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Understanding persistence in the use of Online Fitness Communities: Comparing novice and experienced users

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ABSTRACT

Mobile and wearable technologies facilitate physiological data collection for health and wellness purposes. Users typically access these data via Online Fitness Community (OFC) platforms (e.g., Fitbit, Strava, RunKeeper). These platforms present users with functionalities centered on self-monitoring, social networking and enjoyment. In order to fully benefit from these functionalities, users need to make a habit out of integrating OFC use into their everyday workout routines. However, research suggests that users often fail to use OFCs over a longer period of time. This study sheds light on the factors that explain persisted OFC use. To that end, the study compares novice and experienced users in terms of their OFC use motives and how these motives contribute to the habitual integration of OFCs into everyday workout routines. Based on the survey responses of 394 OFC users, a multi-sample structural equation model indicates that self-regulatory and social motives directly predict habitual OFC use, and that enjoyment and self-regulatory motives indirectly predict habitual OFC use, by driving the perceived usefulness of OFCs. Moderation analysis revealed that, for novice users, self-regulatory motives are the prime drivers of habitual OFC use, while social motives and enjoyment are more important for experienced users.

1. Introduction

Technology is increasingly important in the support of regular health and activity monitoring (Kay, Santos, & Takane, 2011). Activity tracking applications (apps) and wearables linked to (online) data analysis platforms are considered radically new and self-empowering health technologies that enable their users to track, analyze and interpret health related parameters including step counts, calorie intake, heart rate, exercise frequency and more. These technologies and applications can collect large amounts of activity and health related data.

Because the practice of collecting health related data about oneself is a self-monitoring process that relies on the quantification of one's bodily processes (e.g., heart rate) and activities (e.g., step counts), this practice is also known as the 'Quantified Self' (Barrett, Humblet, Hiatt, & Adler, 2013; Swan, 2012a, 2012b, 2013). Wearables and apps have boosted the Quantified Self since they afford automated and detailed data collection, resulting in better data quality. In addition, these technologies do not just capture and archive data for the benefit of the 'life-logger' him- or herself, but also enable the user to share his records with others in dedicated online communities or on social network sites.

Fitness apps, wearables and Online Fitness Communities (OFCs) are increasingly attracting academic attention. The focus of academic research is relatively broad, however, ranging from descriptive analyses to intervention studies (Middelweerd, Mollee, van der Wal, Brug, & Te Velde, 2014). Descriptive analyses often focus on identifying the presence of specific elements in fitness apps. West et al. (2012), for example, categorized the types of behaviors addressed in fitness apps. Nutrition, physical activity and personal health and wellness appeared most common. Conroy, Yang, and Maher (2014) examined the prevalence of behavior change techniques in fitness apps. They concluded that fitness apps mostly contained fewer than four behavior change techniques of which self-regulatory features (feedback, planning and goal-setting) and social support were most prevailing. In addition, Lister, West, Cannon, Sax, and Brodegard (2014) found widespread use of gamification elements in fitness apps, although these appear to be seldom framed within behavior change theory. In short, descriptive analyses show that physical activity is a typical activity monitored by fitness apps and that users typically gain access to their data via an online platform that has self-regulatory, social

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networking and gamification features.

Intervention studies form a second strand of research. These studies examine the potential of e&mHealth devices and applications for behavior change. A number of these studies discuss the potential of OFCs and social media for behavior change in the fields of health and fitness behavior. Cavallo et al. (2012), for example, concluded from their research that integrating Facebook in an intervention may enhance social support for physical activity. Foster, Linehan, Kirman, Lawson, and James (2010) found that using a Facebook application to create a social and competitive context was successful in raising step counts. In short, these studies illustrate that integrating social media in interventions can result in positive health behavior adherence outcomes.

A central conclusion of several intervention studies is that the success of e&mHealth in support of people's health behavior strongly depends on the extent to which users integrate their use in their everyday routines. Intervention studies in the context of physical activity, for example, report significant attrition numbers (Bessell et al., 2002; Malik, Blake, & Suggs, 2014). A commercial study by Endeavour Partners (2014), reports that 50% of new users of wearables and 74% of new users of health apps, stop using them within two weeks. This suggests that only a minority of users succeed in making a habit out of using their wearable or app.

Given the problem of persistence in the use of wearables and apps, it is important to identify potential use motives that contribute to habitual wearable/app use. Greater awareness of these motives informs developers about how products can be improved, provides focus for health practitioners who wish to build successful health interventions and programs that rely on these technologies, and helps both scientists and individual users to better understand the role of these technologies in supporting healthy behavior. It is crucial in this regard to not focus on the devices (i.e. apps and wearables) that capture the data, but rather on the opportunities for feedback they make available, as it is this feedback which has been identified as an important factor for behavior change (DiClemente, Marinilli, Singh, & Bellino, 2001; Free et al., 2013). For most apps and devices, these opportunities for feedback are presented in the form of an OFC.

1.1. Online Fitness Communities

Online Fitness Communities (OFCs) are platforms that translate data gathered by a wearable device or mobile app into feedback, both of informational and social nature. OFCs thus generate meaningful information about the user's performance and/or health. Popular examples of OFC's are Strava, RunKeeper, Fitbit and Endomondo. OFCs enable users to either manually add activities to their profile or to upload sessions logged through wearable devices or dedicated smartphone applications which use the sensors and GPS of the smartphone to automatically log a user's activities once a session is started. After completion of the activity, data is transferred to the user profile using 3/4G or WiFi connection, where users can analyze their performance. OFCs also connect both recreational and professional athletes. Users can view other athletes' activities and can allow others to view theirs. Furthermore, users can interact with others based on the activities they share. On Strava, for example, they can give 'kudos', which is the Strava equivalent of a 'Facebook like', to activities posted by a Strava user as a means of endorsing each other's achievements. They can also comment on the activity. Users can typically join OFCs with both a free account or a paid premium account, which allows them to use more features of the platform.

In this study, we particularly focus on Strava, an OFC that is experiencing significant growth in recent years, especially among cyclists and runners. Launched in 2011, Strava now has over 10 million users (A VC Lets a Bet Ride: the Story of Strava, 2013) generating 2 million activities per week (A Global Data Set, 2014).

1.2. OFC affordances and use motives

Although U&G theory has been applauded for focusing on what people do with media rather than on what media do to people, scholars have also critiqued the theory for overly focusing on the social and psychological origins of needs, while dismissing the role that media themselves play in need. The perceived usefulness concept has a pronounced importance in research on technology adoption and use (Bhattacherjee & Premkumar, 2004). For OFCs, this usefulness implies that the OFC must add value to existing exercising behavior. Technology developers attempt to generate this added value in technological features that they believe will assist the user in achieving his/her goals. For instance, as mentioned above, descriptive research has revealed that the most popular OFCs have a number of features in common, such as features to log activities, to interact with others and to set goals (and obtain rewards for achievement).

According to media affordances theory (Hutchby, 2001; Schrock, 2015; Woodruff & Aoki, 2003), technological features can be understood as intrinsic properties of the technology that engender possibilities for action (cf. Orlikowski's (1992) duality of technology). Technological affordances arise when the user perceives these 'actionable properties' (Jensen, 2010). In the context of OFCs, for example, self-monitoring can be considered a technological affordance that arises when users perceive the possibilities that OFCs offer to log metrics on physical activity (e.g., duration, average speed, …).

The affordances concept has recently been successfully integrated into motivational theories of media use (e.g., Sundar & Limperos' (2013) renewed Uses & Gratifications theory). Adding the affordances concept to such theories is relevant, because the concept acknowledges that not only psychological and social needs, but also (novel) expectations about the outcomes of technology use – that arise when people perceive the technology's actionable properties – motivate technology use. Because affordances are relational (Hutchby, 2001), however, users may differ in the extent to which they perceive these affordances (Vanden Abeele, Schouten & Antheunis, Forthcoming). This, in turn, may impact how useful users perceive a technology to be.

In the current study, we integrate the affordances concept with Self-Determination Theory (SDT) (Ryan & Deci, 2000). SDT departs from the premise that three basic psychological needs drive human behavior: autonomy, relatedness and competence needs. Autonomy refers to the need to be in control of one's life. Relatedness comprises a person's need to have meaningful relationships with significant others. Lastly, competence is a person's need to feel effective or successful in his/her undertakings (Deci & Ryan, 2008, 2010). As we will argue below, the actionable properties of OFCs afford gratification of these needs in the context of physical activity and exercise behavior.

1.2.1. Self-regulatory use motives

Self-regulation refers to the process of regulating one's own behavior through processes of self-monitoring, planning, scheduling and goal-setting (Bandura, 1991; Michie et al., 2011). Self-regulation also includes setting self-determined goals or standards in order to become more efficient at reaching targeted behavior. When these goals or standards are reached, this will lead to self-rewarding reactions that can induce further adjustment of goals and continuance of behavior (Bandura, 1977). Self-regulation is closely associated with the fulfillment of autonomy and competence needs (Ryan & Deci, 2000).