PIXEL BIT

Revista de Medios y Educación

PIXEL BIT

PIXEL-BIT

REVISTA DE MEDIOS Y EDUCACIÓN

Nº 72 - ENERO - 2025

https://revistapixelbit.com

Scopus

CLARIVATE ANALYTICS
EMERGING SOURCES CITATION INDEX
INDEXED

2024 CALIDAD REVISTAS CIENTÍFICAS ESPAÑOLAS
FECYT

EDITORIAL UNIVERSIDAD DE SEVILLA

UNIVERSIDAD Đ SEVILLA
Ciencias de la Educación

FACTOR DE IMPACTO (IMPACT FACTOR)

SCOPUS Q1 Education: Posición 236 de 1406 (83% Percentil). CiteScore Tracker 2023: 5,3 - Journal Citation Indicator (JCI). Emerging Sources Citation Index (ESCI). Categoría: Education & Educational Research. Posición 556 de 1506. Cuartil Q2 (Percentil: 65.29) – FECYT (2023): Ciencias de la Educación. Cuartil 1. Posición 12. Puntuación: 39,22- DIALNET MÉTRICAS (Factor impacto 2022: 1.78. Q1 Educación. Posición 13 de 235) - REDIB Calificación Glogal: 29,102 (71/1.119) Percentil del Factor de Impacto Normalizado: 95,455- ERIH PLUS - Clasificación CIRC: B- Categoría ANEP: B - CARHUS (+2018): B - MIAR (ICDS 2020): 9,9 - Google Scholar (global): h5: 34; Mediana: 52 - Journal Scholar Metric Q2 Educación. Actualización 2016 Posición: 405a de 1,115- Criterios ANECA: 20 de 21 - INDEX COPERNICUS Puntuación ICV 2019: 95.10

Píxel-Bit, Revista de Medios y Educación está indexada entre otras bases en: SCOPUS, Fecyt, DOAJ, Iresie, ISOC (CSIC/CINDOC), DICE, MIAR, IN-RECS, RESH, Ulrich's Periodicals, Catálogo Latindex, Biné-EDUSOL, Dialnet, Redinet, OEI, DOCE, Scribd, Redalyc, Red Iberoamericana de Revistas de Comunicación y Cultura, Gage Cengage Learning, Centro de Documentación del Observatorio de la Infancia en Andalucía. Además de estar presente en portales especializados, Buscadores Científicos y Catálogos de Bibliotecas de reconocido prestigio, y pendiente de evaluación en otras bases de datos.

EDITA (PUBLISHED BY)

PIXEL-BIT
REVISTA DE MEDIOS Y EDUCACIÓN

Nº 72

Índice

Mediating effect of self-control on self-esteem and Instagram use in adolescents. Relationships with academic performance and technological stress

Efecto mediador del autocontrol sobre la autoestima y el uso de Instagram en adolescentes. Relaciones con el rendimiento académico y el estrés tecnológico

Dr. Francisco José Rubio-Hernández
Universidad Internacional de Valencia. España

Dra. Adoración Díaz-López
Universidad Internacional de la Rioja. España

Dra. Vanessa Caba-Machado
Universidad Internacional de la Rioja. España

Dña. Elena González-Calahorra
Universidad de Nebrija. España

ABSTRACT

The interrelationships between use of Instagram, self-control, self-esteem, technological stress and academic performance in adolescents were explored. A quantitative, cross-sectional, non-experimental design with a correlational-exploratory approach was used to survey 158 secondary school students. Correlational analysis and structural equation techniques were applied. The main results showed: a) more frequent use of social networks was associated with worse academic performance and lower self-esteem; b) technological stress and use of Instagram specifically were linked to lower self-esteem; c) the intention to dedicate more time to studying was related to expecting better grades; d) reducing time online was associated with better perceived academic performance. It was also found that self-control is a mediating factor in the relationship between use of Instagram and self-esteem. In conclusion, although use of Instagram and having good self-control do not in themselves seem to be directly related to self-esteem, the ability to control use of Instagram does seem to have an influence, something that should be taken into account in future socio-educational interventions.

RESUMEN

Se exploraron las interrelaciones entre el uso de Instagram, el autocontrol, la autoestima, el estrés tecnológico y el rendimiento académico en adolescentes. Mediante un diseño cuantitativo transversal, con enfoque correlacional-explicativo, se encuestó a 158 estudiantes de educación secundaria. Se aplicaron técnicas de análisis correlacional y ecuaciones estructurales. Los principales resultados revelaron lo siguiente: a) una mayor frecuencia de uso de redes sociales se asoció con un peor desempeño académico y una menor autoestima; b) el estrés tecnológico y el uso específico de Instagram se vincularon con una disminución de la autoestima; c) la intención de dedicar más tiempo al estudio se relacionó con expectativas de mejores calificaciones; d) reducir el tiempo en línea se asoció con la percepción de un mejor rendimiento académico. Además, se observó que el autocontrol actuaba como mediador en la relación entre el uso de Instagram y la autoestima. En conclusión, aunque usar Instagram y tener un buen autocontrol no parecen estar directamente relacionados con la autoestima por sí solos, la capacidad de control al usar dicha red social sí que parece influir, lo cual debe tenerse en cuenta en futuras intervenciones de carácter socioeducativo.

1. Introduction

Technological advances have brought with them new opportunities for communication and participation in society. They have transformed how people appreciate and value life, the family, love and sexuality, and education, significantly affecting adolescents' perspectives on these aspects (Garzón et al., 2019).

Social networks have become an important communication channel. Nonetheless, despite these advantages, these digital contexts entail risks and dangers, especially for younger people who use internet-connected electronic devices continuously and on a massive scale (Trillo & Rubio, 2024).

At the present time, adolescence is regarded as a crucial stage marked by changes of different types, and social networks, in particular Instagram, have become very important in this population group (Camacho-Vidal et al., 2023). Therefore, it is necessary to understand the relationship between use of Instagram, self-esteem and self-control in adolescents owing to its psycho-socioeducational implications. This knowledge could contribute to their psychological well-being, healthy development and academic performance and to socioeducational interventions that promote positive use of these tools in the digital era, especially when it is possible that comparison with other information or with other people, owing to a lack of self-control in use of social networks (and the idealised image projected in them) causes a drop in self-confidence or self-esteem (Alodia & Suryadi, 2021).

Self-esteem refers to a series of negative and positive feelings, thoughts and beliefs about oneself. It also includes intrapersonal perceptions regarding expectations, skills, intelligence and social relations, which express the extent to which subjects feel that they can be successful or are deserving of something. These assessments can be affected by feedback from the subjects themselves on their own actions, as well as by social feedback by means of external commentaries on the individual's performance. Nonetheless, self-esteem can undergo changes throughout life, and so is not immutable, being at the mercy of day-to-day experiences (Sánchez-Villena et al., 2021). It is a variable that can allow the person to set in motion actions that are successful or unsuccessful in their immediate context, and it plays a fundamental role in adolescent's personal development (Usán et al., 2023).

Self-control has been defined as individuals' force of will to regulate their own behaviours when attempting to achieve objectives that are valuable in the long term (instigating factor), as well as to be capable of restraining themselves when facing temptations or immediate gratifications (inhibiting factor). This self-regulation competence, which is developed during the early stages of life, is necessary to regulate emotions, thoughts and behaviours, as well as to inhibit or withdraw socially unacceptable impulses (Oliva et al., 2019). Individuals' efforts to modify their reactions and actions can negatively or positively influence their environment. Therefore, low self-control in adolescence could lead to a constant need to pick up electronic devices that are connected to the internet and use their applications and social networks, presenting less capacity to inhibit this impulse (Álvarez & Moral, 2020).

Instagram is a very popular social network among adolescents, where users share photos videos along with short texts (Camacho-Vidal et al., 2023). Through Instagram, adolescents explore large amounts of visual and textual information, often making comparisons between the information they see and themselves. This social network also allows users to modify or embellish images by using different filters, presenting something that is not entirely real and creating a personal story that they can consider their own world

even when it is a fairytale (Alodia & Suryadi, 2021). Accordingly, many adolescents edit videos and photos before sharing them to make them as near to perfect as possible (Widiastuti et al., 2023).

Consequently, academic literature has identified the existence of a negative association between use of Instagram and self-esteem, which could mean that people with low levels of self-esteem use these means of communication to escape from the emotions and feelings generated by Instagram, or to achieve higher levels of self-esteem (Andreassen et al., 2017). However, Torres-Serrano (2020) did not find proof of these relationships between variables in her research. Additionally, other studies have shown that intensive use of Instagram is associated with social comparisons that can negatively affect individuals' self-esteem (Jiang & Ngien, 2020; Sherlock & Wagstaff, 2019) and provoke stress in young people (García et al., 2014; López-Sáez et al., 2024). For example, exposure to idealised images on Instagram can lead users to make unfavourable comparisons with others, which can in turn lead to reduced self-esteem (Sherlock & Wagstaff, 2019; Lo Destro, 2024; Siddiqa et al. 2024), depression (Kim et al.,2021), distorted body image (Camacho-Vidal et al., 2023) and even eating disorders (García-Puertas, 2020).

Furthermore, Zheng et al. (2022) found that self-control is a protective factor in adolescents' mental health, influencing their levels of self-esteem. On the same line, Suparman (2024) found a positive association between self-esteem and self-control in adolescent subjects, with self-control directly and indirectly affecting their resilience through self-esteem.

Regarding the intersection between self-control and use of Instagram, Hasanah and Halimah (2023) found that self-control had a significant effect on what they called social media disorder with regards to the use of Instagram. Sari and Purwaningtyas (2023) found a moderate association between compulsive use of Instagram and lack of self-control in students. Similarly, Rahmanissa et al. (2023) confirmed the existence of a negative correlation between subjects' self-control and their addiction to Instagram, with the first variable making a contribution of 60% with regards to the second considering the coefficient of determination (R^2).

On a different line, excessive or inappropriate use of social networks in adolescence can result in a distorted perception of reality, encouraging social isolation, mental health problems, such as anxiety and depression, and negatively affecting academic performance owing to procrastination and difficulty concentrating (Díaz-López et al. 2021; Caba-Machado et al., 2023). So, while digital competence makes it possible to take full advantage of the opportunities offered by digital technologies, it is crucial to be aware of the risks associated with their use and adopt safe practices (Rubio et al., 2024).

Therefore, a gap has been identified in the academic literature relating to the analysis of the direct effects of use of Instagram on self-esteem when self-control is involved. Moreover, how frequency of use of social networks in general affects both self-esteem and self-control will be investigated. As far as the researchers are aware, apart from the approach of Oliva et al. (2019), no study has yet tackled this specific aspect. These authors found that subjects with higher social network addiction scores displayed lower self-control levels, suggesting that it is important to promote self-control in adolescents to prevent internet addiction.

Consequently, the following research questions were formulated: How does self-control influence use of Instagram and levels of self-esteem in adolescents? Is there a relationship

between levels of self-esteem, self-control, use of Instagram and perceived academic performance in adolescents?

From these questions, a series of objectives were derived:

1. To analyse the direct effect of use of Instagram on self-esteem
2. To assess the mediating role of self-control in the relationship between use of Instagram and self-esteem.
3. To identify relationships between frequency of use of social networks and levels of self-control, self-esteem and technological stress.
4. To detect relationships between perceived technological stress and levels of self-control, self-esteem and use of Instagram.
5. To explore relationships between perceived academic performance and levels of self-control, self-esteem and use of Instagram.

2. Methodology

2.1. Design

Following the lines of Ato et al. (2013), this study is based on empirical non-experimental research. A quantitative focus with a descriptive, correlational, explanatory strategy was used with a transversal data collection design.

2.2. Sample

A total of 158 students from compulsory secondary education (ESO) participated in the study having voluntarily responded to the data collection instrument. Non-probability snowball sampling was used to recruit the participants.

The sample comprised 57.6% females (n = 91) and 42.4% males (n = 67). With regards to their academic year group, 48.7% (n = 77) of the participants were in year 2 of compulsory secondary education (ESO), 26.6% (n = 42) in year 1, 15.2% (n = 24) in year 4 and 9.5% (n = 15) in year 3.

The majority of the adolescents (84.8%, n = 134) attended public schools, followed by state assisted private schools (8.2%, n = 13) and private schools (7%, n = 11). With regards to the Autonomous Region (AR), 56.9% (n = 90) of the sample came from Madrid, while 8.2% (n = 13) were from Castilla-La Mancha. There were also responses from adolescents from the Basque Country (5.7%, n = 9), Extremadura (5.1%, n = 8), Castilla y León (13.9%, n = 22) and Murcia (10.1%, n = 16).

The subjects had a mean age of 14.02 years, with a standard deviation of 2.403 years, a minimum of 12 years and a maximum of 17 years.

2.3. Instrument

The instrument used for data collection had four dimensions: 1) sociodemographic-educational elements (9 items: sex, age, school year, type of school, locality, perceived academic performance, expectations of improved grades, expectations of devoting more time to study, stress from absence of internet). These elements were assessed through dichotomous, polytomous or open numerical responses; 2) frequency of use of social networks in general (10 items) and Instagram in particular (Rubio et al., 2024b) (5 items) (both aspects were assessed through a 4-point Likert scale, from always to never); 3) self-esteem (Rosenberg et al., 2000) (10 items assessed through a 4-point Likert scale, from strongly agree to strongly disagree); 4) self-control (Del Valle et al., 2019) (11 items assessed through a 5-point Likert scale, from a lot to nothing).

The reliability of the instrument was calculated with Cronbach's alpha (α). A score of α = .85 was obtained for the use of Instagram dimension, α = .72 for self-esteem and α = .75 for self-control. All of the scales had good internal reliability. The reliability of the instrument as a whole gave a figure of α = 0.78, which is considered to be acceptable.

2.4. Data analysis

The Statistical Package for the Social Sciences (SPSS v29) program was used to carry out a descriptive analysis of the variables, using measures of central tendency (means), dispersion (standard deviations), skew and kurtosis to comprehend the characteristics of the data.

Before carrying out the analysis of correlation, the Kolmogorov–Smirnov test (K–S) was used to establish whether the variables fulfilled the assumption of normality. As this assumption was not satisfied, it was decided to use a non-parametric correlation coefficient, in this case that of Spearman.

Next, the AMOS (V29) program was used. A measurement model was used to test the factor structure of the Instagram variable as a latent variable. This latent variable comprised four measurement components. The relationships between use of Instagram, self-control and self-esteem were then modelled to test their relationships with one another. The fit of the model was assessed using the most reliable fit indexes (Hu & Bentler, 1999), namely, the relative chi-squared statistic (χ^2), root mean square error of approximation (RMSEA), comparative fit index (CFI), Tucker–Lewis index (TLI) and the standardised root mean squared residual (SRMR). The models are considered to fit the data adequately with values of $\chi^2/df \leq 2$ to 3, $\leq .08$ for RMSEA (Browne & Cudeck, 1993), $\geq .90$ for CFI and TLI with values greater than .95 preferred (Bentler & Bonett, 1980), and values of $\leq .08$ preferred for SRMR.

A critical step in structural equations modelling (SEM) is to establish an appropriate sample size, although there is no consensus in the literature on what a sufficient sample size would be (Wang & Wang, 2012). However, the minimum sample size for carrying out SEM is usually held to be $N = 100$–150 (Anderson & Gerbing, 1988; Ding et al., 1995; Tabachnick & Fidell, 2007; Tinsley & Tinsley, 1987).

2.5. Procedure

Students from various regions of Spain were contacted. They were sent the questionnaire through instant messaging apps and were asked to spread it around their fellow students. Prior to its administration, the instrument was digitised using Google Forms. Data collection took place between 8 May and 6 August 2023. The research complied strictly with Spain's Organic Law 3/2018, of 5 December, regarding the Protection of Personal Data and Guaranteeing Digital Rights (2018) and the ethical principles in the social sciences published by the European Commission (2018).

3. Analysis and results

3.1. Correlations between the variables of analysis

Statistically significant negative correlations were found between perceived general academic performance and frequency of use of social networks ($p \leq .05$), between frequency of use of social networks and self-esteem ($p \leq .01$), between the expectation of improved academic results if spending less time on the internet and perceived general academic performance ($p \leq .01$), between technological stress and self-esteem ($p \leq .05$) and between use of Instagram and self-esteem ($p \leq .01$). The correlations were positive and statistically significant between the expectation of dedicating more time to academic tasks if spending less time on the internet and the expectation of improving academic results if spending less time on the internet ($p \leq .01$); between technological stress and frequency of use of social networks ($p \leq .01$) and the expectation of improving academic results if spending less time on the internet ($p \leq .05$); between self-esteem and perceived general academic performance ($p \leq .01$); as well as between the expectation of achieving better results if spending less time on the internet ($p \leq .05$) and technological stress ($p \leq .01$) (Table 1).

Table 1

Correlation, descriptive statistics and reliability of variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FUSN (1)	1							
PAP (2)	-.191*	1						
EABR (3)	.092	-.229**	1					
EDMTS (4)	-.089	-.111	.665**	1				
TS (5)	.319**	-.121	.165*	.140	1			
SE (6)	-.375**	.310**	-.143	-.013	-.191*	1		
SC (7)	-.078	.023	.022	.083	-.016	.021	1	
IG (8)	.520**	-.148	.159*	.031	.407**	-.290**	-.026	1
Mean	3.28	3.92	2.76	2.70	2.07	28.67	35.59	8.18
SD	1.150	.849	.870	.826	.945	6.054	6.38	3.51
α	-	-	-	-	-	.72	.75	.85
Skew	.193	-.867	-.216	-.290	.410	-.125	-.661	.251
Kurtosis	-.919	1.395	-.645	-.369	-.852	-.423	1.448	-1.067

3.2. Structural equations model

The absolute value of the skew and kurtosis of each variable was within the range of ± 1.96 and below the values for normally distributed data of ±3 and ±10 when using SEM (Brown, 2015).

The model presented in Figure 1 was constructed by testing the relationships between use of Instagram, self-control and self-esteem. Before the analysis, a measurement model was used to test the factor structure of social networks as a latent variable. The factor loadings (≥ .4) (Stevens, 2009) supported a single factor solution. The general model had a good fit ($\chi 2(260)$ = 327.884, RMSEA = .041 (CI 90% .025–.054), CFI = .943, TLI = .935, SRMR = .0697.

The results indicated that use of Instagram is not significantly related through direct effects to self-control (β = -.591, *p* > .05), and it is not significantly related to self-esteem (β = -,591, *p* > .05). Moreover, self-control is also not significantly related to self-esteem (β = 2.590, *p* > .05). Furthermore, when mediating the relationship between use of Instagram and self-esteem, self-control (β = -1.53) was statistically significant, as shown by the bootstrapping (95% confidence intervals [CI]: -.1.361, -1.083, *p* ≤ .05) (see Table 2).

Table 2

Relationship between the model's variables

Relationship	Standardised coefficients	Significance
Instagram use → Self-control	β = -.591	*p* > .05
Instagram use → Self-esteem	β = -.591	*p* > .05
Self-control → Self-esteem	β = 2.590, *p* > .05	*p* > .05
Instagram use → Self-esteem (via Self-control)	β = -1.53	CI: [-1.361, -1.083], *p* ≤ .05

Figure 1

SEM of the Instagram, self-control and self-esteem variables
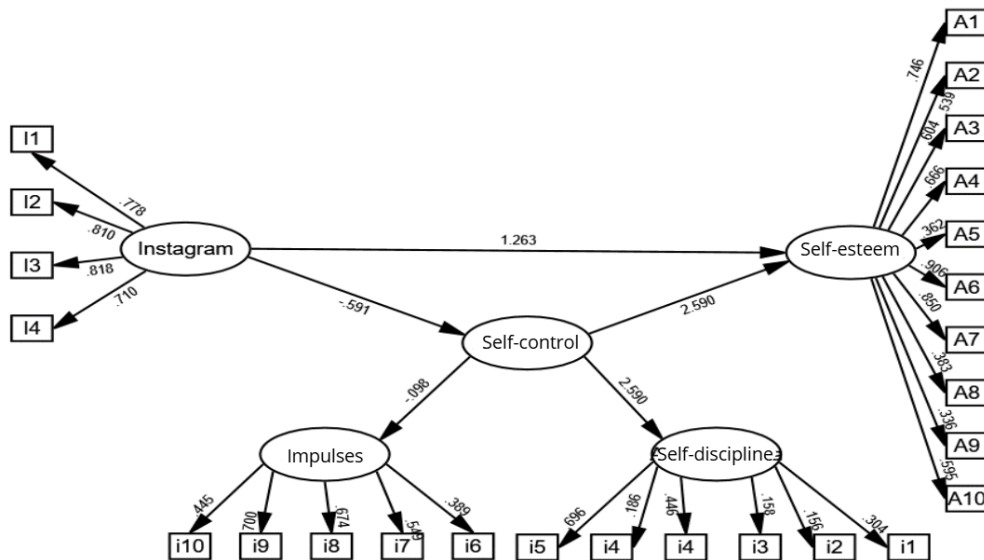
4. Discussion and conclusions

The discussion around the impact of use of Instagram on self-esteem is a matter of growing interest in psychological and educational research. Instagram, as a platform characterised by a focus on the image and self-representation, can affect users' self-perception. Furthermore, poor self-control can lead to problematic use of Instagram, exacerbating social comparisons and their adverse effects on self-esteem (Fard et al., 2023). Therefore, it seems to be important to explore how self-control can mediate the relationship between use of Instagram and self-esteem, considering both the positive and negative aspects of this interaction.

To respond fully to objectives 1 and 2 of this study, which involve analysing the direct effect of use of Instagram on self-esteem when mediated by self-control, the results firstly indicated that use of Instagram did not display a direct significant relationship with self-esteem. This means that the time or intensity with which a person uses this social network do not seem to affect this construct directly. On the same lines, no direct relationship with self-control was found, which could suggest that use of Instagram might not automatically affect people's capacity to control impulses or behaviours. This might be related to the fact that the influence of social networks on self-control could depend on other contextual or individual factors, such as the type of content consumed or the personal characteristics of the users. These results agree with those found by Jiang and Ngien (2020) and contradict those reported by Fagundes et al. (2020) and those of Camacho-Vidal et al. (2023), who did find a significant relationship. Similarly, no direct relationship was observed between self-control and self-esteem. However, when self-control is considered as a mediating variable,

it does play a significant role in the relationship between use of Instagram and self-esteem. In other words, self-control seems to influence how use of Instagram impacts people's assessments of themselves. One possible explanation for this fact might lie in the management of social comparisons. In this sense, Instagram is a platform that fosters social comparisons owing to the visual and curated nature of the posts (Haller, 2020). Users tend to compare their lives with those of others, which can lead to feelings of insufficiency and low self-esteem, and in this situation, individuals with better self-control can be more capable of handling these comparisons in a healthy way (Martínez-Cardama & Gómez-López, 2023). Another explanation might be that exposure to idealised content on Instagram can inspire negative emotions such as envy, sadness or anxiety, and so a high level of self-control could help people regulate their emotions effectively (Haller, 2020). Furthermore, low self-esteem can be exacerbated by interactions on social networks, where external validation is common and self-control is linked to greater resilience and coping skills that enable people to confront challenges to their self-esteem more effectively.

Another key objective of this study was to identify the relationship between frequency of use of social networks, self-esteem, technological stress and self-control (objective 3). As a result, this study highlights how frequency of use of social networks is negatively related to self-esteem. These results are in line with what Garro-Aburto et al. (2024) reported. It also found that the frequency of use of social networks relates positively to technological stress, results that support the conclusions of Díaz-López et al. (2020), who noted that more frequent exposure to screens correlates positively with greater technological stress. One striking finding is that no relationship was found between frequency of use of social networks and self-control. This result is consistent with the work of Álvarez-Menéndez and Moral-Jiménez (2020), which highlights how adolescents who report problematic use of social networks often face deficits in self-control, but this does not imply that frequent use of social networks directly causes lower self-control (Álvarez-Menéndez & Moral-Jiménez, 2020). From this perspective, research also suggests that emotional regulation, which is related to self-control, is not always negatively affected by use of social networks. This supports the idea that the relationship between these variables is complex and possibly indirect (Granados et al., 2020).

To respond fully to objective 4, the relationship between perceived technological stress and levels of self-control, self-esteem and use of Instagram were analysed. In this framework, technological stress relates positively to use of Instagram. These findings are in line with those reported in a review study of stress, which concluded that more frequent social network use is related to higher stress levels (Keles et al., 2020; López-Sáez et al., 2024) They contrast with other outcomes where there was no significant difference in self-reported stress levels of people who use Instagram and people who do not (Brailovskaia & Margraf, 2018). Moreover, technological stress is negatively related to self-esteem, agreeing with the study by Korzynski et al. (2021). However, no relationship was found between technological stress and self-control, which differs from what was observed by Wang et al. (2021), who reported that technostress can indirectly harm young people's self-control.

Finally, for objective 5, the relationships between perceived academic performance and levels of self-control, self-esteem and use of Instagram were analysed. It was found that expecting that spending less time on Instagram would lead to improved academic results was related to frequency of use of Instagram. These results are in line with what was

reported by Díaz-López et al. (2020) on the internet in general and by Muñoz-Franco et al. (2023) on TikTok in particular. Both studies concluded that young people who state that they would spend more time on schoolwork and studying if they spent less time online, display a greater frequency of use of applications and lower grades. In addition, the expectation that spending less time on Instagram would lead to improved academic results is also related to self-esteem. One possible explanation for this could relate to the fact that adolescents' academic performance directly affects their self-esteem and self-concept (Luo et al., 2020).

This study has some limitations. First, the sample size is not representative and the sampling was done through a non-probability criterion with fewer males than females. This is justified by the study being exploratory and the sampling being a first approach that led to faster data collection. In doing so, the criteria of accessibility of the interviewers were taken into account. This reservation can be overcome by expanding the sample to include other schools that provide obligatory secondary education, making it possible to reach conclusions that are more conclusive than the ones already reported based on our data. A second limitation would relate to the scope of the instrument and social desirability bias as self-reports were used in research that addresses topics relating to critical analysis of behavioural traits. With regards to the artefact, it should be noted that no pilot study process was performed as the survey was based on previously validated scales.

It can therefore be concluded that the effect of Instagram use on users' self-esteem is wholly mediated by their levels of self-control. So, while use of Instagram is not in itself directly related to self-esteem, the presence of self-control does mediate this relationship, enabling users to handle social comparisons better and regulate their emotions when faced with the idealised content on the platform. It was also found that greater frequency of use of social networks relates to an increase in technological stress, lower self-esteem and worse perception of academic achievement. Finally, the fact that technological stress negatively affects self-esteem is a notable finding. These findings may have some practical implications and present lines for further research. Accordingly, the conclusions of this research could be taken into account when designing interventions for children and adolescents relating to responsible use of the internet in general and social networks in particular. Similarly, it seems appropriate to replicate this study with other social networks, such as TikTok or Snapchat, to see if similar results are found and be able to trace patterns of behaviour according to the networks used. In the same way, incorporating the risks of using social networks, such as reduced self-esteem, into the training programmes intended for parents would seem to be worthwhile. Finally, socioeducational policies should address this question and start to regulate the use of social networks, considering banning them at certain ages as is already done in other settings such as Australia and Florida.

Author Contributions

F.J.R-H. (Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Writing - original draft, Validation, Writing – revision and editing), A.D.-L (Conceptualisation, Writing – original draft, Validation, Writing – revision and editing), V. C.-M. (Formal analysis, Writing – original draft, Validation, Writing – revision and editing), E.G.-C. (Investigation, Writing – revision and editing).

References

Alodia, A., & Suryadi, D. (2021). *The Relationship Between Social Comparison and Self-Esteem Among Late Adolescent Instagram Users*. International Conference on Economics, Business, Social, and Humanities (ICEBSH). https://doi.org/10.2991/assehr.k.210805.083

Álvarez Menéndez, M., & Moral Jiménez, M. D. L. V. (2020). Phubbing, uso problemático de teléfonos móviles y de redes sociales en adolescentes y déficits en autocontrol. *Health and Addictions/Salud y Drogas*. https://doi.org/10.21134/haaj.v20i1.487

Andreassen, C.S., Pallesen, S. & Griffiths, M.D. (2017). The relationship between addictive use of social media, narcissism, and self-esteem: Findings from a large national survey. *Addictive Behaviors, 64*, 287-293. https://doi.org/10.1016/j.addbeh.2016.03.006

Ato, M., López-García, J. J., & Benavente, A. (2013). Un sistema de clasificación de los diseños de investigación en psicología. *Anales de Psicología/Annals of Psychology, 29*(3), 1038-1059. https://dx.doi.org/10.6018/analesps.29.3.178511

Brailovskaia, J., Margraf, J., Schillack, H., & Köllner, V. (2019). Comparing mental health of Facebook users and Facebook non-users in an inpatient sample in Germany. *Journal of Affective Disorders, 259*, 376–381. https://doi.org/10.1016/j. jad.2019.08.078

Caba-Machado, V., Mcilroy, D., Padilla-Adamuz, F. M., Murphy, R., & Palmer-Conn, S. (2023). The associations of use of social network sites with perceived social support and loneliness. *Current Psychology*, *42*(17), 14414-14427. https://doi.org/10.1007/s12144-021-02673-9

Calvo-González, S., Arcos-Romero, A. I., Rodríguez-Fernández, N., & Posada-Corrales, J. A. (2024). Consumo y usos de Instagram en adolescentes de Asturias (España): ¿para qué aplican filtros en sus fotografías y cómo impactan en sus interacciones sociales?. *Revista Latina De Comunicación Social*, (83), 1–17. https://doi.org/10.4185/rlcs-2025-2326

Camacho-Vidal, P., Díaz-López, A., Sabariego-García, J.A. (2023). Relación Entre el uso de Instagram y la Imagen Corporal de los Adolescentes. *Apuntes de Psicología*, *41*(2), 117-122. https://doi.org/10.55414/ap.v41i2.1537

Díaz-López, A., Maquilón-Sánchez, J. J., & Mirete-Ruiz, A. B. (2020). Uso desadaptativo de las TIC en adolescentes: Perfiles, supervisión y estrés tecnológico. *Comunicar: Revista Científica de Comunicación y Educación*, (64), 29-38. https://doi.org/10.3916/C64-2020-03

Díaz-López, A., Mirete-Ruiz, A. B., & Maquilón-Sánchez, J. (2021). Adolescents' perceptions of their problematic use of ICT: relationship with study time and academic performance. *International*

Journal of Environmental Research and Public Health, *18*(12), 6673. https://doi.org/10.3390/ijerph18126673

European Commission (2018). *Ethics in Social Science and Humanities*. http://bit.ly/3Db11Sc

Fagundes, L. S., Marot, T. A., & Natividade, J. C. (2020). Use of Instagram, social comparison, and personality as predictors of self-esteem. *Psico-USF*, *25*(4), 711-724. https://doi.org/10.1590/1413/82712020250410

García Puertas, D. (2020). Influencia del uso de Instagram sobre la conducta alimentaria y trastornos emocionales. Revisión sistemática. *Revista Española De Comunicación En Salud*, *11*(2), 244-254. https://doi.org/10.20318/recs.2020/5223

García, B. C., de Ayala López, M. L., & Jiménez, A. G. (2014). Los riesgos de los adolescentes en Internet: los menores como actores y víctimas de los peligros de Internet. *Revista latina de comunicación social*, (69), 462-485.

Garro-Aburto, L. L., Salvador, H. H. V., Carrillo-Flores, J. W., & Sánchez, R. M. S. (2024). Impacto del consumo de contenido audiovisual en la autoestima de estudiantes universitarios. *VISUAL REVIEW International Visual Culture Review/Revista Internacional de Cultura Visual*, *16*(5), 177-186. https://doi.org/10.62161/revvisual.v16.5336

Garzón, R., León, K. M., & Trejo Garzón, S. (2019). El impacto del uso de la red social Instagram en la autoestima del estudiante adolescente. *Social Review. International Social Sciences Review / Revista Internacional de Ciencias Sociales, 8*(3), 197–209. https://doi.org/10.37467/gka-revsocial.v8.2324

Granados, B. G., Orts, C. Q., & Peña, L. R. (2020). Regulación emocional y uso problemático de las redes sociales en adolescentes: el papel de la sintomatología depresiva. *Health and addictions: salud y drogas*, *20*(1), 77-86. https://doi.org/10.21134/haaj.v20i1.473

Haller, S. L. (2020). *An Examination of Instagram Use and Body Image in a Sociocultural Model of Disordered Eating*. University of Toronto (Canada).

Hasanah, P. R. A., & Halimah, L. (2023). Pengaruh Loneliness dan Self–Control terhadap Instagram Social Media Disorder pada Emerging Adulthood. Bandung *Conference Series: Psychology Science, 3*(1), 1-11. https://doi.org/10.29313/bcsps.v3i1.5524

Jiang, S., & Ngien, A. (2020). The effects of Instagram use, social comparison, and self-esteem on social anxiety: A survey study in Singapore. *Social Media+ Society*, *6*(2), https://doi.org/10.1177/2056305120912488

Keles, B., McCrae, N., & Grealish, A. (2020). A systematic review: The influence of social media on depression, anxiety and psychological distress in adolescents. *International Journal of Adolescence and Youth, 25*(1), 79–93.

Kim, J., Uddin, Z. A., Lee, Y., Nasri, F., Gill, H., Subramanieapillai, M., ... & McIntyre, R. S. (2021). A systematic review of the validity of screening depression through Facebook, Twitter, Instagram, and Snapchat. *Journal of affective disorders*, *286*, 360-369. https://doi.org/10.1016/j.jad.2020.08.091

Korzynski, P., Rook, C., Florent Treacy, E., & Kets de Vries, M. (2021). The impact of self-esteem, conscientiousness and pseudo-personality on technostress. *Internet Research*, *31*(1), 59-79. https://doi.org/10.1108/INTR-03-2020-0141

Ley Orgánica 3/2018, de 5 de diciembre, de Protección de Datos Personales y garantía de los derechos digitales (2018). Boletín Oficial del Estado (BOE), 294, de 6 de diciembre, 119788-119857. https://www.boe.es/eli/es/lo/2018/12/05/3

López-Sáez, M. Á., Pérez-Torres, V., Pastor, Y., Lobato-Rincón, L. L., Thomas, H., & Angulo-Brunet, A. (2024). Social media uses amongst adolescents: motives, minority stress and eudaimonic well-being. https://doi.org/10.6018/analesps.556871

Luo, J., Yeung, P. S., & Li, H. (2020). The relationship among media multitasking, academic performance and self-esteem in Chinese adolescents: The cross-lagged panel and mediation analyses. *Children and Youth Services Review*, *117*, 105308 https://doi.org/10.1016/j.childyouth.2020.105308

Martínez-Cardama, S., & Gómez-López, E. (2023, March). Impact of Social Media on Self-esteem and Emotions: An Instagram-Based Case Study. In *International Conference on Information* (pp. 109-122). Cham: Springer Nature Switzerland.

Oliva, A., Antolín-Suárez, L., & Rodríguez-Meirinhos, A. (2019). Uncovering the Link between Self-control, Age, and Psychological Maladjustment among Spanish Adolescents and Young Adults. *Psychosocial Intervention, 28*(1), 49–55. https://doi.org/10.5093/pi2019a1

Rahmanissa, A., Agustina, V. T., & Kencana, S. C. (2023). Hubungan Antara Self Control dengan Kecanduan Media Sosial Instagram pada Siswa Kelas X di SMA Keluarga Widuri Jakarta Selatan. *Sultra Educational Journal, 3*(2), 44-48. https://doi.org/10.54297/seduj.v3i2.497

Rubio, F. J., Giménez-Gualdo, A. M., Díaz-López, A., & Machado, V. C. (2024). Risks analysis and internet perception among spanish university students. *European Journal of Educational Research, 13*(4), 1727-1740. https://doi.org/10.12973/eu-jer.13.4.1727

Rubio, F. J., González, E., & Olivo, J. L. (2024b). Adolescentes en la era digital. Desvelando las relaciones entre las redes sociales, el autocontrol, la autoestima y las habilidades sociales. *Ciencia Y Educación, 8*(3), 39–58. https://doi.org/10.22206/cyed.2024.v8i3.3209

Sánchez-Villena, A.R., De la Fuente-Figuerola, V., & Ventura-León, J. (2021). Modelos factoriales de la escala de autoestima de Rosenberg en adolescentes peruanos. *Revista de Psicología y Psicopatología Clínica, 26*(1), 47-55, 2021. https://doi.org/10.5944/rppc.26631

Sari, N. N., & Purwaningtyas, F. D. (2023). Self-control and Instagram social media addiction in students of Wijaya Putra University Surabaya. *Jurnal Gesi, 2*(1), 1-7. https://doi.org/10.38156/gesi.v2i1.144

Sharifi Fard, S. A., Griffiths, M. D., Mohseni, F., Nabi Zadeh, S., & Ali Babaei, G. (2024). Basic Psychological Needs and Psychological Well-being: The Mediating Role of Instagram Addiction. *Journal of Technology in Behavioral Science*, *9*(2), 171-179. https://doi.org/10.1007/s41347-023-00313-6

Sherlock, M., & Wagstaff, D. L. (2019). Exploring the relationship between frequency of Instagram use, exposure to idealized images, and psychological well-being in women. *Psychology of Popular Media Culture*, *8*(4), 482. https://doi.org/10.1037/ppm0000182

Siddiqa, A., Seçim, G., & Mukhtar, H. (2024). Influence of Instagram Exposure on People Happiness and Self Esteem. *Pakistan Journal of Humanities and Social Sciences*, *12*(1), 748-755. https://doi.org/10.52131/pjhss.2024.v12i1.1941

Suparman, L. H. (2024). The effect of social support, self-esteem, and self-control, on adolescent resilience at child welfare institution. *Journal of Child, Family, and Consumer Studies, 3*(1), 1–11. https://doi.org/10.29244/jcfcs.3.1.1-11

Torres-Serrano, M. (2020). Fear of missing out (FoMO) y el uso de Instagram: análisis de las relaciones entre narcisismo y autoestima. *Aloma, 38*(1), 31-38. http://dx.doi.org/10.51698/aloma.2020.38.1.31-38

Trillo, M. P., & Rubio, F. J. (2024). Riesgos socioeducativos por uso inadecuado de las tecnologías de la relación, la información y la comunicación. En E. Vázquez Cano y J.M. Sáez López, *Tecnologías emergentes y activas en educación* (pp. 31-55). Dykinson.

Usán, P., Salavera, C., Quílez, A., Lozano, R., & Latorre, C. (2023). Empathy, self-esteem and satisfaction with life in adolescent, *Children and Youth Services Review, 144*, 106755. https://doi.org/10.1016/j.childyouth.2022.106755

Wang, X., Li, Z., Ouyang, Z., & Xu, Y. (2021). The Achilles heel of technology: how does technostress affect university students' wellbeing and technology-enhanced learning. *International Journal of Environmental Research and Public Health*, *18*(23), 12322. https://doi.org/10.3390/ijerph182312322

Whelan, E., Golden, W., & Tarafdar, M. (2022). How technostress and self-control of social networking sites affect academic achievement and wellbeing. *Internet Research*, *32*(7), 280-306. https://doi.org/10.1108/INTR-06-2021-0394

Widiastuti, N. N. E., Wulanyani, N. M. S., & Shaheen, S. (2023). The Role of Instagram Usage Intensity on Body Dissatisfaction in Adolescent Girls in Denpasar with Self-Esteem as a Moderating Variable. *Sinergi International Journal of Psychology, 1*(1), 1–16. https://doi.org/10.61194/psychology.v1i1.47

Zheng, M., Peng, K., Yan, W., Lin, Y., Ni, Z., & Zhang, P. (2022). Self-control protects Tibetan adolescent orphans from mental problems: A mediating role of self-esteem. *Journal of Adolescence, 94*(2), 253–263. https://doi.org/10.1002/jad.12025