

THE USE OF SOCIAL MEDIA: THE MEDIATING EFFECT OF THE NUMBER OF FOLLOWERS ON THE RELATIONSHIP BETWEEN LIFE SATISFACTION AND USERS' SELF-ESTEEM.

Lídia Serra¹, Mariana Campaniço²

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Abstract

The utilization of social media has become increasingly prevalent across various generations, serving as a platform for individuals to exhibit personal content that may influence other users. However, there is limited understanding of the impact that the number of followers on social media platforms can have on the relationship between life satisfaction and users' self-esteem. **Objective:** The primary aim of this research is to examine the mediating effect of the number of followers on the relationship between life satisfaction and self-esteem among Instagram users. **Method:** This study included an original sample of 298 participants, as well as two simulated samples of 2980 and 29800 subjects, all of whom were users of the social media platform Instagram and aged between 18 and 40 years. The research utilized three measurement instruments: a sociodemographic questionnaire, the Satisfaction with Life Scale, and the Rosenberg Self-Esteem Scale. **Results:** The findings revealed that the number of followers serves as a significant mediator in the relationship between life satisfaction and self-esteem across all applied models. Additionally, a positive and significant relationship was observed among all these variables in the three study samples. **Conclusion:** The number of followers on social media platforms has been shown to impact the self-esteem of users and contribute to a better understanding of the effect of life satisfaction on participants' self-esteem levels. However, caution is needed regarding the use and content shared, as exposure on social media can have positive and negative impacts on users and influence them. Therefore, the results of this study may contribute to the development of awareness programs about the use of social media, as well as increasing the digital literacy of its users.

Keywords: Self-esteem, number of followers, life satisfaction, social media, technology, usage time

1 Universidade Autónoma de Lisboa. Portugal. E-mail: lmserra@autonoma.pt. ORCIDID: <http://orcid.org/0000-0003-2612-3335>.

2 Instituto Superior de Estudos Interculturais e Transdisciplinares – IP de Almada. Portugal. E-mail: marianacampanico@gmail.com.

Introduction

Nowadays, the utilization of information and communication technologies (ICTs) constitutes an intrinsic facet of contemporary society, encompassing personal, professional, and recreational domains. There has been a consistent rise in the adoption of internet services. According to Eurostat (2022), in 2021, approximately 80% of individuals aged 16 to 74 within the European Union engaged with the internet on a daily basis, with notably higher usage rates observed among younger demographics (16-29 years). These statistics underscore the escalating significance of the internet, particularly social media platforms, in individuals' lives. It has been noted that the dissemination of personal life on social media is becoming increasingly effortless and routine (Dias & Nascimento, 2013), often motivated by users' desires to compare themselves with others and emulate their daily habits and behaviors.

Most users believe they are influenced by the posts shared on social media platforms such as Instagram (Almeida et al., 2018), while simultaneously aiming to expand their network connections within these platforms. Social media platforms are recognized as virtual connections among groups of individuals united by professional objectives, associations, friendships, among others, through which they can share and disseminate information (Silvério, 2012). Often, such sharing occurs without consideration for aspects related to their privacy, security (Borges, 2016), or how they present their bodies, which has become a concerning issue (Barry et al., 2017).

Among online tools (e.g., social networks, video conferencing platforms, email services, image and video editors, etc.) social media platforms are especially popular among young people, with consumption rates four times higher compared to older age groups (Eurostat, 2022). These platforms enable virtual communication with other users, facilitating the sharing of written information, photographs, music, or videos (Mehdizadeh, 2010; Monteiro et al., 2020). Social media users aim for their content to be appreciated, gain online followers, and expand their reach to more people (Chou & Edge, 2012). The number of likes received on posts may depend on the content of the photographs used and can influence user's behavior (Drake et al., 2017).

However, influencers strive to cultivate a greater sense of trust with their followers, aiming for their content to be increasingly appreciated, practiced, or disseminated (Borges, 2016). Instagram serves as a prime example of a social media platform where users engage in self-promotion through photographic material or videos, typically accentuating their positive aspects, while anticipating appreciation and validation from their audience (Monteiro et al., 2020; Moon et al., 2016).

Individuals with low self-esteem tend to exhibit greater feelings of hopelessness (Çakar, 2014) and are inclined to conceal their limitations or flaws from others (Kuster et al., 2012), including within the realm of social media. Self-esteem is defined as an individual's capacity for self-value and positive self-regard (Batista et al., 2015). This subjective assessment of one's own worth can be reinforced or influenced by the consumption of content on Instagram.

In the study by Rodríguez-Suárez et al. (2022) with 321 users, it was found that when exposed to photographs of people with perfect bodies and ideal beauty, participants showed lower levels of self-esteem and anxiety compared to the control group. This need for human comparison has been advocated for a long time. For instance, Festinger's (1954) Theory of Social Comparison Processes posited that individuals tend to compare themselves with others in various personal characteristics. The search for similar or different attributes in others is crucial to the process of

self-evaluation. Such situations can heighten concerns that users have about their own appearance when comparing themselves with other social media users (Fardouly et al., 2015).

The presence of low self-esteem leads users to engage in more self-promotion, increased usage (Mehdizadeh, 2010), or a higher frequency of posting photographs on social media platforms, driven by a growing desire for recognition (March & McBean, 2018). The study by Pop et al. (2022) identified a positive association between Snapchat usage and users' self-esteem, but a negative relationship between users' weight and TikTok usage. Additionally, Barry et al. (2017) did not find a significant correlation between self-esteem and the posting of selfies on social media platforms.

The fact that a user receives likes influences their brain activity and behavior (Sherman et al., 2018), highlighting brain areas associated with reward (Sherman et al., 2016). Being valued and recognized leaves a person satisfied. Life satisfaction is considered a positive evaluation that individuals make of their lives and overall well-being, taking into account personal, relational, professional, and other aspects (Diener et al., 1985). The Compensation Model underlying life satisfaction posits that when individuals are dissatisfied in a particular area of their lives, they tend to seek satisfaction and compensation in other domains or contexts (Nielsen et al., 2011). This can help explain why many individuals seek refuge in social media when they are feeling unwell (Vidal et al., 2020). On the other hand, Zhan et al. (2006) identified that social media usage is associated with higher life satisfaction.

The study by Reina et al. (2010) revealed a noteworthy and positive correlation between life satisfaction and self-esteem among young individuals, suggesting that contentment with one's life is linked to self-acceptance and a favorable assessment of life events (Batista et al., 2015). However, using social media can be negatively associated with individuals' life satisfaction (Akin & Akin, 2015) and, consequently, their self-esteem. As demonstrated in the study by Bakioğlu et al. (2022), the presence of fear of missing out online, which includes the need to belong, the need for popularity, anxiety, and addiction, has a negative impact on the life satisfaction of social media users. This suggests that the effects of social media usage vary and have different impacts on the lives of its users (Bakioğlu et al., 2022; Carrotte et al., 2017; March & McBean, 2018).

Being satisfied with life also entails feeling accepted by peers and feeling liked by others through the number and type of interpersonal relationships they establish (Harter, 1999), which increasingly occurs within online contexts, influencing individuals' self-esteem and well-being (Valkenburg et al., 2006). Although various studies present different impacts and relationships among life satisfaction, self-esteem, and the number of followers on social media platforms, the relationship between these three variables in Instagram users is not yet fully understood. This leads us to establish hypotheses that life satisfaction and number of followers are positively correlated with self-esteem.

Furthermore, scientific studies have revealed that Instagram is being used by users to share health-related issues (e.g., miscarriage) and seek emotional support through information sharing (Mercier et al., 2020), identify markers of depression (Reece et al., 2017), raise awareness about injury prevention through seatbelt use (Drake et al., 2017), and highlight the importance of an active lifestyle (Carrotte et al., 2017), but the mediating effect of the number of followers in the relationship between life satisfaction and self-esteem of Instagram users is not yet known.

Valkenburg et al. (2006) identified that when social media users receive positive feedback on their online profiles, their well-being and self-esteem improve. If we consider that this positive feedback may be reinforced by the number of followers on the social media platform, we hypothesize that the number of followers may help mediate the effect of life satisfaction on the self-esteem of Instagram users.

The main objective of this study is to verify whether the number of followers acts as a mediator in the relationship between life satisfaction and self-esteem. Similarly, it is important to explore the presence of significant relationships among life satisfaction, the number of followers with self-esteem, both within the original sample and in simulated samples of Instagram users.

Method

Participants

In this study, 298 Portuguese subjects of both genders participated. As inclusion criteria for the sample, only participants of Portuguese nationality, aged 18 years or older, and daily users of the Instagram social network were considered.

All participants responded to the study protocol (100%), with 55.7% being female and 44.3% being male. The participants had a mean age of 25.61 years (± 5.62). The majority of participants reported being in the 22 to 25 age range (36.2%), followed by the age range of 18-21 years (22.8%), and the age range of 26-29 years (20.8%). Regarding the daily number of hours of Instagram usage, 54.4% used less than 3 hours per day, 33.2% used between 3 and 7 hours, 8.1% used between 7 and 12 hours, and only 4.4% used Instagram for more than 12 hours per day. Lastly, concerning the number of followers, 8.7% had fewer than 100 followers, 27.2% had between 101 and 500 followers, 21.1% had between 501 and 1000 followers, 32.9% had between 1001 and 5000 followers, and 10.1% had more than 5000 followers on the Instagram social network.

Measures

For this study, a sociodemographic questionnaire was employed to collect information from participants [e.g., age, gender, number of hours spent using Instagram, number of followers (the mediating variable)], along with the Satisfaction with Life Scale and the Rosenberg Self-Esteem Scale.

The Satisfaction with Life Scale (original version by Diener et al., 1985; Portuguese version by Simões, 1992) was utilized to assess individuals' level of life satisfaction and was employed as the independent variable in the current study. This scale is administered using a five-point Likert scale (ranging from 1 to 5 points), with scores ranging from a minimum of 5 to a maximum of 25 points. A higher score indicates greater life satisfaction. The scale demonstrates good psychometric properties, with a Cronbach's alpha of .77. For the present study, a Cronbach's alpha of .85 was obtained.

The Rosenberg Self-Esteem Scale (original version by Rosenberg, 1965; Portuguese version by Santos & Maia, 2003) was employed to assess participants' self-esteem, considered the dependent

variable in this study. This instrument consists of 10 items that are rated on a 4-point Likert scale. The scale is scored by summing the items, yielding values ranging from 0 to 30 points. A higher score on this scale indicates a higher level of self-esteem. The scale demonstrates strong psychometric properties, with a Cronbach's alpha value of .86 in the Portuguese version, and in the current study, the Cronbach's alpha was .88.

Procedure

The study protocol was administered online to users of the Instagram social network. The data collection period took place during the academic year 2021 and 2022. Participants voluntarily and without any personal interest took part in the study after being informed of its objectives and providing signed informed consent. The informed consent was formalized through an online form that participants responded to before starting the protocol response. With this prior authorization, the researchers ensured that the participant read, understood, and agreed to all information regarding the research procedure, including data confidentiality. The disclosure and distribution of the study protocol access link were made only on the Instagram social network, and recording the participant's name was not considered in order to guarantee anonymity. For data administration and collection, the Google Forms platform was used, with an estimated response time of approximately 10 minutes. This study received approval from the scientific council of ISEIT – IP de Almada, and ethical and deontological responsibilities inherent in the research were ensured.

Data analysis

For this study, the R programming language and the RStudio integrated development environment were used. Data analysis included descriptive statistics of the participants' characteristics in the original sample (298 subjects). Mean and standard deviation were used for numerical variables, and frequencies and percentages were used for nominal variables. The Pearson correlation coefficient was employed to study correlations between variables, following verification of their statistical assumptions. Simulated samples were considered in the study to obtain a better understanding of the behavior of variables in various analysis scenarios, as well as to help identify the statistical power of the study (Vasishth & Broe, 2011). Data were estimated through simulation from the original sample, generating 10 and 100 times more data points, 2980 and 29800, respectively. The MedGraph-PC program was employed for the mediation analysis, following the guidelines of Baron and Kenny (1986). To estimate whether the indirect effect is significant, the Sobel test was applied. Finally, the analysis of variance (ANOVA) test was used to verify if there are significant differences between the applied mediation models. The significance level used was a p-value < .05.

Results

Correlations between self-esteem, the number of followers, and life satisfaction

In the following table (Table 1), the correlation values found between self-esteem, the number of followers, and life satisfaction, are presented for the original sample and the two simulated samples.

TABLE 1.

Correlations between self-esteem, the number of followers and life satisfaction.

	Self-esteem	
	<i>r</i>	<i>p</i>
298 subjects (original sample)		
Number of followers	.311	≈ .001*
Life satisfaction	.509	≈ .001*
2980 subjects (simulated sample)		
Number of followers	.337	≈ .001*
Life satisfaction	.545	≈ .001*
29800 subjects (simulated sample)		
Number of followers	.314	≈ .001*
Life satisfaction	.546	≈ .001*

Note: *Significant correlation for *p-value* = .01; *r* = Pearson's correlation; *p* = *p-value*

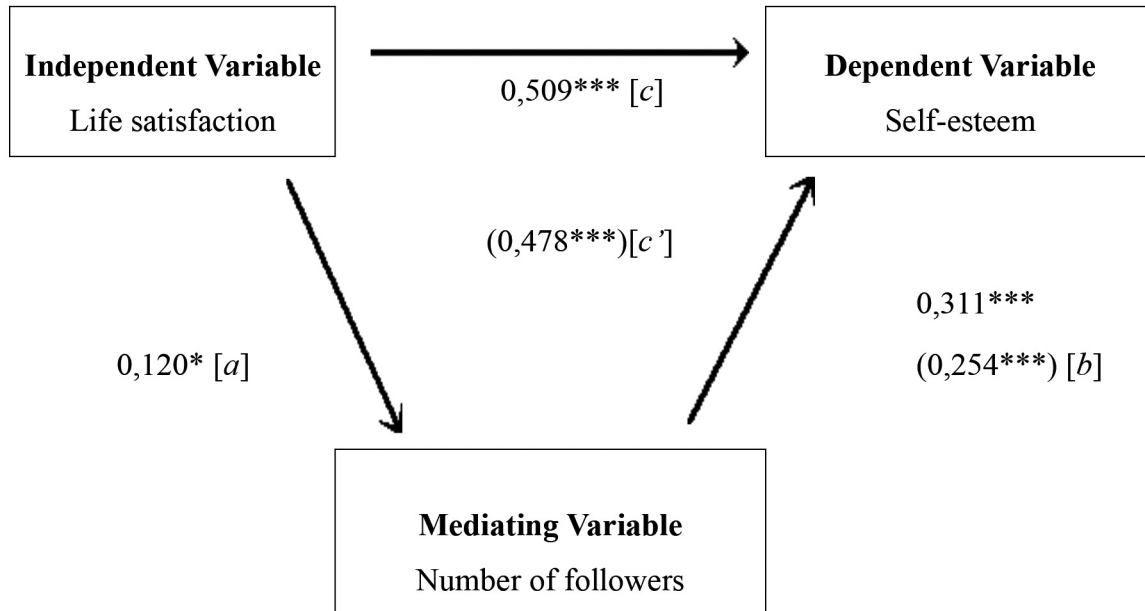
Mediation of the number of followers in the relationship between life satisfaction and self-esteem

Mediation Model 1

Through the mediation model in the original sample, it was observed how the effect of the predictor (life satisfaction) influenced the outcome variable (self-esteem) through a mediating variable (number of followers) which served as an intervening variable to explain this effect. The level of the effect of the predictor variable passing through the mediator variable caused an indirect effect on the outcome variable of $c' = .478$. Additionally, it was found that the effect of life satisfaction on the number of followers was $a = .120$ and the effect of the number of followers on self-esteem was $b = .254$. The following figure (Figure 1) illustrates the significant mediating effect of the number of followers on the relationship between life satisfaction and self-esteem of users in the original sample. Through the Sobel test, it was found to be a significant model ($p \approx .000$).

FIGURE 1.

Mediating effect of the number of followers on the relationship between life satisfaction and self-esteem in a sample of 298 subjects.



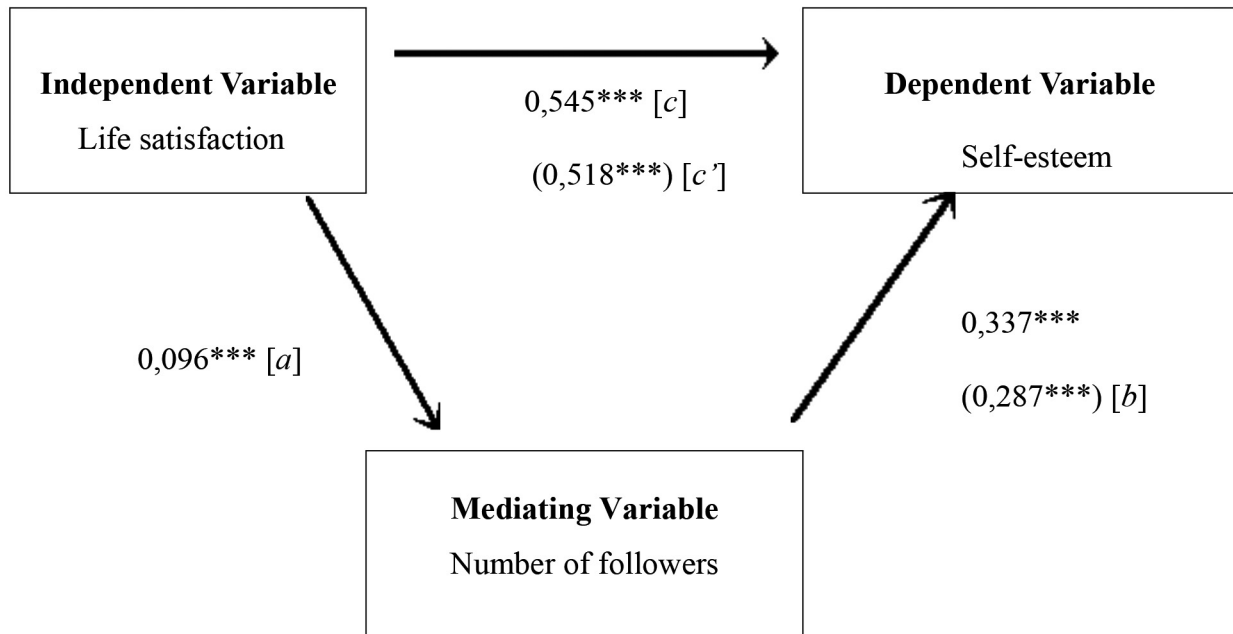
Note: [a] = is the effect of the explanatory variable on the mediator; [b] = is the effect of the mediator on the response variable; [c] = total direct effect of life satisfaction on self-esteem without including the mediator variable. [c'] = indirect effect of life satisfaction on self-esteem considering the effect of the mediator variable. * $p < .05$; ** $p < .01$; *** $p < .001$.

Mediation Model 2

In this model, it can be observed that the level of the effect of the variable life satisfaction through the mediator variable caused an indirect effect on the outcome variable ($c' = .518$). The effect of life satisfaction on the number of followers was $a = .096$ and the effect of the number of followers on self-esteem was $b = .287$. Figure 2 represents the mediation effect achieved in this sample (2980 subjects). The Sobel test confirmed it to be a significant model ($p \approx .000$).

FIGURE 2.

Mediating effect of the number of followers on the relationship between life satisfaction and self-esteem in a sample of 2980 subjects.



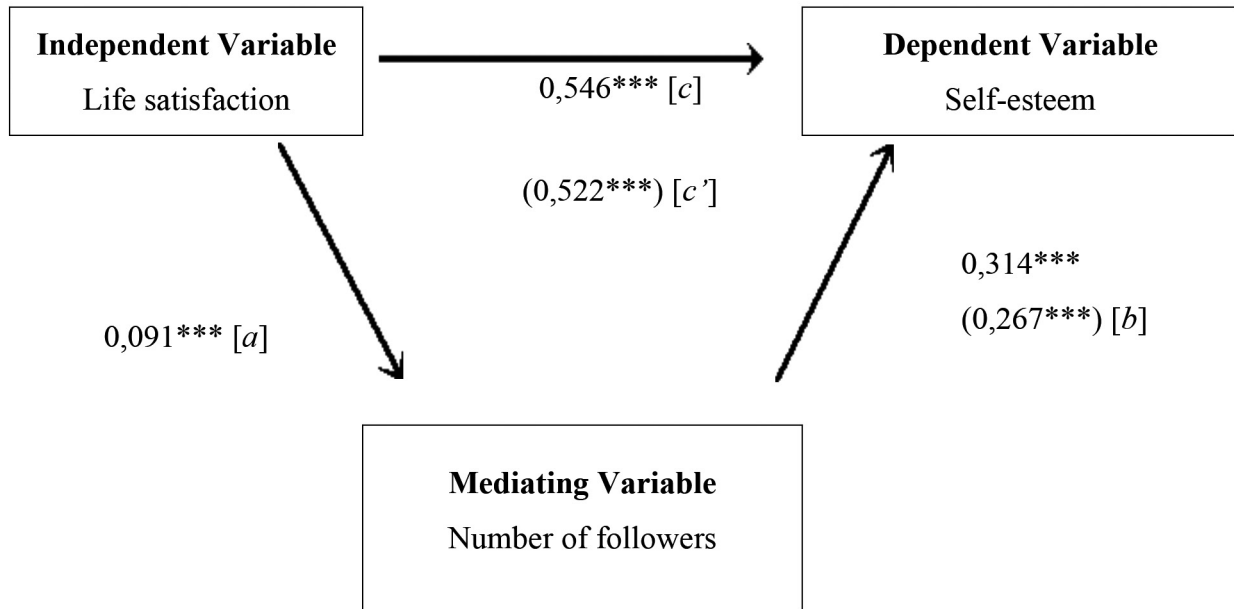
Note: [a] = is the effect of the explanatory variable on the mediator; [b] = is the effect of the mediator on the response variable; [c] = total direct effect of life satisfaction on self-esteem without including the mediator variable. [c'] = indirect effect of life satisfaction on self-esteem considering the effect of the mediator variable. * $p < .05$; ** $p < .01$; *** $p < .001$.

Mediation Model 3

In this last model, it can be observed that the level of the effect of the predictor variable passing through the mediator variable caused an indirect effect on the outcome variable of $c' = .522$. The effect of life satisfaction on number of followers was $a = .091$ and the effect of number of followers on self-esteem was $b = .267$. Figure 3 represents the mediation effect of the model. This model also proved to be significant, as indicated by the Sobel test ($p \approx .000$).

FIGURE 3.

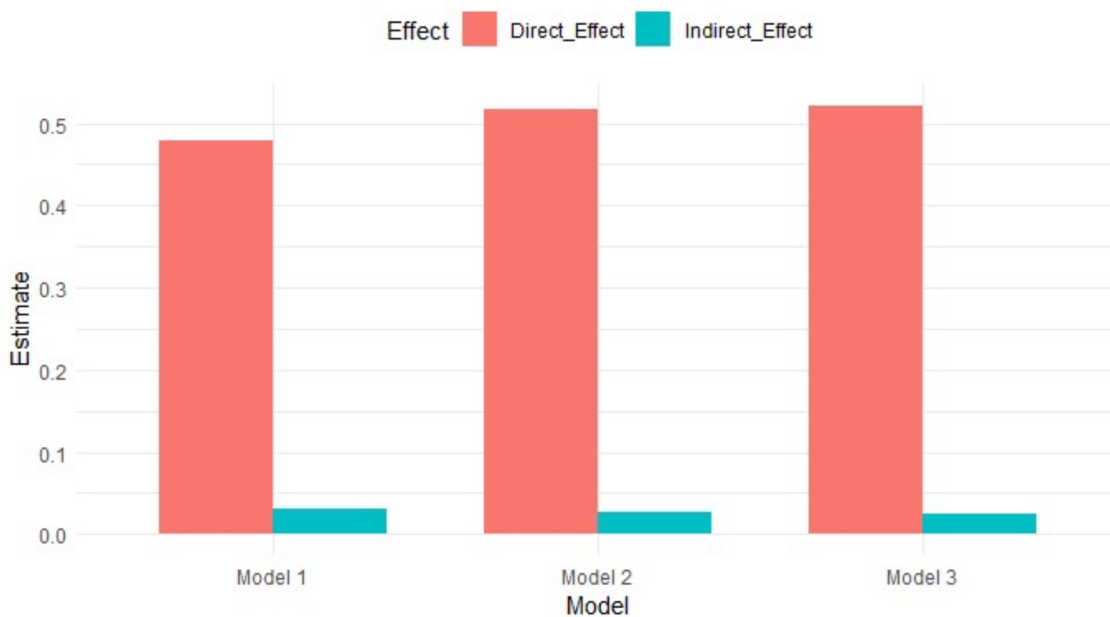
Mediating effect of the number of followers on the relationship between life satisfaction and self-esteem in a sample of 29800 subjects.



Note: [a] = is the effect of the explanatory variable on the mediator; [b] = is the effect of the mediator on the response variable; [c] = total direct effect of life satisfaction on self-esteem without including the mediator variable. [c'] = indirect effect of life satisfaction on self-esteem considering the effect of the mediator variable. * $p < .05$; ** $p < .01$; *** $p < .001$. The following bar chart (Figure 4) illustrates the distribution of effects achieved in each mediation model. However, the results obtained through ANOVA showed that there are no significant differences between the three mediation models ($F = .483$; $p = .618$).

FIGURE 4.

Comparison of the three mediation models



Discussion

The results of the present study initially revealed a positive and significant correlation between self-esteem, life satisfaction, and the number of followers across all samples, thereby confirming our study hypothesis.

In the studies by Romdhane et al. (2023) and Szczesniak et al. (2022), a positive and significant association between life satisfaction and self-esteem was observed. This type of association was also found in the study by Bozoglan et al. (2013). The use of social media entails social benefits for its users, which are related to their life satisfaction (Zhan, 2016) and, consequently, to their self-esteem.

The presence of life satisfaction can contribute to enhancing individuals' self-worth, self-confidence, and self-respect, thereby increasing their ability to confront various challenges (Batista et al., 2015), including those encountered online. The study by Uram & Skalski (2022), comprising 309 participants with ages ranging from 18 to 70 years, also found a positive and significant relationship between life satisfaction and self-esteem, indicating that life satisfaction had a significant impact on self-esteem, as well as on other variables, such as loneliness, which is also present in social media users (Kusumota et al., 2022). On the other hand, the study conducted by Batista et al. (2015) did not find a statistically significant relationship between life satisfaction and self-esteem. However, it is worth noting that dissatisfaction, particularly dissatisfaction with one's body, and low self-esteem may coexist when individuals perceive a considerable discrepancy between their actual self and their ideal self (Yu & Yung, 2018).

Despite several studies showing that life satisfaction has a positive relationship with self-esteem (Bozoglan et al., 2013; Romdhane et al., 2023; Szczesniak et al., 2022), when attempting to understand interaction effects between self-esteem and participants' sociodemographic characteristics (gender *versus* self-esteem and age *versus* self-esteem) regarding their life satisfaction, these effects disappear. This may be justified by the fact that levels of life satisfaction and self-esteem vary from men to women and across different ages (Moksnes & Espnes, 2013). Moreover, even though social media users may occasionally experience some form of social overload due to various online social commitments, it does not necessarily imply that their life satisfaction (Zhan, 2016) or self-esteem are affected.

Regarding the number of followers, although our study revealed a positive relationship with self-esteem, Yu & Yung's study (2018) uncovered those variables such as appearance evaluation or body anxiety - characteristics that concern most social media users seeking followers - have a negative relationship with their self-esteem. It is known that individuals with narcissistic traits tend to spend more time and share more content on Instagram. However, there seems to be no relationship between these characteristics and the number of online followers (Moon et al., 2016). There also appears to be a significant negative relationship between users' self-promotion on social media and their self-esteem (Mehdizadeh, 2010). Lower self-esteem and self-control among social media users are associated with a higher risk of social media addiction (Huaytalla et al., 2016), which may also result from the pursuit and strong desire to gain more online followers.

Given the results obtained in the mediation models, we confirmed our hypothesis regarding a significant mediation of the number of followers in the relationship between life satisfaction and self-esteem. All mediation models revealed a significant mediating effect of the number

of followers on the relationship between life satisfaction and self-esteem, with no significant differences between them. This indicates that the models demonstrate robustness in explaining the mediating effect of the number of followers on the social media platform Instagram. The study by Obada & Dabija (2022) also aimed to verify the mediating effect of social media use in a large sample composed of 932 subjects. This model also showed a significant mediation effect when introducing social media use into the relationship between users' perceived control, concentration, time distortion, and trust in online information. Indeed, in modern society, the use of social media characterizes interactions and symbolic relationships that influence the type of information consumed and how users think (Dias & Nascimento, 2013). Communication established through social media is not only about the content shared but also about the various ways people influence each other (Bateson & Ruesch, 1965). On the other hand, the study by Kim et al. (2023) only managed to show a partial mediation effect of social media, in a sample of 120 subjects, when introduced into the relationship between lifestyle and healthy aging. Personal characteristics of social media users, such as their self-critical perfectionism, may also attenuate the relationship between life satisfaction and self-esteem (Romdhane et al., 2023).

This study has several limitations. Firstly, it did not take into account the type of content shared or the types of profiles sought after on the Instagram social network, as it is known that the type of content influences the exposure, recognition, and self-valuation of social network users (March & McBean, 2018; Mehdizadeh, 2010), with consequences for their self-esteem. Additionally, the study did not consider the types of posts used by individuals of different age groups, as distinct ages present different interests on social networks (Dias & Nascimento, 2013). Lastly, being a cross-sectional study, it did not allow for an understanding of how the variables assessed in this investigation impact self-esteem over time. In this regard, longitudinal studies would be important to comprehend the self-esteem of Instagram users and other social media platforms. Understanding the reasons behind users' virtual follower-seeking behavior and analyzing the differences among populations from different countries are crucial aspects to explore further. This research sheds light on how the subjective evaluation of life satisfaction and having social media followers explain the self-esteem of Instagram users. These findings should be considered by social media managers and mental health professionals to prevent negative effects and increase awareness about social media usage, as well as digital literacy.

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