

Digital Addiction in Teenagers: Tackling it With an App Based on Behavioral Economics

Samantha Kitchner¹ and Zoe T²

¹Archbishop Mitty High School, San Jose, CA, USA

²Polygence Research Academy, Stanford, CA, USA

ABSTRACT

In recent years, smartphone usage has increased rapidly, especially in teenagers. The excessive screen time can lead to digital addiction which means people use technology to a point where they cannot stop, even though they recognize the negative consequences associated with it. In behavioral economics, there are two ways of classifying all decisions we make in life: rational and irrational. A rational decision would be one that gives us the most utility or satisfaction. Because humans are imperfect, we constantly make irrational decisions, such as using our phone too much even though we know that it is not the best use of our time. There is an explanation in behavioral economics behind this though. There are theories such as hyperbolic discounting and present bias that say humans value things more that are in the present time. I am recommending the use of an app in order to lower teens' screen time. This app would have numerous features such as goal setting, points/rewards, and a leaderboard that directly counteract this irrational behavior.

Introduction

In recent years, phone usage in teenagers has risen significantly, especially in the use of social media. Since 2017, worldwide social media usage has gone up by more than 25%, increasing from 2.8 billion users to 3.6 billion users, making that nearly 50% of the population. It is projected that by 2025, users will be up to 4.4 billion (Clement, 2020). This much use of social media has racked up the number of hours teens spend on their device to the point where it has caused a digital addiction. In behavioral economics, this addiction could be described as an irrational behavior and explained by various concepts, such as present bias and hyperbolic discounting (Ubel, 2009). In this report, I am introducing the idea of the use of a theoretical app, FOCUS, that would help to combat the rise of digital addiction by tracking and limiting a user's screen time.

Research

Recently, smartphone usage in teenagers has increased rapidly, which has resulted in a number of negative physical, mental, and emotional consequences. Since 2015, smartphone ownership in teens has increased from 65% to 85% (see fig. 1). Moreover, teenagers spend an average of seven and a half hours on the screen each day for non-academic purposes ("Media Use by Tweens and Teens 2019: Infographic: Common Sense Media", 2019).

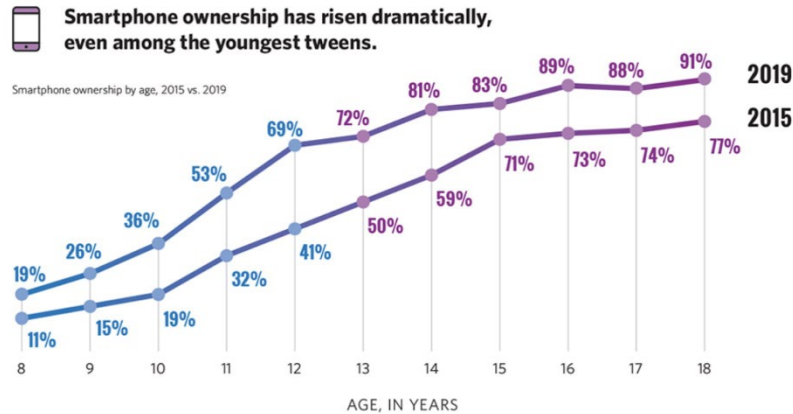


Figure 1. Smartphone Ownership by Age in the U.S. (“Media Use by Tweens and Teens 2019: Infographic: Common Sense Media”, 2019).

Assuming most teens get about eight hours of sleep a night, there are 16 hours they are awake each day. By spending seven and a half hours on a screen, teenagers are spending about half of their day looking at their phones, which prevents them from engaging in other more productive activities. Furthermore, an excess of screen time has a significant impact on teens’ sleep. 80% of people use their phone within an hour of going to bed or waking up, and 70% of people sleep with their phone next to them (Georgie, 2020). Additionally, when people wake up in the middle of the night, 40% grab their phone and use it (Georgie, 2020). Using a cellphone close to bedtime or during the night can reduce quality and quantity of sleep, demonstrating how excessive screen time in teenagers can affect their restfulness and physical health.

I conducted a survey through Qualtrics to get a better understanding of how people use their phones, and it garnered 58 responses from teenagers and young adults ages 13-25 from across the United States. 55% of the respondents answered “yes” when asked if they felt they were addicted to their phone, and 80% said they wanted to lower their screen time. Of the respondents who want to lower their screen time, 56% of them wanted to do so to spend more of their time productively.

Teenagers today have started to use their phone so much to the point where some have become digitally addicted. Those who are digitally addicted might lose track of time while online, fall behind on responsibilities, and fail at trying to cut back on their screen time (“How Internet Addiction Affects Your Brain”, 2019). Moreover, excessive phone usage may cause people to experience feelings of loneliness, anxiety, depression and cause them to feel overwhelmed or stressed (“How Internet Addiction Affects Your Brain,” 2019).

Digital addiction is an irrational behavior because people feel guilty about engaging in this behavior, knowing that it doesn’t truly benefit them in the long run. Behavioral economists have classified human behaviors into two categories: rational behavior and irrational behavior (Ubel, 2009). If humans were perfect, we would only make rational decisions our entire life. These rational decisions would be ones that would bring us the greatest utility, or satisfaction. The utility of two options can actually be calculated and then compared to see which one would give someone higher satisfaction. However, since humans aren’t perfect and don’t have the time to calculate the utility for every situation, irrational decisions are made frequently. Irrational decisions are the ones that go against the utility-maximizing theory and are much more common in our real lives (Riley, 2020). Some examples of irrational behaviors include not going to the gym, eating unhealthily, procrastinating work, staying up too late, and using one’s phone more than a healthy amount. These are considered irrational because there are other options besides these that would grant us a higher utility in the end. This specific behavior of digital addiction is considered irrational because there are more beneficial things one would prefer to be doing instead of using their phone. These other options, such as doing homework or exercising, have rewards that will be given in the future instead of in the present moment. If one were to calculate the utility of their two options -- being on their phone or having a healthy lifestyle -- they would see that the second choice would actually give them greater satisfaction in the long run.

These types of irrational behaviors can be explained by some ideas and theories in behavioral economics. Behavioral economists assert that individuals might act this way due to hyperbolic discounting, which is when people prefer small short-term rewards over bigger long-term rewards (Benhabib et al., 2009). For example, using my phone right now gives me a small immediate happiness, compared to possibly getting into a better school in the future because I studied harder right now, which would be a later, greater reward. This is an example of immediate gratification, which is the desire to experience pleasure or fulfillment without any delay. Furthermore, present bias explains that options that are close to the present time are valued more (Benhabib et al., 2009). For example, if I were to give someone the option between getting fifty dollars right now or one hundred dollars in three months, they are more likely to pick the fifty dollars. This is because they receive the money immediately, which seems more beneficial to them than having to wait for a larger amount of money. However, if I were to offer them fifty dollars in three months or one hundred dollars in six months, it might not be as easy of a decision as the first scenario, even though it is the same amount of money and same amount of time between the two options (Benhabib et al., 2009). This is because neither of these options are in present time; therefore, one feels no present bias toward either. Teenagers feel more pleasure and satisfaction from using their phone in the moment because it is happening in the present time.

Lastly, people will usually pick the option with the most certainty, and because something happening sooner rather than later has more certainty, this is the preferred option. When teenagers use their phone, it is certain that it will happen and give them utility because it is happening right now; however, anything in the future has uncertainty because there are many factors that contribute to that actually happening.

Proposed solution

Digital addiction is an irrational behavior and a prevalent problem in teenagers that could be explained by psychological phenomena, such as hyperbolic discounting and present bias. In order to counteract these biases, I am recommending the use of an app, FOCUS, that could help teenagers limit their screen time. I came up with the idea of FOCUS in order to help users to limit and track their screen time so they know they aren't spending more time on their phone than they should. So far this is just a theoretical idea, but I am in the process of getting the app fully created. I have created the wireframe, design, and layout for the app, but I still need to work on getting it coded. While there are already some apps and websites that exist, such as Google Wellbeing and Apple Screen Time, this app would have many more valuable features, such as goal setting, a point system, and regular feedback that incorporates proven, effective concepts from behavioral economics.

One main feature of this app would be goal setting: users could set a goal for themselves to say how much time they want to spend on their screen that day. Setting a goal ahead of time is an example of pre-commitment, which can make people more likely to follow through (Ubel, 2009). This is because once they plan something out for the future, they feel more compelled to complete that task. An example of pre-commitment is agreeing to go to the gym with one's friend twice a week. Since they committed to them, they are more likely to actually start going to the gym. Suppose they want to spend no more than three hours on their phone that day; throughout the day, the app would send them reminders to let them know if they are close to passing their limit, and this would help them reduce their overall screen time.

Creating a point system will be another unique feature of this app. Gamification is the application of game-design elements and game principles in non-game contexts (Huotari, 2012). Gamifying an app gives the user a more interactive, fun experience, making them more inclined to use the app (Deese, 2016). Based on this idea, I am designing this app as more of a game instead of just a tracker. Each week users would be provided with a certain number of points that can later be used to their advantage. If they pass their time limit one day, they lose a certain number of points, depending on how much time they spent over the limit. I chose to have the users lose points because of the concept of loss aversion, which comes from behavioral economics. This concept states that people value losses more than gains. For example, if someone were to lose five dollars, that would have a greater effect on them than if they were to receive five dollars, even though it's the same dollar amount (Tversky, 1991). At the end of the week, users

can use any points they have left to “buy” a reward of extra screen time one day the next week. The more points they have, the more extra screen time will be available to them, so this will be an incentive to not pass the screen time (see fig. 2).

Lastly, there will be a leaderboard to compare one’s times to their friends, which would be effective because it would be an incentive to lower the user’s screen time (see fig. 2). It adds the aspect of competition to the app and motivates them to use their phone less.

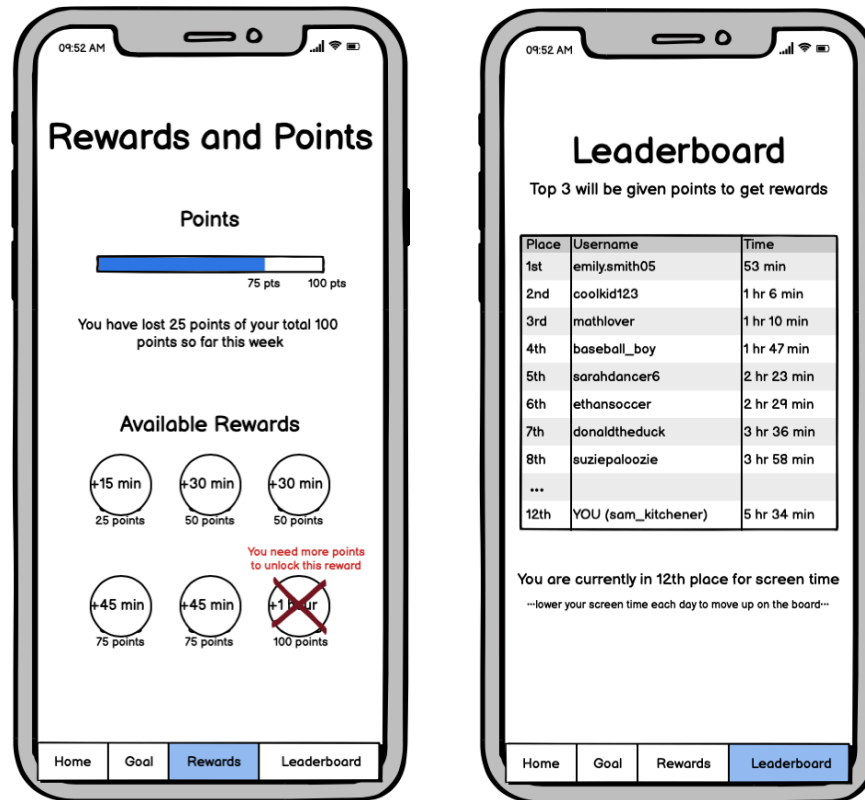


Figure 2. Rewards and Leaderboard of the app

Focus

There are other solutions that have been thought about or tried before; however, I ultimately decided to go with the use of an app because it has a more lasting effect on controlling screen time. For example, in China, digital addiction is considered a disorder, and many parents have sent their kids to bootcamps to cure their digital addiction (Phillips). This bootcamp is extremely intense and pushes children to a breaking point. The mental health of the children becomes destroyed from the overbearing control. The bootcamp is all about discipline and forces the kids to do activities such as marching and taking away all technology and WiFi. While it might teach kids a lesson that they shouldn’t be online as much, being this harsh isn’t very effective, as it does not actually stop them from using technology once they leave (Phillips). This military boot camp is much too forceful; ultimately, the use of an app would be less authoritative and still preserve freedom of choice.

Another possible solution I considered was releasing information to the public about why too much screen time is bad. This could be beneficial, but I don’t think it would necessarily stop people from using their phones as much. For instance, people could choose to just ignore the information and not do anything about it. In order to have

an effective solution, I believe it would have to proactively do something to counteract the problem, which this does not do.

After looking over those ideas, I came to the conclusion that an app would be the best solution. It could still have information about why too much screen time is bad, including statistics and graphs, but it would also have actual limits to help the users control their time. Additionally, this app would be effective because it still gives people the freedom of choice. In behavioral economics, nudging is a term used to describe when someone is encouraged to do something but not forced. For instance, in grocery stores certain items are placed at eye level to encourage customers to buy those foods. This app “nudges” people by allowing them to set certain limits that they want for themselves, instead of forcing them to follow strict amounts of screen time. Even though people do have the option to ignore the limits, they will feel more inclined to follow them because of the other features on the app, like the leaderboard, that give them an incentive to lower their screen time.

Some might argue that similar solutions such as this app have already been created. Google has created a feature called Wellbeing (“Digital Wellbeing through Technology: Google,” 2019). This is a website where one can go and answer a few questions about their screen time, and then Google will give them tips and recommendations on how to lower it. Apple also has a feature called ScreenTime. This feature can track all the time someone spends on their phone every day and which apps they use the most. There are many other screen-time limiting apps that also exist; however, none of them have the gamification features that FOCUS would have. While these can be helpful resources for some, FOCUS will be a lot easier to use and could help lower screen time even more because of the additional features like the points and leaderboard that give users more of an incentive.

Lastly, critics might assert that not a lot of people would download the app. A lot of apps take a while to start up and get popular, and this app would be no different. However, by investing in marketing, it could become an app used by many people very quickly. Since the app mainly targets teenagers, it could be advertised on different social media platforms, such as Instagram, Tik Tok, and Snapchat. It would also be beneficial to market this app to parents, since they are often the ones trying to lower their child’s screen time.

Conclusion

Digital addiction is a problem many teenagers face, and the solution I am suggesting to counteract this problem would be with an app called FOCUS. FOCUS would be an effective solution because it would directly counteract the irrational behavior of digital addiction by using key concepts from behavioral economics. For example, the point system uses loss aversion, the goal-setting is a type of pre-commitment, and overall the whole app is gamified. By limiting users’ time spent on their phone, this app would allow them to spend their time on things that have more long-term value. Furthermore, this lowered phone usage could also significantly improve users’ mental health and wellbeing overall.

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