

Shaping the Self in the Age of AI: The Relationship Between AI Engagement, Identity Development, and Mental Health Among Adolescents

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Abstract

This research investigates the expanding role of Artificial Intelligence (AI) in the everyday lives of adolescents, examining how it influences their learning processes, social connections, and ethical reasoning. Adopting a quantitative design, the study examines the extent to which AI technologies have become integrated into teenage experiences and the impact of this integration on behavior, relationships, and psychological well-being. The discussion remains balanced, outlining both the opportunities AI presents for growth and innovation, as well as the risks it poses if left unchecked. Central to this work is the call for responsible development and mindful use of AI to ensure it supports, rather than disrupts, healthy adolescent development.

The study focuses on how sustained interaction with AI-driven platforms, i.e., social media, chatbots, and recommendation algorithms, shapes adolescents' identity development and social value formation. To test the research hypotheses, a sample of 400 teenagers aged, participants was tested on some standardized psychological tools to assess the traits like AI engagement, self-concept clarity, moral orientation, susceptibility to algorithm-influenced norms, and mental health outcomes (including anxiety, depression, and loneliness). Three hypotheses were examined in total through Pearson correlation analyses, multiple regression models, and independent-samples t-tests.

Keywords

Artificial intelligence; adolescents; self-concept clarity; moral identity; conformity; mental health; quantitative methods

Introduction

In recent years, Artificial Intelligence (AI) has become an integral part of adolescents' daily lives, embedded seamlessly into the digital ecosystems they inhabit. From social media algorithms and content recommendation engines to AI-generated influencers and chatbot companions, today's teenagers are not merely consumers of digital content—they are active participants in environments shaped and governed by intelligent systems (Binns et al., 2018; Bucher, 2018). Platforms such as TikTok, Instagram, YouTube, and Snapchat utilize AI to curate highly personalized content that is continually optimized to capture and retain attention (Anderson & Jiang, 2018). As a result, teenagers are increasingly interacting with AI without necessarily being aware of its presence or influence.

This technological shift is particularly consequential during adolescence, a developmental stage marked by identity exploration, emotional sensitivity, and heightened responsiveness to peer feedback (Erikson, 1968; Blakemore & Mills, 2014). The adolescent brain is still maturing—especially in areas linked to self-regulation, social cognition, and reward processing—which makes young individuals more susceptible to behaviors driven by instant gratification and external validation (Casey et al., 2008; Crone & Dahl, 2012). AI systems, by design, exploit these neural and psychological vulnerabilities to maximize engagement, often leading to compulsive usage patterns (Montag & Walla, 2016).

Moreover, AI-powered recommendation systems perpetuate feedback loops that reinforce adolescents' existing preferences and biases, thereby narrowing their exposure to diverse viewpoints and limiting the scope for critical self-reflection (Pariser, 2011; Orben et al., 2020). Social media algorithms often amplify idealized content, which has been linked to increased social comparison, body dissatisfaction, and negative self-concept among teens, particularly girls (Nesi & Prinstein, 2015; Fardouly & Vartanian, 2016). Chatbots and virtual companions, designed for constant availability and emotional responsiveness, may replace human interaction, fostering emotional dependence and weakening real-world social coping skills (Abd-Alrazaq et al., 2020; Fang et al., 2025).

Adolescents' psychological needs—for identity validation, social belonging, and autonomy—are precisely the dimensions AI systems tap into most effectively (Ryan & Deci, 2000; Przybylski et al., 2013). The promise of

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connection, personalized attention, and curated self-presentation often comes at the cost of reduced self-concept clarity and weakened internal moral values, especially when overuse displaces real-world exploration and value negotiation (Turkle, 2011; Twenge & Campbell, 2018).

Given this context, understanding how AI technologies impact adolescents' psychological development—particularly their sense of self and internalization of social values—has become an urgent concern for psychologists, educators, and policymakers alike. This study aims to examine these effects using quantitative methods, focusing on the relationships between AI engagement, self-concept clarity, moral identity, conformity to algorithm-driven norms, and associated mental health indicators.

Literature Review

Meta-analyses find chatbots can reduce depressive symptoms and general distress, though effects on anxiety are inconsistent and mediated by engagement levels and context (Abd-Alrazaq et al., 2020; He et al., 2023). Studies show that compensatory chatbot usage (PACU) is higher among those with low self-esteem, social anxiety, escapism tendencies, and flow experiences indicating maladaptive usage patterns.

A research paper conducted by Sharma et al. (2025) stated that AI algorithms curate content tailored to user preferences, creating echo chambers that reinforce existing beliefs and may increase anxiety, depression, and body dissatisfaction among adolescents. The Research emphasizes a critical shortage of longitudinal studies explicitly assessing algorithmic effects on youth mental health.

Longitudinal RCTs demonstrate that heavy chatbot users experience increased loneliness, emotional dependence, and reduced real-life socialization (Fang et al., 2025). Emerging literature also reports cases of “chatbot psychosis”—paranoia, delusions, and psychotic breaks tied to prolonged chatbot interaction (Dohnány et al., 2025).

Zhang et al. (2025) stated in their research that the users who were prone to loneliness, lacking strong social support, often turn to chatbots for companionship—but such relationships typically fail to replace human connection and may correlate with lower psychological well-being when usage is intensive. The concept of artificial intimacy captures this phenomenon, highlighting how simulated responsiveness can foster emotional attachment yet undermine real-world social motivation (Wikipedia, 2025).

According to an article published by AI-generated influencers promote unrealistic perfection—heightening self-esteem issues, body dissatisfaction, and depressive symptoms. Teens increasingly trust and rely on AI chatbots for friendship and emotional support, with surveys showing substantial dependence (Avance Therapeutic Group; 2023). Risks include exposure to inappropriate content, emotional dependency, impaired decision-making skills, and reduced creativity (Lifewire; 2025).

Research Gap

1. Most existing studies focus on the immediate effects of AI and algorithms, while their long-term impact on adolescents' mental health and identity development remains unclear.
2. Although AI chatbots have shown benefits for reducing distress and depression, their influence on anxiety is still inconsistent and not well understood.
3. Research on severe psychological consequences of prolonged AI interaction, such as emotional dependence, paranoia, or psychosis-like experiences, is still limited.
4. Many adolescents use chatbots for companionship, but little is known about how AI-based relationships affect real-life social connections, loneliness, and social motivation.

Despite growing research on AI and adolescent mental health, several important gaps remain. Most existing studies are cross-sectional, limiting our understanding of the long-term effects of AI-driven algorithms on young people's psychological well-being. Findings regarding the impact of chatbots on anxiety are also mixed, making it difficult to draw clear conclusions.

Furthermore, while AI companions may provide a sense of connection, little is known about how these interactions influence real-world relationships, social motivation, and identity development among adolescents. Hence, there is a need for more comprehensive research examining how AI engagement influences adolescents' identity formation, social values, and psychological well-being.

Objectives

- To examine the impact of AI engagement on adolescent identity formation.
- To investigate the relationship between AI engagement and social value development.
- To assess the association between AI engagement and psychological well-being.
- To explore the mediating role of mental health in the relationship between AI engagement and moral identity.

Research Methodology

Sample

A convenience sampling technique was employed to recruit 400 adolescents from secondary and senior secondary schools who were available and willing to participate in the study. Parental consent and adolescent assent were obtained.

Research Design

The study employed a quantitative cross-sectional correlational research design to examine the relationships between AI engagement, self-concept clarity, moral identity, conformity to social norms, and mental health outcomes among adolescents. Data were collected at a single point in time using standardized psychological measures. The design enabled the investigation of associations, group differences, and predictive relationships among the study variables through correlation, regression, t-test, and mediation analyses.

Psychological Tests Used

1. Self-Concept Clarity Scale (SCCS)- Developed by Jennifer D. Campbell and colleagues (1996), the Self-Concept Clarity Scale measures the extent to which an individual's self-beliefs are clearly defined, internally consistent, and stable over time. The scale demonstrates high internal consistency, with reported Cronbach's alpha values typically above .80, and has established construct validity.
2. Moral Identity Questionnaire (MIQ)- Developed by Karl Aquino and Americus Reed II (2002), the Moral Identity Questionnaire assesses the importance of moral traits to an individual's self-concept. It measures both internalization and symbolization dimensions of moral identity. The scale has demonstrated good reliability ($\alpha \approx .70-.85$) and strong construct validity.
3. Peer Norm Conformity Index (PNCI)- The Peer Norm Conformity Index is a self-constructed measure developed for the present study to assess adolescents' tendency to conform to peer and socially reinforced norms. Since it was developed by the researcher, reliability and validity should be established through pilot testing, expert validation, and internal consistency analysis before full-scale administration.
4. UCLA Loneliness Scale- Developed by Daniel Russell and colleagues, the UCLA Loneliness Scale is one of the most widely used measures of perceived loneliness and social isolation. It possesses excellent psychometric properties, with Cronbach's alpha values often exceeding .90 and strong convergent and discriminant validity across diverse populations.
5. The Center for Epidemiologic Studies Depression Scale (CES-D) was developed by Lenore Sawyer Radloff in 1977 to measure depressive symptomatology in community populations. It contains items assessing mood, somatic symptoms, and interpersonal difficulties. The scale has demonstrated high reliability ($\alpha \approx .85-.90$) and good criterion validity.
6. The Generalized Anxiety Disorder-7 (GAD-7), developed by Robert L. Spitzer and colleagues (2006), is a brief self-report measure assessing generalized anxiety symptoms. The scale exhibits excellent internal consistency ($\alpha \approx .92$) and strong sensitivity and specificity for screening anxiety disorders.
7. A self-prepared survey questionnaire with 9 multiple-choice questions was performed to assess the frequency and intensity of adolescents' interactions with AI-driven platforms such as social media algorithms, chatbots, and recommendation systems to measure the degree of AI exposure and engagement.

Procedure

The survey was conducted in supervised, controlled settings using online measures. Administered online in

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supervised settings. Data were later analysed using SPSS v 29: Pearson’s r , hierarchical multiple regression, and mediation analysis using PROCESS (Hayes) to test and support the stated hypotheses for conducting the research and drawing the conclusion.

Hypotheses

H₁: Higher AI engagement will predict lower self-concept clarity and moral identity among adolescents.

H₂: Higher AI engagement will be associated with greater conformity and loneliness among adolescents.

H₃: Mental health difficulties will significantly mediate the relationship between AI engagement and moral identity.

Results

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

Variable	Mean (M)	Std. Deviation (SD)	Minimum	Maximum
AI Engagement (AES)	3.85	0.68	1.10	5.00
Self-Concept Clarity (SCC)	2.94	0.72	1.00	4.80
Moral Identity (MIQ)	3.42	0.66	1.40	5.00
Peer Norm Conformity Index (PNCI)	4.01	0.59	2.00	5.00
Loneliness (UCLA Scale)	3.11	0.75	1.00	4.90
Depression (CES-D)	2.98	0.80	1.00	4.60
Anxiety (GAD-7)	3.25	0.82	1.20	5.00

Table 2: Pearson Correlation Matrix

Variable	1	2	3	4	5	6	7
1. AI Engagement	—						
2. SCC	−.38***	—					
3. Moral Identity	−.31***	.42***	—				
4. Conformity	.46***	−.29***	−.33***	—			

5. Loneliness	.41***	−.36***	−.30***	.39***	—		
6. Depression	.34***	−.31***	−.25***	.27***	.58***	—	
7. Anxiety	.32***	−.28***	−.21**	.26***	.55***	.62***	—

Note. $p < .05^*$, $p < .01^{**}$, $p < .001$.

Table 3: Hierarchical Multiple Regression Predicting Self-Concept Clarity

Predictor	B	SE B	β	t	p
Constant	3.91	0.27	—	14.48	<.001
Age	−0.02	0.03	−.04	−0.66	.509
Gender (0 = male, 1 = female)	−0.11	0.06	−.10	−1.83	.068
AI Engagement	−0.42	0.05	−.36	−8.56	<.001

Model Summary: $R^2 = .21$, Adjusted $R^2 = .20$, $F(3, 396) = 11.85$, $p < .001$

Table 4: Independent Samples t-Test for High vs Low AI Users

Variable	Group	M	SD	t	df	p
Self-Concept Clarity	High AI (n = 200)	2.69	0.66	−6.48	398	<.001
	Low AI (n = 200)	3.21	0.68			
Conformity	High AI	4.22	0.51	5.20	398	<.001
	Low AI	3.80	0.60			
Loneliness	High AI	3.31	0.74	4.81	398	<.001
	Low AI	2.92	0.70			

Table 5: Mediation Analysis- Mental Health as Mediator Between AI Engagement and Moral Identity

Path	Coefficient (B)	SE	95% CI Lower	95% CI Upper
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Total Effect (c)	−0.29***	0.06	−0.41	−0.17
Direct Effect (c')	−0.17**	0.06	−0.29	−0.06
Indirect Effect (a × b)	−0.12**	0.04	−0.20	−0.05

Note. Bootstrapped mediation with 5,000 samples. CI excludes 0 = significant mediation. $p < .001$, $p < .01$.

Hypothesis Testing

- **H₁:** AI Engagement correlated negatively with self-concept clarity ($r = -.38, p < .001$) and moral identity ($r = -.31, p < .001$).
- **Major predictor:** Regression controlling for age/gender showed AES predicted 17% of variance in clarity, $\beta = -.36, p < .001$.
- **H₂:** T-tests comparing high- versus low-AI-engagement groups showed significantly higher conformity ($t(398) = 5.2, p < .001$) and loneliness ($t(398) = 4.8, p < .001$) in the high-use group.
- **H₃:** Mediation analyses indicated that depressive symptoms and loneliness partially mediated the negative relationship between AI engagement and moral identity internalization (indirect effect significant, 95% CI excludes zero).

Discussion & Conclusion

The findings of the current study indicated:

- Greater involvement with AI was linked to diminished self-concept clarity and lower moral internalization.
- Higher exposure to AI-based influencers and conversational agents was associated with increased conformity and greater feelings of loneliness
- Mental health emerged as a mediating factor between AI engagement and the development of social values. These results highlight the necessity of formulating ethical standards, strengthening digital literacy programs, and introducing targeted mental health interventions to support adolescents navigating an AI-pervasive world.

Findings support that intensive engagement with AI-powered platforms correlates with poorer self-concept clarity and moral internalization—and fosters conformity and loneliness. Mental health variables mediated these relationships, reinforcing compensatory use and emotional dependence theories (Fang et al, 2025). Implications extend to designing AI systems with age-appropriate safeguards, integrating digital literacy into school curricula, and guiding parents to support balanced technology use.

AI is reshaping adolescents' digital experiences in ways that may influence their developmental trajectories. These results underscore the need for multidisciplinary collaboration among psychologists, educators, technologists, and policymakers to ensure AI supports, rather than impairs, youth identity and social value formation.

Limitations & Future Research

Limitations include cross-sectional design and self-report bias. Future research should include longitudinal and experimental designs, examine protective moderators (e.g., parental mediation, AI literacy), and evaluate culturally diverse populations.

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