

Delineating and Limiting Problematic Use of Digital Technologies

Doctoral School: Doctoral School in Law, Political Science, Economics and Management (ED DESPEG)

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Host laboratory: CNRS GREDEG (UMR 7321)

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Subject description:

Context and motivation

The use of the Internet via computers, smartphones, and other electronic devices has dramatically increased over the last 25 years and digital technologies now occupy a large and growing share of leisure time. The use of the Internet may provide tremendous benefits to users as a means to connect with friends, access large amounts of information, educational tools, and news. Yet, the ubiquity of digital technologies may lead to problematic digital use, i.e., any impulsive use of digital technologies that can be self-harming or deemed inappropriate by others. Examples range from excessive time spent on social media, internet, or video games, as well as any use of these technologies in dangerous or inappropriate situations (e.g., while driving or attending professional meetings). In the case of excessive use and focusing on the demand side, survey evidence shows that users tend to overconsume digital because they are often poorly informed about the consequences of unrestrained use. Moreover, people tend to spend more time than they plan in front of digital technologies. The problematic digital use is often compared to forms of behavioral addictions such as gambling and video game disorder.

Despite the recent contributions on the topic from several disciplines, many questions remain open. First, it is not clear how problematic use of digital technologies impacts a wide range of outcomes (e.g., mental health - in particular attention disorders, polarization of opinions, work and academic attainment, learning and creativity). Much of the literature proposes correlational studies using self-reported measures of use. The literature calls for more objective measures and more causal evidence. Second, policy-makers are increasingly looking for behavioral solutions that can prevent or alleviate problematic use. Some preventive technologies (e.g., limiting apps) have been developed, but it is questionable whether they are suitably designed or whether individuals underestimate the consequences of problematic use. Private businesses may also have counteracting profit motives, e.g., designing apps that can promote problematic use.

This doctoral project aims at:

- i. shedding light on the causes and mechanisms underlying problematic digital use,
- ii. developing new tailored tools and interventions that provide guidance for public policies

The thesis plan is articulated in three parts:

- I. First, it intends to provide a diagnosis of problematic digital use. In particular, it aims to study the factors and mechanisms underlying the phenomenon.
- II. Second, it will investigate the causal effect of some preventive and corrective solutions. More specifically, it will draw upon insights from behavioral sciences to design both monetary (e.g., rewards) and non-monetary (e.g., nudges) solutions, and test their effectiveness on a range of outcomes.
- III. Finally, by drawing insights from several related disciplines, such as ergonomics, and informatics and computer sciences, it aims at proposing innovative tools.

Theoretical Framework and Methods

This thesis aims at producing pluridisciplinary work at the intersection between behavioral sciences and other disciplines related to digital technology use. The theoretical framework adopted in the thesis draws inspiration from past multidisciplinary work. Several reasons for problematic digital use have been identified in the literature, mainly focusing on emotional states (excessive reassurance, low self-esteem, need for social gratification) and behavioral biases (lack of self-control, naïveté).

As far as methods are concerned, this doctoral project relies on a mixed-method approach. On the one hand, observational and experimental methods will play a fundamental role when shedding light on the causes and solutions to problematic use. On the other hand, this thesis will draw upon methods used in computer and design science to design new tools that prevent or limit the consequences of problematic use. Those tools include smartphone applications with web-based interventions, online counseling and therapy, artificial intelligence and virtual reality therapeutic software, or even games and virtual 3D systems.

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