Studying without distractions? The effect of a digital blackout on academic performance

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Taming our wandering minds when we have an infinite source of distractions in our pockets has become more and more challenging. In my paper I assess whether distractions coming from smartphones are detrimental to academic performance, and in particular how reducing them may help students boost their learning.

I target first-year Bocconi students by recruiting them in both the Fall and Spring semesters asking their willingness to participate in a challenge, and I assign them to the use of an app that blocks other distracting apps on their smartphones. I ask them to activate this app during the week-day afternoons for the four weeks preceding the mid-term examinations, in the first half of the semester.

The app needs to be manually activated and prevents users from using other distracting apps and receiving notifications. Every day before the official starting time students get a reminder on which they can tap to activate the block. When active, the app blocks other apps and their notifications, e.g. social media, messaging, news. Students can join or leave the block at any moment during this time window, and come back as many times as they like. During the distraction blackout, students make the conscious and intentional choice to remain off their phones, knowing that breaks are monitored.

Throughout the semesters I administer online surveys in order to investigate habits, past experiences and backgrounds. Moreover, I use survey measures related to exam anxiety, expectations about exam performance, and course evaluations by linking app usage to lecture schedules. I use administrative data about students' background and grades in midterm exams.

In order to detect a causal effect of the treatment assignment on academic performance, I use both surveys and administrative data to show that self-selection into the treatment is not an issue and I provide proof that my control and treatment groups are balanced.

First I document how control and treatment groups are balanced using survey measures related to academic motivation, habits and distractions, personality, and I repeat the same analysis by comparing the Fall and the Spring samples. I find that students assigned to the treatment are those that indeed use more apps and more social media, but there is no difference in terms of motivation and personality traits; this supports the idea that students assigned to the treatment are indeed those who need to unplug from distractions, and participating in this intervention is indeed costly (and potentially beneficial) for them. As for the Fall versus Spring samples I find that students in the second semester show some imbalances in terms of distraction habits, as they are more likely to be distracted by their smartphones while in class or studying compared to the Fall participants. This pattern needs to take into account the peculiar condition of the a.y. 2020/21, in which classes have been

held progressively more online due to the Covid 19 pandemic. I find no difference in terms of academic motivation, habits, and personality.

Second, I use administrative variables to construct a propensity score and match observations for causal analysis. I show that groups are balanced in terms of age, gender, citizenship, Bocconi fee categories, and past performance measured as high school GPA.

In the Fall semester I find a significant difference in terms of performance between treatment and control groups for the management midterm, but not for microeconomics or mathematics. In the Spring semester I find that treatment students significantly improve their performances in the law and macroeconomics midterms, but not in mathematics or computer science. These results may hint at the fact that the app helps student focus when dealing with particular subjects that may require different levels of concentration. An heterogeneity analysis is also conducted in terms of gender, network dimension, technological history and habits, and family background.

I do not find significant differences in terms of expected percent chance of passing the exams, expected grades, course evaluations, and anxiety levels.

Further analysis is needed in order to understand the underlying mechanism and how universities can help students improve both learning outcomes and morale.