giving and receiving feedback was troublesome at times. On the giving side, people “...didn’t know what to say about other people’s progress” and that they “had to log in every day and comment on other people’s goals”, which was “too time consuming”. On the receiving side, “other users didn’t...provide any useful insight, and often gave non-constructive comments.”

Based on the responses, we propose two design ideas for making social components in goal achievement systems more helpful and less costly.

Provide additional context to aid people logging progress and giving feedback. Adding additional context such as visualization of goal progress and past posts provides people with information to reflect on, perhaps making it easier to write a post or to comment on others’. By doing this, the effort of writing feedback is decreased.

Provide constructive recommendations early on Another way to reduce the cost of social feedback would be for the system to provide recommendations and tips early on. Users could write tips based on these recommendations instead of composing new ones from scratch, reducing costs and giving examples of useful contributions to guide them.

More generally, we think the problem is captured nicely by one participant’s lament: “I just really wish there

would have been more direction in terms of what to write about.” Giving more shape to structure social aspects of the system to support reflection and collaboration [6] is likely to be important to goal achievement systems.

Conclusion and future work

Both progress logging and social feedback increased goal performance, although the effect of social feedback was not statistically significant so far, in part perhaps because the costs of being social were high. We plan to run additional studies to collect more data and make stronger conclusions. We also plan to develop goal support tools that use ideas such as those we propose above to make being social easier and more effective in helping people achieve their goals.

References

- [1] Bentley, F., & Tollmar, K. The power of mobile notifications to increase wellbeing logging behavior. In *Proc. CHI*, ACM (2013), 1095–1098.
- [2] Burke, M., & Settles, B. Plugged in to the community: social motivators in online goal-setting groups. In *Proc. C&T*, ACM (2011), 1–10.
- [3] Colineau, N., & Paris, C. Motivating reflection about health within the family: the use of goal setting and tailored feedback. *UMUAI* 21, no. 4-5 (2011): 341–376.
- [4] Li, I., Dey, A., & Forlizzi, J. A stage-based model of personal informatics systems. In *Proc. CHI*, ACM (2010), 557–566.
- [5] Mankoff, J., et al.. StepGreen.org: Increasing Energy Saving Behaviors via Social Networks. In *Proc. ICWSM* (2010).
- [6] Prilla, M., Degeling, M., & Herrmann, T. Collaborative reflection at work: supporting informal learning at a healthcare workplace. In *Proc. GROUP* (2012), 55–64.