




Screen time, social support, and depression among international university students

Tiempo de pantalla, apoyo social y depresión en estudiantes universitarios internacionales

Tempo de exposição às telas, apoio social e depressão entre estudantes universitários internacionais


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KEYWORDS

college students,
depression, screen time,
social support.

ABSTRACT. Objective: This study aims to explore the relationship between objectively measured screen time and depression. Moreover, it seeks to determine whether social support mediates the relationship between depression and objectively measured screen time. **Methods:** This cross-sectional study included a sample of 121 international college students. Screen time was measured using logged data from participants' phones. Basic anthropometric data were collected with a stadiometer and bioimpedance analysis. The Zung Depression Scale was used to assess depression, and the Interpersonal Support Evaluation List was applied to assess social support. Data analysis involved correlation and t-test analyses, followed by a path mediation analysis. **Results:** The current data suggest that there is no direct association between depression and screen time, as no correlation was found between these variables ($r(85) = .03$, $p > .05$), nor were meaningful differences in screen time observed between depressed and non-depressed groups ($t(85) = -.19$, $p = 0.85$). However, an indirect association was established through a path model in



which social support acted as a mediator ($p < .05$). **Conclusion:** Screen time alone is not indicative of depression; however, social support can significantly mediate their relationship. Consequently, lowering screen time may not lead to a reduction in depressive symptoms, as more subtle factors may influence this association. Therefore, the relationship between phone use and depression is complex and requires further investigation using more advanced methods.

PALABRAS CLAVE

estudiantes
universitarios, depresión,
tiempo de pantalla,
apoyo social.

RESUMEN. Objetivo: Este estudio tiene como finalidad explorar la relación entre el tiempo de pantalla medido objetivamente y la depresión. Además, busca determinar si el apoyo social media la relación entre la depresión y el tiempo de pantalla medido objetivamente. **Método:** Este estudio transversal incluyó una muestra de 121 estudiantes universitarios internacionales. El tiempo de pantalla se midió mediante los registros obtenidos de los teléfonos de los participantes. Los datos antropométricos básicos se recopilaron utilizando un estadiómetro y un análisis de bioimpedancia. La depresión se evaluó con la Escala de Depresión de Zung y el apoyo social mediante la *Interpersonal Support Evaluation List*. El análisis de datos incluyó correlaciones y pruebas *t*, seguido de un análisis de mediación por trayectorias. **Resultados:** Los datos sugieren que no existe una asociación directa entre la depresión y el tiempo de pantalla, ya que no se encontró correlación entre estas variables ($r(85) = .03$, $p > .05$), ni diferencias significativas en el tiempo de pantalla entre los grupos con y sin depresión ($t(85) = -.19$, $p = 0.85$). Sin embargo, se identificó una asociación indirecta mediante un modelo de mediación en el cual el apoyo social actuó como mediador ($p < .05$). **Conclusión:** El tiempo de pantalla, por sí solo, no es un indicador de depresión; no obstante, el apoyo social puede mediar significativamente esta relación. En consecuencia, reducir el tiempo de pantalla no necesariamente conduce a una disminución de los síntomas depresivos, dado que factores más sutiles pueden influir en esta asociación. Por ello, la relación entre el uso del teléfono y la depresión es compleja y requiere investigaciones adicionales con métodos más avanzados.

PALAVRAS-CHAVE

estudantes universitários,
depressão, tempo de
tela, apoio social.

RESUMO. Objetivo: Este estudo tem como objetivo explorar a relação entre o tempo de tela medido objetivamente e a depressão. Além disso, busca determinar se o apoio social media a relação entre depressão e tempo de tela medido objetivamente. **Métodos:** Este estudo transversal incluiu uma amostra de 121 estudantes universitários internacionais. O tempo de tela foi mensurado por meio dos registros obtidos nos telefones dos participantes. Os dados antropométricos básicos foram coletados com o uso de estadiômetro e análise de bioimpedância. A depressão foi avaliada pela Escala de Depressão de Zung, e o apoio social pela *Interpersonal Support Evaluation List*. A análise dos dados incluiu correlações e testes *t*, seguida de uma análise de mediação por caminhos. **Resultados:** Os dados indicam que não há associação direta entre depressão e tempo de tela, uma vez que não foi encontrada correlação entre essas variáveis ($r(85) = .03$, $p > .05$), nem diferenças significativas no tempo de tela entre os grupos com e sem depressão ($t(85) = -.19$, $p = 0.85$). Contudo, uma associação indireta foi identificada por meio de um modelo de mediação no qual o apoio social atuou como mediador ($p < .05$). **Conclusão:** O tempo de tela, isoladamente, não é um indicador de depressão; entretanto, o apoio social pode mediar significativamente essa relação. Consequentemente, reduzir o tempo de tela não necessariamente leva a uma diminuição dos sintomas depressivos, pois fatores mais sutis podem influenciar essa associação. Portanto, a relação entre o uso do telefone e a depressão é complexa e requer investigações adicionais com métodos mais avançados contextualizados.

1. INTRODUCTION

According to the World Health Organization (2024), depression is a common disorder affecting over 280 million people, or 5% of the global population. College-age adults are no exception, and it is becoming increasingly prevalent in the young adult population. This is evident when considering that the fourth leading cause of death among adolescents and young adults (15–29 years of age) is suicide, and the link between suicide and depression is well established. According to recent studies, 36% of undergraduate college students report experiencing moderate to severe depressive symptoms (Lee et al., 2021). Furthermore, depression is associated with various physical health problems, such as cardiovascular disease, diabetes, and obesity, among others.

A possible factor contributing to mental health issues in modern societies is excessive screen time (Nakshine et al., 2022). A recent systematic review of longitudinal studies in young people (10–24 years old) found a positive association between total screen time and subsequent depressive symptoms (Tang et al., 2021). Different types of screen time were measured in this systematic review. Specifically, regarding phone use, Bickham et al. (2015) measured phone use with a recall survey and a time-use diary, while Liu et al. (2020) asked participants to self-report the number of hours per day they used their phones. Both studies found a significant positive association between screen time and subsequent depressive symptoms (Bickham et al., 2015; X. Liu et al., 2020). Other studies in the systematic review explored the relationship between total screen time (including television, video games, computers, etc.) and subsequent depressive symptoms. All studies found a significant association between total screen time and subsequent depressive symptoms. However, it is important to note that every study included in the systematic review recorded screen time subjectively through self- or parent-reported questionnaires, rather than using objective device-logged measures (Allen & Vella, 2015; Grøntved et al., 2015; Gunnell et al., 2016; Houghton et al., 2018; Zink et al., 2019). The aforementioned studies focused on how screen time affects subsequent depressive symptoms. However, this relationship appears to be bidirectional, as there is evidence that increased depressive symptoms can lead to greater phone and social media use. For instance, longitudinal data indicate that increased depressive symptoms can predict problematic phone use and technology use in the form of social comparison and feedback-seeking behaviors (Cui et al., 2021; Nesi et al., 2017).

The distinction between subjective and objective screen time or phone use measures is critical and should not be overlooked. Sewall et al. (2020) found that students miscalculated their phone use by 19.1 hours per week. Moreover, Parry et al. (2021) assessed the alignment between self-report and device-logged measures in a meta-analysis of 47 studies. They found that fewer than 10% of self-report screen time studies produced results within 5% of their device-logged measures, reflecting the inaccuracy of self-reported measures (Parry et al., 2021). Although subjectively measured screen time is associated with depression, because it differs from objective screen time, data from studies using subjective measures do not inform us about how the actual duration of phone use (objective screen time) is related to depressive symptoms.

An important factor that may play a role in the relationship between screen time and depression is social support. Within this study, social support is defined as the extent to which an individual feels supported through the availability of psychological and material resources provided by their interpersonal relationships. These psychological resources include, among others, esteem support, which refers to one's perception of being valued and accepted by others, and informational support, which involves the perception that others can offer guidance, advice, or assistance in understanding and coping with challenging situations. Additionally, social support encompasses material support, such as the availability of financial assistance or tangible resources when needed (Cohen & Wills, 1985). Moreover, this study is concerned with objective screen time and depression among international students, who have been shown to report lower levels of perceived social support (citation) and to experience additional stressors, such as language difficulties, acculturation stress, financial challenges, and loneliness, that contribute to negative emotions (Hunley, 2010; Kristiana et al., 2022). According to the buffering hypothesis, social support helps mitigate the negative effects of stressors on mental health (e.g., depression, anxiety, etc.) (Cohen & Wills, 1985).

However, in the absence of a socially supportive environment, international students may turn to other stress-regulating strategies. For instance, smartphones may be used to instantly and acutely regulate negative emotions

(Shi et al., 2023). On the other hand, excessive phone use may hinder international students from building a supportive social network (Herrero et al., 2019). With respect to the association between social support and other variables in our study, reduced social support has been shown to be associated with increased depressive symptoms (Ramezankhani et al., 2013; Shi, 2021), as well as increased screen time (Hunt et al., 2018; Liu & Yi, 2022; Song & Kim, 2022). There are relatively fewer studies exploring how social support affects the relationship between screen time and depressive symptoms. One study found that social support moderated the relationship between screen time and emotional health, showing that when dividing the sample into high and low social support groups, social media use affected emotional health differently (Liu & Yi, 2022). When in-person social interactions were controlled for, the association between smartphone use and psychological well-being was no longer significant (Anderl et al., 2024). To our knowledge, to date, no studies have explored social support as a mediator between screen time and depression. The current study aims to explore whether social support mediates the relationship between screen time and depression.

In summary, depression remains a critical concern among young adults, and increased screen time has been identified as a potential contributing factor. However, there is a notable gap in research employing objective measures of screen use and examining social support as a mediating variable in the relationship between screen time and depression. The primary objective of the present study was to analyze the association between objectively measured smartphone use and depression scores in a diverse sample of international college students. Our first hypothesis posits that screen time is significantly correlated with depression, while the second hypothesis proposes that students with higher levels of depression will exhibit greater screen time compared to those with lower levels. Additionally, the secondary aim of this study was to determine whether perceived social support mediates the relationship between smartphone use and depression. Accordingly, our third hypothesis states that social support mediates the effect of screen time on depression.

2. METHODS

Participants

A random sample of 121 international students (47 females, 74 males) was taken from a larger cross-sectional dataset exploring variables that may be associated with self-rated depression and anxiety scores in young adults 18 to 25 years of age. The inclusion criteria stated that the participants had no history of major neurological or psychiatric disorders and were between 18 and 25 years of age at the time of data collection. The current sample was taken from international students (Erasmus, visiting, and full-time local students) attending university. The research was conducted per the ethical principles of the Declaration of Helsinki and was approved by the local institutional review board before the commencement of data collection. Informed written consent was obtained from all participants before participation in the study. Participants were assured of confidentiality and informed of their right to withdraw from the study at any time.

Protocol

All data collection took place in a private laboratory and/or classroom outside the public view. After participants provided written informed consent, they were presented with a package containing all the study questionnaires. At the top of each questionnaire were explicit instructions regarding how to complete it, and participants were told that they could address any concerns or misunderstandings with the researcher at any time. Once the questionnaire packet was completed, the researcher would review the completed questionnaires to ensure that

all questions were answered and any shortcomings were addressed at this time. Participants were then asked to proceed to a simple basic anthropometric measurement of height and weight. Lastly, participants were asked to open their smartphone screen time settings and show the device to the researcher. The researcher would then review the screen time use with the participant and record the total daily average screen time over the past month, including the top three applications used and the average time per day of each application.

Instruments

Data was collected through self-reported questionnaires, physical observation of the participants' smartphones, and basic anthropometric data obtained from bioimpedance analysis (BIA). The questionnaires included the following: 1) Demographic Information, 2) Zung Self-Rating Depression Scale (SDS), and 3) Interpersonal Support Evaluation List shortened version (ISEL-12). The demographic questionnaire was adapted for the present study to meet the needs of the diverse group of international students used in the current sample. The SDS is a psychological questionnaire to measure the severity of depressive symptoms. It consists of 20 items; 10 of the items are worded symptomatically positive and 10 symptomatically negative. Participants can select any of the four quantitative terms for the items: "A little of the time, Some of the time, Good part of the time, Most of the time." Depending on how suggestive an item is of depression, each of these responses is assigned a number, with 4 being the most and 1 being the least suggestive of depression. The ISEL-12 is a 12-item measure of perceptions of social support. This measure is a shortened version of the original ISEL 40 items (Cohen & Hoberman, 1983). Aside from the overall total social support score (SS), the questionnaire also includes three different subscales designed to measure three dimensions of perceived social support. The dimensions are 1) Appraisal Support (AS), 2) Belonging Support (BS), and 3) Tangible Support (TS). Each dimension is measured by 4 items on a 4-point scale ranging from "Definitely True" to "Definitely False."

Smartphone use was objectively collected (device-logged) from the participants' handheld devices under the supervision/direction of the researcher collecting data. Total screen time and the top three most used applications were recorded in hours per day. Height was measured to the nearest centimeter using a SECA stadiometer (Model: 213 Hamburg, Germany). Weight was measured to the nearest 0.1 kilograms using the Tanita Inner Scan V bioimpedance device (Model: BC-545N, TANITA Corporation, Tokyo, Japan), which provided a body composition analysis of body mass index (kg/m²), lean Mass, and body fat percentage (%fat).

Data analysis/statistics

Bivariate correlations were conducted to examine the relationships among screen time, social support, depression, and anthropometric variables. Following the criteria proposed by Dunstan & Scott (2018), participants with raw scores of 39 or below were classified as presenting no depressive symptoms, whereas those with scores of 40 or above were categorized as exhibiting depressive symptoms. An independent samples *t*-test was performed to assess differences between participants with and without depressive symptoms. Statistical significance was set *a priori* at $\alpha = .05$, and effect sizes were interpreted using Cohen's (2013) benchmarks, where $d = 0.20$ indicates a small effect, $d = 0.50$ a medium effect, and $d = 0.80$ a large effect. Finally, mediation path analysis was applied to evaluate the relationships among screen time, social support, and depression scores.

3. RESULTS

Participant demographics are summarized in Table 1. Significant differences between males and females were identified in height ($t(119) = -11.25$), weight ($t(119) = -9.04$), BMI ($t(119) = -3.23$), body fat percentage ($t(119) = 10.29$), and SDS scores ($t(85) = 3.58$). In contrast, no significant differences were observed between male and female participants in perceived social support, as measured by the ISEL-12, nor in objectively recorded screen time.

Table 1

Participant demographic information is presented as mean \pm standard deviation

	Total (n=121)	Male (n=74)	Female (n=47)	<i>p</i>	<i>d</i>
Age (years)	21.14 \pm 1.53	22.2 \pm 2.2	21.08 \pm 1.52	0.706	0.592
Height (cm)	172.7 \pm 9.78	178.30 \pm 6.97	163.96 \pm 6.61	< 0.001	2.111
Weight (kg)	71.8 \pm 13.76	71.3 \pm 11.78	60.84 \pm 9.62	< 0.001	0.973
BMI	24.0 \pm 3.42	24.81 \pm 3.28	22.82 \pm 3.32	0.002	0.603
% Fat	21.27 \pm 7.15	17.37 \pm 5.00	27.40 \pm 5.57	< 0.001	1.895
SDS	38.24 \pm 9.00	36.01 \pm 8.35	41.74 \pm 8.95	< 0.001	0.662
ISEL	38.42 \pm 6.85	37.69 \pm 7.10	39.57 \pm 6.34	0.141	0.279
Screen Time (hours/day)	6.45 \pm 2.19	6.75 \pm 2.38	5.97 \pm 1.75	0.057	0.373

Note. *p* = *p*-value, *d* = Cohen's *D*. Bold indicates statistical significance.

Correlations are presented in Table 2. Depression (SDS) and screen time did not exhibit a significant association ($r(119) = .26$). In contrast, a significant negative correlation was observed between depression and overall social support (SS; $r(119) = -.403$). Depression was also significantly negatively associated with each ISEL-12 subscale: Appraisal Support (AS; $r(119) = -.303$), Belonging Support (BS; $r(119) = -.326$), and Tangible Support (TS; $r(119) = -.381$). Additionally, social support and screen time were significantly negatively correlated ($r(119) = -.243$), suggesting that social support may function as a mediating variable in the relationship between depression and screen time. Depression and body fat percentage showed a significant positive correlation ($r(119) = .291$). However, because screen time was not significantly associated with body fat percentage, this variable was not included in the mediation analysis.

Table 2*Means, standard deviations, and correlations*

Variable	N	M	SD	1	2	3	4	5	6	7
1. Depression (SDS)	121	38.24	9							
2. Screentime (hours)	121	6.45	2.19	0.026						
3. SS (ISEL-12)	121	38.42	6.85	-.403**	-.243**					
4. AS (ISEL-12)	121	13.12	2.84	-.303**	-.243**	.807**				
5. BS (ISEL-12)	121	12.87	2.6	-.326**	-.213*	.824**	.450**			
6. TS (ISEL-12)	121	12.44	2.77	-.381**	-0.162	.875**	.550**	.640**		
7. BMI	121	24.03	3.42	-0.056	0.1	-0.13	-0.097	-0.125	0.251	
8. % Fat	121	21.27	7.16	.291**	-0.047	0.027	0.05	0.009	0.007	.197*

Note. * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed)

Independent sample t-test results are presented in Table 3. Screen time in depressed participants ($M = 6.49$, $SD = 1.96$) and non-depressed participants ($M = 6.42$, $SD = 2.35$) did not differ significantly ($t(119) = -.187$, $p = .852$). Depressed participants ($M = 35.86$, $SD = 7.89$) showed lower levels of social support compared to non-depressed participants ($M = 40.29$, $SD = 5.3$) ($t(82) = 3.47$, $p = 0.001$). The difference in the subscales of social support was also significant between depressed and non-depressed participants. For instance, % fat had a significant effect ($t(119) = -2.35$, $p = 0.020$) when comparing depressed ($M = 23.04$, $SD = 6.84$) and non-depressed participants ($M = 19.98$, $SD = 7.15$).

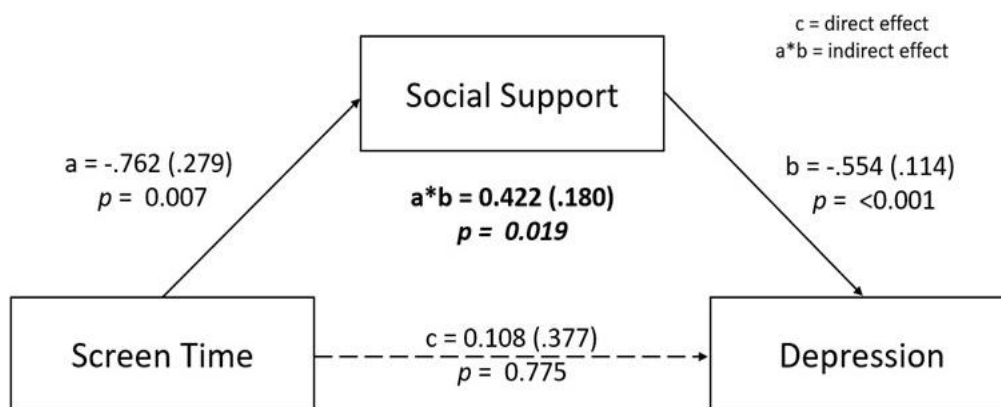
Table 3*Independent samples t-tests between depressed and non-depressed participants*

	Depression Group			<i>t</i>	<i>p</i>	<i>d</i>
	NDS	DS	<i>df</i>			
Depression (SDS)	31.89 ± 4.28	46.96 ± 5.91	86	-15.49	< 0.001	2.92
Screentime (hours/day)	6.42 ± 2.35	6.49 ± 1.96	119	-0.187	0.852	0.032
Social media (hours/day)	2.78 ± 1.87	2.32 ± 1.41	97	1.34	0.183	0.278
SS (ISEL-12)	40.29 ± 5.30	35.86 ± 7.89	82	3.47	0.001	0.659
AS (ISEL-12)	13.83 ± 2.19	12.14 ± 3.32	81	3.17	0.002	0.601
BS (ISEL-12)	13.31 ± 2.13	12.25 ± 3.05	84	2.13	0.036	0.403
TS (ISEL-12)	13.14 ± 2.14	11.47 ± 3.23	81	3.22	0.002	0.61
BMI (kg/m ²)	24.19 ± 3.27	23.82 ± 3.64	119	0.585	0.56	0.107
% Fat	19.98 ± 7.15	23.04 ± 6.84	119	-2.36	0.02	0.437
Lean Mass (kgs)	55.47 ± 11.40	51.34 ± 12.90	119	1.86	0.065	0.34

Path mediation analysis using linear regression is presented in Figure 1. Screen time had no significant direct effect on SDS ($\beta = 0.108$, $SE = 0.377$), but it had an indirect effect on SDS via the mediation of social support ($\beta = 0.422$, $SE = 0.180$). This indicates that social support fully mediated the relationship between screen time and SDS.

Figure 1

Mediating effect of social support in the relationship between screen time and depressive symptoms



Note. Data presented in a, b, c , and $a*b$ are beta (β) scores \pm standard error (SE). p = p -value.

4. DISCUSSION AND CONCLUSION

In the current study, we aimed to explore the relationship between objectively measured screen time and depression in our diverse sample of international college students. Contrary to common belief and our first hypothesis, the data did not show a significant correlation between objectively measured phone use and depression. In other words, higher screen time values in our sample were not associated with significantly higher depressive symptoms. This finding challenges the results of several studies that have suggested a positive association between screen time and depressive symptoms (Allen & Vella, 2015; Bickham et al., 2015; Grøntved et al., 2015; Gunnell et al., 2016; Houghton et al., 2018; X. Liu et al., 2020; Zink et al., 2019, 2020). Moreover, contrary to our second hypothesis, when we examined the relationship further, we found that smartphone use was not significantly different between our depressed and non-depressed groups. Interestingly, the depressed group used social media less than the non-depressed group, putting into question the past research that has suggested the relationship (Tang et al., 2021; Nakshine et al., 2022; Bickham et al., 2015). Opposing our findings previous studies have found a correlation between these variables and have found a difference in smartphone usage between depressed and non-depressed groups, suggesting that increased screentime can lead to mental health issues (Allen & Vella, 2015; Bickham et al., 2015; Grøntved et al., 2015; Gunnell et al., 2016; Houghton et al., 2018; X. Liu et al., 2020; Zink et al., 2019, 2020). It is important to note that all measures of screen time in the mentioned studies were of a self- or parent-report nature. It has been suggested that there may be a threshold effect at around five hours in the association between screen time and depressive symptoms, meaning that when screen time is below five hours no significant correlation is observed, whereas above five hours a positive association appears between the two variables (Rosenthal et al., 2021). Our study did not demonstrate similar results. Most of our participants had screen times above the five-hour threshold, which may be because

our sample is composed of international students who can be spending more time on their phones to connect with their family and friends. This might be why a notable portion of our participants' screen time consisted of the social networking apps like WhatsApp. Contrary to common belief, higher use of social networking apps does not relate to depressive symptoms, as demonstrated by previous findings and the present study's findings (Bradley & Howard, 2023).

We did not find a direct relationship between objectively measured phone use and depressive symptoms. This is in line with previous research using objective measures of phone use (Bradley & Howard, 2023; Sewall et al., 2020, 2021; H. Shaw et al., 2020), which yielded similar results in finding no direct relationship between objectively measured screentime and depressive symptoms. However, prior investigation suggests the relationship is significant when phone use is measured by self-report or perception of problematic phone use. Shaw et al. (2020) combined both methods by exploring the association between mental health with both objective screen time and problematic smartphone use (PSU) scales. They found no relationship between objectively measured phone use and mental health, which is in line with our results. However, they found that PSU scales have a significant relationship with mental health variables (Shaw et al., 2020). It is worth noting that in the previous findings suggesting a relationship between depression and screen time, measures of screen time are of subjective nature (Allen & Vella, 2015; Bickham et al., 2015; Grøntved et al., 2015; Gunnell et al., 2016; Houghton et al., 2018; X. Liu et al., 2020; Zink et al., 2019, 2020). We conclude from our data and previous studies that there is no relationship between objective phone use and depressive symptoms.

We explored the relationship between SDS, screen time, and social support (ISEL-12), and this is where significant correlations were found. SDS was significantly correlated with all components of social support (ISEL-12), i.e., emotional support, informational support, and tangible support. Furthermore, social support was also highly correlated with objectively measured screen time. The significant relationship between objectively measured phone use and social support is aligned with previous research (Hunt et al., 2018; Y. Liu & Yi, 2022; Song & Kim, 2022). This relationship between screen time and social support could be explained by a debilitating cycle between them. On average, our sample of college students used their phones to consume social media, approximately 50% of the total time spent on the handheld device. Possibly, more time spent on social media may lead to them allocating fewer resources to seeking face-to-face social interactions, therefore reducing their social functioning. This can cause less perceived social support and more loneliness, making our sample of students spend more time on social networking platforms (Nowland et al., 2018; Pea et al., 2012).

We also investigated social support as a potential mediator. In the current data, screen time does not directly affect depression, but it plays a role in influencing an individual's perceived social support, which in turn directly influences depression. Therefore, the indirect effect of screen time on depression (via social support) is present in the current data (see Figure 1). Screen time significantly affected social support (path a), which in turn significantly predicted depression (path b). The indirect effect of screen time on depression was significant (path $a*b$) and larger than the direct effect. These findings suggest that social support plays a crucial role in the mechanism through which screen time influences depression. This aligns with the previously mentioned buffering hypothesis. According to the buffering hypothesis, social support could be buffering the effects of stressors. In other words, the lack of social support could make our international students more susceptible to depression in the face of stressors. This lack of social support may lead to students resorting to acute emotional management strategies such as using smartphones (Y. Shi et al., 2023). Therefore, stressed students with higher phone use who feel socially supported may not experience higher depressive symptoms because of the buffering

effect of social support. On the other hand, stressed students who do not feel socially supported may experience depression due to the lack of the mentioned buffering effect. For clarity, this study cannot approve of these interrelations, and future research needs to address them.

Another possible explanation is the style of interaction with social media. A study categorized users as either interactive users—those who share content with others—or passive users, who scroll through content without contributing likes, comments, or posts. The style of use appears to play a role in well-being, with interactive users tending to be more socially connected than passive users (Shaw et al., 2022). It could be that participants of our study with less social support tend to interact with social media passively (regardless of the amount of screen time), and this leads to worsened mental health and vice versa. Therefore, total screen time and/or social media use may not be a primary driver of mental health issues, but rather, how they interact with others on their smartphone or social media influences their mental health. To be clear, this study only points out social support as a mediating mechanism between screen time and depression, and we don't have data to support the buffering hypothesis or style of social media interaction. More research needs to be done to establish this connection.

This study has several limitations that should be considered. The cross-sectional design restricts the ability to establish causality between screen time, social support, and depression, and our sample of international college students may limit the generalizability of the findings to other populations. While we used objective measures of screen time, other key variables, such as social support and depressive symptoms, relied on self-report, which can introduce biases. Additionally, we did not account for potential confounding variables like the context of screen use, nor did we explore cultural differences in technology use and social support. Despite these limitations, the study offers valuable insights into the complex interplay between these factors, implying the need for further research in the field.

In conclusion, the findings of the current research suggest that contrary to popular belief, depressive symptoms are not directly associated with objectively measured screen time. However, social support was found to be associated with both screen time and depression, and it mediated the relationship between these two variables. This implies that screen time may influence depression indirectly by affecting one's perceived social support. Further longitudinal studies are needed to confirm the mediation effect observed in this study and to explore the complex interplay between screen time, social support, and depressive symptoms.

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Conflicto de intereses / Competing interests:

Los autores declaran que el presente proyecto no representó conflicto de intereses de ninguna parte.

Rol de los autores / Authors Roles:

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