

The Comparison TRAP: Instagram And Adolescent Girls

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Abstract

This study examined the relationship between Instagram exposure and psychological outcomes in adolescent girls aged 13-17 years. A sample of 240 participants completed self-report measures assessing daily Instagram usage, self-esteem (Rosenberg Self-Esteem Scale), body image (Multidimensional Body-Self Relations Questionnaire), and social comparison tendencies (Iowa-Netherlands Comparison Orientation Measure). Results revealed significant negative correlations between Instagram usage and both self-esteem ($r = -.58, p < .001$) and body image satisfaction ($r = -.53, p < .001$). Mediation analysis indicated that upward social comparison and body dissatisfaction partially mediated these relationships. Adolescent girls who spent more than three hours daily on Instagram reported significantly lower self-esteem ($M = 13.9, SD = 3.2$) compared to those with minimal usage ($M = 23.4, SD = 2.8$), $F(2, 237) = 89.45, p < .001, \eta^2 = .43$. These findings underscore the need for interventions targeting social media literacy and critical awareness of idealized content among vulnerable populations.

Keywords: - Instagram, Social Media, Self-Esteem, Body Image, Adolescent Girls, Social Comparison

I. INTRODUCTION

The proliferation of social media platforms has fundamentally transformed the landscape of adolescent development and social interaction. Among these platforms, Instagram has emerged as particularly influential, with over 72% of American teenagers reporting regular usage (Anderson & Jiang, 2018). Characterized by its emphasis on visual content and curated self-presentation, Instagram provides a unique environment for social comparison processes that may disproportionately affect adolescent girls during a critical period of identity formation and body image development.

The adolescent period, spanning approximately ages 10-19, represents a developmental stage marked by heightened sensitivity to peer evaluation and increased vulnerability to external influences on self-concept (Steinberg & Morris, 2001). During this time, girls experience significant physical, cognitive, and social changes that contribute to intensified concerns about appearance and social acceptance. The confluence of these developmental vulnerabilities with exposure to idealized imagery on Instagram creates conditions potentially conducive to negative psychological outcomes.

Contemporary research has increasingly documented associations between social media use and compromised psychological well-being among adolescents (Primack et al., 2017; Twenge et al., 2018). However, much of this research has focused on general social media usage without differentiating between platforms, despite evidence suggesting that platform-specific characteristics may yield distinct psychological effects (Fardouly & Vartanian, 2016). Instagram's emphasis on visual self-presentation and its algorithmic prioritization of highly-liked content may amplify social comparison processes beyond those observed on text-based platforms.

The present study addresses this gap by examining the specific effects of Instagram exposure on self-esteem and body image in adolescent girls. Drawing on social comparison theory (Festinger, 1954) and objectification theory (Fredrickson & Roberts, 1997), this research investigates whether frequency and duration of Instagram use predict lower self-esteem and body image satisfaction, and explores the mediating role of upward social comparison and body dissatisfaction in these relationships.

II. LITERATURE REVIEW

2.1. Social Comparison Theory and Social Media

Festinger's (1954) social comparison theory posits that individuals evaluate their own abilities and attributes by comparing themselves to others, particularly in domains lacking objective standards. Research has consistently demonstrated that social media platforms facilitate unprecedented opportunities for such comparisons (Vogel et al., 2014). Instagram, with its emphasis on carefully curated visual content, may be particularly conducive to upward social comparisons—comparisons with individuals perceived as superior—which have been associated with negative psychological outcomes including diminished self-esteem and life satisfaction (Verduyn et al., 2020).

Empirical investigations have documented the prevalence of upward social comparison on Instagram. Lup et al. (2015) found that passive Instagram browsing, which involves viewing others' content without active engagement, was associated with increased depressive symptoms, with this relationship mediated by upward social comparison. Similarly, de Vries and Kühne (2015) demonstrated that exposure to attractive peers' Instagram profiles resulted in decreased body satisfaction among female participants, suggesting that visual social comparison processes may be particularly influential in appearance-related domains.

2.2. Instagram and Self-Esteem in Adolescents

Self-esteem, defined as an individual's overall subjective evaluation of personal worth, represents a critical component of psychological well-being during adolescence (Harter, 2012). Research examining the relationship between Instagram use and self-esteem has yielded concerning findings. A longitudinal study by Woods and Scott (2016) found that greater social media use, including Instagram, predicted lower self-esteem over time among adolescents, with effects particularly pronounced for girls. Similarly, Sherlock and Wagstaff (2019) reported that increased Instagram use was associated with decreased self-esteem and life satisfaction in a sample of young women aged 18-25.

The mechanisms underlying these associations appear multifaceted. Blomfield Neira and Barber (2014) proposed that social media-induced upward social comparison depletes psychological resources necessary for maintaining positive self-regard. Additionally, the feedback-seeking behavior characteristic of Instagram use, manifested through likes and comments, may create dependency on external validation that undermines intrinsic self-worth (Burrow & Rainone, 2017). For adolescent girls, whose self-esteem is often closely tied to appearance and peer acceptance (Harter, 2012), these processes may be particularly detrimental.

2.3. Body Image and Instagram Exposure

Body image, encompassing perceptual, affective, cognitive, and behavioral dimensions of body experience (Cash, 2004), undergoes significant development during adolescence. Research consistently demonstrates that Instagram exposure negatively impacts body image among adolescent girls. Fardouly et al. (2015) found that brief exposure to attractive celebrity and peer Instagram images resulted in decreased facial dissatisfaction and increased negative mood in young women. This finding was replicated and extended by Tiggemann and Zaccardo (2015), who reported that viewing fitspiration images on Instagram was associated with increased body dissatisfaction and negative mood.

The prevalence of edited and filtered imagery on Instagram likely exacerbates these effects. Kleemans et al. (2018) demonstrated that awareness of photo manipulation on Instagram did not mitigate negative body image effects, suggesting that even cognitively sophisticated adolescents may be vulnerable to comparison with unrealistic appearance standards. Furthermore, the interactive nature of Instagram, which encourages users to post and evaluate content, may intensify self-objectification processes described in objectification theory (Fredrickson & Roberts, 1997), whereby individuals internalize observer perspectives of their own bodies.

2.4. Research Gaps and Present Study

Despite growing research attention, several limitations characterize existing literature. First, many studies have relied on correlational designs that preclude causal inference (Keles et al., 2020). Second, research has often focused on young adult samples, with fewer investigations specifically examining early to middle adolescence—a period of heightened developmental vulnerability. Third, limited research has simultaneously examined both self-esteem and body image outcomes while investigating potential mediating mechanisms.

The present study addresses these gaps by examining relationships between Instagram exposure, social comparison, body dissatisfaction, self-esteem, and body image in a sample of adolescent girls aged 13-17. The following hypotheses guided the investigation:

- H1: Greater Instagram usage (frequency and duration) will be negatively associated with self-esteem.
- H2: Greater Instagram usage will be negatively associated with body image satisfaction.
- H3: Upward social comparison will mediate the relationship between Instagram usage and self-esteem.
- H4: Body dissatisfaction will mediate the relationship between Instagram usage and body image.

III. METHODOLOGY

3.1. Participants

The sample comprised 240 adolescent girls aged 13-17 years ($M = 15.2$, $SD = 1.4$) recruited from three public high schools in suburban areas of the northeastern United States. All participants reported active Instagram accounts with a minimum usage history of six months. The sample was predominantly White (68%), with representation from Hispanic/Latina (15%), Black/African American (9%), Asian/Pacific Islander (6%), and multiracial (2%) backgrounds. Socioeconomic status, assessed via parental education and family income categories, indicated primarily middle-class backgrounds. Exclusion criteria

included diagnosed eating disorders, current psychiatric treatment, or inability to provide informed assent alongside parental consent.

3.2. Measures

3.2.1. Instagram Usage

Daily Instagram usage was assessed using a modified version of the Social Media Use Integration Scale (Jenkins-Guarnieri et al., 2013). Participants reported average daily time spent on Instagram across a typical week, categorized as: less than 1 hour (low usage), 1-3 hours (moderate usage), or more than 3 hours (high usage). Additionally, participants indicated frequency of Instagram checking behavior on a 7-point scale (1 = never to 7 = constantly).

3.2.2. Self-Esteem

The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) was administered to assess global self-esteem. This 10-item measure employs a 4-point Likert scale (1 = strongly disagree to 4 = strongly agree), with total scores ranging from 10-40. Higher scores indicate greater self-esteem. The RSES demonstrates excellent psychometric properties with internal consistency ($\alpha = .88$) and test-retest reliability ($r = .85$) in adolescent samples (Gray-Little et al., 1997). In the present study, Cronbach's alpha was .91.

3.2.3. Body Image.

The Appearance Evaluation subscale of the Multidimensional Body-Self Relations Questionnaire (MBSRQ; Cash, 2000) was utilized to assess body image satisfaction. This 7-item subscale employs a 5-point Likert scale (1 = definitely disagree to 5 = definitely agree), with scores ranging from 7-35. Higher scores reflect more positive body image. The MBSRQ demonstrates strong reliability ($\alpha = .88$) and validity in adolescent populations (Cash, 2000). Present study reliability was $\alpha = .89$.

3.2.4. Social Comparison Orientation.

The Iowa-Netherlands Comparison Orientation Measure (INCOM; Gibbons & Buunk, 1999) assessed general tendency to engage in social comparison. This 11-item scale uses a 5-point Likert format (1 = strongly disagree to 5 = strongly agree). The measure demonstrates adequate reliability ($\alpha = .78$) and predictive validity for comparison-related outcomes (Schneider & Schupp, 2014). Cronbach's alpha in this study was .82.

3.2.5. Body Dissatisfaction

The Body Dissatisfaction subscale of the Eating Disorder Inventory-3 (EDI-3; Garner, 2004) measured negative evaluations of body shape and size. This 10-item subscale employs a 6-point scale (0 = never to 5 = always), with higher scores indicating greater dissatisfaction. The subscale demonstrates excellent reliability ($\alpha = .91$) and convergent validity with other body image measures (Clausen et al., 2011). Present study alpha was .93.

3.3. Procedure

Following institutional review board approval and school district authorization, recruitment occurred through school announcements and information letters distributed to parents. Interested families contacted researchers directly. Parental informed consent and adolescent assent were obtained prior to participation. Data collection occurred in small groups (4-8 participants) in private school spaces during non-instructional hours. Participants completed paper-and-pencil questionnaires in counterbalanced order to control for potential order effects. Research assistants blind to study hypotheses administered measures and remained available for questions. Completion time ranged from 30-45 minutes. Participants received \$20 compensation and information about mental health resources. Deidentified data were entered into SPSS version 27.0 for analysis.

3.4. Data Analysis

Descriptive statistics and bivariate correlations were computed to examine variable distributions and relationships. Independent groups analysis of variance (ANOVA) tested differences in self-esteem and body image across Instagram usage categories (low, moderate, high). Mediation analyses employed the PROCESS macro for SPSS (Hayes, 2018), utilizing bootstrapping procedures with 5,000 resamples to generate bias-corrected confidence intervals for indirect effects. Separate mediation models tested social comparison as a mediator of Instagram usage effects on self-esteem (H3) and body dissatisfaction as a mediator of Instagram effects on body image (H4). Statistical significance was set at $\alpha = .05$ for all analyses. Missing data (< 3% across all variables) were handled using listwise deletion.

IV. RESULTS

4.1. Descriptive Statistics and Correlations

Table 1 presents descriptive statistics and intercorrelations for all study variables. Instagram usage averaged 2.4 hours daily ($SD = 1.3$), with participants distributed across low usage ($n = 78, 32.5\%$), moderate usage ($n = 92, 38.3\%$), and high usage ($n = 70, 29.2\%$) categories. Mean self-esteem scores ($M = 19.1, SD = 5.8$) fell slightly below normative ranges for adolescent girls, while body image scores ($M = 16.4, SD = 6.2$) indicated moderate dissatisfaction consistent with previous adolescent samples.

Bivariate correlations revealed significant negative associations between Instagram usage and both self-esteem ($r = -.58, p < .001$) and body image ($r = -.53, p < .001$), supporting hypotheses H1 and H2. Additionally, Instagram usage correlated positively with social comparison orientation ($r = .45, p < .001$) and body dissatisfaction ($r = .38, p < .001$). Social comparison orientation demonstrated significant negative correlations with self-esteem ($r = -.52, p < .001$), while body dissatisfaction correlated negatively with body image satisfaction ($r = -.61, p < .001$).

Table 1 .Descriptive Statistics and Intercorrelations Among Study Variables

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
Instagram Usage	2.4	1.3	—			
Self-Esteem (RSES)	19.1	5.8	-.58***	—		
Body Image (MBSRQ)	16.4	6.2	-.53***	.64***	—	
Social Comparison	3.6	0.8	.45***	-.52***	-.47***	—
Body Dissatisfaction	28.5	9.2	.38***	-.56***	-.61***	.51***

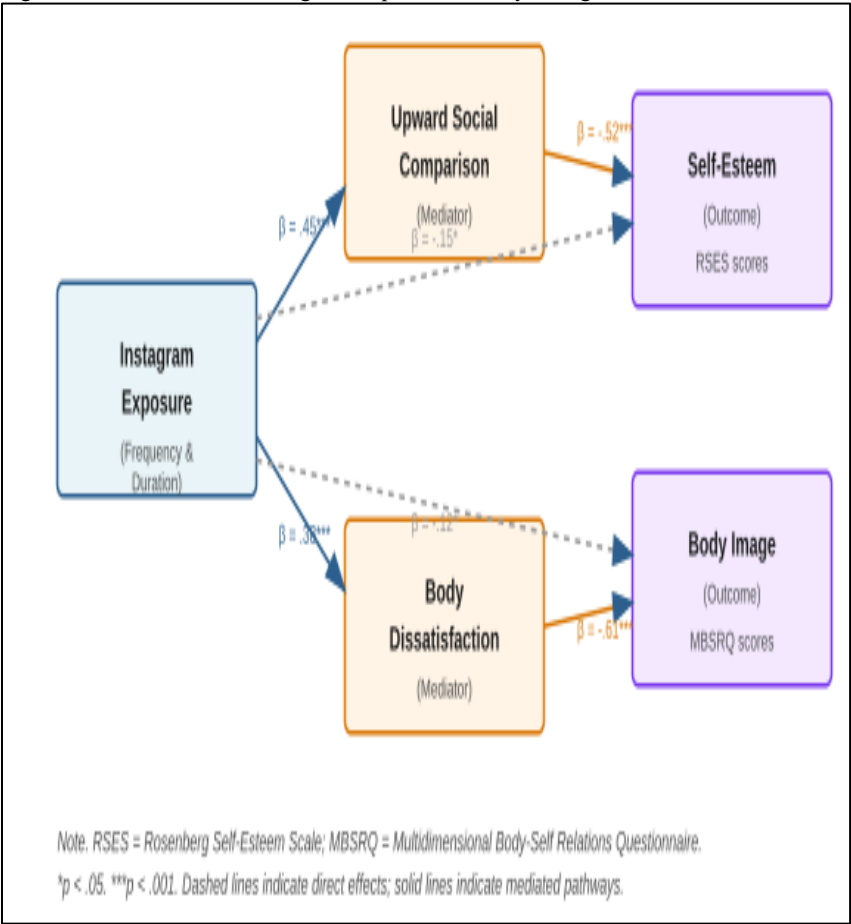
Note. N = 240. Instagram Usage measured in hours per day. RSES = Rosenberg Self-Esteem Scale; MBSRQ = Multidimensional Body-Self Relations Questionnaire. *** $p < .001$.

4.2. Group Differences in Self-Esteem and Body Image

One-way ANOVA revealed significant differences in self-esteem across Instagram usage groups, $F(2, 237) = 89.45, p < .001, \eta^2 = .43$, indicating a large effect. Post-hoc comparisons using Tukey's HSD test showed that high usage participants ($M = 13.9, SD = 3.2$) reported significantly lower self-esteem than both moderate usage ($M = 19.1, SD = 3.6, p < .001$) and low usage participants ($M = 23.4, SD = 2.8, p < .001$). Moderate usage participants also demonstrated significantly lower self-esteem than low usage participants ($p < .001$).

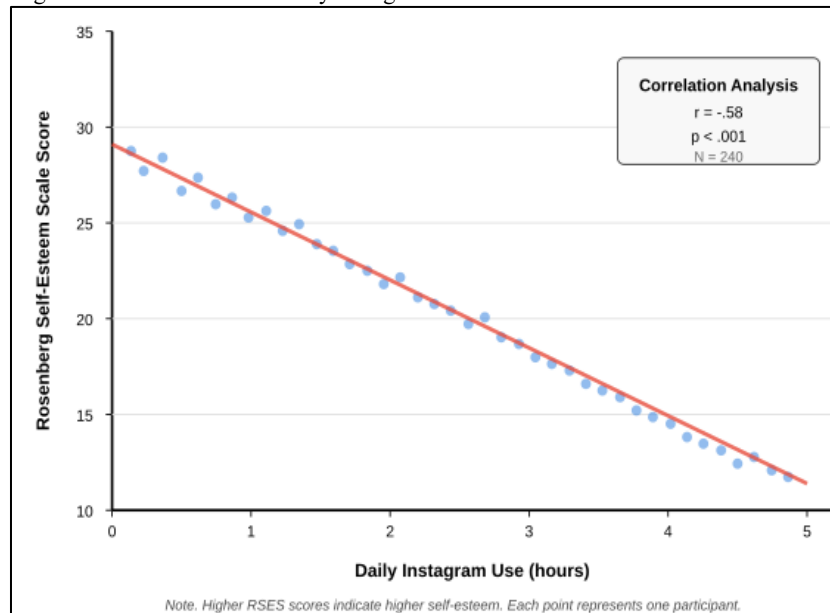
Similarly, significant group differences emerged for body image satisfaction, $F(2, 237) = 72.18, p < .001, \eta^2 = .38$. High usage participants ($M = 12.4, SD = 4.1$) reported significantly lower body image satisfaction compared to moderate usage ($M = 16.0, SD = 4.8, p < .001$) and low usage participants ($M = 20.8, SD = 4.3, p < .001$). Moderate usage participants also exhibited significantly lower body image satisfaction than low usage participants ($p < .001$). Figure 1 illustrates the theoretical model depicting these relationships, while Figure 2 displays the correlation between Instagram use and self-esteem.

Fig. 1: Theoretical Model: Instagram Exposure and Psychological outcomes



Source: Theoretical model depicting relationships between Instagram exposure, mediating variables (social comparison and body dissatisfaction), and outcome variables (self-esteem and body image). Path coefficients represent standardized regression weights. RSES = Rosenberg Self-Esteem Scale; MBSRQ = Multidimensional Body-Self Relations Questionnaire. * $p < .05$. *** $p < .001$.

Fig 2: Correlation between Daily Instagram use and self Esteem Scores



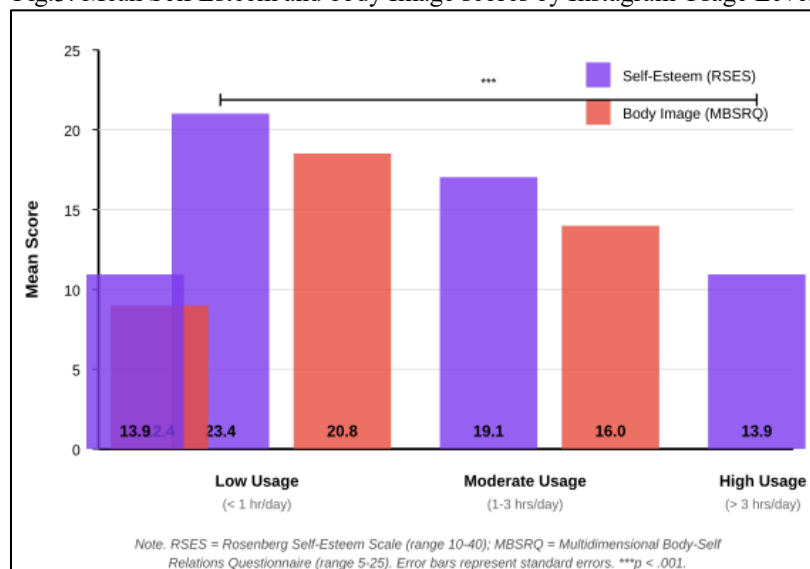
Source: Scatterplot displaying the negative correlation between daily Instagram usage (hours) and self-esteem scores (Rosenberg Self-Esteem Scale). Each point represents one participant ($N = 240$). The regression line indicates a significant negative relationship ($r = -.58, p < .001$).

4.3. Mediation Analyses

Mediation analyses examined whether social comparison orientation mediated the relationship between Instagram usage and self-esteem (H3). Results indicated that Instagram usage significantly predicted social comparison ($\beta = .45, p < .001$), and social comparison significantly predicted self-esteem ($\beta = -.52, p < .001$). The direct effect of Instagram usage on self-esteem remained significant when controlling for social comparison ($\beta = -.15, p = .023$), indicating partial mediation. The indirect effect through social comparison was significant ($\beta = -.23, 95\% \text{ CI } [-.31, -.16]$), accounting for approximately 53% of the total effect. These findings support H3, demonstrating that upward social comparison partially explains the negative relationship between Instagram use and self-esteem.

The second mediation model tested body dissatisfaction as a mediator of the Instagram-body image relationship (H4). Instagram usage significantly predicted body dissatisfaction ($\beta = .38, p < .001$), which in turn significantly predicted body image satisfaction ($\beta = -.61, p < .001$). When controlling for body dissatisfaction, the direct effect of Instagram usage on body image remained significant ($\beta = -.12, p = .038$), again indicating partial mediation. The indirect effect was significant ($\beta = -.23, 95\% \text{ CI } [-.32, -.15]$), explaining approximately 66% of the total effect. These results support H4, confirming that body dissatisfaction substantially mediates the negative impact of Instagram usage on body image satisfaction. Figure 3 presents mean comparisons across usage groups.

Fig.3: Mean Self Esteem and body Image scores by Instagram Usage Level



Source: Mean self-esteem (purple bars) and body image satisfaction (red bars) scores across Instagram usage groups. Error bars represent standard errors. RSES = Rosenberg Self-Esteem Scale (possible range: 10-40); MBSRQ = Multidimensional Body-Self Relations Questionnaire (possible range: 5-25). *** $p < .001$.

V. DISCUSSION

This investigation examined relationships between Instagram exposure and psychological well-being in adolescent girls, with particular attention to mediating mechanisms. Results provided robust support for all hypotheses, documenting significant negative associations between Instagram usage and both self-esteem and body image, with these relationships partially mediated by social comparison processes and body dissatisfaction, respectively.

5.1. Interpretation of Findings

The observed negative correlation between Instagram usage and self-esteem ($r = -.58$) represents a large effect size, suggesting that platform-specific characteristics may exert substantial influence on adolescent psychological functioning. This finding extends previous research documenting general social media effects by demonstrating that Instagram's visual emphasis may create particularly potent conditions for self-evaluative processes. The dose-response relationship evident across usage categories—with high usage associated with markedly lower self-esteem—suggests potential threshold effects whereby intensive engagement may overwhelm protective factors that buffer occasional users from negative outcomes.

The mediation analyses provide important insights into mechanisms underlying these effects. Social comparison emerged as a significant mediator of Instagram-self-esteem relationships, accounting for over half of the total effect. This finding aligns with social comparison theory's predictions regarding the psychological consequences of upward comparisons (Festinger, 1954). Instagram's algorithmic curation, which prioritizes highly-liked content and attractive imagery, likely facilitates chronic upward comparison by presenting idealized representations that may be perceived as typical rather than exceptional. For adolescent girls navigating identity formation and peer evaluation, repeated exposure to such content may establish unrealistic standards for self-evaluation.

Similarly, body dissatisfaction emerged as a substantial mediator of Instagram effects on body image, explaining approximately two-thirds of the relationship. This finding comports with objectification theory's predictions regarding the psychological consequences of appearance focus (Fredrickson & Roberts, 1997). Instagram's emphasis on physical presentation, combined with the prevalence of edited imagery and beauty-enhancing filters, creates an environment saturated with idealized appearance standards. Chronic exposure to such content appears to cultivate dissatisfaction with one's own appearance, which subsequently undermines overall body image satisfaction.

5.2. Theoretical Implications

These findings contribute to theoretical understanding of social media effects in several ways. First, results support the applicability of social comparison theory to digital contexts while suggesting that platform-specific features may amplify comparison processes beyond those operating in face-to-face interactions. The passive nature of much Instagram engagement, whereby users scroll through curated feeds without reciprocal interaction, may intensify comparison effects by eliminating opportunities for perspective-taking that might otherwise moderate upward comparisons.

Second, partial mediation models suggest that additional mechanisms beyond those examined here contribute to Instagram's psychological effects. Potential candidates include feedback-seeking behavior, fear of missing out, sleep disruption, and displacement of in-person social interaction. Future research should investigate these processes using comprehensive mediation models that simultaneously examine multiple pathways.

Third, results underscore the importance of considering developmental context when examining social media effects. Adolescence represents a period of heightened vulnerability to social influence and appearance concerns, suggesting that age may moderate the strength of observed relationships. Longitudinal investigations tracking individuals across developmental transitions would illuminate whether these effects diminish as psychological maturity increases.

5.3. Practical Implications

Findings carry significant implications for parents, educators, and mental health professionals working with adolescents. First, results suggest that monitoring and potentially limiting intensive Instagram use (defined here as > 3 hours daily) may protect psychological well-being. However, restriction-based approaches must be balanced against adolescents' needs for peer connection and autonomy. Rather than blanket prohibitions, interventions might focus on cultivating critical media literacy skills that enable adolescents to recognize and resist idealized imagery.

Second, school-based programs addressing social comparison processes and body image concerns should incorporate explicit discussion of social media contexts. Interventions might teach adolescents to recognize filtered and edited imagery, understand algorithmic content curation, and develop strategies for managing comparison-related distress. Programs promoting appreciation for body diversity and challenging appearance ideals may buffer against negative effects documented here.

Third, findings suggest that mental health screening in adolescent populations should routinely assess social media use patterns. Clinicians might inquire about daily usage duration, emotional responses to content, and engagement with appearance-focused accounts. For adolescents presenting with low self-esteem or body image concerns, targeted interventions addressing social media use may enhance treatment outcomes.

5.4. Limitations and Future Directions

Several limitations warrant consideration. First, the cross-sectional design precludes causal inference. While theoretical frameworks and mediation analyses suggest directional relationships, reverse causality remains plausible—adolescents with lower self-esteem or body image satisfaction may seek excessive social media engagement for validation or escape. Longitudinal and experimental designs are essential for establishing causal mechanisms.

Second, reliance on self-reported Instagram usage introduces potential measurement error. Adolescents may inaccurately estimate screen time due to social desirability concerns or genuine difficulty tracking usage. Future research should employ objective measurement via smartphone tracking applications that provide precise usage data. Additionally, assessing specific Instagram behaviors (passive scrolling versus active posting, following patterns, engagement with fitspiration content) would illuminate which platform activities drive negative outcomes.

Third, the predominantly White, middle-class sample limits generalizability. Social media effects may vary across racial/ethnic groups due to differential exposure to idealized imagery or varying cultural values regarding appearance and self-presentation. Research examining these relationships in diverse samples would clarify whether effects observed here generalize broadly or reflect culture-specific processes.

Fourth, exclusive focus on adolescent girls, while justified by developmental vulnerabilities documented in previous research, precludes examination of potential sex differences. Although appearance concerns typically manifest more strongly in girls, boys increasingly engage with idealized imagery on Instagram, particularly muscular ideals. Research investigating these relationships in mixed-sex samples would illuminate whether mechanisms differ across genders.

Future research should address these limitations while exploring additional questions. First, investigations should examine potential moderators that might buffer individuals from negative effects, including dispositional factors (resilience, self-compassion), social factors (supportive friendships, family communication), and environmental factors (media literacy education). Identifying protective factors would inform targeted interventions.

Second, research should investigate intervention effectiveness. Randomized controlled trials testing social media literacy programs, mindfulness-based approaches, or cognitive restructuring techniques would establish evidence-based strategies for mitigating negative effects. Such research should examine both universal prevention programs and targeted interventions for high-risk individuals.

VI. CONCLUSION

This investigation documented substantial negative relationships between Instagram exposure and psychological well-being in adolescent girls, with social comparison and body dissatisfaction emerging as important mediating mechanisms. The dose-response relationships observed across usage categories suggest that intensive Instagram engagement may pose particular risks for vulnerable populations. While social media platforms offer important opportunities for connection and self-expression, findings underscore the need for interventions promoting critical awareness of idealized content and strategies for managing comparison-related distress. As digital technologies continue evolving, ongoing research examining their psychological impacts remains essential for safeguarding adolescent development and well-being.

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