

Promoting kindness and gratitude with a smartphone and triggers

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Previous research has shown that gratitude positively influences psychological wellbeing and physical health. These findings call for the development of technologies to promote gratitude. This paper presents a novel system leveraging smartphones to naturally embed gratitude inspiration in everyday life. Smartphone sensor data is utilized to infer optimal moments for stimulating contextually relevant thankfulness and appreciation. We hypothesize that our approach leads to reoccurring instances of grateful emotion, and consequently, improves overall wellbeing.

Our approach has two parts: A user interface (UI) for expressing or journaling gratitude, and triggers designed to inspire user actions in natural contexts. We compare three conditions including control, periodic triggering, and contextual triggering. The control group has access to the main UI but not notifications. The periodic group receives inspirational content evenly dispersed throughout the day. The contextual group receives the same content but based on social interactions, physical activity, and location changes extracted from mobile sensor data.

To evaluate the effectiveness of our gratitude intervention, we include measures of psychological wellbeing (Ryff scales of PWB), gratitude (GQ6, GRAT) and, novel to this work, an analysis of users' responses to the gratitude inspiring content and sporadic mood measurements using the phone lock screen. Not only quantitative measures, but also qualitative measures from users' interviews played an important role in evolving the system.

We have run two rounds of a randomized control trial (RCT) for evaluating our system. After the first round of the study (2 weeks, N=15), we refined both the system design and study procedure and ran a second round of RCT (5 weeks, N=27). We also improved interface usability, data logging and analysis. We also optimized measurements and added automatic measurements of multiple attributes of gratitude. We have added a novel method for mood measurement to cancel out the effect of transient mood on sense of gratitude. Finally, we have extended the length of intervention to get past the novelty effect. We report the detailed results of our RCT's, analyzing the different contexts and their effects on overall wellbeing and on the practice of gratitude.