

The impact of a Digital Detox Intervention on Smartphone Usage and Procrastination: A  
Longitudinal Study

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**Abstract**

Digital detox, a conscious break from digital devices, has gained attention in the popular and academic world as a means to decrease excessive screen time and positively influence various psychological outcomes. However, it has not been clear how digital detox should be applied and what its effects are. The purpose of this study is to find out what effect a digital detox has on procrastination and if it can be used to reduce screentime while controlling for “other” non-social media screen time. In a quasi-experimental longitudinal design, a sample of 92 participants underwent a week-long digital detox. The digital detox meant that the participants were not allowed to use any social media except for Whatsapp. Screen time and procrastination were measured before, during and after the digital detox. The results showed that the digital detox lead to lower total screen time in the week after the detox. During and after the detox, participants reported less procrastination compared to before the detox. During the digital detox, participants showed an increase in other screentime than social media, but this increase did not influence the effectiveness of the digital detox on total screen time and procrastination. Future research should include a control group and more follow-up measurements to prove that it’s truly social media that is responsible for the excessive screen time and procrastination and to see how long the effects of a digital detox last.

*Keywords:* Digital detox, smartphone use, screen time, procrastination

## **Introduction**

Smartphones are widely adopted by the public and play a big role in their internet behavior. In 2023, 5.16 billion people were online, which accounts for 64.4% of the global population. 92.3% of the internet users access the internet via their smartphones (Kemp, 2023). One of the most important reasons for people to use their smartphones is to be on social media. In the last three years, the number of social media users has increased by one billion users (Kemp, 2023). On average in 2023, people spend 5 hours per day on their mobile phones, 2.5 of which is spent on social media and these numbers are increasing (Kemp, 2023). While this could be seen as a great success for the smartphone and social media industry, many users feel that they use their smartphones more than they would like. Almost half of smartphone users in developed countries think they are over-using their smartphone and wish they would spend their time on something else (Olson et al., 2022).

As soon as smartphone use is interfering with daily life, this could be seen as problematic smartphone use. Screen time often correlates with problematic smartphone use, but these are two different concepts. For example, someone who uses their phone to connect with their loved ones for hours might not find their use problematic, while someone who uses it only for a few minutes while studying might. Problematic smartphone use is related to various negative effects such as cognitive impairments in the social, work and academic domain (Olson et al., 2022). For example, it is related to sleep disturbance, academic engagement, motivation for advancement, social interaction and feeling of loneliness. (Amiri et al., 2020). Receiving a notification on the smartphone can impair work productivity as much as a phone call or texting does (Stothard et al., 2015). The mere presence of a smartphone has been shown to lower cognitive working memory (Ward et al., 2017).

All of these negative effects may directly or indirectly relate to the concept of procrastination. Procrastination is defined as one's voluntary delay of an intended course of action despite being worse off as a result of that delay (Steele, 2007). Over the past decades, there has been a noticeable increase in chronic procrastination and these numbers are projected to keep rising (Steele, 2007; Steele, 2011). Smartphone and social media use lend itself particularly well for procrastinating as people keep their smartphone close by and are more likely to procrastinate when temptations are proximal (Aalbers et al., 2021). A systematic review by Zhou et al. (2023) showed a correlation between smartphone use and procrastination. However, the direction of this relationship remains unclear, as all of the included studies were survey studies that measured smartphone use and procrastination through questionnaires (Zhou et al., 2023).

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Procrastination has negative consequences for various aspects of life. It negatively impacts learning, social relationships and mental health, contributing to issues such as impaired sleep, lack of physical activity, well-being and stress (Aalbers et al., 2021; Meier, 2022; Zhou et al., 2023). The rise in chronic procrastination over recent decades (Steele, 2007; Steele, 2011) may potentially be linked to the increase in social media and smartphone adoption that took place during the same period.

A way to both gain control over individuals digital behavior and as a means to study the effects of digital behavior on individuals, is through digital detox. In the past years, digital detox has become popular among the public and in the academic world (Nassen et al., 2023). A digital detox refers to a conscious disconnection from email, social media and the internet in general for a certain period of time (Anrijs et al., 2018; Nassen et al., 2023). People engage in digital detox for numerous reasons such as improving social interactions, improving psychological well-being, improving productivity and decreasing distractions (Nassen et al., 2023). However, the effectiveness of a digital detox remains unclear as shown by a systematic review from Radtke et al. (2022). The review gathered all studies on digital detox and found a wide variety of implementations of digital detox, different measurements that were used to measure the same outcomes and differences in measurement time points. It is therefore not clear what kinds of digital detox interventions are effective and on what outcomes they have an effect. Also, it remains unclear if their effects are only valid during the intervention, directly after, short term or long term.

The present study will further investigate the effectiveness of a digital detox as a means to decrease screen time and the effect it has on procrastination. The study will try to find out what the effect of a digital detox from all social media except WhatsApp is on screen time and procrastination. This will be done in a longitudinal design where screen time and procrastination will be over the course of three weeks: before, during and one week after the digital detox.

## **Digital Detox**

As digital detoxing is an emerging field of research, there are many terms that are used to refer to the same concept, such as digital disconnection, non-use, opting out, unplugging and many more. There are however a few common vital elements that were distinguished in a systematic review by Nassen et al. (2023). First, the detox should be voluntary or intentional. Second, digital detox can only occur after initial adoption. This distinction matters as there are also people who never had access to digital means or actively refused them. Thirdly, the five

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levels of disconnection can be distinguished: device-level, platform-level, feature-level, interaction-level and message-level. And lastly, derived from all the digital detox research so far there are six different types of motivation for digital disconnection. Nassen et al. (2023) thus propose the definition: a deliberate (i.e., chosen by the individual) form of non-use of devices, platforms, features, interactions, and/or messages that occurs with higher or lower frequencies, and for shorter or longer periods of time, after the initial adoption of these technologies, and with the aim of restoring or improving one's perceived overuse, social interactions, psychological well-being, productivity, privacy and/or perceived usefulness.

### **Digital Detox and Screen Time**

Considering this definition of digital detox, the present study will use a platform-level digital detox as participants will be asked to refrain from using social media platforms during one week. As mentioned before, in digital detox research many different variations of implementation are used and many different outcomes have been measured. When looking at all of these studies together, mixed results were found (Radtke et al., 2023).

When looking specifically for platform-level interventions that measured effects on screen time, only a few studies were found, showing mixed results. Two studies by Hinsch & Sheldon (2013) showed that 48 hours of abstaining from Facebook resulted in a significant reduction of time on Facebook, measured one week later. Conversely, in another study by Sheldon et al. (2011) an increase in Facebook use was found among participants who had high feelings of disconnection during their 48 hours abstinence from Facebook, when measured 48 hours after the intervention. Another study by Stieger and Lewetz (2018) tested a week-long digital detox from all social media and found that 4 days after the intervention, time spent on social media was the same as before the intervention.

One device-level digital detox study did show a reduction in screen time. The study found that reducing smartphone use through a use-limiting application for a week reduced screen time for at least 21 days (Ko et al., 2015).

Based on the above, it is not clear how the digital detox would affect screen time. It could increase or decrease screen time and it could also leave screen time unaffected. However, as the goal of the digital detox typically is to reduce screen time, the effectiveness will be tested accordingly, resulting in the following hypothesis.

***Hypothesis 1a: The digital detox will lead to lower screen time one week after the detox compared to before the digital detox***

### **Digital detox and procrastination**

Previous research found that there is a relationship between procrastination and Phone and social media use (Aalbers et al., 2022; Przepiorka et al., 2023). Yet, much of the research is cross sectional in nature and is done via surveys, thus providing only a correlation and no causal relationship. A better way to study the direction of this relationship would be through digital detox studies; However, studies on the effect of digital detox on procrastination, are very scarce. One study by Hexspoor (2022) found that digital detox significantly reduces procrastination when measured directly after the detox. Another study found that abstaining from Facebook for two days reduces procrastination, when measured directly after the intervention and when measured one week later (Hinsch & Sheldon, 2013).

Research by Meier (2022) used questionnaires instead of a digital detox to investigate the relationship between screen time and procrastination and found that not screen time per se causes procrastination, but that checking habit strength, perceived interruptions and the urge to check together explained a small to moderate amount of procrastination.

Based on the above, it can be expected that social media has a relationship with procrastination and that a digital detox will most likely lead to a reduction in procrastination. This leads to the following hypothesis.

***Hypothesis 1b: Reducing social media use by digital detox will lead to lower procrastination during and one week after the digital detox compared to before the digital detox.***

### **“Other” smartphone use during the digital detox**

To fully understand the impact of a digital detox on smartphone use, it is also important to examine changes in other screen time than social media during the detox period. While social media accounts for a large portion of screen time (Kemp, 2023), it is not the only factor contributing to problematic smartphone use. Smartphones are merely tools that offer various functions which can lead to excessive use. Notably, the issue of problematic phone use did not emerge when mobile phones first became available around 1996. Instead, it arose during the smartphone era, which began between 2004 and 2007. Unlike earlier mobile phones, smartphones provide many more that can be used to spend free time such as web

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browsing, shopping, texting, and social media, all of which can contribute to increased screen time.

Furthermore, there is a significant overlap between problematic smartphone use and problematic social media use. The association between problematic social media use and problematic smartphone use ranges between  $r=0.3$  and  $r=0.5$ , which is considered medium to large (Marino et al., 2021). Evidence indicates that engagement in social media and networking sites covers the largest part of time spent on smartphones (Kemp, 2023). However, this association also highlights that there are other uses besides social media that contribute to the problematic smartphone use. Therefore, social media may only be partially responsible for an unwanted high amount of screen time.

A digital detox study could be used to investigate the relationship between social media and total screen time by reducing social media time to zero and see if people would substitute their social media time with other screen time activities. Only one study was found that investigated this effect. In the research by Brown and Kuss (2020), participants had an increase in other applications than social media during a 7 day digital detox. The participants reported that when they were bored, they substituted social media with other applications (Brown and Kuss, 2020).

Following this line of thought, it can be expected that during the digital detox there will be a significant increase in other screen time than social media, resulting in the following hypothesis.

***Hypothesis 2: The digital detox will lead to an increase in “other” screen time during the digital detox compared to before the digital detox***

### **Emotion regulation theory and procrastination**

A theory that can be used to explain procrastination is the emotion regulation theory (Tice & Bratslavsky, 2000). This theory posits that procrastination is a failure in self-regulation: people control their behavior to reach a goal, but this self-control can lead to a negative mood, which they then try to repair by engaging in hedonistic behavior, behavior they are actually trying to refrain from. The notion that phone use is stimulated by negative emotional states is backed up by empirical findings. Important predictors of problematic smartphone use are negative affectivity, psychological well-being and Fear of Missing Out (Sánchez-Fernandez & Borda-Mas, 2022).

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Following this theory, it is possible that procrastinators are looking for something to alleviate their negative moods, and the phone is just the first thing that comes to mind. In case of a digital detox, procrastinators would just find something else to alleviate their moods, like watching tv or reading a newspaper. For the present research this would mean that procrastination would be unaffected by the digital detox, as there are other options available, either on smartphones or elsewhere, that can be used to alleviate negative moods.

Another possibility is that smartphones are particularly salient and conducive to procrastination and are actually causing procrastination by interrupting people's behavior to reach a goal. Many apps try to gain the users attention with specific tactics that tap into our social needs. For the present research this would mean that reducing screen time should lead to less procrastination, as the smartphone is causing a large part of procrastination.

The same line of thinking could be applied to total screen time. On one hand it is possible that people use smartphones merely as a means to relax and alleviate their moods just like they would if they had other kinds of leisure possibilities. On the other hand it is possible that it is mostly social media that causes a high amount of total screen time.

To find out if there is a difference between on one hand the pure procrastinators and smartphone users that seek distractions and on the other hand the people whose attention is purposely taken by the social media apps, an interaction effect should be tested. If there is a difference between these two, the people that were affected by the lures of social media would have a greater effect of the digital detox on screen time and procrastination than the people that were just using their smartphones as a means to relax. Thus, the following hypotheses were formulated.

***Hypothesis 3a:* There will be a moderator effect of the change in “other” screen time during the digital detox on the change in total screen time after the detox, in which participants with an increase in “other” screen time during the digital detox will show a smaller reduction in total screen time after the detox compared to participants with no increase in “other” screen time during the digital detox.**

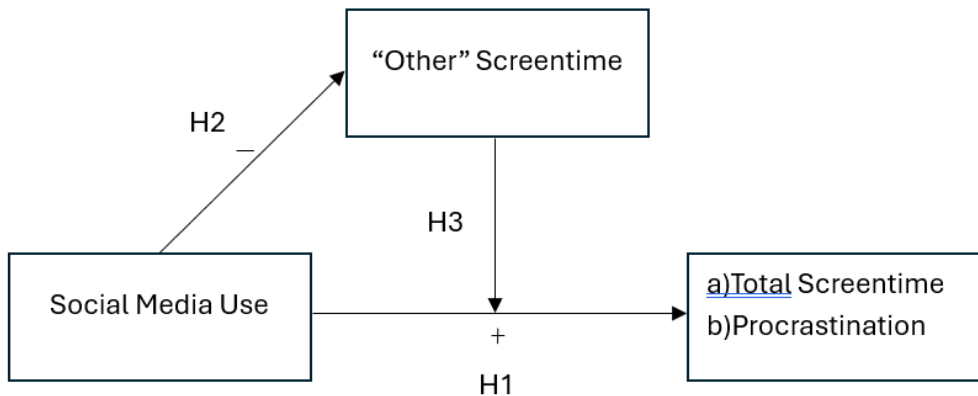
***Hypothesis 3b:* There will be a moderator effect of the change in “other” screen time during the digital detox on the change in procrastination after the detox, in which participants with an increase in “other” screen time during the digital detox will show a smaller reduction in procrastination after the detox compared to participants with no increase in “other” screen time during the digital detox.**



The hypotheses are visualized in the research model in Figure 1

**Figure 1**

*Research model visualizing the proposed hypotheses*



## Method

### Participants

In order to determine the minimum number of participants needed for this study, an a priori power analysis was conducted using G\*Power version 3.1 (Faul et al., 2014). The analysis considered a multiple linear regression analysis with three predictors, a medium effect size ( $f^2=.15$ ) and an alpha of .05. The results showed that a total sample size of  $n=74$  was needed to achieve a power of .95.

The participants were then recruited via convenience sampling resulting in a total of 190 participants. All unfinished questionnaires were excluded ( $n=88$ ). After excluding participants based on missing data from the first week, the sample size was reduced to 169 participants. In the second week 22 more participants failed to complete all questionnaires, leaving 147 participants. Based on the missing data from the third and final questionnaire, the sample size was reduced to 104 participants. Then, participants who did not report any social media usage at the first measurement point were excluded, resulting in 102 participants. Finally participants that used social media during the intervention period were excluded. There were 14 participants who used social media during the intervention period, ranging from one minute to 360 minutes time on social media. Participants who used social media for more than 10 minutes during the detox period were excluded. Less than 10 minutes social

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media was considered acceptable as it prevented 4 participants from being excluded, for whom those few minutes were still less than 1% of their usual time spent on social media. Those few minutes indicate that they must have reinstalled their apps for some reason and delete them again immediately afterwards. Thus, the final data sample included 92 participants. With this the power requirement was met.

The age of the included participants ranged from 19 to 67 years, with a mean age of 28.8 years (SD= 11.0) and a median age of 25 years. The sample consisted of 15 male participants (16.3%), 74 female participants (80.4%), and 3 participants who identified as other or non-binary (3.3%).

### **Design and procedure**

The study is a quasi-experimental longitudinal design where all participants receive the same treatment, namely the digital detox. The digital detox entailed that all participants were asked to remove all social media apps from their smartphones and not use any social media over the course of one week (seven days). In the instructions that were given via email, the social media apps that should be deleted were specified by stating: “We kindly ask you to delete Instagram, Threads, Snapchat, TikTok, Twitter/X, Facebook, YouTube, BeReal, LinkedIn, Reddit, Pinterest, Tumblr and all dating apps. Browser-based access to these platforms is also discouraged.”

The effects of the intervention were assessed by measuring screen time and procrastination pre-, during and post treatment. The participants were sent a link via email to the first questionnaire on the 7<sup>th</sup> of April 2024 so that they could assess their screen time and procrastination over the past week. They were then instructed to remove the social media apps from their phone and not use them anymore between the period from Monday 00:01 the 8<sup>th</sup> of April 2024 until 23:59 on Sunday the 14<sup>th</sup> of April. The second email was sent to the participants on Sunday the 14<sup>th</sup> of April with a link to the questionnaires that assessed their screen time and procrastination over the past week, which was the week of the digital detox. The third email was sent to the participants on Sunday the 21<sup>st</sup> of April with a link to the follow-up questionnaire that assessed their screen time and procrastination over the past week.

To ensure anonymity and to be able to connect the three questionnaires, the first questionnaire included a random number generator that gave the participants a random ID number between 1 and 999999. They were then asked to take a picture or write down their ID number and had to fill in their ID number in a forced text entry to continue the questionnaire.

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In the consecutive questionnaires the participants were asked to fill in their ID number before completing the rest of the questionnaire.

## **Ethical approval**

The university of Utrecht works according to the Code of Ethics for Psychologists (NIP, 2024). This research project was registered at the Utrecht University Student Ethics Review & Registration Site (UU-SER). The Faculty Ethics Review Board has given approval for this study under the approval number: 24-0625.

## **Measures**

The questionnaires were administered using the online survey platform Qualtrics. For the present study, total screen time, time on social media and procrastination were measured. In the first of three questionnaire, gender, age and whether participants have done a prior detox asked. The second questionnaire had an additional optional text entry where people could fill in how they experienced the digital detox.

## **Screen time**

To measure screen time and social media usage, participants utilized the standard screen time tracking software available on their own smartphones. For Android users, this feature is called 'Digital Wellbeing'. For iPhone users it is 'Screen Time'.

## **Procrastination**

Procrastination was measured using the Irrational Procrastination Scale (IPS)(Steel, 2010). The IPS consists of 9 items that score procrastination behavior on a 5 point scale, ranging from 1 ("very seldom or not true for me") to 5 ("very often true, or true of me"). Three items had to be reverse coded so that a higher score corresponds with more procrastination.

Research by Svartdal (2016) assessed the IPS and found a cronbach's alpha of  $\alpha=.85$  which indicates a good internal consistency. This suggests that the items on the IPS are reliably measuring the same underlying construct. The test also has a high test-retest reliability of .83 (Kim et al., 2020).

### **Data processing and analysis**

In order to test the hypotheses, statistical analyses were conducted using *IBM SPSS Statistics v27*.

### **Hypotheses 1 and 2**

For hypothesis 1a it was expected that the reduction in social media time would lead to a reduction in total screen time after the digital detox. For hypothesis 1b it was expected that that the reduction in social media time would lead to a reduction in procrastination during and after the digital detox. For hypothesis 2 it was expected that a decrease in social media time would lead to an increase in “other” screen time during the digital detox. Because everybody had the same treatment, no comparison could be made between groups with and groups without the digital detox/reduction in social media. Thus, only within subjects comparisons could be made between the different time points. These comparisons were made by performing a series of paired sample t tests.

For hypothesis 1a total screen time was compared between during and before the digital detox and after and before the digital detox. For hypothesis 1b procrastination was compared between during and before the digital detox and between after and before the detox. For hypothesis 2 a new variable was created named “other” screen time, in which social media time was subtracted from total screen time. Subsequently “other” screen time was compared between during and before the detox and between after and before the detox.

### **Hypothesis 3**

For hypothesis 3a it was expected that there would be a moderator effect of “other” screen time on the effect reduction in social media time has on total screen time. Herein it was expected that a higher increase in “other” screen time during the digital detox would result in less reduction in total screen time one week later.

For hypothesis 3b it was expected that the same kind of moderator effect would apply to procrastination, where a higher increase in “other” screen time during the digital detox would result in a smaller reduction in procrastination one week later.

In order to test hypotheses 3a and 3b two multiple regression analyses were performed that included the interaction effect of “other” screen time and social media time. To do this, first a few new variables were created. The variable Social Media Change is social media time after the detox minus the social media time before the detox. A positive value indicates an increase and a negative value a decrease in social media time. The variable Total Screen Time

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Change is total screen time after the detox minus total screen time during the detox. A positive value again corresponds with an increase and a negative value with a decrease in total screen time. The variable procrastination change is procrastination after the detox minus procrastination before the detox. A positive value indicates an increase and a negative value a decrease in procrastination.

Another variable was created for the increase in “other” screen time, slightly different from the rest. As the hypothesis stated that the effectiveness of the digital detox depends on how much people will engage in other activities than social media on their phones during the digital detox, the change in “other” screen time during and not after the digital detox was important. So, the variable “other” screen time is “other” screen time during the detox minus “other” screen time before the detox. Again, a positive value indicates an increase in “other” screen time and a negative value a decrease in “other” screen time during the intervention period.

Lastly, the interaction effect was added as a variable that multiplied the variables Social Media Change X “Other” screen time Change.

In summary, the predictors for both the change in total screen time as well as the change in procrastination were change in social media, change in “other” screen time and the interaction between change in social media and change in “other” screen time.

## Results

### Statistics

Six paired sample t tests were performed to test hypotheses 1 and 2. The assumptions for a dependent t test were checked for all variables. The dependent variables total screen time, procrastination and “other” screen time were all measured on a continuous scale. The independent variables are related as they have been filled out by the same respondents and been paired by connecting the ID numbers. Histograms showed that the assumption of normality was met for all of the variables. Outliers were inspected by making box plots of all the included variables. They showed between 1 and 4 outliers on all of the variables except for procrastination in week 1. The outliers were inspected to see if they could indicate an error in measurement. None of the outliers were removed because of this. For example the highest outlier in total screen time was 4089 minutes of total screen time in week 3, which was still considered plausible considering what is known about average screen time and when comparing this participants screen time over the course of the three weeks.

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The results of the paired sample t-tests showed that total screen time in week 3 was significantly lower than in week 1,  $t(91)=2.76, p=.007$ . Total screen time also was significantly lower in week 2 than in week 1  $t(91)=6.54, p<.001$ . This confirms hypothesis 1a (see figure 1).

**Figure 1**

*Mean Total Screen Time compared by Week.*

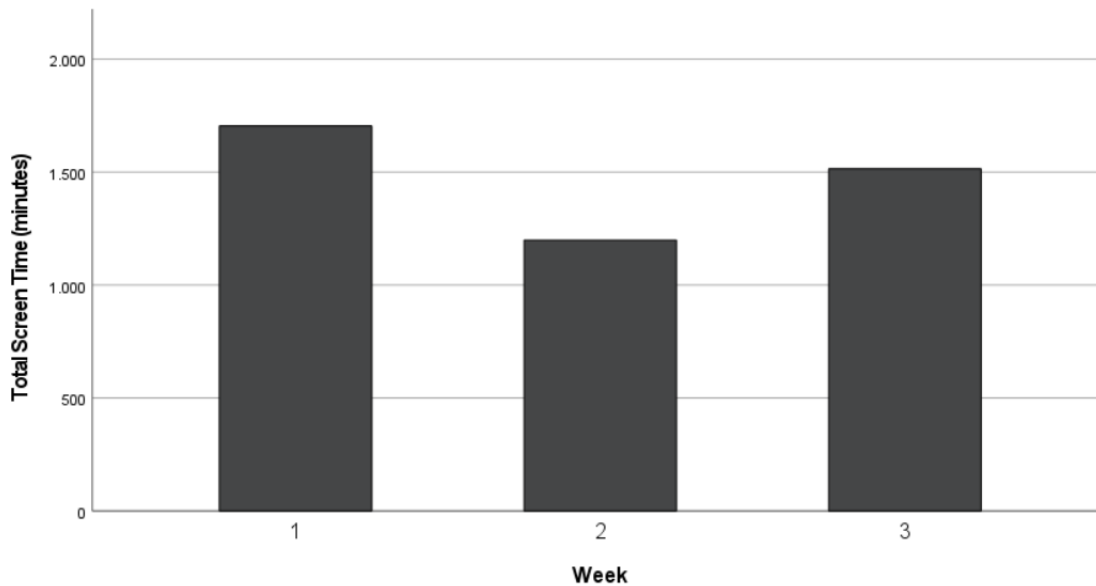
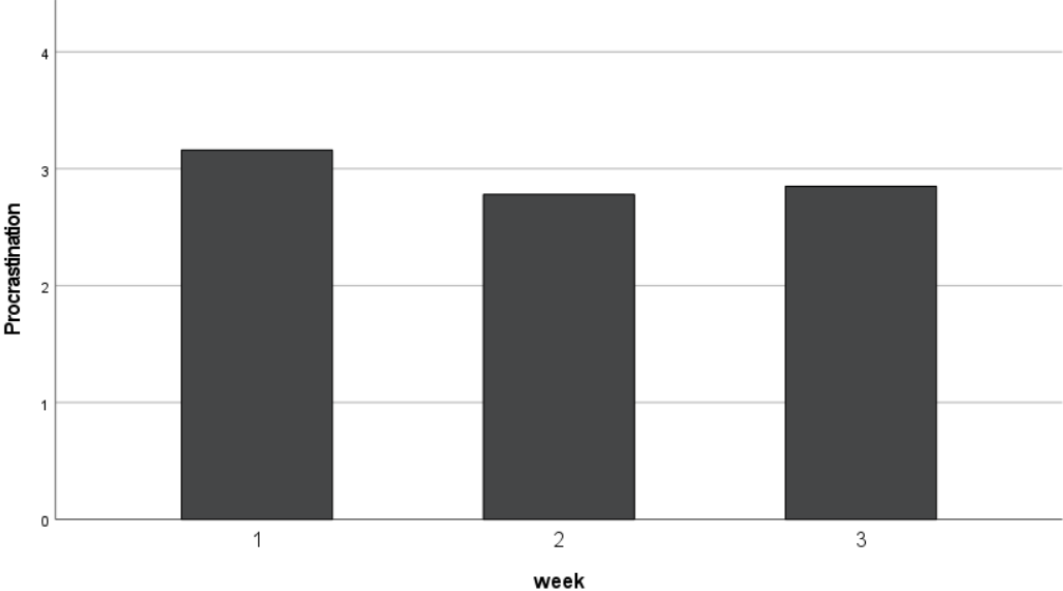


Figure 2 shows the results of the paired sample t tests on procrastination. Procrastination was significantly lower in week 3 compared to week 1  $t(91)=5.37, p=.000$ . Procrastination was also significantly lower in week 2 compared to week 1  $t(90)=6.38, p=.000$ . This confirms hypothesis 1b

**Figure 2**

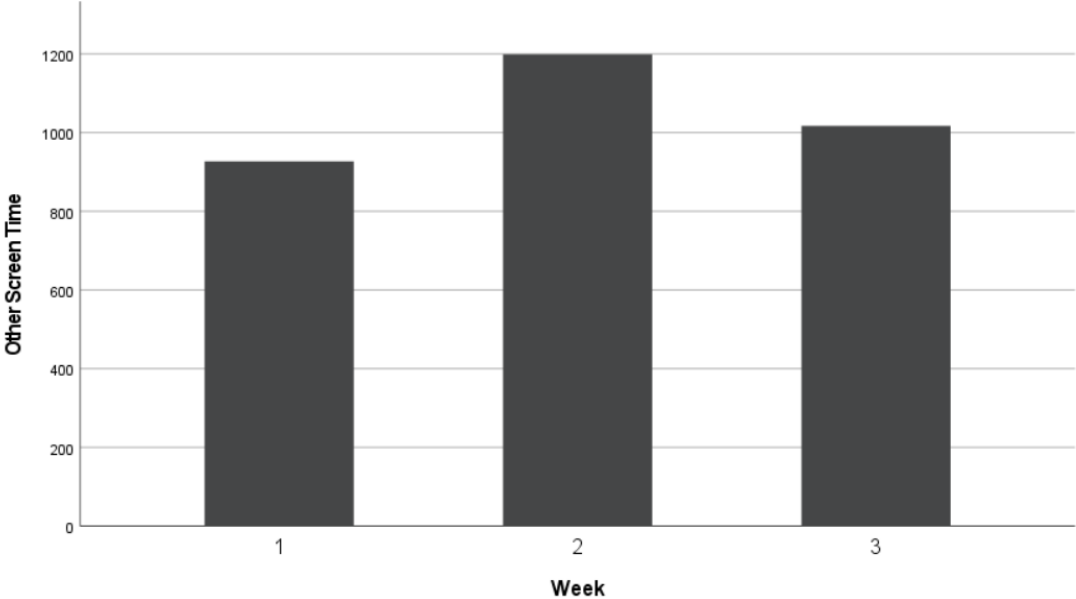
*Mean procrastination compared by week.*



The results of the paired sample t tests on “other” screen time are shown in figure 3. “Other” screen time was not significantly higher in week 3 than in week 1  $t(91)=-1.94$ ,  $p=.055$ . However, “Other” screen time was significantly higher during week 2 compared to week 1  $t(91)=-4.51$ ,  $p=.000$ . This confirms hypothesis 2 (see figure 3)

**Figure 3**

*Mean “Other” Screen Time by week*



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For hypotheses 3a and 3b, two regression analyses were performed to find out if there is an interaction effect between the time spent on other screen time and time on social media that affects the effect of the detox on total screen time and procrastination (see table 1).

The assumptions for a linear regression were checked for both regression analyses. Scatterplot inspection showed a linear relationship in both analyses. The assumption of normality was checked, and met, by examining histograms. The assumption of multicollinearity was met, as all variance inflation factors were low. The even spread in a scatterplot of residuals versus predicted values showed that the assumption of homoscedasticity was also met.

The results show that the three variables together, social media, other screen time and the interaction effect explain a significant part of the variance in the change in total screen time ( $F=53.60, p<.001, R^2=.65$ ). However, there is no significant interaction effect on the change in total screen time ( $\beta = -.12, t(91) = -1.55, p = 0.124$ ). Social media change, “other” screen time change and the interaction effect do not explain a significant part of the variance of the change in procrastination ( $F=1.84, p=.146, R^2=.059$ ). Also the interaction effect of change in other screen time and in social media time on the change in procrastination, is not significant ( $\beta = -.59, t(91) = -.59, p = .56$ ). This means that hypothesis 3a and 3b are not confirmed. The effect of the digital detox on procrastination as well as total screen time, is not influenced by the change in “other” screen time during the digital detox.



**Table 1**

	<i>Total Screen Time Change</i>			<i>Procrastination Change</i>		
	<i>b(SE)</i>	<i>β</i>	<i>p</i>	<i>b(SE)</i>	<i>β</i>	<i>p</i>
Constant	-14.62(50.63)		.77	-.24(0.07)		.001
Social Media Change	.96(0.09)	.82	.00	.00(.00)	.27	.03
“Other” Screen Time change	.27(0.08)	.23	.001	-.00(.00)	-.04	.75
Social Media Change X “Other” Screen Time Change	.00(.00)	-	.12	-.00(.00)	-.07	.56
<i>F</i>	53.60*			1.84**		
<i>R</i> <sup>2</sup>	.65			.06		

\**p* < .001 \*\**p* > .05

### Discussion

The present study investigated the effect of a week-long digital detox from social media on screen time and procrastination. The results show that digital detox indeed leads to a decrease in total screen time, as well as in procrastination during and one week after the digital detox, which confirms hypotheses 1a and 1b. The participants had a significant increase in other screen time during the digital detox compared to before the detox. However, “other” screen time in the week after the detox compared to before the detox did not significantly differ. This partially confirms hypothesis 2 that stated “other” screen time would increase during and after the digital detox. For hypothesis 3a and 3b it was expected that the amount of time participants engaged in other screen time during the digital detox would have an effect on how much change there would be in total screen time and procrastination after the detox period. However, no significant interaction effect was found. Therefore hypotheses 3a and 3b were rejected.

### **Digital detox and total screen time**

Conform the expectations the digital detox lead to lower screen time during and one week after the detox compared to before the detox. This means that this form of detoxing which entails a week long abstention of all social media can indeed be an effective means of reducing total screen time somewhat lastingly.

This finding is in line with some of the previous research (Hinsch & Sheldon, 2011) that also found that abstaining from social media lead to a decrease in screen time. It is also in line with the research that tested a device-level digital detox and found that app use decreased after the intervention period (Ko et al., 2015). However, there was also previous research that found a rebound effect after the detox period (Sheldon et al., 2011) and research that found no effect at all (Stieger & Lewetz, 2018).

A possible explanation for the fact that no rebound effect was found, could be that there was not measured for any variables such as social disconnectedness like in the research by Sheldon et al. (2011). It could be that when controlling for such variables, there would be a rebound effect but on a group level the digital detox resulted in lower screen time. The difference between the present study and the study of Stieger and Lewetz (2018) might lie in the difference in analysis. Stieger and Lewetz had a seven-day intervention, but only analyzed the effects of the first four days as some of the participants relapsed on the 5<sup>th</sup> day. This could have had an effect on the results. However, both the study of Stieger and Lewetz (2018) and the present study did not include a control group, so it cannot be said with certainty what the effects of the digital detox on screen time were.

This study contributes to previous research as it tested a specific form of digital detoxing, namely a platform-based digital detox. There still is little research done on the effects of a detox as there is no consensus on how it should be applied and it is not clear yet which outcome measures are affected (Radtke et al., 2021). This research thus gives insight into how a detox could be applied and how, and for how long it affects screen time.

### **Digital detox and procrastination**

Conform the expectations, the digital detox lead to a decrease in procrastination during and one week after the digital detox. This means that during the digital detox the participants felt that they were procrastinating less than before the digital detox and that this effect lasted for at least one week. This is in line with previous research on the relationship between procrastination and phone and social media use (Aalbers et al., 2022; Przepiorka et al., 2023). This is also in line with research on the effects of digital detox on procrastination (Hexspoor,

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2022; Hinsch and Sheldon, 2013) which also found that abstaining from social media can reduce procrastination.

Just like research on digital detox and its effect on screen time, there is still little research that investigated the relationship between digital detox and procrastination. The present research adds to the understanding of this relationship and shows how a digital detox could be a means to reducing procrastination. Also, the follow up measurement is valuable as it adds to the understanding on how long the effects of a digital detox on procrastination may last.

### **“Other” screen time during the digital detox**

In line with expectations, “other” screen time did increase during the digital detox. However, there was no moderating effect of the change in “other” screen time during the digital detox on the change in total screen time and procrastination after the detox. This means two things. Firstly the change in “other” screen time is only temporary and when the detox period is over, “other” screen time returns to normal levels. Secondly, the amount of time spent on “other” screen time during the digital detox does not have an effect on how much total screen time and procrastination change after the digital detox.

This is valuable information as only one prior study has investigated what happens to “other” screen time during a period of social media abstention (Brown and Kuss, 2020) and no prior research has studied how this affects the effects of the digital detox. The emotion regulation theory (Tice & Bratslavsky, 2000) says that procrastination is a way to escape the negative mood associated with self-control. People set a goal for themselves and then distract themselves by using their smartphones. When holding the findings of the present research against this theory, one would expect that procrastination could be caused by anything. Thus, engaging in other smartphone activities such as reading the news, shopping or playing videogames, should affect procrastination just as much as engaging in social media. However, the findings of this study suggest that these activities during the detox do not affect procrastination as much as social media does. Regardless of how much time was spent on “other” screen time during the detox, social media abstinence led to a decrease in procrastination.

In the research of Meier (2021) the link between social media and procrastination was investigated and found that the procrastination is mainly caused by checking habit strength, perceived interruptions and the urge to check. These findings offer an explanation for what the present study has found. The habit of checking social media is interrupted during the

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digital detox, which would explain the effect of the digital detox on procrastination. The “other” screen time activities maybe don’t induce such urge to check which interrupts activities. Also, it takes on average 66 days for a new habit to form (Lally & Gardner, 2010) so the newfound “other” screen time activities during the detox would not have such habit strength as the established habit strength of social media checking.

The same explanation could be given for the finding that engaging in “other” screen time during the digital detox did not affect the change in total screen time after the detox. The habit of checking social media may be interrupted and temporarily weakened, while the “other” screen time activities do not give such an urge to check as social media does and even if the “other” screen time activities would become a habit, it takes much longer than one week for such a habit to form.

### **Practical implications**

The results of the present study have practical implications for the general public. As mentioned in the introduction, many people already engage in digital detox to gain control over their smartphone and social media consumption. The findings of this study show that deleting the social media apps for as long as one week can reduce screen time and procrastination and it doesn’t seem to matter if you’re doing other activities on your smartphone during the digital detox.

### **Limitations and further research**

There are a few limitations to the present study. One of them is the absence of a control group. This affects the internal validity as there may be other explanations to the effects on screen time and procrastination that were found. It is possible, for example, that engaging in a research on smartphone use alone is enough to make the participants more conscious about their habits. This could be solved in future research simply by adding a control group that is only told to monitor their screen time during the intervention period, without any instructions to digital detox.

Another limitation is the homogeneity of the sample. Most of the participants were younger than 30 and female and were recruited via a convenience sample. As there is no randomization in the selection process of participants, the odds are that most participants have a similar background and socio economic status, which affects the generalizability of the results. It is possible that young people with a university degree respond differently to a digital detox than the general public.

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Finally, although the goal of the digital detox was to refrain from all social media, it did not include WhatsApp. This was done because people are often dependent on WhatsApp to communicate and for work related purposes and it was expected that there would be too few participants willing to refrain from using WhatsApp for a full week. However, WhatsApp is one of the most used social media apps (Kemp, 2023) and is in fact used by many people for leisure purposes. The consequence of this is that there was no complete absence of social media during the digital detox and this could go in two directions. Either the digital detox would even be more effective at reducing total screen time and procrastination or, like in the research by Sheldon (2011), the participants would have a strong sense of disconnectedness because of the detox and would show higher screen time and as a consequence higher procrastination after the detox.

In conclusion, significant results were found for the effect of a digital detox on screen time as well as on procrastination. The results suggest that a week-long platform based digital detox will lead to lower screen time and procrastination for at least one week after the digital detox. In order to better understand the conditions under which a digital detox works and how much procrastination is affected by social media, future studies should include a control group and compare a platform based detox with a control group. Also, this study found that the effects of the detox on screen time and procrastination last for at least a week. Future studies could use multiple follow up measurements to see how long these effects.

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