

## Design Psychology Technologies for Good Mental Health

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### Introduction

We live in a world where digital technologies (referring to electronic tools, systems, devices and resources that generate, store or process data), are becoming embedded into all technologies. Human-facing or user-engaging digital technologies such as social platforms have drastically changed the ways in which we interact with one another, how we view privacy, and how our democratic processes function. Hardly anyone will have escaped the massive media attention regarding recent problems with Facebook, Twitter, and Instagram, with growing worries on the impact these platforms have on mental health. These worries are frequently echoed regarding young people, as parents and concerned adults often find themselves woefully unprepared to deal with the influence of these technologies on young people's lives – especially as they themselves struggle with overusing them.

According to a recent report, adults in the UK who use the internet spend on average 3.15 hrs online [1]. This number gets even more absurd when averaged to a whopping 48 days a year hunched over a screen. Yet, this number is likely an underestimation, as it is based on people's self-reports of their own usage. Most of us, whether we believe that digital technologies are "good" or "bad" for us, will have found ourselves feeling enslaved by them at some point. Pressures to keep up with a constant stream of e-mails, social validation (or lack thereof) provided by friends on social media, or gamification features keeping us hooked to applications are all anecdotal examples of how technology can help make us feel anxious, stressed, and even depressed. Somebody once said that we cannot uninvent our inventions; now that Pandora's box of digital tech is open, there is no way of shutting it back again. So instead, what if we had reliable ways of designing digital technologies, platforms, and services with mental health in mind?



### What Does the Science Say?

Currently, the effects of digital technologies such as social platforms, games, and applications on mental health are hotly debated. Defined as a state of well-being in which every individual realises their own abilities, can cope with the stresses of life, can work productively and is able to make a contribution to their community (and not just the absence of mental disorders [2]), mental health is fundamental for prospering in an increasingly complex world. Yet many technologies designed to be helpful or make us feel less lonely by connecting us with others have the unintended effects of becoming a detriment to mental health. Unfortunately, the majority of current research relies on cross-sectional (i.e., one-timepoint) data, whereas data following people ‘in the wild’ over time is owned by the tech companies themselves and researchers have limited or no access to it. Scientific findings are very much divided in “good vs bad” camps, where studies have identified positive impacts of digital technologies on well-being and social connectedness [3], but also increases in poor mental health [4] and reduced participation in meaningful activities and face-to-face relationships [5]. Yet, in spite of these scholastic divisions (and perhaps false dichotomies between good and bad), we know enough to say that the way technologies are designed likely contributes to poor mental health.

It could certainly be argued that contemporary digital technologies are created to maintain continuous usage. Expert designers claim that exploiting vulnerabilities in the human psyche has been a common feature of the design process for social media platforms such as Facebook, and addictive or potentially harmful features being there on purpose rather than by accident in order to increase user engagement [6]. Dopamine hits that create social-validation feedback loops via “likes” [7] or gamification of services and products [8] are examples of features linked to behavioural addictions, especially among children and adolescents [9]. Waiting for social platforms to load their content is a deliberate design feature, as it increases addictiveness of variable rewards [10]. The depth in human interactions has also been designed away, as for instance social platforms are built to increase so-called social snacking [11]. That is, online socializing is analogous to having a meal providing temporary satiation for social hunger such as loneliness but is unlikely to be fulfilling in the long run.

Social reciprocity, such as showing that others have read one’s messages or by demonstrating that the other person is typing back in real time, is another favourite feature of tech designers that helps create an emotional rush [10]. Snapchat currently uses elongated red lines to highlight how long ago it has been since two users interacted, with anecdotal evidence of teenagers asking friends to watch their streaks while being away on holiday [10]. Web-based services like those provided by Google are free, but everything we do (i.e., our data) is being harvested in order to target us for more efficient advertising [12]. We are also losing our emotional privacy online, as algorithms are able to deduce how we feel based on our user data from web browsers and smart devices [12]. Regrettably, there is currently no ethical code of conduct by which to hold companies responsible for the consequences these technologies have on mental health [though efforts are being made to create such a code; see e.g., 6, 13]. But if these features have been purposefully designed in, they either have to be designed out – or companies need to think outside of the box and create digital technologies of the future in a new way. There are no reasons why social platforms have to function the way they do, or search results be delivered in the manner we are accustomed to today.

### How Can We Solve These Problems?

One way of attempting to solve the existing digital mess is applying principles from design psychology, a currently non-existing branch of psychology that I am championing in my lab at Imperial College London. Our work focuses on understanding psychological mechanisms that govern human behaviour, emotions, and decision-making processes related to designing products, services, and behavioural interventions that benefit mental health. Traditionally, psychologists have shied away from engaging with industry, whereas companies have not always been open or able to work with psychologists. Indeed, many companies hire designers focusing on user experience alone, which although important, is not enough to understand long-term effects of technologies or to prevent people from using them in unintended or harmful ways. Instead, mental health-proofing technologies before releasing them for wider use requires time, patience, and financial investment. My personal experience of engaging with companies on these issues has left me feeling more optimistic than ever, however. For example, after a talk at [Imperial Tech Foresight 2039](#) and a recent [BBC radio panel discussion](#) about whether machines make the right choices for young people, I've been inundated with requests to engage with companies and individuals about issues concerning the effects of digital technologies on mental health. I do not believe that companies are unwilling to test their products for mental health effects, but the frameworks to do so might not always be there.

For companies to ensure good mental health of their future users, one way in moving forward is abandoning the attention economy business model that relies on the pull on users' attention and creates a more efficient advertising space in turn [10]. Though this business model clearly works in terms of revenue, it works less well in terms of ensuring the social and emotional development of the people who use it – many of whom are young. For instance, social platforms (or even web browsers) as paid services might be a way to implement safety features and good design while promoting healthy social development. Another way to counteract unintended consequences of technology on mental health is for the industry to work closely with behavioural scientists to conduct rigorous scientific testing and treat technological applications as planned behavioural interventions. The Design Psychology Lab at Imperial College can provide such a space, among others. For everyone concerned with mental health, the time has come to work across academic and industry borders to ensure that some of the processes that are deemed important for a healthy social and emotional development are embedded into the digital technologies of the future. If we cannot uninvent our inventions, let's work together on inventing and testing better ones that help us ensure good mental health for future generations. It is also time to introduce a system for mental health certification of digital technologies that companies can use to verify their products and services (not unlike electrical safety certification systems, for instance).





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