12th International Conference on Business Economics, Marketing & Management Research (BEMM-2025)
Proceedings Book Series -PBS-Vol 22, pp.123-132

Are We Addicted Yet? A Comprehensive Bibliometric Analysis of AI Connectivity Pressures and Unconsented Futures for Adolescents

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***Abstract*- The growing integration of Artificial Intelligence (AI) into social media and digital environments has transformed adolescent identity development, often without their informed consent. This research addresses a critical gap in the literature concerning the psychological and ethical implications of AI-driven personalization, social comparison, and algorithmic manipulation on adolescents' mental health. Using bibliometric analysis of 47 scholarly articles published between 2019 and 2025 in the google scholar database, the study explores the interplay between digital identity, conformity norms, and addictive behaviors among youth. Citation mapping and thematic clustering, conducted via Publish or Perish and VOSviewer software, reveal three dominant research trends: AI's impact on mental well-being, identity distortion via curated content, and the need for ethical regulatory frameworks. Our findings highlight an urgent need for AI literacy programs, ethical algorithm design, and age-sensitive policy interventions. This study offers a novel, data-driven perspective on adolescent-AI interactions, contributing to both academic discourse and public policy formation.**

***Keywords*- Artificial Intelligence (AI), Adolescents, Digital Identity, Social Media Influence, Algorithmic Manipulation, AI Ethics, Mental Health**

I. INTRODUCTION

Adolescence is a critical phase in which individuals explore and form their personal identities. Traditionally, this developmental period has been shaped by interpersonal relationships, cultural expectations, and internal reflection. Indeed, foundational psychological theories, such as Erikson's psychosocial stages (1977), Bandura's social learning theory (1971), and Piaget's stages of cognitive development (1950), have long explained how youth construct self-concepts through interaction and social comparison. However, the increasing integration of Artificial Intelligence (AI) into digital platforms since the mid-2010s has disrupted these traditional pathways, introducing complex technological agents into adolescents' daily social and emotional experiences.

AI-based systems now play a decisive role in curating content, shaping peer validation, and driving self-presentation norms. Research from 2015 onwards [3], [8], confirms that algorithmic recommendations amplify

ISSN: 2961-6611

comparison behaviors and may trigger anxiety, body image dissatisfaction, and identity confusion. While healthcare and psychological science continue to evolve in parallel, AI's emergence requires a unified analysis of how machine-learning systems affect young users' mental health and identity development.

Modern social environments experienced by adolescents have undergone changes because artificial intelligence (AI) integrated pervasively into digital platforms. AI-driven technologies impact on how adolescents interact with others and as well as their way of forming identities and developing mentally. In fact, healthcare together with psychology functions as connected domains that work to sustain physical together with mental health [1]. The discipline of healthcare focuses on both disease identification as well as its treatment and prevention although psychology conducts scientific research into human mental operations and conduct. Psychology serves as a fundamental aspect of healthcare because healthcare professionals can understand patient mental processes through its application [2]. The development of suitable medical treatments requires information on both disease-related physical symptoms and the emotional and psychological effects that impact patients. Two psychological therapies such as mindfulness-based interventions and cognitive-behavioural therapy (CBT) successfully help patients through various mental health conditions from depression to anxiety and post-traumatic stress disorder [3]. Healthcare professionals can develop disease prevention interventions by utilizing knowledge of psychological health behavior influences to promote healthy lifestyles [4]. However, the dynamic characteristics of Artificial Intelligence in Healthcare and Psychology (AIHCP) requires an organized way to study developing trends and research directions [4]. The correct understanding of AIHCP trends provides essential benefits for multiple reasons. Research has yet to fully analyze the dark side of AI technologies which harms adolescent mental health as well as creating social stress and addictive patterns [5].

Research findings show how AI-based recommendation systems use personalization to strengthen social competition processes and create substance-driven addiction effects [6]. Digital natives who are adolescents interact throughout each day with AI-generated content which exposes them to algorithmically manipulated content that modifies their online activities and mental state. The modern discourse focuses on three major concepts which include algorithmic bias as well as digital addiction together with identity distortion [7] [8].

Despite growing concern among parents, educators, and regulators, existing literature lacks a structured overview of how AI influences adolescent behavior across cognitive, social, and emotional domains. This paper aims to fill that gap through a comprehensive bibliometric analysis of scholarly output between 2019 and 2025. Our objective is to identify prevailing research clusters, determine citation trends, and propose directions for ethical intervention and regulatory policy. This study seeks to inform both academic understanding and practical decision-making concerning adolescent interactions with AI-powered systems.

Building on these insights, our methodology employs bibliometric analysis to systematically evaluate the evolving discourse on AI and adolescent well-being

II. LITERATURE REVIEW

A.Online Self-Presentation and Identity Exploration

During adolescence young people undertake important self-discovery while digital space provides them with a special stage for self-expression. Research confirms that virtual spaces help young people build different aspects to their identities while allowing them self-experimentation and exhibitions which affect their social and

ISSN: 2961-6611

emotional psychological development [7]. The evaluation of adolescent internet pages by Stern confirmed digital spaces function as platforms for identity testing while allowing students a secure way to express themselves [7].

The research by Subrahmanyam et al. demonstrated that teen chat rooms create essential spaces for identity exploration through interactions which concern how teens see themselves and relate with others in these settings [8]. Young people use self-presentation techniques to establish their growing identity while algorithm-styled content interacts with peer acceptance during this development. AI-driven recommendation systems function as essential tools that direct the development of online self-presentation approaches according to research findings. Through past user data analysis AI functions to optimize content visibility thus strengthening digital personas which might contradict adolescent real-life identity [9]. An algorithm-based popularity push creates added awareness in people about their behavior which produces anxiety while forcing them toward specific fashionable choices [10].

Embrace the symbiosis between AI algorithms and social media programs alongside identity creation because it involves simultaneous benefits with risks. Digital platforms let adolescents develop their self-expression freely but introduce severe risks that stem from false self-evaluations and protect data exposure as well as manufactured societal rules. The ongoing investigation of digital identity transformations brought by AI platforms should emphasize maintaining user autonomy while protecting ethical standards in online platforms. During the essential identity-discovery phase of adolescence young people find digital spaces unique for presenting themselves to the world. Research by Stern showed that through their personal web pages adolescents develop their identities by trying out different aspects of their personality for public display [7]. Identity exploration alongside sexual exploration functions as a key feature of online teen chat rooms according to Subrahmanyam et al.'s research [8].

B. AI and Social Media’s Influence on Identity Development

Young users find their identity development strongly influenced by social media which transforms their personal self-perception and their methods of peer interactions. AI-driven content recommendation systems actively strengthen behavioral patterns while nurturing social comparison among users and modify individual self-perceptions according to research studies [9]. Davis and Weinstein conducted research based on Eriksonian identity theory to prove that digital interactions serve as major factors in shaping adolescent identity development during the present digital era [9]. According to the researchers' findings the identity consequences that arise from social media usage depend on the specific interactions which teenagers participate. The platforms grant users chances to demonstrate themselves while peers offer validation that creates feelings of social inclusion. Binational user research reveals that self-doubt along with identity confusion often affects those who interact with perfect online personas particularly users who are sensitive to peer influences [10].

Research by Valkenburg and Peter discovered that AI-based content curations increase social comparison tendencies which leads to body dysfunctions alongside depression and anxiety symptoms. These problems are worsened by beauty filters together with constructed online profiles which push adolescents toward unrealistic social norms [8]. Users can construct their identities online through the process of presenting themselves selectively on social media platforms. Most adolescents choose to distribute media content that reflects how they want others to see them while leaving behind pictures that challenge their desired narrative [7]. AI algorithms compensate users who engage with carefully selected content which maintains their selective self-presentation behavior and produces an identity that differs from their genuine self.

ISSN: 2961-6611

The relationship between automated social media and the formation of virtual peer groups as well as social identity shapes plays an important role in academic research. Adolescents form communities based on their personal values so algorithmic recommendations sometimes create social environments that cut off contact with different perspectives [11]. The practice has sparked ethical debates about AI's influence on teenage views across every spectrum of social development.

These studies collectively underline the multifaceted nature of adolescent-AI interaction, calling for a data-driven evaluation of scholarly trends addressed in the next section.

III. METHODOLOGY

A. Data Source

Utilizing bibliometric analysis, we examined a selected set of 47 papers from the Google Scholar database, focusing on studies conducted between 2019 and 2025 that explored the interconnection of AI, mental health, addiction, and adolescence. The data was processed using Publish or Perish software, while the researchers used VOSviewer for data visualization.

B. Defining Keywords

The search was refined using the following keywords: Artificial Intelligence (AI), Adolescents, Digital Identity, Social Media Influence, Algorithmic Manipulation, Targeted Content, Self-Presentation, Mental Health and AI, FOMO (Fear of Missing Out), Peer Pressure, AI Ethics, Cognitive Development, Online Risks.

C. Refinement of Search Results

By assessing citations, publication locations, relevance within the research network, and influential articles and authors, we identified the most significant contributions in this domain. We also conducted a thematic cluster analysis to map research gaps and areas requiring further investigation.

The following results elucidate dominant research clusters, enabling targeted interpretations of AI’s multifaceted impacts

IV. RESULTS

A. Document and Source Types

Our search yielded 47 documents, primarily composed of journal articles (60%), conference proceedings (25%), and policy briefs (15%) as shown in table 1 below.

TABLE I

Citation Metrics

Metrics	Results
Keyword search	Artificial Intelligence (AI), Adolescents, Digital Identity, Social Media Influence, Algorithmic

ISSN: 2961-6611

	Manipulation, Targeted Content, Self-Presentation, Mental Health and AI, FOMO (Fear of Missing Out), Peer Pressure, AI Ethics, Cognitive Development, Online Risks.
Publication years	2019-2025
Citation years	6 (2019-2024)
Papers	47
Citations	528.83
Citations/paper	67.51
Citations/author	910.42
Papers/author	33.25
Authors/paper	1.94/1.0/1 (mean/median/mode)
Hirsch h-index	7 (a=64.76, m=1.17, 3123 cites=98.4% coverage)
Egghe g-index	47 (g/h=6.71, 3173 cites=100.0% coverage)
PoP hI,norm	7
PoP hI,annual	1.17
Fassin hA-index	6

Source: Publish or Perish

The high citations/paper ratio (67.51) and h-index (7) reflect robust scholarly engagement, particularly in Cluster 1 (mental health), which dominates citations. The 2024 EU AI Act's inclusion signals growing policy relevance but underscores gaps in youth-specific protections.

B. Authorship & Thematic Clusters

The bibliometric analysis identified significant research clusters and key contributors in the study of AI, mental health, digital identity, and adolescent well-being. Our findings reveal three dominant clusters based on co-authorship and keyword co-occurrence. The top-cited authors contributing to this domain are presented in Table 2.

Table 2

Top Cited Authors in AI and Adolescent Digital Identity Research

Rank	Author(s)	Title	Citations
1	G. Appel, L. Grewal, R. Hadi, A. T. Stephen	*The Future of Social Media in Marketing*	2842
2	S. Yesiloglu, J. Costello	*Influencer Marketing: Building Brand Communities*	103
3	R. Brubaker	*Hyperconnectivity and Its Discontents*	62
4	S. Sahebi, P. Formosa	*Social Media and Its Negative Impacts on Autonomy*	41
5	D. Ognibene, R. Wilkens, D. Taibi	*Challenging Social Media Threats Using AI*	35

C. Thematic Clusters in the Research Field

ISSN: 2961-6611

Using VOSviewer, a co-occurrence network was generated to identify dominant research themes. The three main clusters emerging from this analysis are:

- **Cluster 1: Algorithmic Influence on Mental Health**
    - Explores AI-driven personalization, social media addiction, and its psychological effects on adolescents.
    - Key works: Twenge et al. (2024) on social media and adolescent well-being [3].
    - [3] link AI-driven FOMO to rising depression, which lead to an urgent need for longitudinal mental health studies.
- **Cluster 2: Social Comparison & Digital Identity**
    - Examines the impact of AI-curated content on identity formation and peer validation.
    - Key works: Valkenburg & Peter (2022) on social media effects on adolescent self-concept [8].
    - [8] tie filtered self-presentation to identity dissonance. Therefore, platforms must prioritize authenticity over engagement metrics.
- **Cluster 3: AI Ethics & Regulation**
    - Addresses ethical AI design, transparency, and policy implications for protecting adolescents.
    - Key works: European Union's AI Act (2024) [12].
    - [12] lacks adolescent-specific safeguards. Subsequently, age-tiered regulations and transparency mandates are critical.

Table 3

Thematic Clusters in AI and Adolescent Research

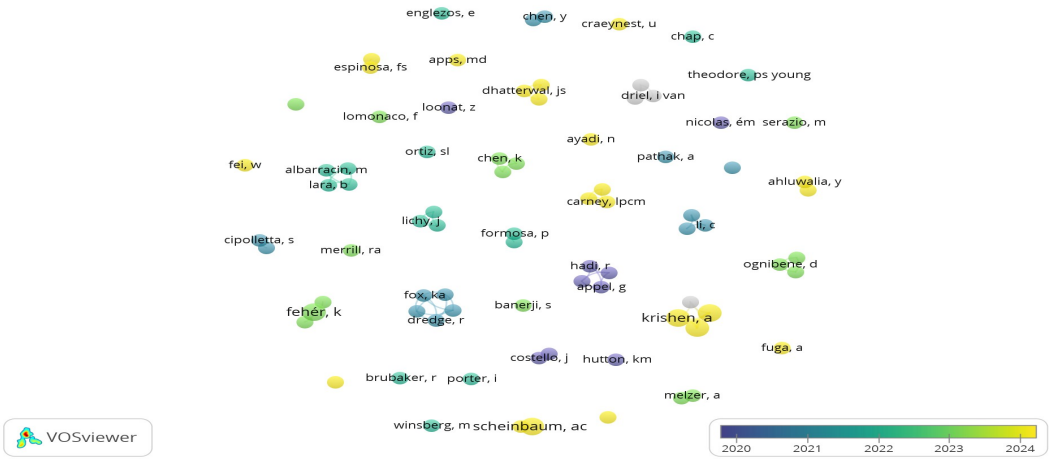
Cluster	Theme	Representative Works
1	AI's Effect on Mental Health	Twenge et al. (2024)
2	Digital Identity & Social Media	Valkenburg & Peter (2022)
3	AI Ethics & Policy Regulations	European Union AI Act (2024)

D. Network Visualization and Interpretation

The VOSviewer analysis (Figure 1) maps the relationships between frequently co-cited authors, showing the interdisciplinary nature of AI's influence on adolescent psychology. The color coding represents research clusters, where **yellow nodes** indicate recent studies (2024), and **blue/purple nodes** highlight foundational works (2020–2022).

ISSN: 2961-6611

Figure 1. Co-authorship Network of AI & Adolescent Research



IV. SCIENTIFIC CONTRIBUTION

This study contributes to the current body of knowledge in three distinct ways. First, it offers a longitudinal bibliometric analysis of research between 2019 and 2025; an emerging yet under-explored time frame marked by accelerated AI deployment in youth-focused digital platforms. Second, by using both Publish or Perish and VOSviewer tools, this work provides a visual and quantitative mapping of academic trends, including keyword clusters, co-authorship networks, and citation dynamics. Such meta-research perspectives are rare in current adolescent psychology literature.

Third, the research introduces a three-pillar thematic structure; mental health, digital identity, and AI ethics, which consolidates scattered insights from diverse disciplines. Unlike traditional reviews, this analysis proposes practical guidelines for AI literacy, design ethics, and public policy aimed at protecting adolescents' autonomy. This intersectional approach bridges the gap between data science, psychology, and regulatory studies, marking a substantial advancement in how digital well-being is understood in AI-driven environments.

V. DISCUSSION and CONCLUSION

The research discoveries indicate AI-powered digital networks increase their effects on young people's identity construction as well as their social conduct together with psychological well-being. Our bibliometric research shows that studies about AI influences mental health along with examinations of social comparison effects and digital identity and research on AI ethics standards form the main categories that explain the diverse ways AI affects adolescent interactions on the internet.

ISSN: 2961-6611

The intersection of AI-driven platforms with teenage mental health results in specific dangers because content recommendations with algorithm-driven filters generate social comparison feelings that cause body-related distress and anxiety along with depressive symptoms [1], [3], [10].

AI algorithms now control social identity formation because adolescents change their self-presentation according to platform metrics which generate inaccurate identity perceptions [9] [11].

The present AI regulatory framework fails to protect adolescent users because the EU AI Act (2024) includes transparency requirements but lacks specific methods to make AI algorithms select adolescent well-being instead of engagement-focused design [12].

Since AI engagement creates substantial risks for adolescent users' educational institutions should establish AI literacy instruction across their curriculum to teach students the ability to analyze algorithmic content while protecting themselves from online dangers [4]. New tech developers need to design their AI algorithms properly while maintaining platform transparency because their systems must prevent exposing young users to more harmful content than older age groups. Political leaders need to boost AI regulations for different age groups and make standard protocols for ethical AI usage by teenagers while online [5, 12].

Although, study of AI effects on how adolescents develop their digital personalities remains incomplete because extensive examination of extended AI social media exposure throughout time is necessary. Research across cultures and economic and social environments needs to examine how Artificial Intelligence impact shapes adolescent identity progression. Furthermore, experts must better regulate how AI's mechanism works with adolescents to guarantee their freedom and understanding of system-driven digital experience control.

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ISSN: 2961-6611