

A Bibliometric Analysis of Moral and Spiritual Intelligence Development in Adolescents: Research Trends and Themes

Loso Judijanto¹, Ivon Arisanti²

¹ IPOSS Jakarta losojudijantobumn@gmail.com

² Universitas Teknologi Sumbawa ivon.arisanti@uts.ac.id

Corresponding Author: losojudijantobumn@gmail.com

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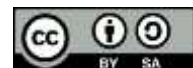
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ABSTRACT

Moral and spiritual intelligence are increasingly recognized as essential capacities for adolescents to navigate ethical dilemmas, build meaning, and develop healthy character, yet the research landscape on these constructs remains dispersed across psychology, education, religion, nursing, and technology ethics. This study maps research trends and themes on moral and spiritual intelligence development through a bibliometric analysis of 222 Scopus-indexed documents published between 1964 and 2026, analyzed using VOSviewer through keyword co-occurrence, co-authorship, and citation analyses. The results reveal seven thematic clusters centered on artificial intelligence and ethics, survey-based studies of moral intelligence, spiritual intelligence and leadership, morality and human thinking, religion and spirituality, psychological and emotional aspects, and consciousness and identity. Publication output has grown rapidly since 2020, with recent attention shifting toward empirical measurement, cross-sectional designs, young adults, and AI ethics. Research on adolescents specifically remains peripheral, as no adolescent-related keyword reaches the mapping threshold. Collaboration is limited, dominated by a single transnational team, while the United States, India, Indonesia, Iran, and the Russian Federation lead country contributions. This study highlights a clear gap in adolescent-focused research and offers a roadmap for developing moral and spiritual intelligence through family, school, and character education in the digital era.

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Corresponding Author:

Name: Loso Judijanto

Institution: IPOSS Jakarta

Email: losojudijantobumn@gmail.com

INTRODUCTION

Adolescence is a critical developmental period in which individuals form their identity, values, and ways of making moral judgments. During this stage, young people face increasingly complex ethical choices related to peer relationships, academic pressure, digital media, and social

expectations. Beyond cognitive ability, the capacity to act rightly and to find meaning in life has been conceptualized through the constructs of moral intelligence and spiritual intelligence. Spiritual intelligence refers to the ability to use spiritual resources, values, and transcendent awareness to solve problems and achieve life goals, and it has been linked to well-being, leadership, and meaningful work (Vasconcelos, 2020). Moral intelligence, in turn, reflects the capacity to understand right from wrong and to act consistently with ethical principles, and it is closely related to empathy, conscience, and self-control.

Research on adolescents suggests that spiritual intelligence can be developed intentionally and plays an important role in character formation. Studies of gifted students show that engaging spiritual intelligence in the classroom fosters global awareness, compassion, and a sense of purpose (Sisk, 2008), while qualitative research indicates that adolescents possess an inner wisdom that can be nurtured through reflective practices (Kilcup, 2016). Empirical evidence also links spiritual intelligence, resilience, and psychological hardiness to the development of moral judgment among female students (Darvishzadeh & Bozorgi, 2016). In school contexts, spiritual intelligence has been facilitated among secondary school learners and positioned as a foundation for creating enabling and caring school environments (Currie, 2023; Ferreira & Schulze, 2015).

The development of moral and spiritual intelligence is shaped by multiple environments. The family environment has been shown to influence emotional intelligence among youth (James Robert & Kadhiraavan, 2019), and schools are increasingly expected to contribute to holistic human potential development rather than academic achievement alone (Rogach et al., 2018). Religious and moral education programs, including those grounded in prophetic and Islamic values, offer structured pathways for cultivating moral character (Huda et al., 2023), while recent approaches propose integrating multiple intelligences into character education to strengthen moderate and progressive values among students (Prayitno et al., 2026). Parenting also matters, as differences in moral, emotional, and spiritual intelligence among parents are associated with aggressive behavior in children (Naeim et al., 2026).

At the same time, the digital transformation has introduced new challenges for moral and spiritual development. Artificial intelligence is increasingly present in education, raising questions about how technology can support or undermine spiritual education and ethical reasoning among learners (Rapi et al., 2024; Tan, 2020). Scholars have also emphasized the ethical implications of artificial intelligence for human dignity, responsibility, and moral agency (Green, 2018). Meanwhile, studies in psychology link religious belief, analytic thinking, and moral concern (Jack et al., 2016), and propose compassion as a core foundation for building caring societies (Gilbert, 2021). These developments indicate that moral and spiritual intelligence is becoming a multidisciplinary field connecting psychology, education, religion, health sciences, and technology ethics.

Despite the growing interest, research on moral and spiritual intelligence remains fragmented across disciplines and populations. Many empirical studies focus on nurses and nursing students (Barkhordari-Sharifabad et al., 2022; Eskandari et al., 2019; Özveren et al., 2026), while adolescent-focused research appears scattered and less visible. There is limited systematic understanding of how the field has evolved, which themes dominate, and to what extent adolescents are represented in this literature. Therefore, this study aims to conduct a bibliometric analysis of research on moral and spiritual intelligence development by identifying its thematic clusters, temporal trends, research density, collaboration networks among authors, institutions, and countries, and the most influential publications, with particular attention to its relevance for adolescent development.

METHODS

This study employs a quantitative bibliometric approach to examine research trends and themes on moral and spiritual intelligence development. Bibliometric analysis enables a systematic assessment of scientific literature by combining performance analysis, which describes publication output and citations, with science mapping, which visualizes the relationships among keywords, authors, institutions, and countries. This approach is appropriate for a field that spans psychology, education, religious studies, health sciences, and technology ethics, as it can reveal dominant themes, influential works, collaboration patterns, and research gaps, including the position of adolescents within the literature.

Bibliographic data were retrieved from the Scopus database, selected for its broad multidisciplinary coverage and compatibility with VOSviewer. The search targeted titles, abstracts, and keywords using terms related to moral and spiritual intelligence and their development, with the string: TITLE-ABS-KEY (("moral intelligence" OR "spiritual intelligence" OR ((moral* OR spiritual*) AND intelligence)) AND (development OR education OR adolescen* OR youth OR student*)). The data were exported in September 2026 in RIS format. The final dataset comprised 222 documents published between 1964 and 2026, consisting of 148 journal articles, 36 book chapters, 16 conference papers, 13 reviews, 7 books, and 2 editorials, most of which were written in English (188 documents), followed by Russian (13 documents). Publication output grew rapidly after 2020, as 159 documents (71.6%) were published from 2020 onward, with 35 documents in 2025 and 54 documents in 2026, while the leading source was Religions (7 documents), followed by the Boletín Medico del Hospital Infantil de México (4 documents) and several journals with 3 documents, including Pastoral Psychology, Journal of Religion and Health, Frontiers in Psychology, and the International Journal of Children's Spirituality.

VOSviewer was used to perform keyword co-occurrence analysis, co-authorship analysis at the author, institution, and country levels, and citation analysis. Keyword maps were presented in network, overlay, and density visualizations, in which each node represents an item, node size reflects its frequency of occurrence or number of documents, and link thickness indicates the strength of co-occurrence or collaboration. A minimum occurrence threshold was applied to maintain the readability of the maps, clusters were generated automatically by the VOSviewer clustering algorithm, and Scopus citation counts were used to identify the ten most cited documents in the dataset.

RESULTS

Keyword Co-Occurrence Network Visualization

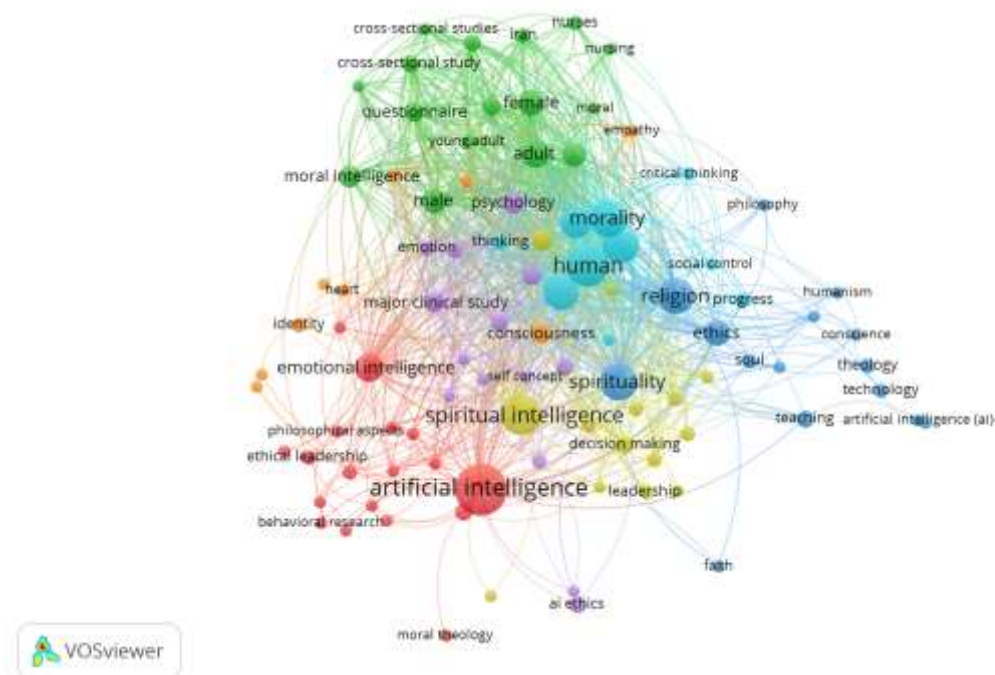


Figure 1. Network Visualization
Source: Data Analysis

Figure 1 displays the keyword co-occurrence network of research on moral and spiritual intelligence. The largest nodes are artificial intelligence (44 occurrences), human (30), spiritual intelligence (29), morality (24), spirituality (23), religion (22), and emotional intelligence (14), and the map forms seven clusters. The red cluster centers on artificial intelligence and emotional intelligence, together with philosophical aspects, ethical leadership, behavioral research, and moral theology, reflecting studies on the ethical implications of artificial intelligence and the role of emotional intelligence in ethical leadership (Dhiman, 2017; Green, 2018). The green cluster contains moral intelligence, questionnaire, cross-sectional study, iran, nurses, nursing, female, male, adult, and young adult, representing survey-based research on moral intelligence, largely conducted among nurses and nursing students in Iran (Alinejad et al., 2023; Eskandari et al., 2019).

The yellow cluster is built around spiritual intelligence, decision making, and leadership, reflecting research on how spiritual intelligence supports leadership practice and work-life outcomes (Ramachandaran et al., 2017; Vasconcelos, 2020). The cyan cluster centers on morality and human, linked to thinking, critical thinking, social control, and progress, while the blue cluster includes religion, spirituality, ethics, conscience, soul, theology, humanism, philosophy, faith, teaching, technology, and artificial intelligence (ai), representing the religious and philosophical foundations of moral and spiritual life. The purple cluster contains psychology, emotion, self concept, major clinical study, and ai ethics, and the orange cluster includes consciousness, empathy, heart, and identity, both of which capture psychological and inner dimensions of moral and spiritual functioning.

In relation to the focus of this study, no adolescent-specific keyword, such as adolescent, student, or character education, reaches the threshold to appear on the map. The closest developmental markers are young adult and teaching, which are located at the periphery of their clusters. This indicates that research on moral and spiritual intelligence is dominated by adult, professional, and technological contexts, while adolescent development remains a peripheral topic.

Studies explicitly addressing adolescents exist, such as those on spiritual intelligence among gifted students and secondary school learners, but they are too scattered to form a distinct thematic cluster (Ferreira & Schulze, 2015; Kilcup, 2016; Sisk, 2008).

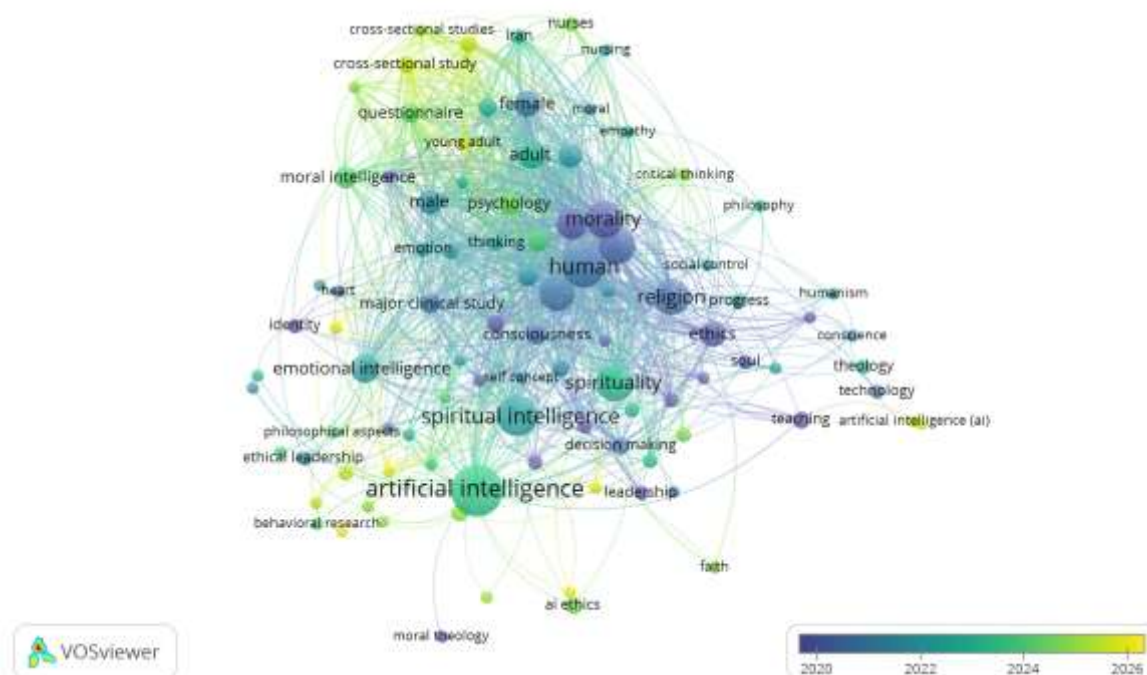


Figure 2. Overlay Visualization
Source: Data Analysis

Figure 2 presents the overlay visualization, in which colors indicate the average publication year of each keyword, ranging from dark blue (around 2020) to yellow (2026). Earlier topics, shown in purple and dark blue, include morality, human, religion, ethics, consciousness, soul, identity, self concept, teaching, leadership, and moral theology. These keywords reflect the normative, philosophical, and religious foundations of the field, which examined how religious belief, compassion, and moral concern shape human behavior (Gilbert, 2021; Jack et al., 2016).

Keywords shown in teal, such as spiritual intelligence, emotional intelligence, artificial intelligence, adult, female, iran, and nursing, appear around 2022 to 2023, while the most recent keywords, shown in green and yellow, include moral intelligence, spirituality, psychology, questionnaire, critical thinking, faith, cross-sectional study, cross-sectional studies, young adult, behavioral research, ai ethics, and artificial intelligence (ai). This pattern indicates a shift toward empirical measurement, as recent studies develop and validate scales of religious, moral, and spiritual intelligence and examine their relationships with learning and care practices (Husain, Ijaz, et al., 2026; Maghaminejad et al., 2026; Özveren et al., 2026).

The overlay map also shows that artificial intelligence has become a recent and rapidly growing context for discussing moral and spiritual development, particularly in education (Rapi et al., 2024; Tan, 2020). The emergence of young adult in yellow suggests growing attention to younger populations, yet adolescents are still not visible as a distinct research focus. Recent developmental studies addressing parenting and character education signal the beginning of this shift (Naeim et al., 2026; Prayitno et al., 2026), but they have not yet formed a strong thematic presence in the map.

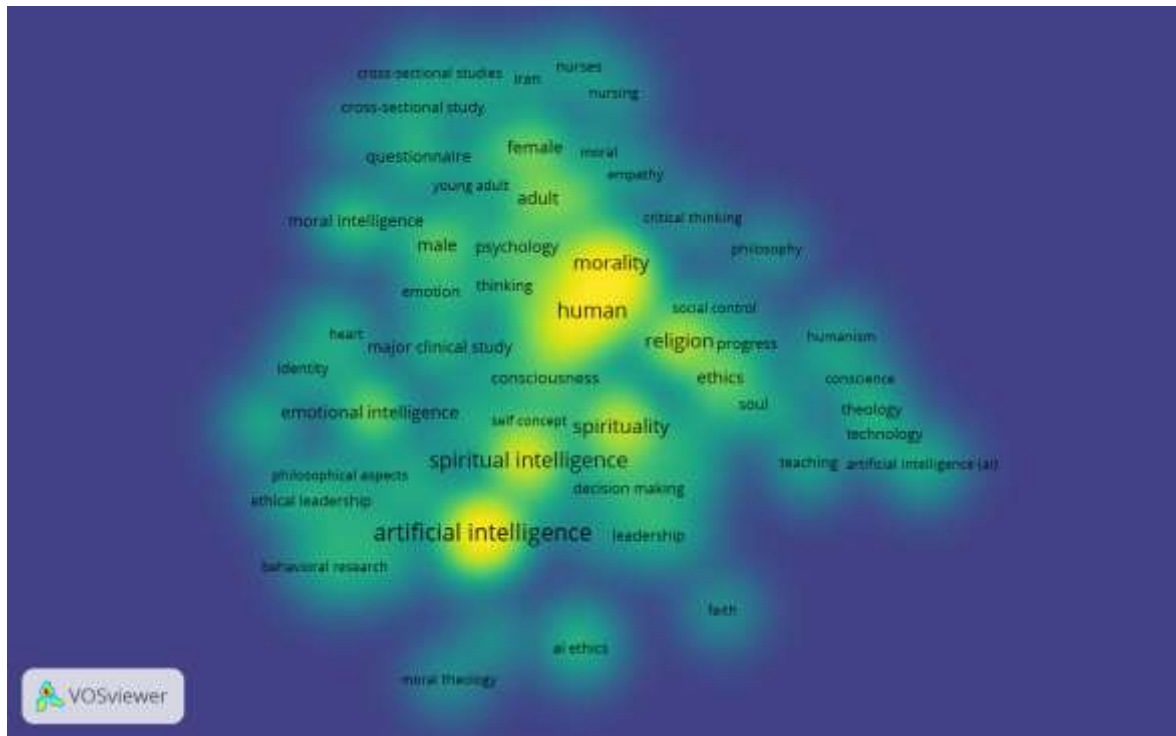


Figure 3 shows the density visualization, where yellow areas indicate a high concentration of keywords and blue areas indicate lower concentration. The brightest areas are around human and morality, artificial intelligence, and spiritual intelligence, confirming that these concepts form the dominant core of the literature. Spirituality, religion, and emotional intelligence also show relatively high density, indicating that spiritual intelligence is frequently studied alongside religious and emotional dimensions.

Moderately dense areas surround female, adult, male, psychology, moral intelligence, ethics, and questionnaire, which reflect the empirical and survey-based stream of research. Notably, moral intelligence shows lower density than spiritual intelligence, suggesting that moral intelligence is a less developed construct in the literature despite its relevance for ethical behavior and character formation.

Keywords in darker regions, such as empathy, identity, heart, faith, conscience, humanism, theology, technology, ai ethics, and moral theology, show low density. Several of these, particularly empathy, identity, and conscience, are central to adolescent moral and spiritual development, yet they receive limited attention. This gap is important because existing studies show that spiritual intelligence contributes to moral judgment and inner wisdom among young people (Darvishzadeh & Bozorgi, 2016; Kilcup, 2016), indicating a promising direction for future research.

Co-Authorship Network

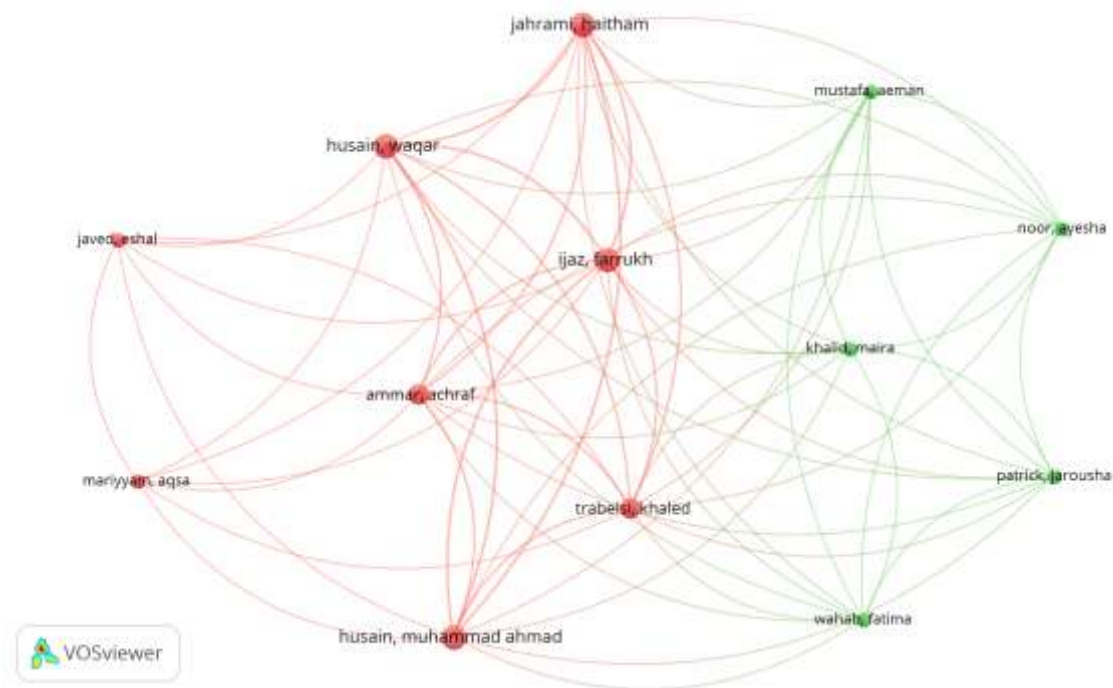


Figure 4. Author Visualization
Source: Data Analysis

Figure 4 displays the co-authorship network of authors, which consists of two interconnected clusters. The red cluster includes Husain, Waqar, Husain, Muhammad Ahmad, Ijaz, Farrukh, and Jahrami, Haitham, who are among the most productive authors in the dataset (3 documents each), together with Trabelsi, Khaled, Ammar, Achraf, Javed, Eshal, and Mariyyam, Aqsa. The green cluster includes Mustafa, Aeman, Noor, Ayesha, Khalid, Maira, Patrick, Jarousha, and Wahab, Fatima, who are strongly linked to the red cluster through shared publications.

Tracing the documents shows that this network is formed by three publications from the same research team, which developed and validated measures of religious, moral, and spiritual intelligence and religious beliefs about mental health, and examined these intelligences as correlates of death anxiety and life satisfaction (Husain et al., 2025; Husain, Ijaz, et al., 2026; Husain, Mariyyam, et al., 2026). The red cluster reflects authors of the 2026 studies, while the green cluster reflects co-authors of the 2025 validation study among Christians and Muslims.

This result indicates that collaboration in the field is limited and concentrated in one productive transnational team, while most other authors publish independently or in small, unconnected groups. For instance, the most prolific individual author, Viniegra-Velázquez, L. (4 documents), does not appear in the network because the works are single-authored. The lack of broader collaboration suggests that research on moral and spiritual intelligence, especially among adolescents, would benefit from multidisciplinary partnerships between psychologists, educators, religious scholars, and health researchers.



Figure 5. Institution Visualization

Source: Data Analysis

Figure 5 presents the co-authorship network at the institutional level. The map shows three groups arranged in a linear structure. The red group on the left includes the Department of Humanities at COMSATS University Islamabad and the Department of Training and Movement Science at Johannes Gutenberg-University Mainz, together with units from the University of Sfax, the University of Jordan, and Fatima Jinnah Women University. Government Hospitals, Manama, is the largest and most central node and acts as a bridge to the green group on the right, which is labeled Arabian Gulf University, Manama.

These institutional links originate from the same publications of the Husain and Jahrami research team (Husain et al., 2025; Husain, Mariyyam, et al., 2026). Government Hospitals, Manama, appears in several of these studies and therefore connects both groups. The green group mainly represents the same partner institutions recorded under shorter affiliation names in another publication, which shows that variations in affiliation names in Scopus can split one collaboration into separate clusters.

Overall, the institutional network indicates that institutional collaboration in this field is weak and depends on a single transnational partnership spanning Pakistan, Tunisia, Jordan, Germany, and Bahrain. No education-focused or adolescent-focused institution appears in the network, which reinforces the finding that school-based and developmental research on moral and spiritual intelligence has not yet been supported by sustained institutional collaboration.

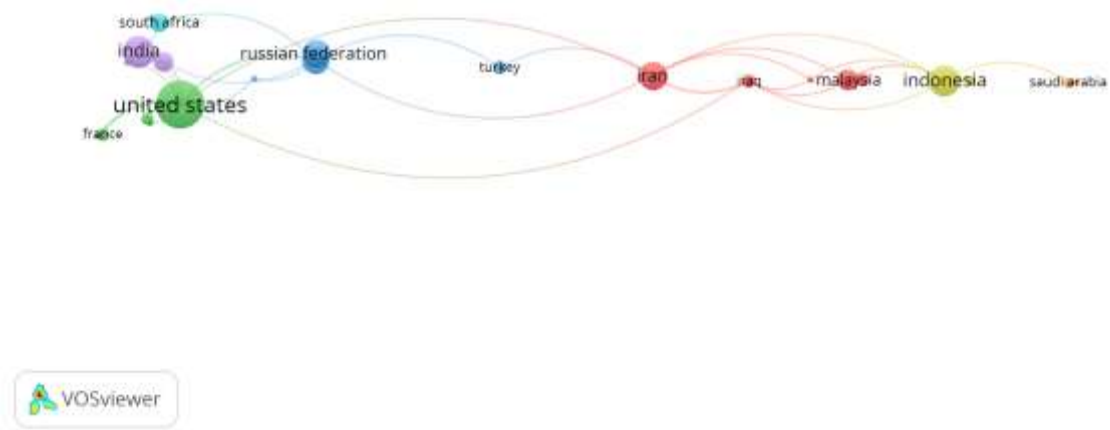


Figure 6. Country Visualization
Source: Data Analysis

Figure 6 illustrates the co-authorship network at the country level. The United States is the largest node (47 documents) and forms a cluster with France, followed by India (22 documents), Indonesia (19 documents), Iran (17 documents), and the Russian Federation (17 documents). The Russian Federation forms a cluster with Turkey, Iran forms a cluster with Iraq and Malaysia, Indonesia is connected to Saudi Arabia, and South Africa appears as a separate node linked to the western part of the network. The United States connects with the Russian Federation, Iran, and Iraq, while Iran functions as a bridge linking Western and Asian countries with Malaysia and Indonesia.

The map reveals two regional blocs. The western bloc, consisting of the United States, France, India, the Russian Federation, Turkey, and South Africa, is associated with research on religion, philosophy, leadership, and technology ethics (Dhiman, 2017; Mercer & Trothen, 2021). The eastern bloc, consisting of Iran, Iraq, Malaysia, Indonesia, and Saudi Arabia, reflects strong interest in the religious and Islamic dimensions of moral and spiritual intelligence, including moral education programs and the adoption of artificial intelligence in Islamic education (Huda et al., 2023; Rapi et al., 2024). South Africa contributes several adolescent-focused studies on spiritual intelligence in schools (Currie, 2023; Ferreira & Schulze, 2015).

Indonesia, as the third largest contributor, shows strong potential to lead research on moral and spiritual intelligence in education, supported by its tradition of religious and character education (Prayitno et al., 2026). However, its collaborative ties remain limited to a few countries. Overall, the network is sparse, and strengthening international collaboration would support comparative studies on how cultural, religious, and educational contexts shape the moral and spiritual development of adolescents.

Citation Analysis

Table 1. Most Cited Article

Citations	Author and Year	Title
107	Powell Lawton et al. (2002)	Motivation in later life: Personal projects and well-being
86	Jack et al. (2016)	Why do you believe in god? Relationships between religious belief, analytic thinking, mentalizing and moral concern
73	Gilbert (2021)	Creating a compassionate world: Addressing the conflicts between sharing and caring versus controlling and holding evolved strategies
52	Green (2018)	Ethical reflections on artificial intelligence
48	Sisk (2008)	Engaging the spiritual intelligence of gifted students to build global awareness in the classroom
47	Mercer & Trothen (2021)	Religion and the technological future: An introduction to biohacking, artificial intelligence, and transhumanism
46	Tan (2020)	Digital Confucius? Exploring the implications of artificial intelligence in spiritual education
41	Metzler et al. (2016)	Could robots become authentic companions in nursing care?
41	Dhiman (2017)	Holistic leadership: A new paradigm for today's leaders
36	Vasconcelos (2020)	Spiritual intelligence: A theoretical synthesis and work-life potential linkages

DISCUSSION

The findings indicate that research on moral and spiritual intelligence has evolved from philosophical and religious reflections on morality toward an empirical and multidisciplinary field that connects psychology, education, health sciences, and technology ethics. Early and highly cited works emphasize religious belief, compassion, and motivation as foundations of moral life (Gilbert, 2021; Jack et al., 2016; Powell Lawton et al., 2002), while more recent studies focus on measuring moral, spiritual, and emotional intelligence and examining their relationships with professional competence, stress, and well-being (Alinejad et al., 2023; Maghaminejad et al., 2026; Mehralian et al., 2023). The close links among moral, spiritual, and emotional intelligence in the network suggest that these constructs are increasingly understood as complementary capacities rather than separate domains, consistent with theoretical syntheses that position spiritual intelligence as a resource for meaning, ethical decision making, and leadership (Ramachandaran et al., 2017; Vasconcelos, 2020).

The most important finding in relation to the title of this study is the peripheral position of adolescents in the literature. No adolescent-related keyword reaches the mapping threshold, and the empirical stream is dominated by studies of adults, nurses, and nursing students (Barkhordari-Sharifabad et al., 2022; Eskandari et al., 2019; Özveren et al., 2026). This gap is significant because the available adolescent studies show that spiritual intelligence can be nurtured in schools, fosters global awareness and inner wisdom, and supports the development of moral judgment (Darvishzadeh & Bozorgi, 2016; Kilcup, 2016; Sisk, 2008). Furthermore, research on school environments, family influences, and parenting indicates that the development of moral and spiritual intelligence depends on the social contexts in which adolescents grow (Currie, 2023; James Robert & Kadhavan, 2019; Naeim et al., 2026; Rogach et al., 2018). The limited attention to empathy, identity, and conscience, as shown by the density analysis, further underscores the need for developmental research focused on adolescents.

The prominence of artificial intelligence in the network and its recent position in the overlay map show that technology has become both a topic and a context for moral and spiritual development. Scholars have raised ethical concerns about artificial intelligence and its impact on

human dignity and moral agency (Green, 2018; Mercer & Trothen, 2021), while others explore how artificial intelligence may support or challenge spiritual education and religious learning (Rapi et al., 2024; Tan, 2020). For adolescents, who are intensive users of digital technology, this raises important questions about how moral and spiritual intelligence can be cultivated in technology-rich environments. At the same time, collaboration patterns remain weak and concentrated in a single transnational team that has advanced measurement tools (Husain et al., 2025; Husain, Ijaz, et al., 2026), and country contributions are divided into western and Muslim-majority blocs with limited interaction.

These findings carry implications for both research and practice. For researchers, there is a clear need for adolescent-focused studies using validated instruments, longitudinal and intervention designs, and cross-cultural comparisons that examine how family, school, religion, and digital media shape moral and spiritual intelligence. For educators and policymakers, the results suggest that character education should integrate moral, spiritual, and emotional dimensions rather than treating them separately, as illustrated by holistic multiple intelligence and prophetic intelligence-based approaches (Huda et al., 2023; Prayitno et al., 2026). For countries such as Indonesia, which is among the leading contributors in this field, these insights can inform the design of school programs that strengthen adolescents' moral reasoning, spiritual awareness, empathy, and responsible use of technology.

CONCLUSION

This bibliometric study maps research trends, thematic structures, and intellectual developments on moral and spiritual intelligence development based on 222 Scopus-indexed documents published between 1964 and 2026. The analysis shows that the field is anchored in artificial intelligence, human morality, spiritual intelligence, spirituality, and religion, and is structured into seven thematic clusters covering artificial intelligence and ethics, survey-based moral intelligence research, spiritual intelligence and leadership, morality and human thinking, religion and spirituality, psychological and emotional aspects, and consciousness and identity. Publication output has grown rapidly since 2020, and recent studies have shifted toward empirical measurement, cross-sectional designs, young adults, and AI ethics.

The collaboration analysis reveals that the field is fragmented, with author and institutional networks dominated by a single transnational research team, while country contributions are led by the United States, India, Indonesia, Iran, and the Russian Federation and divided into western and Muslim-majority blocs. The most cited publications emphasize motivation, religious belief, compassion, and the ethical implications of artificial intelligence, while adolescent-focused works remain less cited and less visible.

The most important conclusion is that adolescents remain a peripheral focus in research on moral and spiritual intelligence, even though adolescence is a decisive period for moral and spiritual development. Theoretically, this study shows that moral, spiritual, and emotional intelligence are increasingly studied as interrelated capacities, which calls for integrative developmental frameworks. Practically, the findings suggest that schools, families, and policymakers should design character education programs that integrate moral reasoning, spiritual awareness, empathy, and responsible technology use, particularly in countries such as Indonesia where religious and character education play a central role.

This study has several limitations. The analysis relies solely on the Scopus database, so studies published in other databases or local journals may be excluded. The dataset also includes

documents that discuss artificial intelligence and intelligence in general, which influences the composition of some clusters, and variations in author and affiliation names may fragment the collaboration networks. In addition, publications from 2026 represent only part of the year. Future research should combine multiple databases, refine search strategies to focus specifically on adolescents, and complement bibliometric mapping with systematic reviews. Further studies are encouraged to examine empathy, identity, conscience, and digital well-being as components of moral and spiritual intelligence, and to conduct intervention and cross-cultural studies on adolescents in schools and families.

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