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Scrolling into Anxiety: Experimental Evidence from University Students*

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Abstract

This paper provides evidence on the impact of social media exposure on anxiety among first-year university students in Argentina. While concerns about the mental health effects of social media are widespread, obtaining causal evidence is challenging. We conducted a randomized survey experiment in which participants are exposed to brief, realistic social media scenarios, such as receiving no feedback on a post or viewing idealized content, while a placebo group is assigned to neutral stimuli. Immediately after exposure, we measure state anxiety using the State-Trait Anxiety Inventory (STAI). We find that exposure to these hypothetical scenarios increases anxiety by 0.09 standard deviations relative to the placebo group, with larger effects among male participants. These findings highlight that even short, simulated digital experiences can have meaningful psychological effects, with important implications for the design of policies and interventions targeting youth well-being.

Keywords: Social Media; Youth Anxiety; Field Experiment.

1 Introduction

Over the past decade, the rapid expansion of social media use among adolescents and young adults has raised growing concerns about its potential effects on mental health. A growing body of research documents negative associations between social media use and psychological well-being, particularly anxiety and depression [Barry et al. \(2017\)](#); [Lin et al. \(2016\)](#); [O'Reilly et al. \(2018\)](#). While some recent contributions exploit experimental interventions, quasi-experimental techniques or natural experiments to identify causal effects, the available evidence remains scarce and concentrated in developed countries [Braghieri et al. \(2022\)](#); [Allcott et al. \(2020\)](#); [Mosquera et al. \(2020\)](#); [Schmidt-Persson et al. \(2024\)](#); [McNamee et al. \(2021\)](#); [Donati et al. \(2025\)](#). Systematically, these studies document negative effects of social media use on adolescents' mental

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health, with the underlying mechanisms pointing to a prominent role of social comparison, reductions in perceived self-worth, and broader internalizing behavioral issues. Deepening this evidence, [Donati et al. \(2025\)](#) find that access to high-speed internet significantly increases diagnoses of depression, anxiety, drug abuse, and personality disorders among young cohorts — for both males and females — and effects on eating and sleep disorders among females. They also find similar patterns for hospitalizations and self-harm episodes. The literature also reports effects on other outcomes, including declines in academic performance [Jain and Stemper \(2024\)](#), negative impacts on student mental health [Braghieri et al. \(2022\)](#), increases in hyperactivity, attention deficits, and behavioral problems [McNamee et al. \(2021\)](#), as well as improvements in positive social interactions following reductions in screen exposure [Schmidt-Persson et al. \(2024\)](#). In addition, [Allcott et al. \(2020\)](#) show that reducing social media use not only improves users’ subjective well-being, but also decreases subsequent demand for these platforms, suggesting that factors such as addiction may contribute to excessive usage. Similar results are reported by [Mosquera et al. \(2020\)](#). Building on this evidence, [Allcott et al. \(2022\)](#) show, through a randomized experiment and a structural model of digital addiction, that social media are habit-forming and that users face self-control problems accounting for approximately 31 percent of their use. Recent work has also begun to evaluate policies aimed at restricting smartphone or social media access, including school cellphone bans and youth social media restrictions. This literature documents a consistent temporal pattern: short-run disruption followed by subsequent adaptation. [Figlio and Özek \(2025\)](#) show that cellphone bans in schools initially raise student suspensions—particularly among Black students—but disciplinary effects dissipate after the first year, while test scores and unexcused absences improve in the second year. Similarly, [Allcott et al. \(2026\)](#) find that lockable phone pouches reduce phone use and produce a first-year decline in subjective well-being alongside an increase in disciplinary incidents, but well-being effects turn positive in subsequent years as disciplinary effects fade. This evidence suggests that these policies may initially generate a temporary adjustment period, during which some behavioral indicators deteriorate in the short run before improving over time as students adapt to the new restrictions. However, the effectiveness of such restrictions may ultimately depend on whether compliance reaches a social tipping point, as [Bursztyn et al. \(2026\)](#) show that youth social media bans are unlikely to succeed when the share of complying peers falls well below the threshold required for individual compliance to become self-sustaining. Despite the relevance and urgency of the issue, causal evidence on the effects of social media use on adolescent mental health remains scarce and geographically narrow. The existing literature is almost entirely concentrated in high-income countries — with a disproportionate focus on the United States — leaving a substantial gap in our understanding of how these effects may manifest in middle- and low-income settings, where smartphone adoption has expanded rapidly but institutional and family-level safeguards may differ substantially.

Adolescents are increasingly exposed to digital environments characterized by constant social evaluation, curated content, and algorithm-driven feedback, which may intensify processes such as social comparison and the search for validation [Haidt \(2024\)](#).

These concerns are especially relevant in contexts where access to digital technologies is widespread and begins at an early age. In Argentina, internet access among adolescents is

nearly universal, with most teenagers owning a smartphone and engaging daily with multiple social media platforms [UNICEF and UNESCO \(2025\)](#). This sustained and early exposure raises important questions about the potential consequences of online interactions on emotional well-being. Despite the scale of this phenomenon, there is limited causal evidence on its psychological effects, particularly in developing countries and among younger populations.

Existing studies have primarily focused on aggregate measures of screen time or overall platform use, often overlooking the specific types of interactions that may drive changes in mental health. Yet, different online experiences—such as receiving social feedback, being ignored, or being exposed to idealized images—may have distinct psychological impacts. Understanding these mechanisms is crucial for designing effective interventions, as policies targeting overall usage may fail to address the underlying drivers of harm. This paper contributes to this literature by providing causal evidence on the short-term effects of hypothetical social media experiences on anxiety among first-year university students in Argentina. We implement a randomized survey experiment in which participants are exposed to brief, realistic scenarios that simulate common online interactions. This design is inspired by experimental approaches that use hypothetical but salient scenarios to identify causal effects on psychological outcomes [Mani et al. \(2013\)](#). The scenarios capture key features of the contemporary digital environment, including lack of social feedback, negative evaluation, and exposure to idealized content, while a placebo group is assigned to neutral digital stimuli.

Immediately after exposure, we measure anxiety using the State-Trait Anxiety Inventory (STAI), a widely used and validated instrument for assessing transient emotional states [Spielberger et al. \(2023\)](#). This design allows us to isolate the causal impact of specific online experiences on state anxiety, moving beyond correlational evidence and shedding light on the mechanisms linking social media use and mental health. In addition, we explore heterogeneity in treatment effects, with particular attention to gender differences, given prior evidence suggesting differential impacts across groups [Kelly et al. \(2018\)](#); [Haidt \(2024\)](#).

Our results show that exposure to social media-related scenarios leads to a significant increase in anxiety levels, with meaningful magnitudes. We also find that the increase is larger among male participants, a pattern that contrasts with much of the existing literature. By focusing on specific interactions rather than overall usage, this study contributes to a growing but still limited body of causal evidence on the mental health effects of social media. The findings have important implications for policy and intervention design, highlighting the need to move beyond reducing screen time and instead address the nature and content of digital interactions faced by young people.

2 Data and Experimental Design

2.1 Experimental Design

This study implements a randomized survey experiment conducted in February 2026 at the Facultad de Ciencias Económicas of the Universidad Nacional de La Plata (UNLP), Argentina, one of the largest public universities in the country. The design follows the approach of [Mani et al. \(2013\)](#), who show that exposing participants to hypothetical but realistic scenarios allows

identification of causal effects on psychological outcomes. Rather than eliciting self-reports of general social media use, participants were exposed to brief, realistic scenarios simulating plausible interactions on social media platforms, and their psychological responses were measured immediately afterward using validated scales.

The experiment was administered in person during the first session of the mandatory introductory course *Introducción a los Estudios Universitarios*, in the Mathematics module, before the mid-class break.

The survey began with a module collecting demographic information, social media use patterns, device availability, and leisure-time activities. Participants were then randomly assigned at the individual level to either the treatment or the control condition. The treatment group was exposed to all five hypothetical scenarios designed to simulate interactions with potential psychological impact: (T1) posting content that receives no engagement; (T2) receiving negative comments on a personal post; (T3) viewing an idealized body image with a large number of likes; (T4) encountering an AI-generated video of oneself created by an anonymous account; and (T5) being ignored by friends after proposing a social plan. The control group was assigned a neutral scenario unrelated to social comparison or negative feedback, such as a cooking tutorial or a café advertisement.

Immediately following scenario exposure, all participants completed the Spanish-language version of the State subscale of the *State-Trait Anxiety Inventory* (STAI) (Spielberger et al., 2023), comprising twenty items. This instrument measures anxiety as experienced at the present moment and has been extensively validated for experimental and clinical use. At the beginning of the questionnaire, a brief mood assessment was included to identify cases of severe prior psychological distress; such cases were excluded from the analysis. At the close of the survey, all participants were provided with contact information for a mental health helpline and a youth counseling service.

2.2 Sample

The sample consists of first-year students enrolled in degree programs at the Facultad de Ciencias Económicas, UNLP, who completed the survey in February 2026. To ensure data quality, we restricted the sample to respondents who completed the survey within a plausible time window of three to seven minutes, and excluded three observations due to ambiguous gender responses, yielding a main sample of $N = 506$ participants. The sample is balanced by gender, with 254 women (50.2%) and 252 men (49.8%), and consists of first-year students with an average age of 19.8 years. Of these, 121 were randomly assigned to the treatment group and 388 to the control group.

Social media use is pervasive: 60% of respondents report spending more than four hours per day on social media during weekdays, rising to 72% on weekends. Heavy use is also common, with 28% exceeding six hours on weekdays and 40% on weekends, underscoring the relevance of studying the psychological consequences of these interactions.

2.3 Randomization and Pre-Treatment Balance

We assess the integrity of the experimental assignment by testing whether pre-treatment characteristics are balanced across the control and treatment groups. Table 1 reports group means, mean differences, unadjusted p -values from two-sample t -tests, and Romano-Wolf step-down adjusted p -values for all 26 pre-treatment variables, organized into four panels: social media use, sociodemographic characteristics, free-time activities, and social media platforms.

While a small number of variables exhibit statistically significant differences at conventional levels in the unadjusted tests, this is expected when testing 26 hypotheses simultaneously, as the probability of at least one spurious rejection under the null of perfect balance is substantially higher than the normal significance level of individual tests. To address this, we implement the Romano-Wolf step-down procedure. Using 1,500 resamples, no covariate is significant at the 10% level after adjustment, and we conclude that the randomization was successful.

Table 1. Balance Table: Pre-Treatment Characteristics

Variable	Group Means		Difference	<i>p</i> -value	RW <i>p</i> -value
	Control	Treatment			
<i>Panel B: Sociodemographic Characteristics</i>					
Age	19.933	19.603	−0.330	0.535	1.000
Female	0.508	0.483	−0.024	0.641	1.000
Lives with parents	0.884	0.926	0.042	0.252	0.996
Mother completed university or more	0.325	0.240	−0.085	0.076*	0.786
Father completed university or more	0.245	0.256	0.011	0.801	1.000
Bad or mixed mood (baseline)	0.302	0.281	−0.021	0.666	1.000
<i>Panel C: Leisure-Time Activities</i>					
Reading	0.224	0.223	−0.001	0.980	1.000
Playing video games	0.304	0.248	−0.056	0.236	0.992
Watching series, films, or TV	0.505	0.471	−0.034	0.514	1.000
Physical activity or sports	0.539	0.529	−0.010	0.852	1.000
Using social media	0.616	0.612	−0.004	0.931	1.000
Hobby (painting, music, etc.)	0.157	0.215	0.058	0.142	0.943
Spending time with family, friends, partner	0.577	0.471	−0.106	0.040**	0.598
Other	0.064	0.083	0.018	0.490	1.000
<i>Panel D: Social Media Platforms Used</i>					
Instagram	0.856	0.760	−0.095	0.014**	0.354
TikTok	0.683	0.694	0.011	0.817	1.000
Twitter/X	0.168	0.231	0.064	0.113	0.909
YouTube	0.219	0.223	0.004	0.925	1.000
Snapchat	0.031	0.041	0.010	0.579	1.000
WhatsApp	0.786	0.702	−0.084	0.058*	0.717
Discord	0.026	0.066	0.040	0.036**	0.592
Pinterest	0.044	0.041	−0.002	0.907	1.000
Other	0.018	0.033	0.015	0.322	0.999
Observations	388	121			
RW resamples		1,500			

Notes: Two-sample t -tests comparing control and treatment groups. Difference = Treatment mean − Control mean. For binary variables, group means represent proportions. “Lives with parents” has $N = 301$ (control) and $N = 94$ (treatment) due to item non-response. “Bad or mixed mood” equals one if the respondent reported feeling *bad*, *very bad*, or *so-so* (*Mal*, *Demasiado mal*, or *Más o menos*) at baseline. RW p -value: Romano-Wolf step-down adjusted p -value, which controls the familywise error rate across all 26 simultaneous hypotheses using 1,500 resamples. After Romano-Wolf adjustment, no variable is significant at the 10% level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

2.4 Empirical Strategy

To estimate the average treatment effect on state anxiety, we estimate:

$$\text{STAI}_i = \alpha + \beta \text{Treatment}_i + \varepsilon_i \quad (1)$$

where Treatment_i is a binary indicator equal to 1 if participant i was assigned to the treatment group and exposed to five negative social media scenarios (T1–T5), and 0 otherwise. The coefficient β captures the average treatment effect on state anxiety.

To examine whether the treatment effect differs by gender, we augment equation (1) with a female indicator and its interaction with treatment:

$$\text{STAI}_i = \alpha + \beta_1 \text{Treatment}_i + \beta_2 \text{Female}_i + \beta_3 (\text{Treatment}_i \times \text{Female}_i) + \varepsilon_i \quad (2)$$

where Female_i is an indicator equal to one for female respondents and β_3 captures the differential treatment effect for women relative to men.

To examine heterogeneity by intensity of social media use, we construct a binary indicator of intensive use equal to one if the respondent reported using social media for four or more hours per day on both weekdays and weekends, and zero otherwise. Based on the ordinal responses to questions on weekday and weekend use, this threshold corresponds to the categories “Entre 4 y 6 horas” (between 4 and 6 hours), “Entre 6 y 8 horas” (between 6 and 8 hours), and “Más de 8 horas” (more than 8 hours). In our analytic sample, 54.4% of respondents meet this criterion. We then estimate:

$$\text{STAI}_i = \alpha + \beta_1 \text{Treatment}_i + \beta_2 \text{Intensive}_i + \beta_3 (\text{Treatment}_i \times \text{Intensive}_i) + \varepsilon_i \quad (3)$$

where Intensive_i is the intensive use indicator and β_3 captures the differential treatment effect for intensive users relative to non-intensive users. All specifications are estimated by OLS with heteroskedasticity-robust standard errors.

3 Results

3.1 Main Results

Table 2 reports estimates of equation (1). Exposure to negative social media scenarios increases state anxiety by 1.70 STAI points relative to the control group ($p = 0.056$), a marginally significant effect at the 10% level. The control group mean of 19.60 points provides a reference for the magnitude of this effect. Such effect implies a 0.09 sd in the STAI.

3.2 Heterogeneity Analysis

Table 3 reports estimates of equations (2) and (3). Column (1) shows that women score approximately 3.9 STAI points higher than men on average ($p < 0.01$), a gap that is robust across specifications. The interaction between treatment and gender is negative and statistically indistinguishable from zero, suggesting that the treatment effect is somewhat smaller for women than for men. Two interpretations are consistent with this pattern. First, women may exhibit higher baseline levels of anxiety, leaving less room for further increases in response to the treatment scenarios — a ceiling effect driven by prior exposure and habituation to negative social media

Table 2. Effect of Treatment on State Anxiety

	STAI Total
Treatment	1.702* (0.888)
Constant	19.598*** (0.426)
Observations	506
R-squared	0.007

Robust standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 3. Heterogeneity Analysis: Gender and Intensive Social Media Use

	(1) Gender	(2) Intensive Use
Treatment	2.072* (1.179)	0.991 (1.289)
Female	3.894*** (0.830)	
Treatment $\times$ Female	-0.571 (1.745)	
Intensive User		1.533 (0.852)
Treatment $\times$ Intensive User		1.268 (1.762)
Constant	17.621*** (0.579)	18.768*** (0.621)
Observations	506	506
R-squared	0.057	0.020

Robust standard errors in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

content. Second, the experiment may induce men to engage with content they would not typically encounter in their ordinary digital behavior, amplifying their response relative to women for whom such interactions are more routine. Column (2) shows that neither the intensive use indicator nor its interaction with treatment reaches conventional significance levels, suggesting that the treatment effect does not vary with prior intensity of social media use.

4 Discussion

This paper provides causal evidence on the short-term impact of social media-related experiences on anxiety among young people. Using a randomized survey experiment, we show that even brief and realistic online interactions can generate statistically significant and economically meaningful

increases in state anxiety. These findings contribute to a limited but growing body of causal research on the mental health effects of digital environments, moving beyond the predominantly correlational evidence in the literature.

A key contribution of this study is to isolate the role of specific types of online interactions. Rather than focusing on overall screen time or platform use, our results highlight that the content and context of digital experiences are central in shaping psychological responses. Situations involving lack of social feedback, negative evaluation, or exposure to idealized content appear sufficient to trigger increases in anxiety, even when presented in short, hypothetical formats. This suggests that the mechanisms linking social media use and mental health may operate through acute, situational channels rather than only through prolonged exposure.

An additional and unexpected finding is that the estimated effects are larger among male participants. This contrasts with much of the existing literature, which tends to document stronger associations between social media use and adverse mental health outcomes among women. One possible interpretation is that certain types of social evaluation or exclusion captured by our scenarios may be particularly salient for male students in this context. Alternatively, gender differences in baseline expectations, coping mechanisms, or reporting behavior may play a role. While our design does not allow us to fully disentangle these mechanisms, the results suggest that heterogeneity across groups may be more complex than commonly assumed and deserves further investigation.

Several limitations should be acknowledged. First, the study captures short-term effects on self-reported anxiety, and therefore does not speak to longer-term mental health outcomes. Second, while the scenarios are designed to be realistic, they remain hypothetical and may not fully replicate the intensity or persistence of real-world online interactions. Third, the use of self-reported measures may introduce reporting bias, although the experimental design mitigates concerns about differential measurement across groups.

Such effect implies a 0.09 standard deviations in the STAI, which is not small considering the students are exposed to a hypothetical situation. Despite these limitations, the findings have important implications for policy and intervention design. In particular, they suggest that policies focused solely on reducing overall screen time may be insufficient. Instead, interventions that address the nature of online interactions—such as exposure to social feedback, comparison, and evaluation—may be more effective in mitigating negative psychological effects. Educational programs that promote digital literacy and emotional resilience, as well as platform-level design choices that shape user interactions, could play a key role in improving youth well-being.

Overall, this study provides new evidence that even short and seemingly minor digital experiences can have measurable psychological consequences. Understanding these mechanisms is essential for designing more effective responses to the challenges posed by increasingly pervasive digital environments.

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