

# Body Image Concerns as a Mediator between Instagram Use and Self-Esteem in Female Adolescents

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## ABSTRACT

**Objective:** This study aimed to investigate whether body image concerns mediate the relationship between Instagram use and self-esteem among female adolescents in Hungary.

**Methods and Materials:** A descriptive correlational research design was employed with a sample of 400 female adolescents aged 14–18 years, selected based on Krejcie and Morgan's sample size table. Participants completed three standardized instruments: the Instagram Addiction Scale, the Body Image Concern Inventory, and the Rosenberg Self-Esteem Scale. Data were analyzed using SPSS-27 for descriptive statistics and Pearson correlations, and AMOS-21 for structural equation modeling (SEM). Model fit was assessed using  $\chi^2$ ,  $\chi^2/df$ , GFI, AGFI, CFI, TLI, and RMSEA indices.

**Findings:** Pearson correlation analysis revealed a significant positive relationship between Instagram use and body image concerns ( $r = .52$ ,  $p < .001$ ), a strong negative relationship between body image concerns and self-esteem ( $r = -.58$ ,  $p < .001$ ), and a moderate negative correlation between Instagram use and self-esteem ( $r = -.41$ ,  $p < .001$ ). SEM results demonstrated a good model fit ( $\chi^2 = 118.34$ ,  $df = 58$ ,  $\chi^2/df = 2.04$ , CFI = 0.96, TLI = 0.95, RMSEA = 0.051). Path analysis indicated that Instagram use significantly predicted body image concerns ( $\beta = .52$ ,  $p < .001$ ) and that body image concerns negatively predicted self-esteem ( $\beta = -.49$ ,  $p < .001$ ). The direct path from Instagram use to self-esteem was significant ( $\beta = -.19$ ,  $p = .001$ ), while the indirect path via body image concerns ( $\beta = -.25$ ,  $p < .001$ ) was stronger, confirming partial mediation.

**Conclusion:** Findings highlight that Instagram use exerts both direct and indirect negative effects on adolescent self-esteem, with body image concerns functioning as the primary mediating mechanism. These results underscore the importance of addressing body image perceptions in interventions aimed at mitigating the harmful psychological consequences of social media engagement among adolescent girls.

**Keywords:** Instagram use; body image concerns; self-esteem; adolescents; social media; mediation; structural equation modeling

## 1. Introduction

In recent years, the proliferation of social media platforms has profoundly altered the way young people interact, communicate, and perceive themselves. Among these platforms, Instagram stands out as one of the most visually oriented and widely used, particularly among female adolescents. Its emphasis on image sharing, digital aesthetics, and instant social comparison has raised significant scholarly concerns about its potential influence on users' body image and self-esteem (Sherlock & Wagstaff, 2019). Adolescence is a critical developmental stage marked by heightened sensitivity to social feedback and body-related perceptions, which makes adolescent girls particularly vulnerable to the psychological effects of social media exposure (Sattarpanahi et al., 2024). As such, understanding the interplay between Instagram use, body image concerns, and self-esteem is essential for developing targeted interventions that promote healthier online engagement.

Several studies have highlighted that frequent engagement with Instagram is associated with increased body dissatisfaction and diminished self-esteem among young women (Vall-Roqué et al., 2020). This is largely due to the platform's emphasis on idealized beauty standards and appearance-driven content, which can foster upward social comparison (Almadelta & Mardianto, 2025). For female adolescents, who are navigating identity formation and social belonging, these comparisons may lead to intensified body image concerns and negative self-perceptions (Fadhillah & Indrijati, 2022). Indeed, the link between body image and self-esteem has been consistently established, with poor body satisfaction emerging as one of the strongest predictors of reduced self-worth among adolescent girls (Novarima & Munawaroh, 2023).

The role of Instagram in shaping these dynamics is complex and multidimensional. On the one hand, it provides opportunities for self-expression, creativity, and social connectedness (Mahmood, 2025). On the other hand, its algorithm-driven exposure to highly curated and idealized images has been shown to reinforce body image dissatisfaction (Flores-Mata & Castellano-Tejedor, 2024). Research in European and Asian contexts demonstrates that Instagram use intensity correlates strongly with body dissatisfaction and, indirectly, with diminished self-esteem (Kim & Kim, 2023; Widiastuti et al., 2023). This suggests that the platform's psychological impact extends beyond

mere usage frequency and encompasses how adolescents engage with and interpret visual content.

Empirical evidence underscores that self-esteem is not only influenced by Instagram use but also moderates its impact on body image concerns. For example, individuals with higher levels of self-esteem appear to be less negatively affected by exposure to idealized images on social media (Price et al., 2024). Conversely, those with lower self-esteem are more susceptible to appearance-based social comparison and internalization of unrealistic beauty ideals (Çolak et al., 2023). This vulnerability may manifest in heightened preoccupation with body image, dissatisfaction with one's physical appearance, and ultimately a reduction in overall self-worth (Ruiz et al., 2022).

Research has also begun to unpack the mechanisms underlying these associations. One key pathway is the role of social comparison. Instagram, by its very nature, encourages users to evaluate themselves relative to others, particularly peers and influencers (Nayenggita & Adishesa, 2021). These comparisons are often upward in direction, meaning that adolescents compare themselves with seemingly more attractive or successful individuals, thereby amplifying negative self-perceptions (Alfonso-Fuertes et al., 2023). Findings from both cross-sectional and longitudinal research demonstrate that body dissatisfaction mediates the relationship between Instagram exposure and reduced self-esteem, confirming the critical role of body image concerns in this process (Amor, 2024; Portugal & Siquara, 2022).

Qualitative investigations have provided further insights into how young women internalize Instagram's beauty norms. For instance, interviews with adolescent users reveal that the constant exposure to curated images leads to a heightened awareness of perceived bodily flaws and pressures to conform to prevailing beauty ideals (Sattarpanahi et al., 2024). This aligns with quantitative findings showing that Instagram's visual culture, including selfie-posting and the use of filters, is associated with increased body dissatisfaction and decreased self-esteem (Destro, 2024; Kim, 2020). Moreover, selfie-related behaviors have been linked to both positive and negative self-image outcomes, depending on whether the behavior is active (e.g., editing and posting selfies) or passive (e.g., viewing others' selfies), with passive behaviors more strongly associated with adverse outcomes (Bodroža et al., 2022).

The cultural context also plays an important role in shaping the relationship between Instagram use and body image. Studies conducted in Spain and Portugal, for

example, show that time spent on Instagram is strongly correlated with body dissatisfaction and low self-esteem, suggesting that these patterns are not limited to any one cultural group (Alfonso-Fuertes et al., 2022; Portugal & Siquara, 2022). Similarly, research in Tunisia highlights the correlation between unhealthy patterns of Instagram use and lower self-esteem in young adults (Amor, 2024). Evidence from Asian populations confirms that the influence of Instagram on self-perception is particularly pronounced among female adolescents, who are more likely than their male counterparts to engage in appearance-focused social comparison (Jannah et al., 2023; Kato & Virilia, 2024). This points to a global phenomenon in which Instagram reinforces gendered body image concerns across diverse sociocultural contexts.

Emerging studies have also investigated potential moderating and mediating variables that might buffer or exacerbate the effects of Instagram use. For instance, self-compassion and narcissism have been found to mediate the relationship between social media use and self-esteem, suggesting that personality traits and self-related cognitions play a protective or risk-enhancing role (Mosanya et al., 2024). Likewise, family satisfaction has been identified as a crucial factor influencing whether Instagram use leads to problematic outcomes, with higher family satisfaction linked to greater resilience against negative self-perceptions (Przepiórka et al., 2025). These findings underscore the importance of contextual and individual differences in understanding the psychological impact of Instagram use.

The COVID-19 pandemic further magnified the role of social media in shaping adolescent self-perceptions. During lockdowns, adolescents reported increased reliance on Instagram for social interaction, which, while alleviating loneliness, simultaneously heightened body dissatisfaction and lowered self-esteem due to intensified exposure to idealized online images (Vall-Roqué et al., 2020). These findings echo earlier concerns that Instagram use, particularly when excessive, can act as both a coping mechanism and a source of psychological distress (Sherlock & Wagstaff, 2019). In this sense, Instagram operates as a double-edged sword, providing social connectedness while also perpetuating appearance-based anxieties.

Importantly, not all studies present a uniformly negative picture of Instagram use. Certain research points to its potential for fostering self-expression, identity exploration, and even body positivity when users actively engage with diverse content that challenges traditional beauty ideals (Bekman & Al, 2023). For instance, some adolescents report

that engaging with body positivity movements on Instagram enhances their self-esteem and helps them resist mainstream beauty pressures (Limniou et al., 2021). This suggests that the impact of Instagram on self-esteem and body image is highly dependent on the type of content consumed and the interpretative frameworks adopted by users. Nonetheless, the overwhelming evidence indicates that for adolescent girls, Instagram use often triggers self-critical evaluations and body-related concerns, which in turn undermine self-esteem (Chansiri & Wongphothiphan, 2021).

Several theoretical perspectives help explain these dynamics. Social comparison theory posits that individuals evaluate themselves relative to others, and in the context of Instagram, this process is intensified by the prevalence of idealized images (Nayenggita & Adishesa, 2021). Objectification theory further suggests that women are socialized to internalize an observer's perspective of their bodies, leading to self-objectification and increased vulnerability to body dissatisfaction (Shameli & Davodi, 2020). Integrating these theories, researchers argue that Instagram acts as both a catalyst and a reinforcing mechanism for body image concerns, which serve as a critical mediator between social media exposure and self-esteem outcomes (Çolak et al., 2023).

This growing body of literature provides the foundation for the present study, which seeks to investigate the mediating role of body image concerns in the relationship between Instagram use and self-esteem among female adolescents. Previous findings suggest that Instagram use intensity is positively correlated with body dissatisfaction (Widiastuti et al., 2023), and body dissatisfaction in turn is negatively associated with self-esteem (Novarima & Munawaroh, 2023). However, there remains a need for more comprehensive models that explicitly test body image concerns as a mediating variable within this relationship (Kim & Kim, 2023). By employing structural equation modeling (SEM), the present study aims to contribute to the literature by offering empirical evidence from a Hungarian adolescent population, thereby expanding the cross-cultural scope of this research domain.

## 2. Methods and Materials

### 2.1. Study Design and Participants

This study employed a descriptive correlational design to examine the mediating role of body image concerns in the relationship between Instagram use and self-esteem among female adolescents. The target population included

adolescent females enrolled in secondary schools in Hungary. Using Krejcie and Morgan's (1970) sample size determination table, a sample of 400 participants was selected through a stratified random sampling method to ensure representation across different age ranges and school types. Participants were between 14 and 18 years of age and completed a self-administered questionnaire consisting of standardized instruments measuring Instagram use, body image concerns, and self-esteem. Participation was voluntary, and informed consent was obtained from both the students and their guardians.

## 2.2. Measures

The Rosenberg Self-Esteem Scale (RSES), developed by Morris Rosenberg in 1965, is one of the most widely used instruments for assessing global self-esteem in adolescents and adults. The scale consists of 10 items rated on a 4-point Likert scale ranging from 1 ("strongly disagree") to 4 ("strongly agree"), with five items positively worded and five items negatively worded. Higher total scores indicate higher levels of self-esteem. The RSES has consistently demonstrated strong psychometric properties, with high internal consistency (Cronbach's alpha values typically above .80) and test-retest reliability, as well as robust construct validity confirmed in numerous studies across cultures and age groups.

The Body Image Concern Inventory (BICI), developed by Littleton, Axsom, and Pury in 2005, is a standardized measure designed to assess dysmorphic appearance concerns and body image-related distress. The inventory contains 19 items rated on a 5-point Likert scale ranging from 1 ("never") to 5 ("always"), covering two subscales: dysmorphic appearance concern and symptom interference. Higher scores reflect greater body image concerns and related impairment. The BICI has demonstrated high internal consistency (Cronbach's alpha values above .90), good test-retest reliability, and convergent validity with measures of body dissatisfaction and psychological distress, making it a reliable tool for adolescent populations in body image research.

The Instagram Addiction Scale (IAS), developed by Kircaburun and Griffiths in 2018, is a widely used instrument to measure problematic Instagram use among

adolescents and young adults. The scale includes 15 items rated on a 5-point Likert scale from 1 ("very rarely") to 5 ("very often"), distributed across six subscales: salience, mood modification, tolerance, withdrawal, conflict, and relapse. Higher scores indicate more problematic or addictive Instagram use. The IAS has been validated in multiple cultural contexts, showing strong internal consistency (Cronbach's alpha values above .85) and good construct validity, confirming its suitability for examining the impact of Instagram use in adolescent populations.

## 2.3. Data Analysis

Data analysis was performed using IBM SPSS version 27 and AMOS version 21. Initially, descriptive statistics such as means, standard deviations, frequencies, and percentages were calculated to summarize participant characteristics and study variables. Pearson correlation coefficients were used to assess the bivariate relationships between self-esteem, body image concerns, and Instagram use. To test the hypothesized mediating role of body image concerns, a Structural Equation Modeling (SEM) approach was applied using AMOS-21. Model fit was evaluated through indices including the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA), and the Chi-square to degrees of freedom ratio ( $\chi^2/df$ ). Statistical significance was set at  $p < .05$ .

## 3. Findings and Results

The demographic profile of the participants indicated diversity within the sample. Of the 400 adolescents, 162 (40.5%) were aged 14–15 years, 118 (29.5%) were aged 16 years, and 120 (30.0%) were aged 17–18 years. With regard to place of residence, 238 participants (59.5%) lived in urban areas while 162 participants (40.5%) were from rural regions. In terms of parental education, 104 mothers (26.0%) and 96 fathers (24.0%) had completed secondary education, while 176 mothers (44.0%) and 164 fathers (41.0%) had attained a bachelor's degree, and 120 mothers (30.0%) and 140 fathers (35.0%) reported postgraduate qualifications. These demographic distributions confirm that the sample was heterogeneous and broadly representative of Hungarian female adolescents.

**Table 1***Descriptive Statistics for Study Variables (N = 400)*

Variable	M	SD	Min	Max
Instagram Use	47.38	8.62	22.00	69.00
Body Image Concerns	56.27	10.41	28.00	83.00
Self-Esteem	24.96	5.18	12.00	37.00

The descriptive results in Table 1 show that participants reported moderately high levels of Instagram use ( $M = 47.38$ ,  $SD = 8.62$ ) and body image concerns ( $M = 56.27$ ,  $SD = 10.41$ ). The average self-esteem score was relatively low ( $M = 24.96$ ,  $SD = 5.18$ ) given the potential scale range. These values suggest a tendency among female adolescents to report active Instagram engagement alongside noticeable concerns about body image and relatively diminished self-esteem.

Prior to conducting correlation and SEM analyses, statistical assumptions were examined and confirmed. Normality was assessed using skewness and kurtosis

indices, with all values falling within the acceptable range of  $-1.25$  to  $+1.20$ , indicating approximate normal distribution of the data. Linearity was confirmed by inspection of scatterplots, which showed evenly distributed points along the regression line. Homoscedasticity was evaluated using Levene's test, with non-significant results ( $p = .241$ ), suggesting equal variances across groups. Multicollinearity was checked through tolerance values greater than 0.79 and variance inflation factor (VIF) scores below 2.1, demonstrating no significant collinearity concerns. These results confirmed that the dataset satisfied the assumptions required for Pearson correlation and SEM analyses.

**Table 2***Pearson Correlations Among Study Variables (N = 400)*

Variable	1	2	3
1. Instagram Use	—		
2. Body Image Concerns	.52*** ( $p < .001$ )	—	
3. Self-Esteem	-.41*** ( $p < .001$ )	-.58*** ( $p < .001$ )	—

As displayed in Table 2, Instagram use was significantly and positively correlated with body image concerns ( $r = .52$ ,  $p < .001$ ), indicating that adolescents with higher levels of Instagram engagement also experienced greater body dissatisfaction. Body image concerns were strongly and

negatively correlated with self-esteem ( $r = -.58$ ,  $p < .001$ ). Instagram use also showed a significant negative association with self-esteem ( $r = -.41$ ,  $p < .001$ ). Collectively, these correlations support the hypothesized associations among the three study variables.

**Table 3***Goodness-of-Fit Indices for the Structural Model*

Fit Index	Value	Criterion for Acceptable Fit
$\chi^2$	118.34	Non-significant preferred
df	58	—
$\chi^2/df$	2.04	$< 3.00$
GFI	0.94	$> 0.90$
AGFI	0.91	$> 0.90$
CFI	0.96	$> 0.95$
TLI	0.95	$> 0.95$
RMSEA	0.051	$< 0.06$

The SEM results presented in Table 3 indicated a strong model fit. The  $\chi^2$  statistic was significant ( $\chi^2 = 118.34$ ,  $df = 58$ ,  $p < .001$ ), which is common in larger samples, but the relative  $\chi^2/df$  ratio of 2.04 fell within acceptable thresholds.

Fit indices including CFI (.96), TLI (.95), GFI (.94), and AGFI (.91) all exceeded recommended cutoffs, while RMSEA (.051) indicated close fit. Together, these results



confirm that the hypothesized model adequately explained the observed data.

**Table 4**

*Direct, Indirect, and Total Effects in the Structural Model*

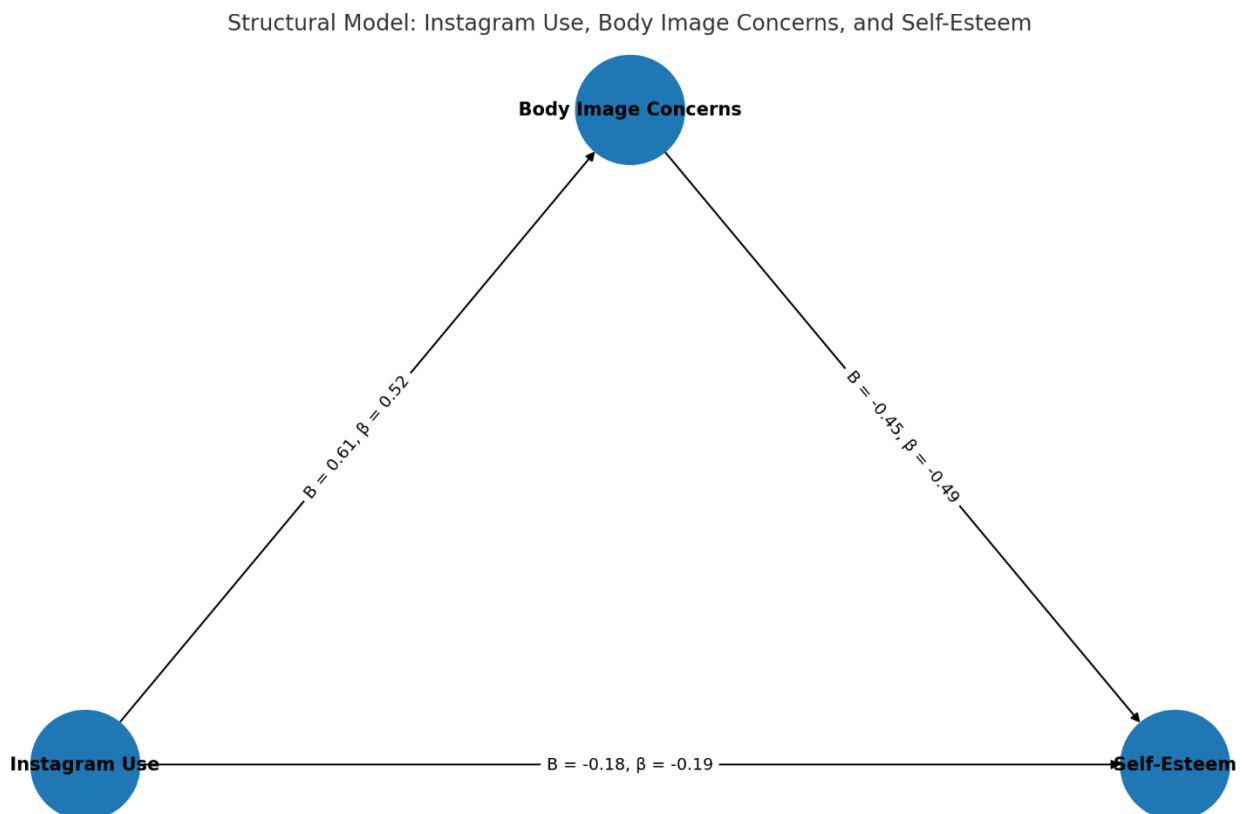
Path	b	SE	$\beta$	p
Instagram Use $\rightarrow$ Body Image Concerns	0.61	0.07	.52	< .001
Body Image Concerns $\rightarrow$ Self-Esteem	-0.45	0.06	-.49	< .001
Instagram Use $\rightarrow$ Self-Esteem (direct)	-0.18	0.05	-.19	.001
Instagram Use $\rightarrow$ Self-Esteem (indirect via Body Image Concerns)	-0.27	0.04	-.25	< .001
Instagram Use $\rightarrow$ Self-Esteem (total)	-0.45	0.06	-.44	< .001

The path analysis in Table 4 showed that Instagram use significantly predicted body image concerns ( $b = 0.61$ ,  $\beta = .52$ ,  $p < .001$ ). In turn, body image concerns significantly and negatively predicted self-esteem ( $b = -0.45$ ,  $\beta = -.49$ ,  $p < .001$ ). The direct path from Instagram use to self-esteem was also negative and significant ( $b = -0.18$ ,  $\beta = -.19$ ,  $p = .001$ ). Importantly, the indirect effect of Instagram use on self-

esteem through body image concerns ( $b = -0.27$ ,  $\beta = -.25$ ,  $p < .001$ ) was stronger than the direct effect, confirming partial mediation. The total effect ( $b = -0.45$ ,  $\beta = -.44$ ,  $p < .001$ ) indicates that Instagram use substantially reduces adolescent self-esteem, with body image concerns serving as the primary explanatory mechanism.

**Figure 1**

*Structural Model of The Study*



#### 4. Discussion and Conclusion

The present study examined the mediating role of body image concerns in the relationship between Instagram use and self-esteem among female adolescents in Hungary. The findings revealed three primary outcomes. First, there was a significant positive correlation between Instagram use intensity and body image concerns, indicating that higher levels of engagement with Instagram are associated with greater dissatisfaction with physical appearance. Second, body image concerns were found to be significantly and negatively associated with self-esteem, suggesting that adolescents who experience heightened preoccupation with body dissatisfaction also tend to report lower self-esteem. Finally, the results of the structural equation modeling (SEM) confirmed the hypothesized mediating effect of body image concerns: Instagram use indirectly predicted lower self-esteem through its influence on body image. This mediating pathway highlights body image concerns as the central mechanism linking Instagram usage to diminished self-worth in female adolescents.

These results align with an extensive body of literature that demonstrates the pervasive influence of Instagram on adolescent psychological well-being. Prior studies have consistently identified that time spent on Instagram is positively related to body dissatisfaction and negatively related to self-esteem among young women (Alfonso-Fuertes et al., 2023; Ruiz et al., 2022). Similarly, research in diverse cultural contexts, including Spain, Portugal, and Indonesia, has shown that Instagram usage intensity exacerbates concerns about body image, often by promoting upward social comparison (Almadelta & Mardianto, 2025; Portugal & Siquara, 2022; Widiastuti et al., 2023). The current findings extend this line of research by confirming that body image concerns mediate this relationship in an adolescent Hungarian population, suggesting that this psychological mechanism is robust across cultural settings.

The positive association between Instagram use and body image concerns observed in this study can be explained by the platform's unique characteristics. Instagram is heavily visual and highly curated, emphasizing idealized portrayals of beauty and lifestyle. Adolescents, who are at a stage of heightened sensitivity to peer evaluation, are particularly prone to internalizing these images and perceiving discrepancies between their actual and ideal selves (Sattarpanahi et al., 2024). Such upward comparisons foster dissatisfaction with body appearance and greater self-criticism (Chansiri & Wongphothipphan, 2021). Previous

studies have similarly documented that adolescent girls who frequently engage with Instagram filters and edited images report increased concerns about body flaws and heightened self-consciousness (Destro, 2024; Kim, 2020). Our findings resonate with these observations, indicating that the intensity of exposure to Instagram's visual culture is directly tied to heightened body image anxieties.

The second major finding of this study, the negative association between body image concerns and self-esteem, reinforces the long-established theoretical link between physical appearance evaluations and global self-worth. Adolescents who are dissatisfied with their body image often internalize feelings of inadequacy and reduced value, which erodes their overall self-esteem (Novarima & Munawaroh, 2023). This relationship has been supported by previous cross-sectional and longitudinal research across multiple settings, where negative body image consistently emerged as one of the strongest predictors of diminished self-esteem (Çolak et al., 2023; Fadhillah & Indrijati, 2022). Notably, the present study corroborates these findings in a Hungarian adolescent sample, suggesting that body image concerns act as a universal risk factor for self-esteem deficits in female youth.

The mediating effect of body image concerns observed here confirms the critical role of body-related perceptions in explaining the psychological consequences of Instagram use. Prior research has demonstrated that while Instagram usage may not directly predict reduced self-esteem, it contributes to negative self-perceptions through mechanisms such as social comparison and objectification (Mahmood & Malik, 2022; Nayenggita & Adishesha, 2021). For example, studies among female adolescents in Asia have shown that Instagram engagement predicts lower self-esteem when body image dissatisfaction is taken into account (Jannah et al., 2023; Kato & Virlia, 2024). Similarly, findings from European contexts suggest that the adverse impact of Instagram on self-worth is mediated by appearance-related concerns, confirming the critical role of body image in the broader psychosocial impact of social media (Amor, 2024; Flores-Mata & Castellano-Tejedor, 2024). Our results extend these findings by offering empirical confirmation of the mediating pathway in a Hungarian context, strengthening the evidence base for body image concerns as a universal mediator.

Another important dimension highlighted by prior research is the role of self-esteem as both an outcome and a protective factor. Studies have shown that individuals with higher baseline self-esteem are less likely to internalize

unrealistic beauty ideals and are more resilient to the negative consequences of social media use (Price et al., 2024). Conversely, those with lower self-esteem are more susceptible to appearance-based comparisons, making them vulnerable to body dissatisfaction and further erosion of self-worth (Bekman & Al, 2023). These bidirectional dynamics underscore the importance of considering self-esteem not only as an outcome but also as a moderating variable in future research. Although our study focused on self-esteem as a dependent variable, the findings reinforce the notion that interventions aimed at strengthening self-esteem could help buffer against the harmful effects of Instagram engagement.

The results also resonate with qualitative studies that have explored adolescents' subjective experiences with Instagram. For example, interview-based research has highlighted that adolescent girls frequently report heightened self-consciousness and anxiety about their appearance when using Instagram, often driven by exposure to idealized and filtered images (Sattarpanahi et al., 2024). This qualitative evidence complements the quantitative findings of the current study by illustrating the lived experiences underlying the observed statistical associations. Moreover, selfie-related behaviors and frequent use of image-editing filters have been identified as predictors of both increased body dissatisfaction and lower self-esteem (Bodroža et al., 2022; Destro, 2024). These findings suggest that Instagram is not merely a neutral platform for social connection but rather a context in which visual self-presentation practices contribute to deeper psychological vulnerabilities.

Interestingly, not all studies paint a wholly negative picture of Instagram use. Some evidence indicates that engagement with body positivity content on the platform can foster resilience and enhance self-acceptance (Limniou et al., 2021). Similarly, Instagram may serve as a space for self-expression and social connectedness that can counteract feelings of isolation (Mahmood, 2025). However, the overwhelming evidence suggests that for adolescent girls, the risks associated with body image concerns outweigh these potential benefits. The findings of the present study corroborate this perspective by showing that even when Instagram offers opportunities for social interaction, its visual emphasis continues to exacerbate concerns about body image and undermine self-esteem (Alfonso-Fuertes et al., 2022).

Additional moderating and mediating factors identified in prior studies provide further insight into the mechanisms at play. For instance, research shows that self-compassion and

narcissism mediate the impact of social media on self-esteem and body image (Mosanya et al., 2024), while family satisfaction serves as a protective factor that reduces the likelihood of problematic Instagram use and its negative outcomes (Przepiórka et al., 2025). Moreover, self-esteem itself has been shown to moderate the relationship between Instagram exposure and body dissatisfaction, with higher self-esteem mitigating negative impacts (Gori, Topino, & Griffiths, 2021; Gori, Topino, Pucci, et al., 2021). These findings suggest that future interventions may benefit from targeting these protective factors to reduce the harmful effects of Instagram on adolescent well-being.

The findings of this study also align with the broader theoretical frameworks that have been applied to social media research. Social comparison theory provides a compelling explanation for why adolescents experience heightened body image concerns when using Instagram, as they are continuously exposed to idealized images against which they evaluate themselves (Nayenggita & Adishesa, 2021). Objectification theory further explains how such exposure fosters self-objectification, leading adolescent girls to internalize an external observer's perspective of their bodies, which increases body dissatisfaction and reduces self-esteem (Shameli & Davodi, 2020). Together, these frameworks help contextualize the current study's findings, showing that Instagram both facilitates and reinforces the processes that link social media use to poor self-perception and diminished well-being.

Overall, the present findings contribute to the growing consensus that Instagram use has complex but largely detrimental implications for adolescent female self-esteem, with body image concerns acting as a pivotal mediator. By demonstrating this mediating effect in a Hungarian adolescent sample, the study not only corroborates prior findings but also extends them to a new cultural context, thereby strengthening the evidence for the universality of these psychological processes.

## 5. Limitations & Suggestions

Despite its contributions, this study is subject to several limitations. First, the cross-sectional design precludes the ability to make causal inferences about the relationships among Instagram use, body image concerns, and self-esteem. Although the results are consistent with theoretical expectations, longitudinal or experimental designs would be necessary to establish causality. Second, the study relied on self-report questionnaires, which are subject to response



biases such as social desirability and recall inaccuracies. Third, the sample was restricted to female adolescents in Hungary, limiting the generalizability of the findings to other genders, age groups, and cultural contexts. Finally, although body image concerns were tested as a mediator, other relevant psychological variables—such as self-compassion, family satisfaction, or personality traits—were not included, which may have provided a more comprehensive model.

Future studies should employ longitudinal designs to clarify the causal pathways linking Instagram use, body image concerns, and self-esteem. Experimental designs that manipulate exposure to idealized versus diverse body content could provide valuable insights into the specific mechanisms driving body dissatisfaction. Expanding research to include male adolescents and non-binary youth would allow for a more inclusive understanding of Instagram's psychological impacts. Additionally, cross-cultural studies that compare adolescents across different societies would help determine whether cultural norms amplify or buffer the negative effects of Instagram. Finally, future research should incorporate protective factors, such as self-compassion and family support, into integrative models to identify potential moderators that can inform effective interventions.

The findings of this study offer several practical implications. Educators and mental health practitioners should develop programs that foster media literacy, helping adolescents critically evaluate the unrealistic beauty standards prevalent on Instagram. Schools can implement workshops that encourage positive self-image, resilience, and healthy social comparison practices. Parents should be encouraged to engage in open discussions with their children about social media use and its potential effects, while also fostering family satisfaction and emotional support. Policy makers and platform designers might consider implementing features that promote exposure to diverse and body-positive content, thereby reducing the adverse psychological consequences of Instagram use. Collectively, these practices can help mitigate the risks associated with social media while promoting healthier engagement among adolescent girls.

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## Declaration of Interest

The authors of this article declared no conflict of interest.

## Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

## Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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## Authors' Contributions

All authors equally contributed to this article.

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