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Examining the Mediating Roles of Artificial Intelligence Literacy and Self-Regulation in the Relationship Between Social Support and Digital Addiction Among Young Adults*

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ABSTRACT

This study aims to examine the mediating roles of AI literacy and self-regulation in the relationship between social support and digital addiction among young adults. The study sample consisted of 492 individuals aged 18–30 living in different regions of Türkiye. Of the participants, 363 were female (73.8%) and 129 were male (26.2%). A correlational survey design was used in this study. The data were analyzed using Model 4 of the PROCESS macro for SPSS. A significant, moderate negative relationship was found between digital addiction and self-regulation, whereas a significant, weak positive relationship was identified between social support and self-regulation. Additionally, significant, weak negative relationships were determined between social support and digital addiction, social support and AI literacy, digital addiction and AI literacy, and self-regulation and AI literacy. Mediation analysis was conducted to test the mediating role of AI literacy and self-regulation in the relationship between social support and digital addiction. The results indicated that AI literacy and self-regulation mediated the relationship between social support and digital addiction. The findings were discussed within the framework of the literature.

Keywords: Social support; digital addiction; artificial intelligence literacy; self-regulation

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1. Introduction

Today, while digitalization provides substantial benefits in fields such as education, professional life, and healthcare (Curacı, 2021; Atatanır, 2022; Çınar & Özkaya, 2023), it also entails significant risks such as addiction and social isolation (Kuss & Billieux, 2017). The increasing amount of time individuals spend in digital environments leads to problems such as detachment from reality and the weakening of social relations (Aksu & Işıklı, 2019). Furthermore, the shift of the search for social support –a fundamental human need– towards digital content is one of the elements triggering this cycle of addiction. While individuals who find this support in offline spaces feel emotionally stronger (Takao et al., 2014), relationships established in virtual environments can lead to emotional expressions that are superficial and detached from authenticity (Öztabak, 2018). As a matter of fact, as the use of mobile communication tools increases, the need for social support multiplies, which can indirectly engender social anxiety and isolation (Açıkgöz, 2024; Bardakçı & Arslan, 2021). In mitigating these digital risks, individuals' self-regulation skills and artificial intelligence literacy levels play a critical role (Çağırkan, 2024). The ability to control the time spent on digital applications and the purpose of their use constitutes an individual's self-regulation capacity (Hoong, 2021), and this capacity is a

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significant factor in combating addiction (Arslankoç et al., 2023). On the other hand, increasing awareness of artificial intelligence technology – a system that mimics human cognitive functions (Elçiçek, 2024) – is only possible by developing literacy in this field (Han, 2020). Consequently, individuals with a strong self-regulation mechanism who are familiar with artificial intelligence technologies can exhibit a more informed, balanced, and critical approach to using digital platforms (Güzeldemirci, 2024). Driven by this theoretical framework, this study aims to examine the mediating role of self-regulation (H1a) and of artificial intelligence literacy (H1b) in the relationship between social support and digital addiction in young adults.

1.1. Social Support

Caplan (1974), who was the first to theoretically address the concept of social support, stated that this construct plays a critical role in protecting individuals' mental health. Adding a more relational dimension to this evolving concept over time, Sarason and Johnson (1979) defined social support as the capacity to utilize social resources through trusted relationships. Focusing on the individual dimension of these resources, Sorias (1988) emphasized the fulfillment of the need for love, affection, and belonging during stressful life events; on the other hand, Patterson (1995) highlighted that support serves a directly protective function against threats to health. Historically grounded in face-to-face interactions, these dynamics underwent a transformation during the Covid-19 pandemic, shifting toward online environments, where young adults, in particular, began to utilize social networking sites as a primary source of support. Today, influenced by multifaceted factors such as personal responsibilities, physical activity, and parental and peer relationships, social support is essentially a subjective construct shaped by the individual's own perception. Possessing both a direct and a protective effect, this concept is, in its briefest definition, the entirety of resources that emerge in times of need, comfort the individual, and reduce stress and tension (Zhou & Cheng, 2022).

1.2. Digital Addiction

The concept of addiction – defined by criteria such as the desire to persist with a substance or behavior despite negative consequences (Young, 2009), as well as craving, loss of control, tolerance, and withdrawal (APA, 2022) - has today extended into digital domains. Digital addiction, which is based on human-computer interaction and refers to the non-purposeful use of digital tools (Greenfield, 1999), is divided into two categories: passive (e.g., watching television) and active (e.g., using phones and tablets) (Arslan et al., 2015; Peper & Harvey, 2018). Such uncontrolled use of digital tools leads to time management problems and the procrastination of responsibilities in individuals. Furthermore, this process causes pathological conditions such as loneliness, social isolation, and loss of self-confidence (Beyatlı, 2012); emotionally triggers depression and anxiety, and at the behavioral level, gives rise to new-generation problems such as nomophobia, netlessphobia, FoMO, and photolurking (Betoncu & Özdamlı, 2019). In summary, the immoderate use of digital tools not only damages individual and social functionality but also paves the way for the emergence of new psychopathological conditions specific to the modern era.

1.3. Artificial Intelligence Literacy

In the context of human-machine interaction, artificial intelligence (AI) is characterized as systems that mimic human-like abilities to think, analyze, and experience (Çelebi & İnal, 2019). Indeed, Dilmaç (2024) states that this technology should evoke a genuine sense of interaction between parties by exhibiting human-like behaviors, and argues that this requires users to adopt a conscious attitude. Today, AI has become a fundamental discipline that individuals must learn during their educational processes. The proliferation of smart assistants, autonomous vehicles, and various smart devices in daily life increases the need for societal awareness; this, in turn, makes it increasingly critical for individuals to be adequately equipped regarding AI (Chen et al., 2020). In this context, AI literacy is defined as a set of new technological attitudes, skills, and competencies that enable people to use artificial intelligence effectively and ethically in their daily lives (Long & Magerko, 2020). According to Kong and Zhang (2021), this literacy encompasses three fundamental dimensions: cognitive (understanding and using AI concepts), affective (being aware of the societal impacts of AI and self-efficacy), and sociocultural (ethical use, respect for human autonomy, benefit-risk balance, and equitable distribution) dimensions. The holistic acquisition of these dimensions provides multifaceted benefits to individuals. Through this competency, individuals can manage their screen time by gaining a controlling and regulatory power over digital addiction, develop balanced technology use strategies, and gravitate toward

alternative behaviors that enhance social interactions (Arslan, 2020; İşler & Kılıç, 2021). Furthermore, AI literacy contributes to the development of 21st-century skills such as creative problem-solving, innovative thinking, and ethical responsibility. As a result, individuals become more conscious, responsible, and equipped at both personal and societal levels in a future dominated by artificial intelligence.

1.4. Self-Regulation

Self-regulation is defined as individuals' capacity to consciously manage their own thoughts, emotions, and behaviors. According to Bandura (1986), this process consists of the stages of self-observation, judgmental process, and self-reaction, whereas Baumeister and Tierney (2012) address the concept around elements such as willpower, focus, and perseverance. Encompassing both motor and cognitive skills, self-regulation contributes not only to the individual, but also to the development of their immediate surroundings (Taşkın Gökçe & Kandır, 2019). Zimmerman (1998), on the other hand, explains this concept as a dynamic cycle—consisting of goal setting, strategic planning, monitoring, and evaluation—where individuals actively manage their own behavioral and cognitive processes. Accordingly, individuals with high self-regulation skills tend to set clear goals, develop appropriate strategies, and monitor and evaluate their own actions. Furthermore, individuals who can control their impulsive reactions, manage their time effectively by balancing their emotions, and adapt flexibly to changing conditions exhibit significantly more effective behavioral adaptation in daily life and social environments (Zimmerman & Martinez-Pons, 1988).

1.5. Theoretical Rationale for the Mediation Model

The proposition that self-regulation and artificial intelligence literacy mediate the relationship between social support and digital addiction is grounded in Bandura's (1986) social cognitive theory, which conceptualizes human functioning as the product of a dynamic interplay among personal, behavioral, and environmental factors. From this perspective, social support constitutes an environmental resource that shapes personal factors, namely individuals' self-regulatory capacities and technological competencies, which in turn regulate behavioral outcomes. Consistent with Zimmerman's (1998) cyclical model of self-regulation, socially supported individuals are better able to set goals, monitor their behavior, and resist the immediate gratification offered by digital platforms (LaRose et al., 2003). Similarly, AI literacy – conceptualized as the competencies required to know, understand, use, evaluate, and ethically reflect on AI-based systems (Long & Magerko, 2020; Ng et al., 2021) – equips individuals to recognize the algorithmic mechanisms (e.g., personalized recommendation systems) that sustain engagement and prolong usage time on digital platforms (Montag et al., 2025). Individuals with higher AI literacy can critically evaluate these mechanisms and thereby manage their digital consumption more consciously. Taken together, social support is expected to foster both self-regulation and AI literacy, each of which subsequently reduces digital addiction; thus, both variables are theoretically justified as mediators in the proposed model.

In summary, while the social support individuals receive from their environment provides an important resource in combating digital addiction, the success of this process depends on the individual's ability to manage their own behaviors and correctly interpret modern technologies. Accordingly, this study aims to empirically test the multiple mediating role of self-regulation and artificial intelligence literacy in the relationship between social support and digital addiction among young adults.

2. Method

2.1. Research Model

In this study, the correlational survey model, one of the quantitative research methods aimed at revealing the degree and structure of the relationship between variables, was preferred (Fraenkel et al., 2012).

2.2. Study Group of the Research

The study group of the research consists of a total of 492 volunteer young adults living in different regions of Türkiye, whose ages range between 18 and 30. The demographic information of the participants in the study is presented in the table 1.

Table 1 *Demographic Characteristics of the Participants*

Variables	Category	n
Gender	Male	129
	Female	363
Education	High school	49
	University	277
	Postgraduate	166
Marital status	Married	50
	Single	442
Perceived economic level	Low	82
	Medium	384
	High	26
Time spent on digital media (hours)	1–3	89
	3–5	192
	5–7	132
	7–9	55
	9+	24
Knowledge of artificial intelligence	Very low	30
	Low	93
	Medium	233
	Good	105
	Very good	31

Table 1 presents the demographic characteristics of the 492 participants. The sample consisted of 129 male and 363 female participants. Regarding educational level, 49 participants had a high school education, 277 had a university degree, and 166 had postgraduate education. In terms of marital status, 50 participants were married and 442 were single. Regarding perceived economic level, 82 participants reported a low, 384 a medium, and 26 a high economic level. Participants' daily time spent on digital media ranged from 1–3 hours to 9 or more hours, with the largest group reporting 3–5 hours (n = 192). Finally, participants' self-reported knowledge of artificial intelligence was mostly at the medium level (n = 233), followed by good (n = 105), low (n = 93), very good (n = 31), and very low (n = 30) levels.

2.3. Data Collection Process

Prior to the implementation of the study, the necessary permissions regarding the use of the data collection instruments were obtained from the developers via email, followed by securing formal written approval from the institutional review board (ethics committee) of the relevant university. Following these approvals, the prepared measurement instruments were distributed to the target audience via online forms. Participants were informed about the purpose, scope, and scientific nature of the study, and their informed consent was obtained. The principle of voluntary participation was strictly observed throughout the process; it was guaranteed that the participants' identities would be kept confidential and the obtained data would be used solely for scientific purposes. Guidelines were provided to encourage participants to complete the data collection forms candidly. During the data cleaning phase, participant data exhibiting extreme outliers, violating normal distribution assumptions, or being incomplete/incorrectly filled were excluded from the analysis. Participants were recruited through convenience and snowball sampling via online platforms (institutional email networks and academic social media groups), with inclusion criteria of being aged 18–30, residing in Türkiye, and having at least a high school education. The target sample size was determined based on mediation analysis requirements (Fritz & MacKinnon, 2007; Hayes, 2013), and after data cleaning, 492 valid cases were retained. However, online data collection introduces potential self-selection bias, as digitally engaged individuals may be overrepresented, and the digital divide may have excluded those with limited internet access. Additionally, the sample was predominantly female (73.8%) and highly educated, and the non-probability sampling method limits generalizability to the broader young adult population.

2.4. Data Collection Instruments

Multidimensional Scale of Perceived Social Support: Developed by Eker et al. (2001), this scale is a 7-point Likert-type instrument. Consisting of 12 items, the scale comprises three subdimensions: family support, friend support, and a significant other. The Cronbach's alpha values for the subdimensions of the scale were found

to be .87 for the family support dimension, .87 for the friend support dimension, and .90 for the significant other dimension. The overall reliability level of the scale is .89. In the current study, the Cronbach's alpha value of the obtained data was calculated as .88.

Digital Addiction Scale: Developed by Arslan et al. (2015) to determine the digital addiction levels of high school and university students, this scale is a 5-point Likert-type instrument. While the Cronbach's alpha reliability coefficient for the entire 29-item scale was found to be .89, the reliability coefficients for the gaming, social media, and impact on daily life subdimensions were calculated as .88, .89, and .90, respectively. In the current study, the Cronbach's alpha value of the obtained data was found to be .90.

Artificial Intelligence Literacy Scale: Karaoğlan-Yılmaz and Yılmaz (2023) adapted the artificial intelligence literacy scale into Turkish culture. It is a 7-point Likert-type scale consisting of three subdimensions and 31 items. The subdimensions comprise critical evaluation, practical application, and technical understanding. The reliability coefficients of the subdimensions range between .97 and .98, and the overall reliability coefficient of the scale is .99. In the current study, the Cronbach's alpha value of the obtained data was determined to be .97.

Brief Self-Control Scale: Developed by Nebioğlu et al. (2012), this scale is a 5-point Likert-type instrument. The scale consists of 2 subdimensions – impulsivity and self-discipline – and 13 items. The reliability coefficients for the subdimensions are .81 and .87, and the overall reliability coefficient is .83. In the current study, the Cronbach's alpha value of the obtained data was found to be .83.

2.5. Data Analysis

The data collected in the study were analyzed using IBM SPSS Statistics (Version 26.0) and the SPSS PROCESS macro. Prior to analysis, the statistical prerequisites were thoroughly examined, leading to the exclusion of eight extreme outliers from the initial 500 data points. Consequently, the final analysis was conducted with data from 492 participants. To assess the assumption of normal distribution, the arithmetic mean, median, skewness, and kurtosis values were calculated. Furthermore, correlation analysis was performed to examine the relationships among variables, and mediation analysis was conducted using the PROCESS macro (Model 4).

3. Findings

To evaluate whether the study data followed a normal distribution, the arithmetic mean, median, skewness, and kurtosis values of the variables were examined. The results of the normality analysis for social support, digital addiction, artificial intelligence literacy, and self-regulation are presented in Table 2.

Table 2. *Correlations, Mean, Standard Deviation, Median, Kurtosis, and Skewness Values*

	1	*2*	*3*	*4*	*M*	*Sd.*	*Skewness*	*Kurtosis*
1. Social Support	*1*	-.17**	.28**	-.10*	64.93	12.30	-.45	-.48
2. Digital Addiction		*1*	-.51**	-.11**	81	18.15	-.19	-.14
3. Self- Regulation			1	-.10*	128.55	41.87	-.34	.13
4. Artificial Intelligence Literacy				*1*	44.11	8.12	-.24	.23

**p<.05 **p<.01*

When Table 2 is examined, the skewness values range between -.48 and .23, while the kurtosis values range between -.45 and -.19. Although values within ±1 are preferred for skewness and kurtosis, values between ±2 are also widely accepted in the literature (Karaatlı, 2006). Based on these results, it was concluded that the data demonstrated a normal distribution. The criteria for evaluating the correlation coefficients are defined as follows: an absolute value between .00 and .10 indicates a negligible correlation; an absolute value between .10 and .39 indicates a weak correlation; an absolute value between .40 and .69 indicates a moderate correlation; an absolute value between .70 and .89 indicates a strong correlation; and an absolute value between .90 and 1.00 indicates a very strong correlation. There is a negative, weak, and significant correlation between social support and digital addiction ($r = -.17$, $p < .01$). Similarly, a negative, weak, and significant correlation exists between social support and artificial intelligence literacy ($r = -.10$, $p < .05$). In contrast, a positive, weak, and significant correlation was found between social support and self-regulation ($r = .28$, $p < .01$). Regarding digital addiction, there is a negative, weak, and significant correlation with artificial intelligence literacy ($r = -.11$, $p < .01$), and a negative, moderate, and significant correlation with self-regulation ($r = -.51$, $p < .01$).

This study aimed to examine the mediating effects of artificial intelligence literacy and self-regulation in the relationship between social support and digital addiction. According to the research findings, the total effect of social support on digital addiction (path c) was found to be negative and statistically significant (β = -.17, B = -.25, SE = .06, 95% CI [-.37, -.12]). Based on this result, it can be concluded that social support was a negative and significant predictor of digital addiction.

Based on the conceptual model of the study, the mediating roles of artificial intelligence literacy and self-regulation in the relationship between social support and digital addiction were examined, and the findings are presented in Figure 1.

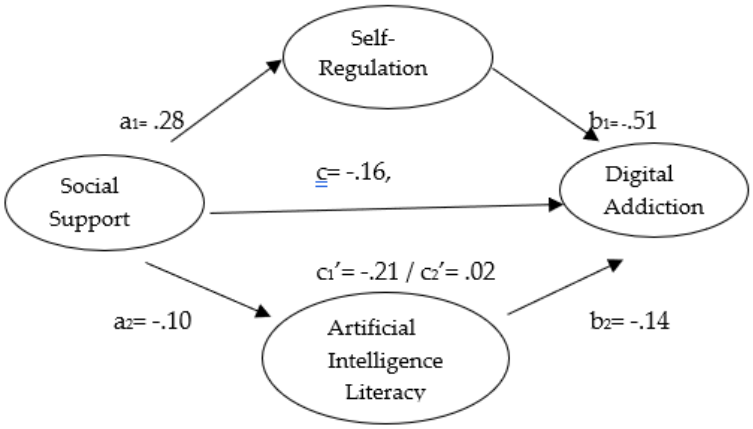

Figure 1. *AI Literacy and Self-Regulation as Mediators of Social Support and Digital Addiction*

According to the analysis results, the effect of social support on self-regulation is significant (β = .28, SE = .02, 95% CI [.12, .24], p<.01). The effect of self-regulation on digital addiction is significant (β=-.51, SE = .09, 95% CI [-1.32, -.96], p<.01). The effect of social support on digital addiction through the mediation of self-regulation (path c'_1) is significant (β=-.21, SE=.03, 95% CI [-.28, -.14]). The direct effect of social support on digital addiction (path c) is significant (β=-.17, SE = .06, 95% CI [-.37, -.12], p<.01). The effect of social support on artificial intelligence literacy is significant (β=-.10, SE = .15, 95% CI [-.63, -.03], p<.05). The effect of artificial intelligence literacy on digital addiction is significant (β=-.14, SE = -.01, 95% CI [-.09, -.02], p<.01). When artificial intelligence literacy is included in the model, the effect of social support on digital addiction (path c'_2) is significant (β = .02, BootSE= .01, 95% CI [.00, .05]).

Table 3. *Mediation Analysis Results*

Model path	B	β	SE	95% CI
Total effect (c)				
Social Support → Digital Addiction	−0.25	−0.17	0.06	[−0.37, −0.12]
Indirect and direct effects				
Social Support → Self-Regulation (a_1)	0.18	0.28	0.02	[0.12, 0.24]
Social Support → Artificial Intelligence Literacy (a_2)	−0.33	−0.10	0.15	[−0.63, −0.03]
Self-Regulation → Digital Addiction (b_1)	−1.14	−0.51	0.09	[−1.32, −0.96]
Artificial Intelligence Literacy → Digital Addiction (b_2)	−0.05	−0.14	0.01	[−0.09, −0.02]
Social Support → Digital Addiction (c′)	−0.21	—	0.03	[−0.28, −0.14]
Indirect effects				
Social Support → Self-Regulation → Digital Addiction	−0.21	—	0.03*	[−0.28, −0.14]*
Social Support → Artificial Intelligence Literacy → Digital Addiction	0.02	—	0.01*	[0.00, 0.05]*

When the indirect (mediating) effect of social support on digital addiction was examined, the path operating through self-regulation was found to be significant. These results indicate that the mitigating effect of social support on digital addiction occurs indirectly through self-regulation. Similarly, the indirect effect operating through artificial intelligence literacy was also found to be statistically significant. The fact that the bootstrap confidence interval does not include zero confirms the significance of this indirect effect. The empirical findings of the study reveal that two distinct mechanisms operate in the indirect effect of social support on

digital addiction: First, high social support enhances individuals' self-regulation capacities, and this robust self-regulation skill functions as an internal control mechanism, significantly reducing the risk of digital addiction. On the other hand, the perplexing negative relationship between social support and artificial intelligence literacy suggests that young adults with strong offline support systems may have a lower perceived need for these next-generation technologies, thereby limiting their literacy; however, this lack of awareness indirectly leaves them more vulnerable to the addictive algorithmic structures of digital platforms.

4. Discussion and Conclusions

When studies examining the relationship between types of digital addiction and social support in the literature are analyzed, the presence of a generally negative relationship stands out. For instance, while Yücel et al. (2023) identified a negative and weak relationship between digital game addiction and social support, Yıldız and Koçak (2020) determined that the perception of social support negatively predicts social media addiction. Similarly, it is observed that individuals who use the internet at pathological levels have significantly lower social support levels (Jung et al., 2019; Nowak et al., 2022), and both internet and phone addiction are inversely associated with social support (Tateno et al., 2019; Wang et al., 2022). In contrast, Karasu et al. (2017), in their study conducted with university students, found no significant relationship between internet addiction and perceived social support. Despite a limited number of divergent findings, the general weight of the literature indicates that a significant interaction exists between social support and digital addiction.

In the literature, it is stated that there is a positive and significant relationship between young adults' social support levels and their self-regulation skills (Ateş & Sağar, 2024; Perry et al., 2018; Zhao et al., 2022). Accordingly, it can be argued that as individuals' perceptions of social support increase, their self-regulation levels also show an increase. Indeed, Martínez-López et al. (2023), in their meta-analysis study that included a total of 32 studies, revealed a positive and consistent relationship between social support and self-regulation skills. This positive effect of social support on enhancing self-regulation levels also manifests itself in the process of acquiring modern digital competencies such as artificial intelligence literacy. In this line, it is observed that the provided social support mechanisms enrich participants' learning experiences and elevate their artificial intelligence literacy levels (Sperling et al., 2024). It has been determined that individuals with low self-regulation levels have higher smartphone addiction levels, and these individuals constitute a high-risk group in terms of digital addiction (Bilkay & Çiçek, 2022; Ching & Tak, 2017). Accordingly, the study conducted by LaRose et al. (2003) also provided findings supporting this heightened risk by focusing on the young adult population, where internet use is widespread and digital behaviors are prominent. In the study conducted by Abdelaliem et al. (2023), a significant and positive relationship was revealed between smartphone addiction and the perception of AI. Parallel to this finding, Mohammed et al. (2024) state that AI's mechanisms of content recommendation and shaping usage habits on social media increase users' risk of addiction. In fact, the presentation of customized content by AI technologies in a way that keeps user interest continuously active and increases engagement makes time management difficult for individuals while leading to an extension of their total usage times (Krajčovič, 2024).

Meng et al. (2024) examined the variables of self-regulation, internet addiction, and social support together. According to the researchers, a low self-regulation level directly increases the risk of internet addiction. This is because self-regulation is related to a person's capacity for impulse control and delaying short-term rewards. Individuals with low self-regulation capacity tend to pursue short-term gratification while ignoring long-term consequences; this situation triggers excessive orientation toward digital actions. On the other hand, social support has a mitigating effect on internet addiction (Chen & Zhang, 2024). Furthermore, social support functions as a buffering mechanism against the risks arising from low self-regulation. In other words, a low self-regulation level and decreased social support reinforce the upward trend in digital addiction. Accordingly, even when social support is strong, individuals' ability to manage their own lives through self-regulation awareness – despite turning to digital actions due to different dynamics – can protect them from the dopaminergic effects of addictive devices.

Along with artificial intelligence technologies, the phenomenon of social support has undergone a structural transformation by gaining both real and virtual dimensions. In particular, the generation of social media content through AI increases the risk of social media addiction, while revealing that artificial intelligence literacy is closely related to digital addiction (Montag et al., 2025). Today, users' content consumption

capabilities and habits are shaped on social media platforms using AI algorithms. Algorithms present personalized content based on users' interest levels or previous interactions. This situation leads users to spend more time on social media, games, or online shopping sites. Consequently, for individuals seeking social support on such online platforms, content becomes excessively consumed without clear limits (Djufri, 2025). These results also suggest that artificial intelligence literacy could be an important dynamic in the emergence of more self-controlled outcomes. One of the notable findings of the study is the negative relationship between social support and artificial intelligence literacy. At first glance, this outcome -which appears contrary to theoretical expectations- can be understood through the lens of the Diffusion of Innovations Theory, given that the societal diffusion of artificial intelligence technologies is still relatively nascent and individuals have not yet fully internalized these technologies as a mass practice (Rogers, 2003; Rogers et al., 2014). Since AI tools are still in the early adoption phase across general society, individuals with strong offline social support networks continue to satisfy their psychological and social needs through traditional channels; this, in turn, can indirectly diminish their motivation to develop these novel competencies that have not yet fully permeated daily routines. On the other hand, within the framework of the Digital Divide (Norris, 2001) and resource substitution perspectives (Helliwell & Putnam, 2004), as artificial intelligence use and literacy spread across society and these dynamics evolve, future research will need to track these processes over time.

From a practical standpoint, these findings indicate that digital addiction dynamics are closely tied to self-regulation capacities and AI literacy levels rather than merely to total screen exposure. Additionally, while these findings reveal key underlying mechanisms, future research should consider alternative explanations, such as how traditional offline support networks interact with the adoption of new technological competencies. There is a negative relationship between social support and digital addiction among young adults, mediated by both self-regulation and AI literacy. Furthermore, social support is positively related to self-regulation, but negatively related to AI literacy. Additionally, statistically significant negative relationships exist between self-regulation and digital addiction, as well as between AI literacy and digital addiction.

5. Recommendations

In future studies, experimental and psychoeducational programs could be developed based on self-regulation skills and social support (peer, family, professional) to target the prevention and amelioration of digital addiction among children, adolescents, and university students. Family, peer, and professional support systems can be strengthened through interventions and guidelines that help users develop healthy digital habits; in particular, psychological counseling and guidance services in schools and universities could be actively utilized in this process. Since this study is cross-sectional, it does not imply causality; therefore, longitudinal designs should be employed to examine the over time effects of changes in social support, self-regulation, and artificial intelligence literacy on digital addiction. To understand the mechanisms underlying the quantitative findings, qualitative methods could be used to investigate the reasons behind the unexpected relationship found between social support and artificial intelligence literacy. Moreover, more specific studies can be conducted focusing on the sub-dimensions of social support (such as family and friend support) and self-regulation (such as emotional, behavioral, and cognitive self-regulation).

6. Limitations

This study has several limitations. First, the cross-sectional design does not allow causal inferences; the observed relationships should be interpreted as associational patterns, not confirmed causal mechanisms. Bidirectional effects cannot be ruled out. Second, convenience and snowball sampling via online platforms may have introduced self-selection bias, and the predominantly female (73.8%) and highly educated sample limits generalizability. Third, all data were based on self-report measures, which are susceptible to social desirability bias and common method variance. Future studies should employ longitudinal designs to examine over-time effects and experimental or quasi-experimental designs to test causal roles. Qualitative methods could explore the unexpected negative relationship between social support and AI literacy. Larger, more diverse samples recruited through probability sampling would enhance generalizability.

Declarations

Declaration of Generative AI and AI Assisted Technologies: During the preparation of this work, the author(s) used Claude (Anthropic) in order to improve the language and readability of the manuscript. After using this tool, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

Ethical Approval: Ethical Approval: This study was reviewed by the Ethics Committee of Niğde Ömer Halisdemir University and was found ethically appropriate (Decision No: 2025/01-30, Meeting Date: 10 January 2025, Meeting No: 01, Document Date and No: 14/01/2025-608080). Before data collection, permissions to use the measurement instruments were obtained from the relevant authors or institutions. Participants were informed about the purpose and scope of the study, and informed consent was obtained on a voluntary basis. The confidentiality of the data was ensured.

Conflict of Interest: The authors declare that they have no conflict of interest.

Consent for Publication: Participants were informed that the results of the study would be published in a scientific journal in anonymized form, and they consented to this publication.

Availability of Data and Materials: Data will be shared upon request.

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Authors' Contributions: All authors contributed to the study conception and design, data collection, analysis and interpretation of the data, and drafting and revision of the manuscript. All authors read and approved the final manuscript.

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