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The Effect of Social Support Features via Buddies in App-Based Habit Building

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ABSTRACT

App-based habit building has been shown to be a good tool for forming desired habits; however, it is unclear how much individual features that are present in many apps contribute to the success of habit building. In this paper, the authors consider the influence of social support features by developing an app in which habit progress was shared with peers – 'buddies' in the app. In the study, 38 participants created habits and monitored their progress regularly with the app over three weeks. The participants were divided into a control group without a 'buddy' and a treatment group cohort in which they were assigned to buddies based on their desired habits. With each habit repetition, the app gave feedback on the number of repetitions and the automaticity of the user's habit. The results obtained show that the reproduction of app-based intentional habit building is effective and that automaticity could be predicted by habit repetition.

KEYWORDS

Habit Forming, Self-Determination Theory, Social Support Features

INTRODUCTION

There is a considerable number of people who struggle with the technique of forming habits that could improve their learning processes, thereby making them more effective and efficient. Especially in the context of technology-enhanced learning, and due to the increased number of technology-related distractions (e.g., advertisements, temptations to browse other websites), the act of forming desirable or undesirable habits significantly influences the learning process and study success (Fiorella, 2020). Habits can influence learning in a positive way by ensuring regular and consistent learning efforts. At the same time, habits can also have a negative impact, for example when habitual excessive media consumption leads to continual distractions (Lee, 2014). Habits are behavioral patterns that are triggered by a particular context, often outside of conscious awareness (Pinder & Cowan, 2018). A student might have the habit of regularly checking their mobile phone, even when studying. However,

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even though habits are mostly triggered automatically, they can still be actively, consciously, and intentionally learned. Lally *et al*. (2010) showed in their study that participants were able to build up habits over a period of several weeks in their natural environment. They found that the growth of habit strength, which they called *automaticity*, can be described by a quadratic function that first increases sharply and then stagnates once the asymptote / tangent is reached. This means that the initial repetitions cause a high growth of automaticity, which then decreases with each repetition until the behavior reaches its limit of automaticity.

The possibility of helping users to form habits has been taken advantage of by the designers and developers of over 100,000 mobile apps in recent years, particularly for health reasons such as exercise, diet, and weight management (Edwards *et al*., 2016). With the ubiquitous use of smartphones today, hundreds of millions of people use such apps for improving their lifestyle, health, study, and work successes etc. (Ibid). A number of individual features are used by these apps, such as paying the user a (virtual) reward for completing the target activity, or providing accurate feedback about the user's progress and performance towards the goal. In many situations, a social feature component (such as sharing the progress with family or friends) has been found particularly effective for individuals to achieve their goals (Villalobos-Zuniga & Cherubini, 2020). Additionally, features utilized by such apps have been designed based on behavioral theories that focus on observable behavior, such as *Self-Regulation Theory* (Bandura, 1986), *Social Cognitive Theory* (Bandura, 1986), *Theory of Planned Behaviour* (Ajzen, 1985), *Trans-Theoretical Model* (Prochaska & Di Clemente, 1983), *Health Belief Model* (Rosenstock, 1974), and *Goal-Setting Theory* (Locke and Latham, 2002). These theories are typically used to explain the reasons for people undertaking (or not undertaking) a certain activity and the different stages of progressing through it. Villalobos-Zuniga and Cherubini (2020) identified a major common role / indicator, namely a person's motivation for doing the task, as a decisive factor for whether the task will be completed or not. They selected the *Self-Determination Theory* (SDT) (Deci and Ryan, 2008) as the foundation of app features upon which their taxonomy was built, which relates to different aspects of motivation. Broadly speaking, SDT can be classified into intrinsic / internal motivation (e.g., studying for one's own interests) and extrinsic / external motivation (e.g., studying because my family wants me to, or to get a good job). Note that we are often both intrinsically and extrinsically motivated to carry out different tasks. Recently, many apps have utilized additional internal or external incentives to help users to succeed more with completing an activity or reaching a goal or making an activity becoming habitual. In spite of the prevalence of these apps and their large number of users there is a lack of professional guidelines for designers, or industry standards, and lacking knowledge on the long-term effects of such interventions means there are concerns that such apps could even lead people to adopt the opposite of the target behavior, in the worst scenarios (Edwards *et al*., 2016).

Building desirable habits, and getting rid of undesirable ones, has also become a major topic in the digital behavior change literature (Pinder & Cowan, 2018). Habit building via self-monitoring on smartphone apps over longer durations has been successfully demonstrated by Stojanovic *et al*. (2020). The self-monitoring itself is only one feature of digital behavior change apps, and they often utilize a wide range of other motivational features, such as reminders, gamification, or social support (Villalobos-Zuniga & Cherubini, 2020). Despite these features being used often, there is a lack of research regarding the contribution of these individual and/or social features for habit building (Hermsen *et al*., 2016). Especially for social features, which are central to many (commercially successful) apps, research is still in its infancy (Elaheebocus *et al*., 2018; Oinas-Kukkonen *et al*., 2009). With this study, the authors aim to address this gap by exploring and examining the impact of social support features in app-based habit building. For this investigation, the authors created an app called *Habit Buddy* that allows habit creation and self-monitoring with additional social support features. Users of the app can have a peer (henceforth called *buddy*) with whom they can communicate and share their habit tracking progress, which is stored and analyzed. The authors then investigated