

## SUMMARY

- Excessive smartphone usage has now become a growing concern for many individuals and policy-makers across the world.
- We conduct a pre-registered randomized control trial ( $N = 110$ ) in which people are **financially rewarded for using their smartphones less than usual**.

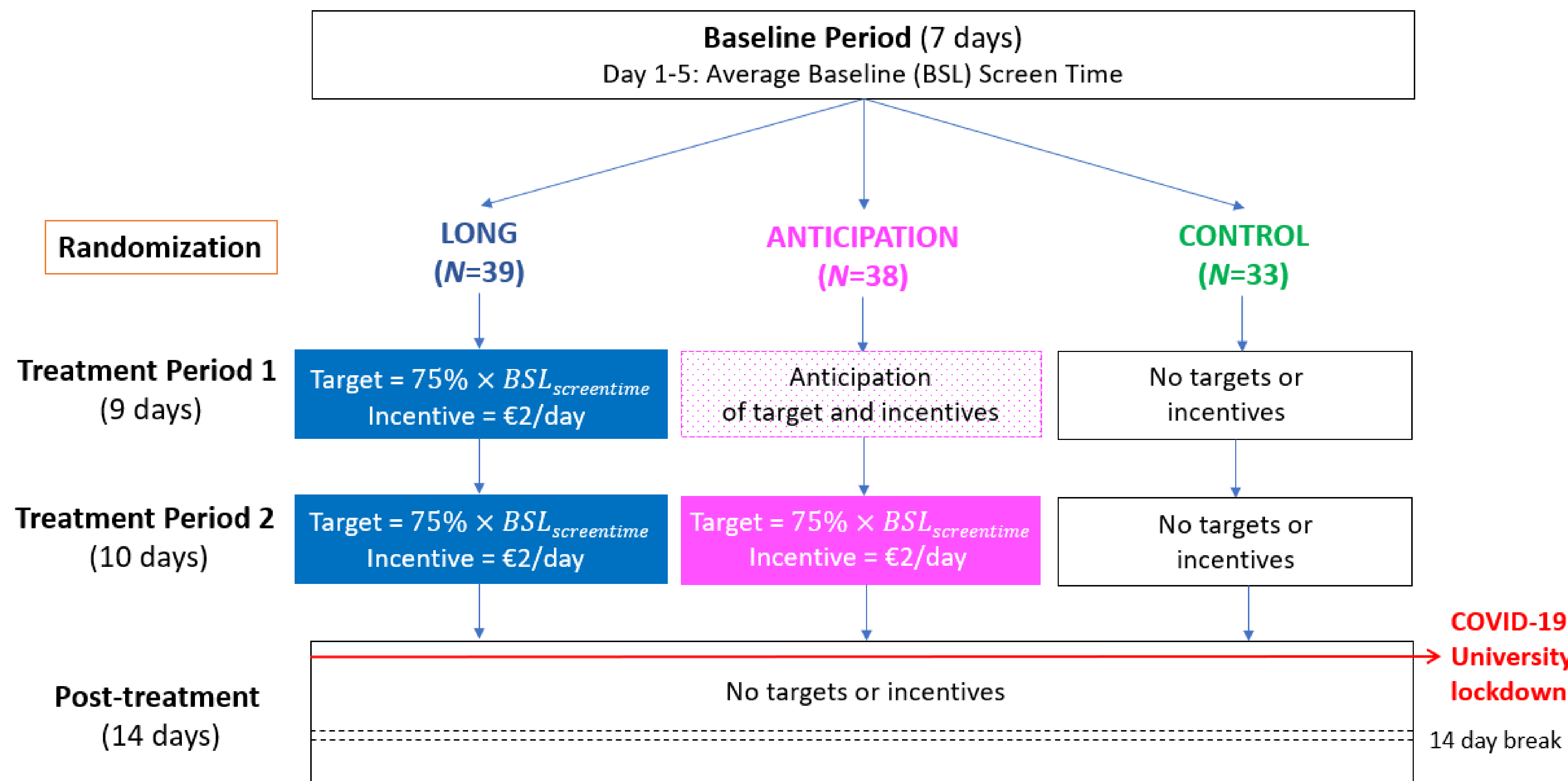
Along with a no-incentive control condition, two treatments were conducted:

- In treatment 1 ("Long"), subjects were incentivized for the complete treatment period to reduce their mobile screen time by 25%.
- In treatment 2 ("Anticipation"), subjects were incentivized to reduce their screen time by 25% only for the second half of the treatment period, but were informed about their incentives and targets from the beginning.

We find that:

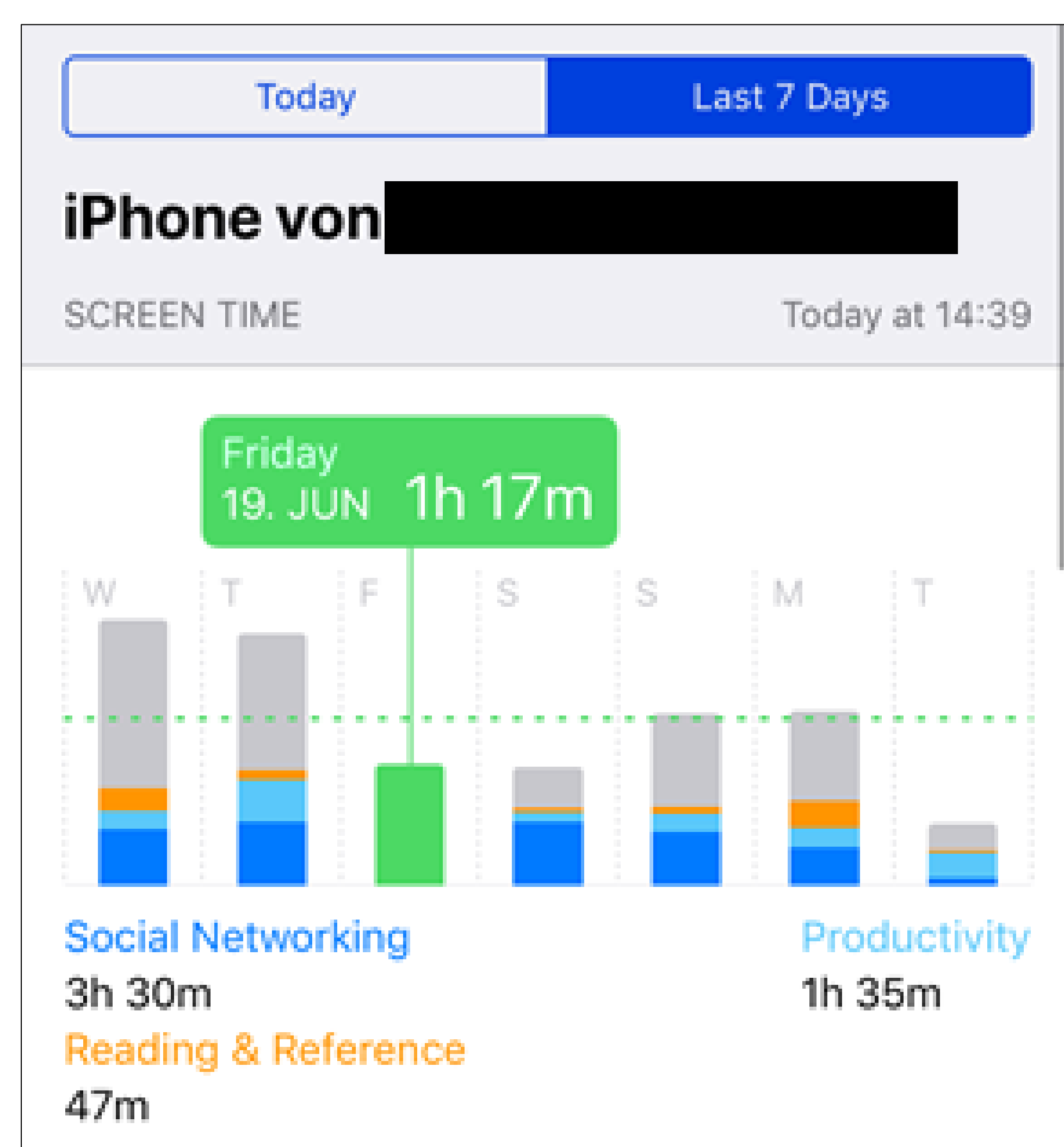
- Subjects in the **Long** treatment reduced their mobile usage in the treatment period and sustained it even without incentives. The finding suggests that small monetary incentives coupled with feasible reduction targets over a nineteen-day period are sufficient to **create a resilient habit of lower smartphone usage**, in line with habit formation theories<sup>1</sup>.
- Subjects in the **Anticipation** treatment, especially those with excessive mobile usage, started **reducing their screen time even before the incentive period**. This provides evidence for the theory of rational addiction<sup>2</sup> and could potentially be attractive to policy-makers due to its cost-effectiveness.
- A caveat is that the Anticipation group of subjects were not able to sustain a lower usage in the post-treatment period.
- Subjects who reduced their usage had **higher academic performance** and were **less concerned about the COVID-19 pandemic**.

## OVERVIEW OF DESIGN



## METHODS

Daily screen time data was collected via smartphone apps and surveys.



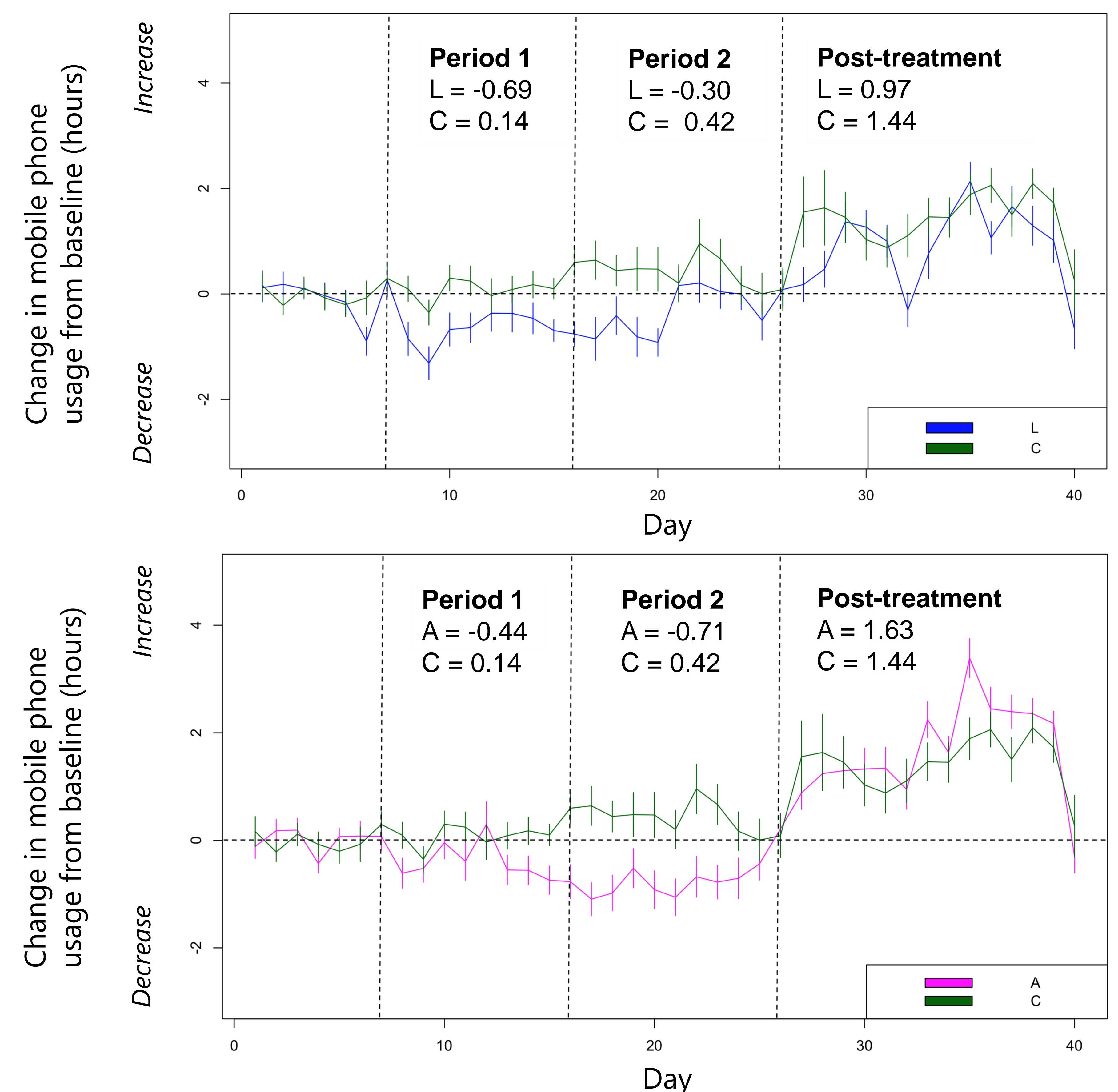
The screen time app shows the exact screen time for the pertinent day



A typical screenshot that subjects were required to submit every week

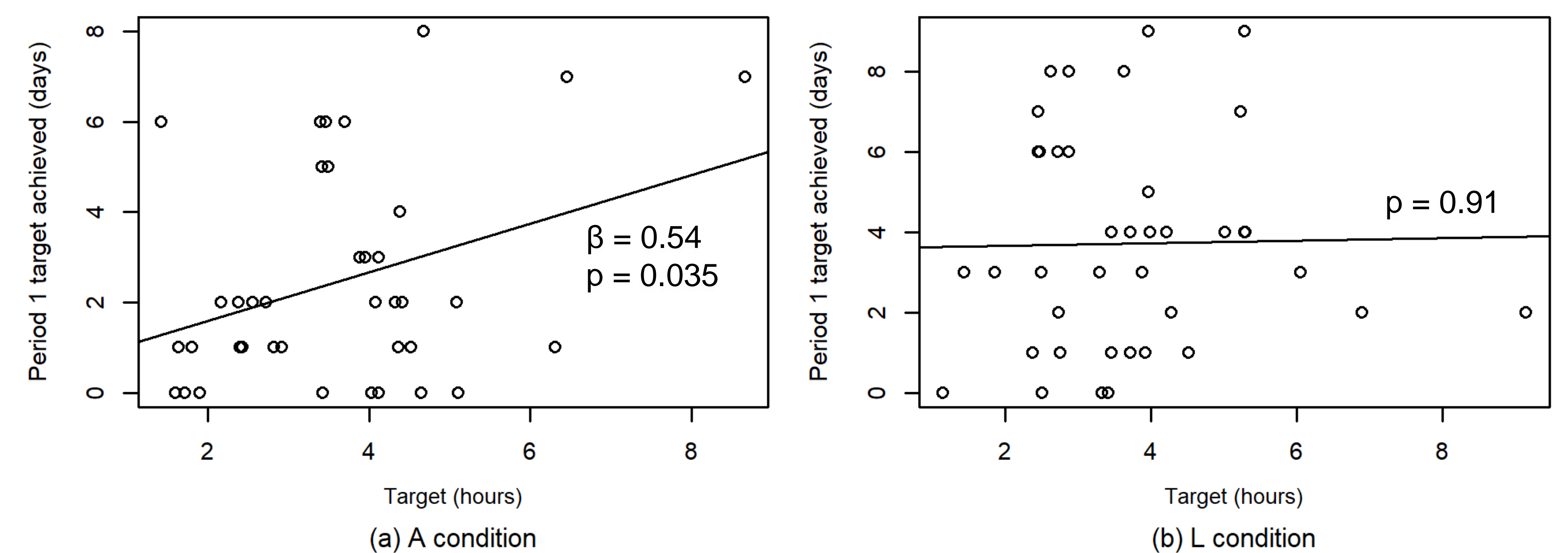
## RESULT 1

Screen time reduction of subjects in **Long** treatment (top) and **Anticipation** treatment (bottom) compared to subjects in the **Control** group



## RESULT 2

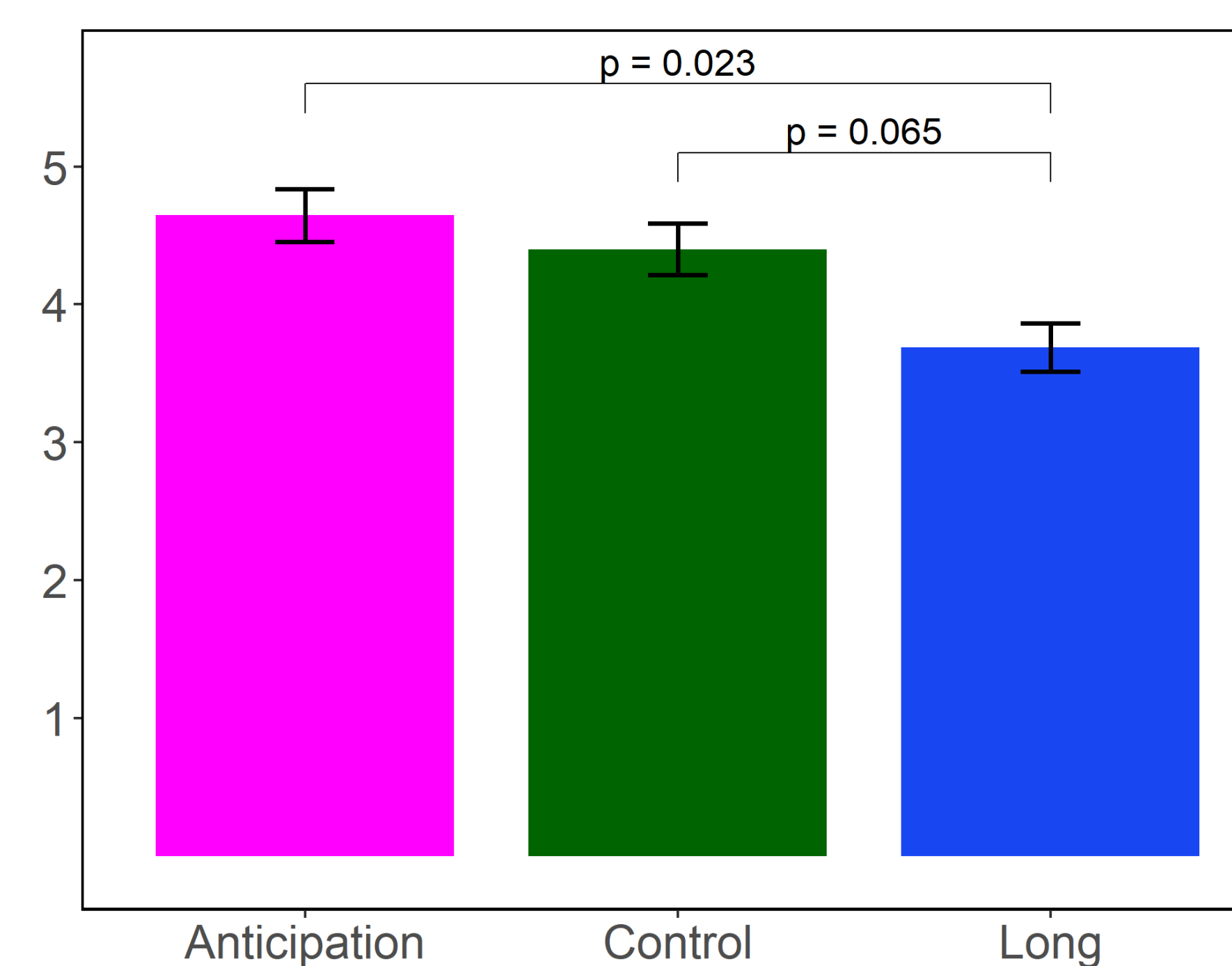
Heterogeneity – Excessive smartphone users respond more strongly to the **Anticipation** treatment.



## RESULT 3

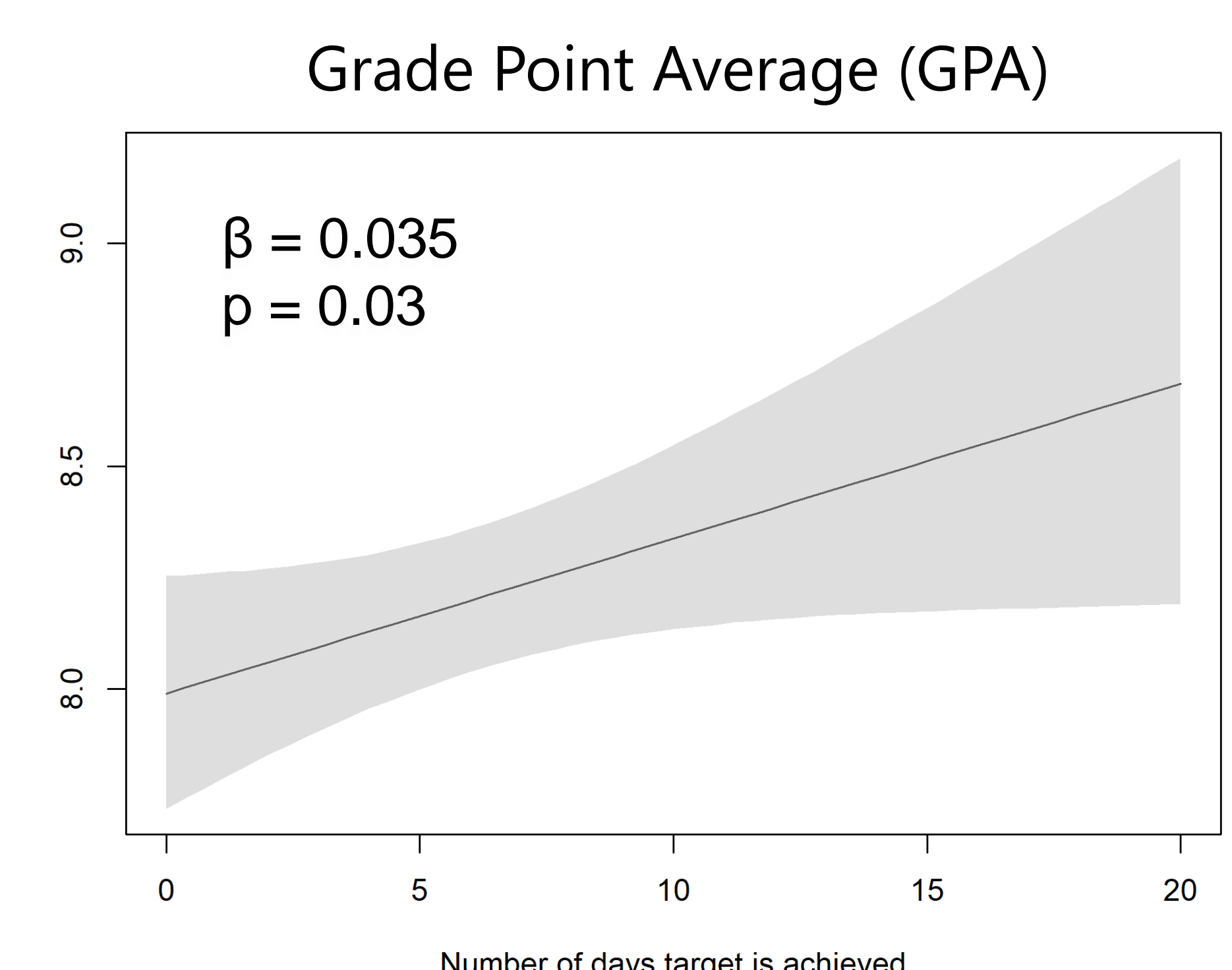
Other outcomes associated with screen time reduction

Concern about COVID-19



- The post-treatment survey was conducted in March, when COVID-19 cases were surging.
- Controlling for baseline mobile usage, we find that subjects in the L condition were less concerned about the COVID-19 situation compared to the A and C condition.

- Post-treatment academic performance (GPA on a 10-point scale)
- We find no significant difference in GPA between conditions.
- However, consistent with past findings<sup>3,4</sup>, the total number of days a subject achieved the target in both Period 1 and 2 had a significant positive effect on their GPA.



<sup>1</sup> Becker, G.S. and K.M. Murphy, *A theory of rational addiction*. Journal of political Economy, 1988. 96(4): p. 675-700.

<sup>2</sup> Pollak, R.A., *Habit formation and dynamic demand functions*. Journal of political Economy, 1970. 78(4, Part 1): p. 745-763.

<sup>3</sup> Lepp, A., J.E. Barkley, and A.C. Karpinski, *The relationship between cell phone use and academic performance in a sample of US college students*. Sage Open, 2015. 5(1).

<sup>4</sup> Felisoni, D.D. and A.S. Godoi, *Cell phone usage and academic performance: An experiment*. Computers & Education, 2018. 117: p. 175-187.