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The Impact of AI on Adolescent Cognition and Mental Health: An International Literature Review (2024-2026)

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Abstract

The influence of artificial intelligence (AI) affects adolescents' academic performance, psychological development, and cognitive evolution. Artificial intelligence has a positive as well as a negative effect adolescents have found in many studies. This literature review focused on a collection of descriptive and empirical articles that were published between January 2024 and April 2026 in English language, examining how AI influences adolescents across three domains: academic performance, cognitive development, and psychological well-being. This literature review includes findings from 13 different countries including the United States, China, Japan, Argentina, Australia, Canada, Great Britain, Germany, Spain, Italy, Romania, Indonesia, and Albania. To identify relevant literature, searches were conducted using ResearchGate, Google Search, PubMed, Web of Science, and Google Scholar. The collected data indicate that the education outcomes, cognitive trajectories, and psychological health of adolescents are significantly influenced by their engagement with artificial intelligence. The review emphasizes the need for balanced use of AI in education and outlines essential directions for future research regarding the developmental impacts.

Keywords: *Artificial Intelligence, Adolescents, Academic Performance, Cognitive Development, Psychological Well-Being.*

Introduction

Artificial intelligence (AI) has been integrated into adolescent learning and live experiences. Previous generations referred to encyclopedias, books and teachers for information, today's adolescents utilize AI systems to explain vocabulary, phenomena, complete homework, writing projects, and even navigate real-life situations. The increasing use of AI technologies raises questions about how they affect cognitive, academic, and psychological development of adolescents.

Scholars are currently questioning how excessive cognitive outsourcing to AI may influence adolescents' independent thinking abilities.

According to Gupta (2025), when students routinely bypass difficult texts or problem-solving tasks, cognitive abilities (the mental muscle for doing operations) such as critical thinking and analytical reasoning may not fully develop.

Moreover, Simarmata (2025) reported that the average attention span has become short in digital spaces to just 47 seconds. When AI summarizes books or automatically solves mathematical problems, adolescents miss learning and the "thinking process" that contribute to memory development, logical reasoning, and creative abilities (YoungLives. 2026).

Two theoretical perspectives attempt to explain the interaction among adolescents and the psychological effect of AI: First, the Stimulation Hypothesis posits that AI can provide a safe environment for socially anxious or neurodivergent adolescents to practice communication and emotional expression without the fear of judgment.

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Second, the Displacement Hypothesis, in contrast, proposes that excessive interaction with AI may reduce the motivation face-to-face interaction, and potentially contribute to social isolation (Sun, 2026).

AI technologies may affect the perception of adolescents including mental health, body image, diet and self-concept. Maheux et al., (2026) believe that AI generated responses when adolescents seek advice regarding sensitive, emotional or psychological issues which may reinforce distorted self-perceptions. Certain studies noted positive outcomes through AI. For example, an ongoing initiative supported by predictive AI models-which included a sample of 1,800 students across seven cities-monitors physical fitness levels, rising childhood obesity, and behavioral indicators, allowing schools to step in with early healthcare interventions (UNICEF Albania, 2026).

Adolescence is a stage characterized by significant biological, psychological and social changes. These changes may vary according to culture and can be viewed as a period of independence (Bertelsmann, 1995). This stage of life differs by country but typically occurs within the same year, with a variation of two to three years. In the late nineteenth and early twentieth centuries, theoretical approaches saw adolescence as the phase where individuals develop as bio-psychosocial beings. Understanding the individual at this stage of life requires analysis of family and social function in biological, social and psychological dimensions (Ausübel, 2002). In society this stage of life as development processes are increasingly shaped by adolescents in relation to the evolution in science and technology, particularly artificial intelligence.

Research on adolescence has focused traditionally on physical development, cognition, emotions, aggression, behavioral problems, and social adaptation. In recent years, one of the problems that is attracting the attention of researchers, psychologists and educational specialists is the excessive and uncontrolled use of artificial intelligence. Both empirical studies and comprehensive investigations are limited. To better evaluate the effects of the impact of the use of artificial intelligence the study presents a literature review. This literature review examines recent international studies to understand the effect of artificial intelligence on adolescents' academic performance, cognitive development, and psychological well-being.

Methodology

This review uses the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020). The literature search was executed across academic databases including Google Scholar, ResearchGate, PubMed, and Web of Science, and Google Search. The research was strictly limited to studies published between January 2024 and April 2026 in English, so we could get information on how artificial intelligence affects adolescents. We chose studies that looked at how artificial intelligence affect academics performance, cognitive development and well-being.

To find the right studies were used words like "artificial intelligence" "generative AI" "ChatGPT" "adolescents" "teenagers" "youth" "cognitive development" "critical thinking" "psychological well-being" "mental health" and "academic performance".

The selection process went across two stages. Firstly, 34 publications were screened from titles and abstracts with keywords: artificial intelligence, adolescents, academic performance, cognitive development, psychological well-being. Secondly, were reviewed and considered only the relevant full papers. It was noted that various studies from the same countries presented differing results regarding the influence of AI use among adolescents. Finally, 16 articles and institutional reports were included, after removing non-relevant studies.

The studies that we target were empirical, descriptive, and analytical literature exploring the intersection of artificial intelligence with adolescent education, cognitive development, behavior, and psychological well-being. The designed sample was mostly descriptive with a smaller subset of analytical and intervention-based studies. The majority of available studies were descriptive or cross-sectional. Because the studies were different in terms of how they were done, we could not do a kind of analysis that combines all the results. We just told the story of what we found and looked for trends, benefits, risks and implications of

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adolescents using artificial intelligence in different cultural contexts and how artificial intelligence affects adolescents.

Results

The findings from the 16 analyzed publications demonstrate that the developmental impact is not monolithic. In Table 1 shows the impact of AI on adolescent development

Table 1: Cross-National Summary of AI impacts on Adolescent Development

Country	Year	Sample	Main Findings	Psychological / Cognitive Impact
USA	2025 – 2026	13–17	57%-schoolwork; 54%-entertainment	Dependency on AI
USA	2025	Adolescents	80% negatively affect; critical thinking	Fear of cognitive decline
USA	2026	12–21	AI use linked to stronger psychological resources	Support informal mental health
China	2025	Adolescents	High optimism and widespread educational AI use	Risk of cognitive outsourcing
China	2026	Adolescents	AI awareness influenced career preferences	Anxiety from replacing professions
Canada	2024	Adolescents	Balanced technology use and supervision	Ethical AI regulation
Australia	2026	Adolescents	Mental health support sources	Dependency on AI
Japan	2026	Adolescents	Use for homework and translation	Reduced independent learning
Argentina	2024	Adolescents	Familiarity with AI and educational use	Uncertainty and future anxiety
Germany	2025	12–19	Misinformation	Critical evaluation
Italy	2025	Adolescents	Learning process vs. academic output	Educational values influenced AI use patterns
UK	2026	Adolescents	53% used AI for educational support	Academic anxiety associated with frequent use
Spain	2026	Adolescents	AI improved learning and digital competence	Cyberbullying & ethical concerns
Romania	2025	Adolescents	Higher competence	Weakened critical thinking
Indonesia	2026	Adolescents	AI reduced career anxiety by 26.7%	Improved decision-making confidence

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Albania	2025–2026	13–24	Digital engagement and fluency	Misinformation and manipulation

North America

Adolescent mental health is evolving as artificial intelligence increases how adolescents learn, communicate, and navigate development challenges (American Psychological Association, [APA], 2025). The findings showed that 57% of adolescents use AI for schoolwork assistance, 54% use for entertainment.

Cognitive dissonance is becoming evident among Gen Z youths regarding their increasing dependence on AI technologies, according to researchers. According to Gallup (2025) about 80% of Generation Z believed that AI could ultimately have a negative impact on their learning and critical thinking skills.

A cross-sectional study in the United States used a nationally representative sample to examine Aritificial intelligence (GenAI) use among adolescents ages 12–21 years, with a particular attention to mental health-related AI use. The study found by Maheux et al. (2026) that AI use was common among participants aged 18–21 years (22%). Motivational quality, specifically the reasons adolescents engage with GenAI — was a key predictor of outcomes, with more intrinsic motivations associated with AI, emerged as a predictor of psychological outcomes. Adolescents who used AI for more motivation demonstrated stronger psychological resources and better well-being outcomes. The findings highlighted the increasing scale of informal AI-based mental health support-seeking among youths.

Germany – digital Literacy and critical Evaluation

AI has rapidly become integrated into the daily lives of German adolescents according with the data from the JIM-Studie 2025 (Jugend, Information, Medien). Artificial intelligence among adolescents aged 12 to 19 years has reached a significant level. 57% of adolescents reported trusting AI-generated information, results revealed simultaneous concerns about misinformation, deepfakes, and data privacy. Adolescents with higher levels of digital literacy were more likely to verify AI information through traditional journalistic and educational sources, rather than accepting AI without evaluation. 74% of German adolescents use AI for homework or studying, and ChatGPT has become the second most used tool among students.

Italy: Learning process vs Academic Output

The relationship between artificial intelligence and adolescent development presents a unique dynamic in Italy. The 59th Censis Report (Rapporto Censis, 2025) and sociological studies report that the Italian adolescents use AI to manage both academic and personal life. While recognizing that school and educational systems are not prepared to respond to the rapid technological changes.

The Censis data revealed that only 31.9% of Italian students use AI as a tool for writing essays or to complete tasks. The important feature among Italian adolescents about AI is that they focus on the learning process rather than simply producing finished assignments. This finding suggests that cultural and educational values may shape how adolescents use AI technologies.

China: Optimism and Cognitive Outsourcing

A nationwide survey conducted by the China Adolescentsand Children Research Center (CYCRC, 2025) together with the government's "AI+ Education" Action Plan highlights the influence of AI tools on young people. Chinese adolescents exhibited an exceptionally high level of optimism toward AI—with over 80% expressing positive attitudes and enthusiasm for the technology. A nationwide demographic assessment covering over 8,500 students across seven representative provinces, (including Beijing, Guangdong, and Henan) reported an AI use of approximately 60% increasing patterns of cognitive behaviors among adolescents.

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Another study conducted in China (Wu, 2026) included 836 adolescents with mean age of 13.98 years (SD = 1.35years), of whom 52.30% were male. The findings revealed that adolescents with direct and explicit knowledge about AI capability significantly reduced their preference for career pathways considered highly replaceable by AI technologies. These results suggest that AI's capabilities may shape adolescents' education aspirations in long-term careers planning.

Great Britain and Australia: Academic Anxiety and AI therapy

Research by Monteith et al., (2026) in Great Britain found that 53% of surveyed teenagers used Aritificial intelligence models as an educational support for homework and learning activities, while 42% used it for entertainment.

Findings from the Australian AdolescentsDigital Index (Schmidt et al., 2026), revealed that nearly half (47%) of adolescents in Australia identified online platforms as their primary source of support for a mental health concern, while 7% reported turning directly to commercial AI AIs for assistance. Research found that frequent use of GenAI was significantly associated with increased academic anxiety, although the effect size was relatively small. No significant relationships were identified between the frequency of GenAI use and adolescents' self-esteem, self-efficacy, or overall academic confidence. AI may contribute to academic-related stress, but the broader psychological effects remain not fully established.

Spain and Canada: Ethical and Educational Concerns

According to Spanier researchers' artificial intelligence became an important influence in adolescents' academic performance and social lives. They report that AI can support learning, academic performance and digital competence when used responsibly, but warn about risks such as mental health, dependency, cyberbullying, and ethical challenges. In schools and online environments, Spain has strengthened digital protection and educational to promote safer and responsible use of AI (Gámez-Guadix & Mateos-Pérez, 2026)

Canadian studies indicate that artificial intelligence and digital technologies strongly influence adolescents' educational, emotional, and social development. Balanced technology use, parental supervision, digital education and ethical regulation of AI and online technologies can help adolescents navigate digital environments safely and responsibility was recommended by Canadian schoolars (Gali & Oladipo, 2024).

In both countries researchers emphasized the importance of digital education, parental supervision, and stronger ethical regulation of AI technologies.

Romania and Indonesia: Motivation and Career Development"

A study conducted in Romania by Dogaru (2025) with 84 students examined across six dimensions perceived usefulness for problem-solving, learning retention, skill acquisition, structured interaction with familiar content, consultation on unfamiliar topics, preference for concise responses, and trust in AI accuracy. The findings showed that students who perceived Al as useful reported higher motivation and competence. The study also found that excessive reliance and AI were associated with risks to academic integrity, including weaker critical thinking and poorer citation and referencing practices.

A study conducted in Indonesia by Wahrini (2026) examined the effectiveness of an AI-driven career guidance system in reducing path anxiety among vocational students. This study is conducted with 180 students from three high schools in South Kalimantan, divided into intervention and control groups. Findings showed that students who used the AI system experienced a statistically significant 26.7% reduction in career path anxiety ($p < 0.001$) compared to the control group. The machine learning skills-mapping model achieved an accuracy rate of 87%. 79% of adolescents accessing adaptive mentoring features, 65% report that repeatedly using skill-gap analyses, and 87% downloaded career roadmaps.

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AI-based career guidance systems can positively support adolescents' career readiness, confidence, and decision-making.

Japan and Argentina: Behavioral Dependency and Future Uncertainty

In Japan, a national student survey report published by Nippon (2026), that nearly 80% of Japanese adolescents reported using Aritificial intelligence tools such as ChatGPT or Gemini. Adolescents used AI for homework assistance, idea generation, proofreading, translation and conversation. The findings revealed that 20% of students depended entirely on AI – generated answers and calculations rather than completing tasks independently. Researchers and educators expressed that excessive AI among adolescents may weaken problem-solving abilities, critical thinking, and independent learning skills.

Similarly finding came from Argentina. The adolescents reported that 99% of them were familiar with AI, while 66% considered AI very useful in daily and academic activities (Ugolini et al., 2024). Adolescents reported using AI for homework support, summaries, and school assignments. Researchers reported that although adolescents view AI as beneficial for learning and productivity, there are uncertainty about and future career opportunities.

Albania: Digital Fluency and Vulnerability

Adolescents in Albania who are thirteen to twenty-four years are getting used to technology that what it learned from a report by Unicef (2025). These Albanian adolescents are using social media, online, communication platforms and digital technologies all the time. These findings show the adolescents are vulnerabilities within digital environments and online misinformation

Discussion

The objective of this cross-national literature review was to analyze the impact of AI on adolescents' development. By analyzing data across 13 countries, can evaluate how these findings algin with the Stimulation hypothesis vs. the Displacement Hypothesis.

Studies in USA, Japan, Argentina, Spain and Italy indicate that adolescents use Ai for homework and academic support and information. The findings suggest that AI can improve learning efficiency and productivity but also reported reducing independent learning skills. These findings partially support stimulation hypothesis, which propose that technology can enhance learning opportunities and facilitate skill development. Evidence from Japan and Romania supports the displacement hypothesis suggesting that dependence on AI may replace active learning processes and reduce critical thinking abilities.

Research from China, Germany, Romania and USA identified concerns regarding cognitive outsourcing. Adolescents rely on AI for problem solving, full gaps of information, and making decisions. The results indicate that while AI might increase efficiency, frequent use can weaken analytical reasoning, independent problem solving and critical evaluation skills. These findings support strongly the displacement hypothesis, because Al may replace cognitive activities performed traditionally by adolescents themselves.

The studies from Australia, Canada, Spain and USA demonstrate that AI can provide emotional support, information and access to mental health resources, they used AI tools to seek advice regarding emotional and psychological concerns that support the stimulation hypothesis. Concerns remain dependency inaccurate advice and reduced human interaction.

Studies from China, Indonesia and Argentina indicate that AI may influences adolescents 'career expectations job displacement and uncertainty about future planning and employment opportunities.

Limitations

This review identified some limitations:

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AI technology is evolving exponentially faster than traditional peer-reviewed publishing cycles. For example, all studies that we analyzed from 2024 might already show AI behaviors were not relevant when it compares them to the various AI models available by 2026.

The majority of the available studies were descriptive and trying to understand what is happening, rather than Long-term developmental impacts remain insufficiently understood.

Another limitation of this study is that the articles included were different in sample and in methodology. Some analyses relied on massive national data panels like study of Pew Research in the US or the CYCRC in China, while others were sample sizes like in Romania that had only 84 participants. This limited generalization.

Finally, cultural context is differences. The included studies are different educational systems and unequal access to digital technologies can affect the result, from one country to another. Artificial intelligence is a part of this, and we need to consider all factors when we are trying to understand its impact.

Conclusion

This literature review examined evidence regarding the AI influence adolescent cognitive, emotional, social and educational development of adolescents across different international contexts. The evidence shows that artificial intelligence has both effects on adolescent development. AI can be efficient for academic support, creativity, and finding information AI can risk critical thinking, independence, feelings and social skills if used without proper guidance.

The future of this generation depends on achieving a balance between using intelligence and allowing it to dominate core growth in their lives. In future will be important to study development like variable to understand how artificial intelligence influent it.

It is very important to obtain human skills, thinking, empathy, creativity, emotional intelligence, ethic reasoning, and making decisions on their own. If adolescents rely much on AI without guidance and regulation, they might lose independence, have weaker relationships and increased technology for interactions.

Recommendations

If we teach adolescents to use technology through education on digital literacy, rules to keep them safe parents guiding. Ai can help them grow up and get better at using technology.

This review emphasizes the need for based researchers to see how AI affects adolescents over time.

The greatest priority is to keep the human element in learning, communication, and emotional development must remain. It needs cooperation among specialists from different fields such as educators, psychologists, families, and technology developers and must make sure that AI is safe and supportive for adolescents.

The value of AI in adolescent development will depend on if these technologies empower adolescents to become more autonomous, reflective, and discerning individuals rather than dependent users of digital systems.

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