FITtogether: An 'Average' Activity Tracker

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Abstract

In this paper we discuss an app we have implemented for iOS and Android called FITtogether. The app counts users' steps and enables them to compare these with the average steps of all other users. We have trialed the app over a two week period in the wild on users' own devices. Our findings suggest that comparison with an average leads to users feeling that they are successful if they are above average, and that by making a personal step count available to others only as part of an average does not lead to anonymity and identity concerns.

Introduction

Smartphone based activity trackers often have social features, for example the ability to post achievements to social network sites, and to compare and communicate with others. There is evidence from walking interventions, that such features are beneficial (e.g. [1]). There is also some evidence that certain styles of social feature could be more positive than others, for example collaboration is preferable to competition (e.g. [2]). There remains however a large design space for activity trackers, and a great deal of work yet to do in exploring it [3][4]. There are myriad ways to design social features into activity trackers and the work in this paper makes some steps in exploring that.
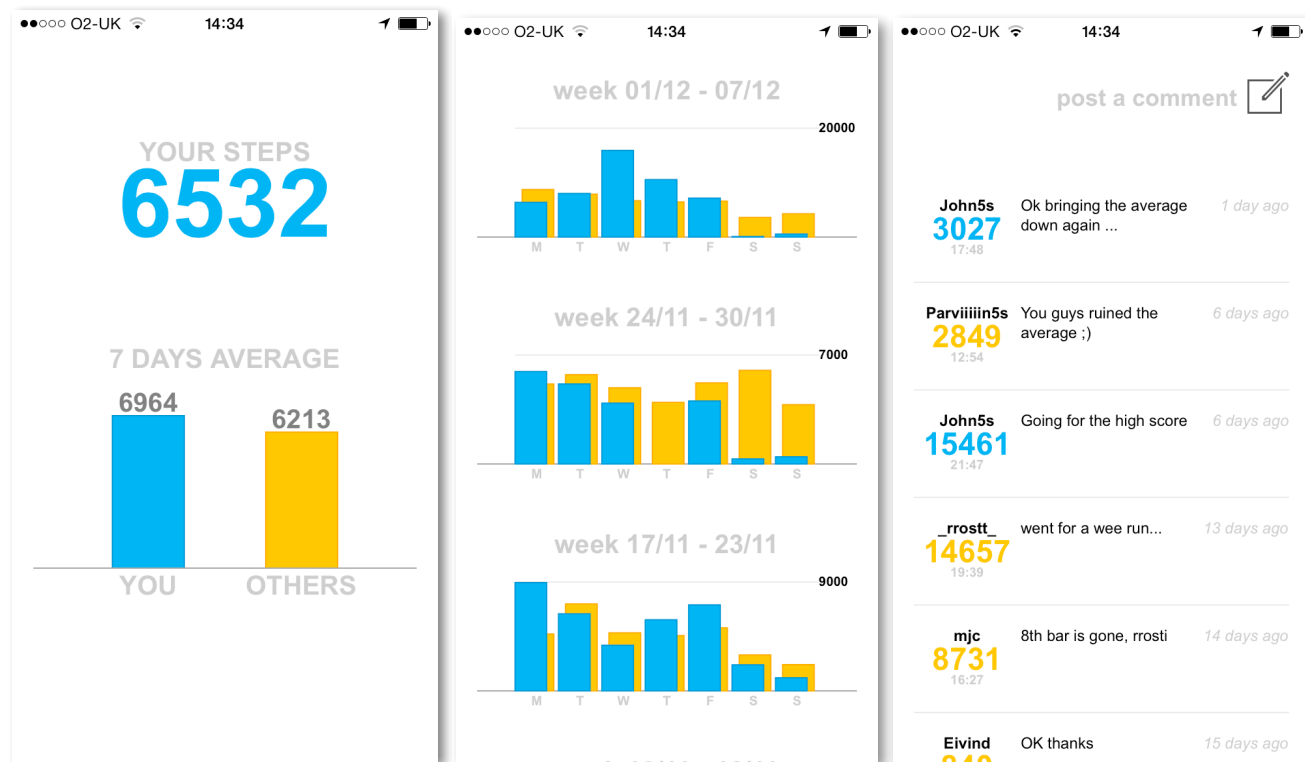
Figure 1: FITtogether 1) main view, 2) history view, 3) chat view. Navigation is via a swipe gesture (left or right). The second and third screen can be scrolled vertically. The chat view shows our own comments made during testing.

We have been taking a design-led approach to researching how people engage with activity trackers. We have implemented several designs and trialed them in the wild (e.g. [4][5]). A key interest for us has been how and why people engage with activity-trackers. We have been looking for rapid ways to explore the design space, perhaps ones that can be combined with slower, more detailed trials.

FITtogether

In this paper we present a mobile phone based activity-tracker called FITtogether, as seen in Figure 1. The design of FITtogether arose in a brainstorming session in October 2014, and was worked-up over a series of sketches and then implemented. Our general aims have been: 1) to rapidly design, build, and trial an app over a short period, 2) to explore the use of indirect comparisons with an average step count rather than

Figure 4. User communication between trial participants. First message at the bottom.
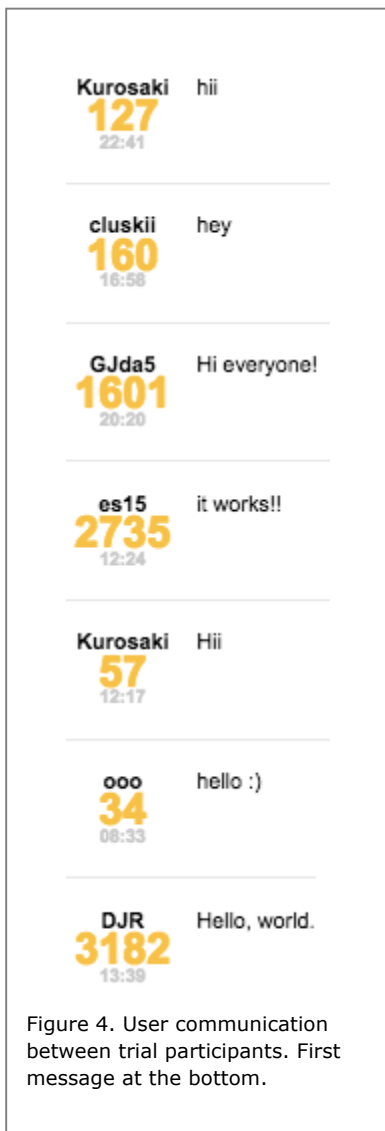
direct comparison with other individuals or with a personal goal.

The app has been implemented for iOS and Android devices. It has the following functionality:

Step counting: The app counts the user's total daily steps. The app displays the user's step count for the current day, their history over previous days, and their average step count for the past seven days.

Comparison with an average: The app displays the user's seven-day average alongside the seven-day average for all other users of the app. The user's history over previous days is also shown against the average for all other users on each day.

User communication: Users can post comments to a timeline visible to all other users of the app. When they post a comment their username is revealed, together with their current daily step count.

Delayed signup: The app does not require users to enter a username until they wish to make a comment.

User Trial

In December 2014 we ran a user trial with twelve participants. The participants installed and used the app on their own smartphone, and used it over a period of 14 days. The participants were recruited from an undergraduate Human Computer Interaction class. This was not part of their assessment (we do not teach this class), and each participant was offered ten pounds. Eleven males and one female participated. All were in their late teens or early twenties. Students were recruited for three reasons: they are convenient and
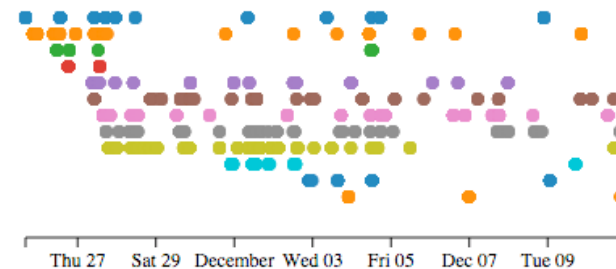

Figure 2: Plot shows user engagement. Each row is a participant. A circle indicates the user opening and using the app.

relatively fast to recruit, they are an existing peer group, and they are likely to own devices we support.

We collected log data from each participant during the trial. This included their daily step counts and comments, as well as data about how they used the app (for example when they opened it, what screens they looked at and for how long, and some information about the state of the device such as its connectivity). A visualization of the log data can be seen in Figure 2 showing when each user interacted with the app. We have interviewed seven of the twelve participants at the time of writing.

Findings

In this paper we will focus on three issues: engagement, comparison, and communication.

Engagement

One user reported problems with the app and uninstalled it shortly into the trial, but otherwise the trial progressed satisfactorily for our purposes. Engagement levels were mixed, as can be seen in

Figure 2, with some users looking at the app more often then others. Engagement generally tailed off over the trial period. No users appeared to develop a habit of daily use of the app, but several looked at it regularly and reported being generally interested in the information it gave. One aspect of the trial, that partly explains some of this tailing off, was that the trial period covered the last week of a teaching period and the first week of an exam period. This had an effect on the students' physical activity levels and the time they had for the app.

The students that participated were less cohesive as a peer group than we had expected, orienting to each other as strangers. The participants had been informed that others from the same class would be participating, but other than that they told us in interview that they got little sense of who the other users of the app were. The communication function was used very little, and the usernames the students chose were pseudonyms or initials rather than real names. Only one interviewee said he recognized others from usernames.

The students had a mixed interest in pedometers. One student used Apple Health on his iPhone and another had tried Google Fit, but in general the students that participated did not seem to have a serious interest in pedometers. Several also oriented to their role as being a tester or advisor, giving us comments about how to improve the app rather than opinions on how it suited them as people. The interviews have still been helpful, but we have had to take care over interpreting what we were told.
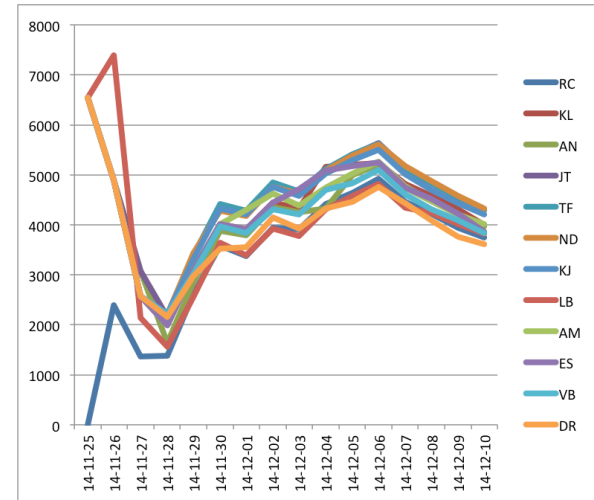

Figure 3: The averages as seen by the 12 participants.

Comparison with an average

From a technical standpoint, the presentation of a user average functioned appropriately. We took a mean average of all the 'other participants' and displayed this for the user. We were concerned about potential problems with this, including outliers shifting the mean, or other factors causing odd results. But as can be seen in figure 3, after a few days the averages seen by each user converged at relatively similar levels.

All participants reported that this comparison between themselves and an average was easy to understand. One participant said it took him a few days to realize he could swipe to different screens but otherwise the participants seemed able to identify what data was theirs, and what was that for others.

Some of the participants seemed to like being able to compare step counts with an average, but others seemed somewhat baffled or detached. Several interviewees spoke of feelings of competitiveness, which manifested as fear of being below average or satisfaction at being above average. This is interesting as the idea of competition and beating others here is simply to be above average; none of the participants made any consideration of whether they were ranked at all or actually walked more than many others. Some of the participants were surprised about being seen as above average, not considering themselves as active.

The app, as we expected from experience, led to some motivation to walk more, but just insofar as things like choosing to walk rather than take the bus. No one went out of their way or saw a need to change. None of the participants saw their step counts as low or of concern. It is possible because of a generally low average, that this reinforced complacency. However, at least one participant engaged in sporting activity (Judo) where he did not carry his device.

All but one participant said they did not know the others using the app. There was a general sense of anonymity with the app, including a sense that the participants themselves did not feel on show or needing to manage their identity. No one spoke of looking bad or looking good, which is interesting as it shifts the sense of competition from one of being seen to be good to a more personal one of being above average. Specifically no one expressed privacy concerns about sharing their steps or mentioned how their step count affected the average for others. Perhaps the general sense of anonymity went too far. One participant reported that they would like to be able to compare

themselves with 'types' of people. It seemed lost on him that the other users were those in the same class. Perhaps then, the app could do more to typify or reveal information about other users without necessarily having to give direct comparisons.

Communication
The communication function of the app was barely used during the trial. Just a series of "hello" messages were posted (see Figure 4). Once one person had posted hello, others (in the words of one interviewee) did the "polite" thing by reciprocating the greeting.

Most participants said they did not see the point of the communication feature, although none dismissed this entirely. Several said it would be better if there were friends using it, whereas another thought the issue was that there were just not enough people. Several interviewees said, in various ways that there was nothing going on in the chat. It was as if the participants were waiting for something to happen before they said anything. Some leadership was required, perhaps a question that people could respond to. It is not clear that communication is a necessary part of the app, but if it is included there may need to be some seeding necessary.

Discussion
This app was neither loved nor hated by our users. It is not a clear success or failure. So what can we learn from this trial?

Firstly, the app does appear to diminish users' sense of competition. Participants still reported feelings of competitiveness, but where coming half way is good enough. This is potentially useful, as it means users do

not get a sense of failing if they are not near the top of a leader board. However, it is also possible that users will become wrongfully reassured if they see a low average. Secondly, we find that the participants are interested in social data without necessarily needing to chat or communicate with others. What the participants seemed to want was more information about the type of people against who they were comparing. Thirdly, users were interested in weekly data, but seemed more interested in a breakdown by day rather than a seven day average.

On the negative side, the communication channel was barely used and seemed pointless for the participants. Potentially this can be dispensed with all together, or be seeded with questions or some form of talking point.

The app has also raised some interesting questions of anonymity and identity. We cannot say if it was because of the sense of anonymity, or the way step data is presented as an average, but none of the participants expressed any concern about their step data being shared with others. Further studies are needed to look into this.

We used a group of students in the trial. There is no ideal target user group for this app, but potentially we could have got more insight from people that are interested in activity trackers or improving their walking.

Conclusion
We have rapidly developed and trialed a social activity tracker app. The feedback we got was not conclusive, but has supplied a range of insight that can go into improving the app, or into building an understanding of the design space. We will make changes to the app and run further trials. To overcome the limitations we encountered associated with using students as participants, we will look for other peer groups and/or will combine future trials with an app store release.

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