Mobile Technology and Wellbeing  
The role of Self-regulation

.

# Abstract

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Mobile technology enables 24/7 connectivity. Besides offering numerous pleasures, research is now beginning to distill potential negative effects of this connectivity on cognitive functioning and social interactions. This paper discusses how self-regulation theory is of importance for understanding these negative effects of mobile technology and discusses how self-regulation theories could aid in the design of “healthy” mobile technology.

# Author Keywords

Mobile Technology; Self-regulation; Mental Health.

# ACM Classification Keywords

J.4 Psychology

# Introduction

Mobile technology has profoundly changed the landscape of our everyday lives. Social interactions are increasingly mediated by smartphones, a 24/7 connection with the world wide web is enabled, and a multitude of apps and sensors enable tracking a variety of bodily and behavioral entities. It has never been this easy to quickly check your email on the spot, read the latest news on twitter, or follow the ups and downs of your friends on Facebook. This 24/7 connectivity also has its flip side. Research investigating these unwanted effects of smartphones is still emerging, but points to potential detrimental cognitive as well as social consequences. Mobile technology can impose informational burdens on its users, affect social interactions, and sometimes even cause dependency towards the technology. This paper poses that self-regulation may play a central role in these negative effects of mobile technology and discusses why self-regulation theories are relevant for the design of “healthy” mobile technology. To start with, a short introduction into self-regulation will be given.

# Self-regulation

Self-control[[1]](#footnote-1) can be defined as: “overriding of one action tendency in order to attain another goal” [1, pp 3]. Behaviors requiring self-control\ cover many different domains within our everyday lives, such as concentrating on a task, controlling impulses, resisting temptations, averting short-term gratification to achieve a long-term goal, and controlling emotions [see, e.g., 2]. Importantly, exerting self-control requires mental energy [3]. For instance, Ego-Depletion Theory [3] postulates that every behavior or cognition requiring self-control will deplete a central resource and thereby temporarily diminishes your self-regulatory capacity on a subsequent act of volition. This would, for instance, mean that having just resisted a tempting chocolate muffin lowers your performance on an attention task [for an overview, see 2]. In other words, our ability to control our behaviors and cognition is not infinite and lapses in self-control, or lowered performance, will occur when our self-regulatory capacity has previously been challenged.

Thus, self-regulation is a frequent process that occurs in almost every aspect of human existence, but which appears to rely on a limited energy resource. Indeed, psychological research has pointed to the importance of good self-regulatory skills on a variety of life outcomes, including academic performance and substance abuse [4]. Mobile technology can place a considerable demand on this self-regulatory capacity, as will be discussed in the next section.

# The flip side of mobile technology

Many people report overusing their mobile phone. For example, Billieux [5] reported that up to 30 % of mobile phone users reported feeling addicted to it. As mobile technology is available anytime and anywhere, people constantly have to resist the temptation to check their phone every time it buzzes and divide their attention between the task at hand and their smartphone. Resisting temptations requires self-regulation [6]. In addition, the seemingly infinite stream of information available can easily present cognitive overload. Research into the division of attention, or multi-tasking, points to negative effects on for instance working memory, disruption of the work flow, and distraction [e.g., 8].

Not only is the constant distraction by mobile technology problematic, it also diminishes the boundaries between work and private life as work mail can be checked just before going to sleep and Facebook updates are quickly read during work hours. Traditionally, the home is the place to recover from the strains experienced at work. Taking work into the home and vice versa can put constraints on stress-recovery [7].

All these processes require self-regulation, whether it is to stay focused on your work and ignore incoming messages, to resist the temptation to check your phone during diner with friends, or dealing with the vast amount of information on offer.

Social consequences include the development of more shallow ‘horizontal relationships’ as mediated interaction differs substantially from the richer face-to-face communication [8]. Research has indicated that merely placing a mobile device on the table during conversation can lower interpersonal connectedness as well as empathetic concern [8]. These effects are problematic as good social connections are essential for good self-control [9].

In the worst case, people actually become addicted to their smartphone, displaying classic dependency symptoms similar to other behavioral addictions such as for instance game addiction or gambling addiction [5].

The study into dependency effects of mobile technology use is still in its infancy, but a number of factors have already been identified central to the development of an addiction [5], including personality type, self-esteem, and impulsivity. Especially impulsivity is highly related to self-control capacity as low self-control results in higher impulsivity [5]. Paradoxically, low self-control capacity thus makes addiction to cell-phone use more likely.

In sum, the informational burden and temptations posed by mobile technology can drain self-regulatory capacity which, in turn, has been suggested as a key factor in the etiology of mobile technology dependency.

# Conclusion: Healthy Mobile Technology and Self-regulation

The design of “healthy” mobile technology could benefit from self-regulation theory, either by lowering temptations and informational burdens or by boosting self-regulatory capacity. This section will *shortly* discuss these opportunities and present some examples of implementations.

Design interventions focusing on lowering the temptations offered by mobile technology and regulate the stream of information could benefit from context-sensitive and interactive applications. For instance by down-regulating the informational burdens on users, without explicitly limiting functionalities. An example would be to make smart use of GPS or Bluetooth functionalities (e.g., work email alerts won’t sound when at home, Facebook is blocked when in face-to-face presence of a friend).

The second route focusses on exploiting mobile technology to restore or boost self-regulatory capacity. Research has indicated that some interventions can overcome ego-depletion, including generating positive emotions [10] or viewing restorative imagery such as nature [11]. These interventions could easily be incorporated into smartphones [e.g., 11].

In a similar fashion, the experience of having high self-regulatory capacity has been labelled as being vital [12]. According to Self-Determination Theory [9], three psychological components are quintessential for high vitality: competence, relatedness, and autonomy. Mobile technology that embraces these three fundamental human needs could improve vitality and enhance self-control capacity.

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1. In this paper, the terms self-regulation and self-control are used interchangeably [↑](#footnote-ref-1)