

The Impact of Internet Usage Time on Adolescents' Self-Confidence: An Analysis of the Mediating Effect of Perceived Social Support

Yike Zhang

School of Literature, Journalism and Communication, Yantai University, Yantai, China
email: 202379502139@s.ytu.edu.cn

Abstract:

In the digital era, adolescents' online usage time continues to increase. As a core dimension of their physical and mental health and social development, self-confidence is susceptible to the influence of online behaviour. This study focuses on the association between online usage time and adolescent self-confidence. Employing quantitative research methods, the study collected data on online usage and self-confidence assessments from 527 adolescents aged 10 to 18 across different regions via questionnaire surveys. Statistical analytical methods were employed to explore the specific mechanisms through which internet usage duration influences adolescents' self-confidence. Findings indicate that moderate internet usage positively influences adolescent self-confidence through avenues such as social expansion and skill acquisition. Conversely, excessive usage may induce self-perception distortions and withdrawal from real-world social interactions, thereby undermining self-confidence. Consequently, this study proposes targeted intervention strategies to guide adolescents towards rational internet usage and promoting the healthy development of self-confidence.

Keywords: Internet usage time; Adolescents; Self-confidence; Influence mechanisms; Intervention strategies

1. Introduction

In this era profoundly transformed by digital technologies, the internet has restructured human social life, interpersonal interactions, and cognitive processes with unprecedented pervasiveness. For the adolescent generation raised alongside digital technology,

internet usage has evolved beyond mere instrumental application into a fundamental state of existence and developmental environment. According to the 53rd Statistical Report on China's Internet Development released by the China Internet Network Information Centre (CNNIC), by December 2023, the number of underage internet users in China had surged to a stag-

gering 193 million, with internet penetration approaching saturation. This expansion in terms of both scale and duration underscores the urgency and relevance of exploring the impacts of internet usage on adolescents' psychological development, particularly with regard to the core personality construct of self-confidence[1].

Global research has repeatedly demonstrated a close association between adolescent internet usage and academic performance, social adjustment, and mental health outcomes. Yet the online world is a double-edged sword. On one hand, it offers boundless information access, diverse platforms for self-expression, and convenient social connections. On the other, when usage becomes excessive—transitioning from mere 'use' to outright 'dependence'—it often displaces adolescents' engagement in real-world activities, offline relationships, and physical exercise. This may result in the deterioration of adolescents' offline social skills and impair their ability to perceive tangible social support from family members, peers, and school contexts. Excessive internet use makes it difficult for adolescents to derive affirmation and a sense of worth from genuine interpersonal interactions, fostering feelings of inferiority, anxiety, and dissatisfaction. This is significantly associated with heightened risks of anxiety, depression, and loneliness. Existing research indicates that excessive internet use may be linked to diminished self-confidence in adolescents, though the underlying mechanisms remain unclear [3].

Self-confidence, as an individual's stable and positive perception and evaluation of their own abilities and sense of worth, serves as a crucial component of psychological well-being. It also functions as an intrinsic motivational source for individuals to tackle life challenges and attain personal goals. Adolescence represents a critical period for the formation and development of self-confidence, coinciding with Erikson's defined psychosocial crisis stage of "identity versus role confusion". During this period, individuals are intensely preoccupied with their self-image and highly sensitive to external evaluations. Their self-concept undergoes a process of intense restructuring and construction, rendering it particularly vulnerable[4]. Traditional pathways to building self-confidence primarily rely on positive experiences and feedback within tangible domains such as academic achievement, physical appearance acceptance, peer acceptance, and family support. However, the emergence of the online realm has introduced a completely new, yet highly uncertain, pathway for self-confidence construction.

Perceived social support refers to the degree to which an individual feels understood, respected, and cared for within their social relationships. As a psychological resource, perceived social support serves as a critical psychological

resource that facilitates individuals' stress coping and promotes their self-worth. Excessive internet usage is likely to estrange adolescents from real-world social environments, thereby reducing access to positive interpersonal feedback and consequently diminishing their perceived social support, which further impacts self-confidence [5]. A robust perception of social support enables individuals to better navigate stressful events and maintain psychological stability. However, excessive internet usage may displace real-world social interactions, diminishing one's perception of tangible social support and consequently affecting self-confidence levels [6]. When adolescents devote substantial time to online activities, this objectively reduces opportunities for meaningful real-world engagement with family and friends, potentially leading to detachment from physical society. This study aims to investigate the relationship between online usage time and adolescent self-confidence, while examining the mediating role of perceived social support. It seeks to provide empirical evidence for guiding adolescents towards reasonable internet usage and promoting their psychological well-being.

Building on the aforementioned rationale, the present study examines the influence of internet usage duration on self-confidence in adolescents aged 10–18 years, while examining the mediating role of perceived social support. The hypotheses are as follows:

H1: Internet usage duration exerts a significant negative predictive effect on adolescent self-confidence, meaning that longer usage duration correlates with lower self-confidence levels. This hypothesis directly tests the adverse effects of excessive usage.

H2: Perceived social support mediates the relationship between internet usage time and adolescent self-confidence, meaning that internet usage time not only directly negatively impacts self-confidence but also indirectly impairs it through diminishing adolescents' perceived social support.

H3: Appropriate internet usage time yields optimal self-confidence and social support, indicating that internet usage within a moderate range is associated with the most favorable psychosocial adaptation outcomes.

2. Research Methodology

2.1 Research Participants

2.1.1 Research Data

Convenience sampling was adopted for the distribution of online questionnaires, resulting in a total of 527 valid completed questionnaires. Participants comprised 295

males (55.98%) and 232 females (44.02%); 255 belonged to the younger age group (10–15 years) and 272 to the older age group (15–18 years).

2.1.2 Questionnaire Reliability

This study utilized Cronbach’s alpha to evaluate internal consistency across the questionnaire’s subscales. Results indicated that the α coefficient for the Perceived Social Support Scale was 0.882, that for the Adolescent Self-Confidence Scale was 0.815, and that for the Internet Usage Time Scale was 0.768. All scales exceeded the acceptable reliability threshold of 0.7, demonstrating good reliability of the research instruments and stable, reliable measurement results.

2.2 Research Instruments

2.2.1 Internet Usage Time Scale

The Problematic Internet Use Scale developed by Kimberly S. Young (1998) was adopted, comprising 18 items (e.g., “Do you attempt to hide the duration of your internet use?”). Responses were rated on a 5-point scale (1 = never, 5 = always), with higher scores indicating longer internet usage duration.

2.2.2 Perceived Social Support Scale

The Chinese translation of the Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet et al. (1988) was employed, consisting of 12 items (e.g., “When I encounter difficulties, there are people who can help me”). A 7-point scale was used (1 = strongly disagree, 7 = strongly agree), with higher scores indicating greater perceived social support.

2.2.3 Adolescent Self-Esteem Scale

The Chinese translation of the Self-Esteem Scale developed by the American psychologist M. Rosenberg (1965) was employed, comprising 10 items (e.g., “I feel I have many strengths”). A 4-point scale was used (1 = strongly disagree, 4 = strongly agree), with higher scores indicating greater self-esteem.

2.3 Research Procedure and Data Processing

Data were collected through a WeChat-based questionnaire survey, with an approximate completion time of 5 minutes. Descriptive statistical analysis, Pearson correlation analysis, and hierarchical regression analysis were performed using SPSS 25.0, while the PROCESS 3.5 add-on was employed for mediation effect testing.

2.4 Common Method Bias Examination

The Harman single-factor test was applied. Results indicated that the first factor explained 35.42% of variance prior to rotation (below the 40% critical threshold), confirming that there was no serious common method bias in the data of this study [7].

3. Research Findings

3.1 Correlation Analysis

Pearson product-moment correlation analysis was utilized to examine the relationships between internet usage duration, perceived social support, and adolescent self-confidence. The correlation matrix results for each variable are presented in Table 1.

Table 1. Descriptive Statistics and Correlation Analysis for Each Variable.

Variables	M	SD	Skewness	Kurtosis	1	2	3
1. Internet use time	3.42	1.33	-0.28	-0.71	1	□	□
2. Perceived social support	3.15	1.67	0.39	-0.65	-0.638**	1	□
3. Adolescent self-confidence	2.16	0.86	0.63	0.18	-0.468**	0.687**	1

Table 1 reveals that online usage time is significantly negatively correlated with perceived social support ($r = -0.638, p < 0.01$) and with adolescents’ self-confidence ($r = -0.468, p < 0.01$). Conversely, perceived social support shows a significant positive correlation with adolescents’ self-confidence ($r = 0.687, p < 0.01$).

3.2 Regression Analysis (Testing Direct Effects)

Using stratified regression analysis, the direct predictive

effect of internet usage time on adolescent self-confidence while controlling for gender and age as covariates. Results are presented in Table 2.

Table 2. Stratified Regression Model Summary.

Model	R	R ²	Adjusted R ²	R ² change	F change	Sig. F change
1	0.058	0.003	0	0.003	0.81	0.445
2	0.472	0.223	0.219	0.220	148.65	0.000

Table 3. Regression Coefficients (Final Model).

Variable	B	SE	Beta	t	p
(Constant)	3.76	0.15		24.42	0
Gender	0.07	0.06	0.04	1.03	0.305
Age	0.04	0.06	0.02	0.61	0.542
Internet use time	-0.29	0.03	-0.462	-10.38	0

Table 3 reveals that, after controlling for gender and age, the direct negative predictive effect of internet usage time on adolescents' self-confidence is highly significant ($\beta = -0.462$, $p < .001$), providing empirical support for Hypothesis H1.

3.3 Mediating Effect Analysis

Using the Process macro plugin in SPSS (Model 4), a Bootstrap test (5000 samples) was conducted to examine

the mediating effect of perceived social support, controlling for gender and age. Results are presented in Table 4.

Table 4. Bootstrap Tests for Total, Direct, and Indirect Effects.

Effect Type	Effect	Boot SE	Bootstrap 95% CI	Effect Proportion
Total Effect (c)	-0.296	0.029	[-0.353, -0.239]	100%
Direct Effect (c')	-0.069	0.028	[-0.124, -0.014]	23.20%
Indirect Effect (a×b)	-0.227	0.025	[-0.278, -0.179]	76.80%

Table 4 reveals that path analysis results indicate all path coefficients are statistically significant. Internet usage time significantly and negatively predicts perceived social support (Path a); perceived social support significantly and positively predicts adolescent self-confidence (Path b); after controlling for the mediating variable, the direct effect of internet usage time on adolescent self-confidence (Path c') remains statistically significant.

Mediation effect test: The indirect effect value of perceived social support was -0.227, and its Bootstrap 95% confidence interval does not include zero, indicating a significant mediating effect.

Effect contribution: The indirect effect contributed to 76.8% of the total effect, demonstrating that the influence of internet usage time on adolescent self-confidence is largely mediated through perceived social support. Hypothesis H2 (perceived social support mediates the relationship) is supported.

3.4 Analysis of Control Variables

Grouping internet usage time: Low group (1–2 points); Medium group (3 points); High group (4–5 points). Operational definitions of “favourable” were as follows: “Favourable self-confidence” scores above the sample median; “Favourable social support” scores above the sample median.

Calculate the proportion within each internet usage time group simultaneously meeting both “good self-confidence” and “good social support” criteria. Identify the group with the highest proportion as the “optimal internet usage time range”. Results are presented in Table 5.

Table 5. Results of Controlling Variable Group Analysis.

Internet Use Groups	Sample Size	Double-High Proportion	Characteristics
Low Group (1-2 分)	178	45.50%	Best psychosocial adaptation
Medium Group (3 分)	117	32.50%	Moderate level
High Group (4-5 分)	232	28.90%	Relatively poorer adaptation

Table 5 reveals that the 1–2 minute internet usage group exhibits the highest dual-high proportion (45.5%), indicating that this range corresponds to the optimal level of psychosocial adaptation, thereby supporting Hypothesis H3.

4. Discussion

4.1 Internet Usage Time significantly Predicts Adolescent Self-confidence Negatively

Research confirms the direct negative predictive effect of internet usage time on adolescent self-confidence. This finding prompts further consideration of the underlying mechanisms. Firstly, from the perspective of time resource allocation, personal time and energy during adolescence are finite. Excessive investment in passive consumption activities such as online entertainment, social media, and short videos directly encroaches on time allocated for developing core self-confidence competencies like academic pursuit, physical exercise, and artistic skills. Internet usage thus operates as a “time thief,” indirectly impeding the normal development of self-confidence. Secondly, the unique evaluation mechanisms and interaction patterns inherent to online environments may directly influence adolescents’ self-assessment. The pervasive “quantified feedback” in online socialising—manifested through metrics like likes, comments, and follower counts—reduces self-worth to simplistic and crude data metrics. When adolescents receive numerical feedback falling short of expectations, it may trigger self-doubt and a decline in perceived self-worth, rendering their self-confidence exceptionally fragile.

4.2 Perceived Social Support Mediates the Relationship between Online Time and Adolescent Self-confidence

This study found that online time not only directly predicts adolescent self-confidence negatively but also exerts an indirect negative impact on it via the mediating role of perceived social support. Individuals possess diverse resources to cope with environmental demands, with social support being a crucial psychosocial resource. Excessive internet use may displace real-world socialising, leading adolescents to become psychologically detached

from their physical social circles. This diminishes their perception of support from family, peers, and teachers, consequently reducing self-confidence. Prolonged online engagement may isolate adolescents from real-world social environments, limiting opportunities for positive feedback. This, in turn, lowers their perception of social support and further undermines self-confidence.

4.3 Appropriate Internet Usage Duration Yields Optimal Self-confidence and Social Support

The findings of this study not only reveal the harms of excessive internet use but, more importantly, delineate a more constructive orientation: the relationship between internet usage and adolescents’ psychosocial adaptation is not a simple linear inverse correlation, but rather involves a noteworthy “moderate range”. Within this zone, adolescents may utilise the internet as an effective tool to maintain and strengthen real-world social connections, thereby reinforcing rather than diminishing their social support networks. This suggests that educational interventions should not aim to stoke technological alarmism or impose blanket bans on internet use, but rather focus on fostering adolescents’ self-regulatory capacities and critical thinking competencies. Parents and educators should focus on helping adolescents find that “balance point” where they can enjoy the benefits of the internet while safeguarding their real-world connections and psychological development. This can be achieved by collaboratively formulating rational internet usage norms, encouraging diverse offline activities and face-to-face social experiences, and guiding young people to reflect on how online content influences their self-perception.

4.4 Research Significance and Implications

This study incorporates social support theory into the research framework investigating the relationship between internet usage and self-confidence, revealing the crucial mediating role of perceived social support. It provides a novel theoretical perspective for understanding the

mechanisms through which internet usage impacts mental health. Practically, it is recommended that parents and educators pay attention to adolescents' online habits. When guiding young people towards reasonable internet usage, efforts should not be confined to restricting screen time. Instead, the focus should be on assessing their social support status, with enhancing their real-world support systems as a core intervention goal. For adolescents with excessive online usage, active encouragement to participate in offline social activities and physical exercise is advised to foster interpersonal connections in the real world. Schools and families should cultivate supportive contextual environments through enhancing communication channels, offering positive attention, and providing emotional responsiveness to effectively enhance adolescents' perceived social support. For individuals already exhibiting low social support, group psychological intervention or social skill-building training may be implemented to help them establish and maintain high-quality interpersonal relationships, thereby breaking the vicious cycle of "internet addiction → lack of social support → diminished self-confidence".

5. Conclusion

This study, anchored in the contemporary context of the growing prevalence and duration of adolescent internet usage in the digital era, draws upon the China Internet Network Information Centre's (2024) report detailing the substantial scale of underage internet users. It thoroughly examines the interrelationship between internet usage duration, perceived social support, and adolescents' self-confidence.

Firstly, the research validates the direct negative predictive effect of online time spent on adolescent self-confidence. This finding aligns with conclusions drawn by Twenge (2019) and other scholars, confirming that excessive engagement in cyberspace may indeed hinder the formation of positive self-concepts among adolescents. The underlying mechanism likely involves excessive online engagement displacing opportunities for adolescents to gain successful experiences and develop core competencies in the real world. Concurrently, the pervasive upward social comparison on social media readily triggers feelings of inferiority and dissatisfaction, thereby undermining self-confidence.

Secondly, this study reveals the crucial mediating role of perceived social support. Online time not only directly diminishes self-confidence but also exerts an indirect negative influence by diminishing adolescents' perceived offline social support. When adolescents experience diminished understanding, respect, and care from family, peers,

and school, their psychological resources for coping with challenges and stress diminish, ultimately leading to lower self-confidence levels.

Finally, this study identified a 'moderate range' for internet usage through group comparisons. Adolescents scoring in the low group (1-2 points) for internet usage time exhibited a significantly higher proportion (45.5%) of concurrently possessing high self-confidence and perceived social support compared to the medium and high groups. This finding indicates that internet usage itself is not entirely detrimental; the core lies in maintaining a balanced usage pattern. Moderate internet usage may enable adolescents to reap the benefits of the digital age while avoiding its displacement effect on real-world social support, thereby achieving optimal psychosocial adaptation.

In summary, this study concludes that excessive internet usage significantly undermines adolescents' self-confidence, a process partly mediated by diminished perceptions of social support. Conversely, maintaining internet usage within moderate bounds is associated with optimal psychosocial development outcomes.

Despite yielding meaningful findings, this study possesses several limitations. Methodologically, it primarily relied on questionnaire data. While the instruments demonstrated good reliability and validity, they remain susceptible to social desirability bias, memory bias, and common method bias. For instance, adolescents may underreport their actual internet usage duration or demonstrate response bias when responding to questions about self-confidence and social support. Regarding the research sample and variables, there remains scope for expansion. Other important mechanisms may not have been incorporated into the model, such as tendencies towards internet addiction or academic self-efficacy. Furthermore, while the sample size is already substantial in terms of representativeness, future research could further broaden the sampling scope to enhance the generalisability of the findings.

References

- [1] China Internet Network Information Center. The 53rd Statistical Report on China's Internet Development. 2024.
- [2] Orth, U., & Robins, R. W. (2014). The development of self-esteem. *Current Directions in Psychological Science*, *23*(5), 381–387.
- [3] Atria Books. TWENGE J M. *iGen: Why today's super-connected kids are growing up less rebellious, more tolerant, less happy—and what that means for the rest of us*[M]. New York: Atria Books, 2019.
- [4] Lei, Li & Zhang, Lei (2003). *Adolescent Psychological Development*. Beijing: Peking University Press.
- [5] Ding, Z., Wang, X., & Liu, Q. (2018). The relationship

between self-esteem and cyber-aggression of undergraduate:
The roles of social anxiety and dual self-consciousness.
Psychological Development and Education, *34*(2), 171–180.

[6] VALKENBURG P M, PETER J.(2007). Online
communication and adolescent well-being: Testing the

stimulation versus the displacement hypothesis. *Journal of
Computer-Mediated Communication*, 12(4): 1169-1182.

[7] Zhou, H., & Long, L. (2004). Statistical remedies for
common method biases. *Advances in Psychological Science*,
12(6), 942–950.