

A bibliometric analysis of character and moral education research on gifted children

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Abstract. Gifted individuals possess superior potential in intelligence, creativity, and wisdom. However, to maximize this potential for themselves and society, they must develop in the cognitive, affective, and socio-emotional domains, supported by character education. Current research in giftedness emphasizes the need for a paradigm shift to support gifted individuals' character development and ethical sensitivity within the education system. This study aims to carry out a bibliometric analysis of studies on character and moral education in gifted education and to examine the field from a panoramic perspective through parameters such as trends, prominent authors, institutions, and countries. This analysis aims to identify current needs, provide a panoramic summary of studies conducted in this area, and guide future research.

1 Introduction

Recent genocides, social crises, and environmental threats show that individuals must have not only knowledge and skills but also strong character and morals for a sustainable and peaceful social life. For a sustainable and peaceful social life to be possible, the education of gifted individuals is an important issue [1].

Gifted individuals are significantly ahead of their peers in cognitive, creative, or leadership skills, and they often demonstrate heightened moral reasoning, empathy, and social sensitivity [2, 3]. These characteristics lead them to have a deep interest in justice, fairness, and social responsibility [4, 5]. The high sensitivity of gifted individuals plays a crucial role in shaping the future of society. However, giftedness should not be seen only as a positive characteristic [6]. However, gifted individuals have made many innovations and inventions for the benefit of humanity throughout history [7]; those who lack a commitment to benefiting society or ethical values may use their talents in ways that harm humanity. In this context, the dark side of giftedness can also emerge [6]. Using these talents for malignant interests and posing a contagious toxic risk is called "dark giftedness" [6, 8]. Indeed, individuals with these dark traits have profoundly impacted the world throughout history. Historians regard Hitler, Putin, and Mussolini as examples of dark giftedness. For this reason, we should not limit the education and contributions of gifted individuals to their cognitive

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abilities. For this reason, the education of character and morals is a significant need for all exceptionally gifted individuals.

Character and moral education are crucial in gifted individuals' academic, moral, and social development. The desire to make a difference in the world [9, 10], present in all human beings, emerges as a more pronounced need in gifted individuals. Because of their high cognitive abilities and social awareness, these individuals become deeply involved in social justice and moral issues at an earlier age. Gifted individuals tend to be altruistic and assertive, and learning through service to others is one of the most appropriate means of strengthening these characteristics [11]. Character and moral education allow these individuals to develop and strengthen their leadership skills [12, 13].

Although there is evidence that gifted individuals tend to adopt moral values with intrinsic motivation and act accordingly [14], they have a privileged position in the maturation of their moral reasoning due to their early intellectual development [15, 16], and have more developed moral judgments compared to their average peers, not all high academic ability leads to high moral judgment [17]. It is possible for these individuals to acquire universal values and the necessary knowledge, skills, and attitudes through quality character and moral education and to lay the foundations for their potential to make the world a better place. Such education can potentially develop values such as social responsibility, social justice, ethical sensitivity, empathy, compassion, and gifted individuals' academic and professional success. Sternberg and Fernandez-Rodriguez [18] argue that our individualistic society fosters an egocentric, even narcissistic understanding of giftedness. They criticize traditional education systems for promoting an approach that serves only the individual or their group. In contrast, they advocate for transformational giftedness [19] and humanistic giftedness [18]. From this perspective, Sternberg [19, 20] states that there is a need for a paradigm shift in gifted education and identification. It is possible for gifted individuals to create solutions to the complex problems that society faces and to realize themselves by acting in a moral perspective with the character and moral education they receive, but this is not possible without the necessary education and guidance processes [21]. In summary, all the skills gifted individuals acquire through character and moral education are of great importance for them to fulfill themselves, prevent their giftedness from turning into a dark quality, and make their contribution to society more qualified and effective.

Although researchers have conducted many studies on giftedness, only a few have focused on character and moral education. Most studies have focused mainly on cognitive development. Today, however, focusing only on academic and cognitive development in gifted education seems incomplete and even wrong. Solving the complex problems of the 21st century requires creative, practical, wise, and ethical skills [22, 23].

In line with the above reasons, this study aims to examine the existing literature on character and moral education for gifted individuals and provide a panoramic overview of the field—the analysis framework aims to answer the following questions

- How were studies distributed across the years and journals in which they were published?
- Who are the studies' authors, and how are their citations distributed?
- What is the distribution of publications by higher education institutions and countries producing publications on the topic under study?
- What are the most frequently used concepts related to the researched topic, and what is their distribution?

2 Method

2.1 Bibliometric analysis

Bibliometric analysis is a research method that examines the relationships between scientific publications, authors, and citations based on numerical data [24-27]. Researchers use this approach to understand how scientific research evolves [28], identify prominent topics, and shape connections between themselves [29]. Bibliometric analysis, which is widely applied in different disciplines to assess scientific performance and monitor information flows [30-32], reveals the structure of scientific literature [33, 34] and shows which concepts are more common and which topics are related to which topics [27, 29, 35].

This study performed a bibliometric analysis based on the Web of Science (WoS) database using the 'bibliometrix' package in R Studio. We preferred this tool due to its compatibility with WoS, flexibility, and ability to analyze data [36, 37]. The Bibliometrix package can process data from different databases. These databases include Scopus, Clarivate Analytics' Web of Science (WoS), PubMed, Digital Science Dimensions, and Cochrane. In this study, we used the WoS database because they considered it appropriate for the field of education. Since Scopus data does not allow for some analyses, such as co-citation and bibliographic matching [38], we did not include the studies in this database.

2.2 Data collection process

In the data collection process, first of all, in the Web of Science main search interface, the first tab "Moral development" OR "Character Development" OR "Moral Education" OR "Character Education" OR "Character" OR "Wisdom" OR "Ethics" OR "Morality" OR "Social Emotional Learning" OR "Social and Emotional Learning" (Topic) and the second tab separated by 'AND' was searched by entering the keywords "Gifted Education" OR "Gifted and Talented" OR "Gifted" OR "High Ability" OR "Giftedness" (Topic). We saw that there were 306 studies from 1982 to 2024. After they examined the contents of these documents separately, they removed studies unrelated to the subject and reached 115 studies to analyze. The table below provides detailed information about the analyzed data.

Table 1. Main Information

DESCRIPTION	RESULTS	DESCRIPTION	RESULTS
Main Information About Data		Document Contents	
Timespan	1982-2024	Keywords Plus	170
Sources (Journals, book, etc.)	53	Author's Keywords (DE)	436
Documents	115		
Document Average Age	10		
Average Citations per Doc	6,704	Document Types	
Annual Growth Rate %	4,74	Article	75
References	4528	Article; Book Chapter	16
Authors		Article; Early Access	1
Authors	165	Article; Proceedings Paper	3
Authors of Single-Authored Docs	42	Book	1
Authors Collaboration		Editorial Material	6
Single-Authored Docs	64	Meeting Abstract	1
Co-Authors per Doc	1,82	Proceedings Paper	7
International Co-Authorships %	19,13	Review	5

2.3 Data analysis

We downloaded the data from the WoS database in 'bibtex' format. We uploaded the downloaded data to the 'bibliometrix' package in R Studio. We examined and analyzed the studies according to the productivity, commonalities, contexts, trends, and associations of publications, authors, concepts, and institutions.

3 Results

This study performed a bibliometric analysis of gifted students' character and moral education studies. The analysis presents the findings, categorizing them by the years and journals of publication, the distribution of authors and citations, the higher education institutions and countries producing publications on the subject, and the most frequently used concepts and their distributions.

3.1 Distribution of studies by year and journal of publication

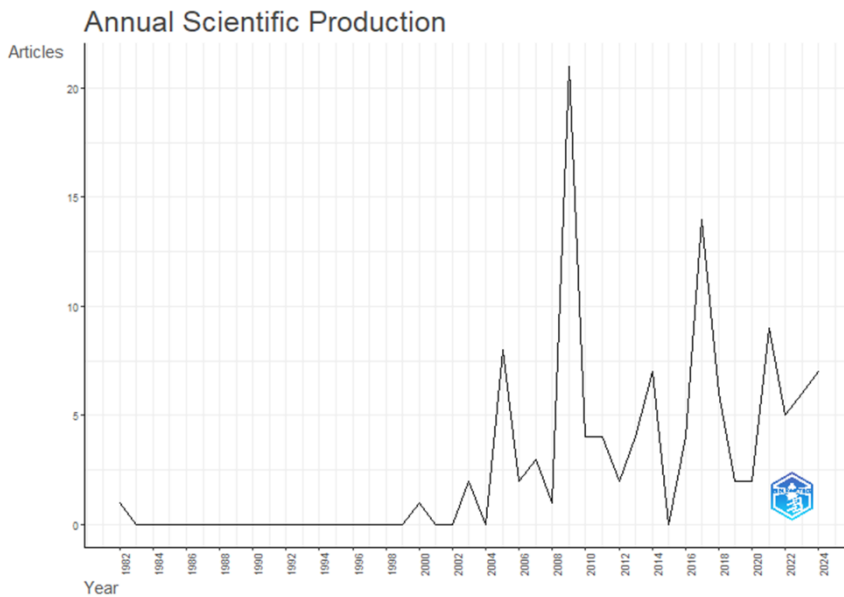


Fig. 1. Annual Scientific Production

Figure 1 provides information about the annual scientific productivity of the studies. The figure shows that studies on character and moral education for gifted children started in 1982 and have continued until today. From 1982 to 2002, researchers conducted 1-2 studies per year, and they increased the number in the following years. A significant increase occurred in these studies in 2005, 2009, 2017, and 2021. Researchers reached the maximum level in 2009 with 21 studies. Despite this, they returned to earlier levels, experiencing a decrease in the number of studies in 2015.

3.2 Authors working on the researched topic and citation distribution

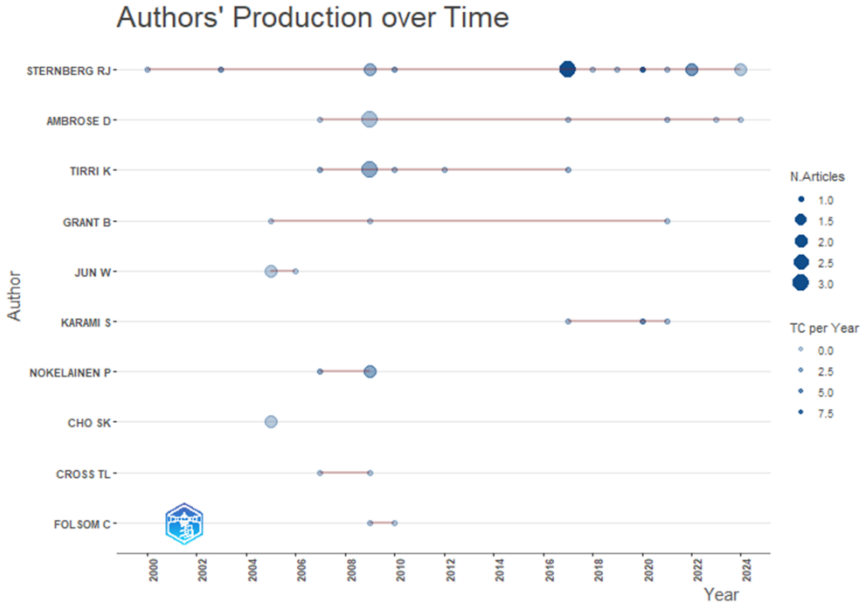


Fig. 3. Authors's Production over Time

Figure 3 shows the productivity of the authors on the topic and the number of citations they received. The figure shows that Sternberg, R.J. is the most productive author, with 16 studies and 301 citations between 2000 and 2024. Ambrose, D. follows him with eight studies and 23 citations between 2007-2024, Tirri, K. with seven studies and 120 citations between 2007-2017, and Karami, S. with three studies and 31 citations between 2017-2021.

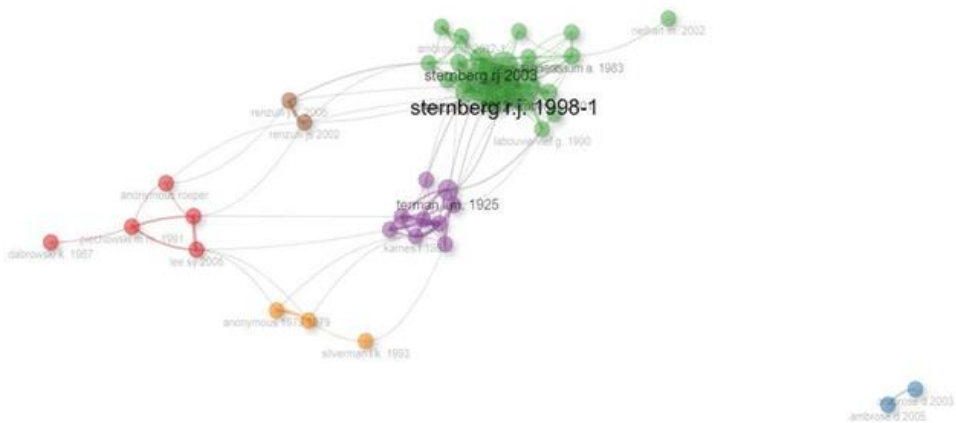


Fig. 4. Co-Citation Network

Figure 4 shows the citation status of the authors in the intellectual clusters. The figure indicates that the authors primarily belong to the green cluster (Sternberg, Renzulli, Ambrose, et al.). We can observe that the authors in the green cluster cite their papers published in various years. The red (Piechowski, Lee, Lovecky, et al.), purple (Terman, Karnes, et al.), yellow (Gross, Silverman), and brown (Renzulli) clusters form a strong connection among themselves while maintaining their connection with the green cluster. Notably, the blue cluster (Ambrose) does not connect to any other cluster.

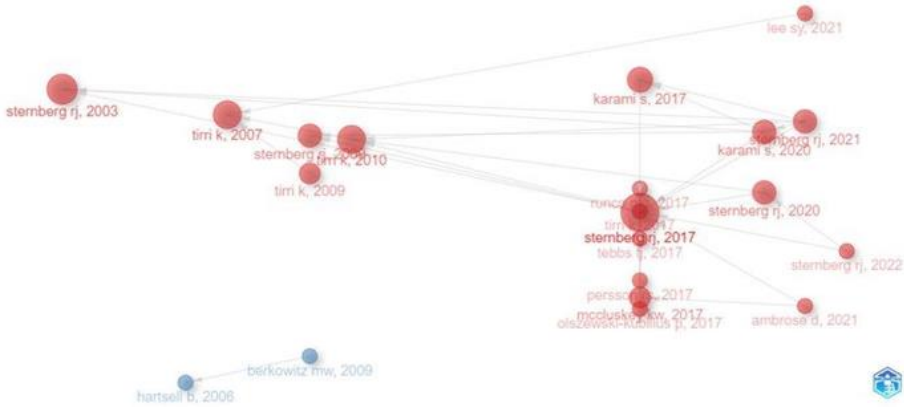


Fig. 5. Historiograph

Figure 5 shows the extent to which authors influence and inspire each other. The figure shows that those in the red cluster have a more intense relationship with each other. In particular, Sternberg, R.J.'s many studies from 2003 (WICS as a Model of Giftedness) to 2017 (ACCEL: A New Model for Identifying the Gifted) have an essential place in the case of inspiration. His work in 2017 is particularly noteworthy. Besides Sternberg, R.J., Tirri, K., and Karami, S. also hold an essential place in the literature. The authors in the blue cluster work in isolation, forming a more niche group.

3.3 Distribution of affiliations and countries producing publications on the researched topic

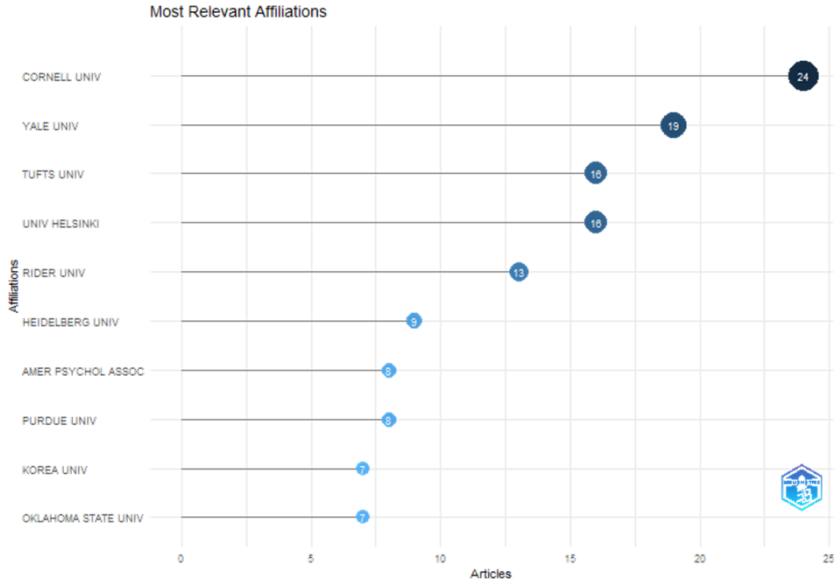


Fig. 6. Most Relevant Affiliations

Figure 6 shows the productivity status of different higher education institutions. The figure shows that Cornell University is the most productive institution, with 24 studies. Yale University follows it with 19 studies, Tufts and Helsinki Universities with 16, and Rider University with 13.

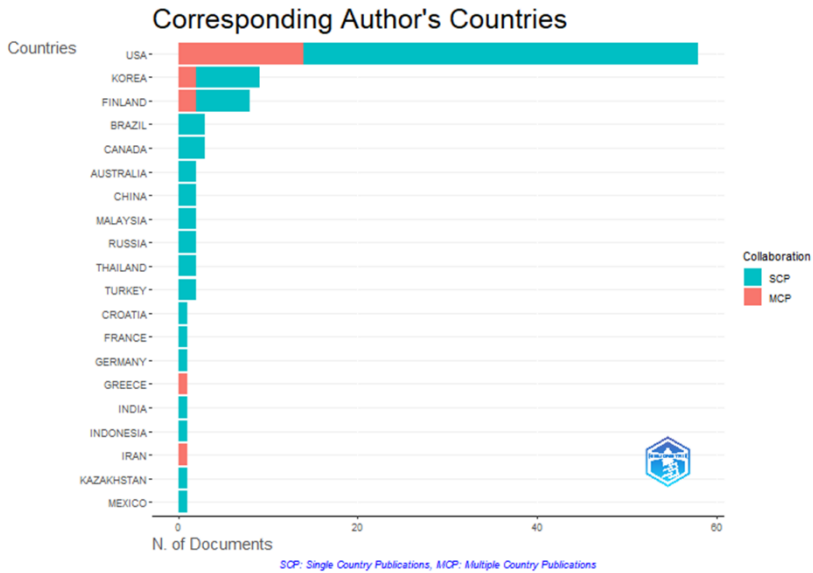


Fig. 7. Corresponding Author's Countries

Figure 7 shows the authors' countries and their single/multiple authorship status. Looking at the figure, we can see that the fields in blue indicate studies that were single-country publications (SCP). In contrast, the fields in red indicate studies that were multiple-country publications (MCP). The USA is by far the leader. Out of its 58 studies, researchers conducted 14 in international partnerships. Korea follows with 2 (MCP) out of 9 studies, and Finland has 2 (MCP) out of 8. Greece and Iran conducted only one study in an international partnership.

BULGARIA	GREECE	1
FINLAND	AUSTRALIA	1
GERMANY	ISRAEL	1
IRAN	UNITED KINGDOM	1
KOREA	JAPAN	1
U ARAB EMIRATES	UNITED KINGDOM	1
UNITED KINGDOM	SWEDEN	1
USA	FINLAND	1
USA	GERMANY	9
USA	INDIA	1
USA	ISRAEL	1
USA	KOREA	3
USA	NORWAY	1
USA	SWEDEN	1
USA	UNITED KINGDOM	2

Fig. 8. Countries' Collaboration

Figure 8 shows the collaboration of countries. The figure shows that the USA collaborates with several countries. The country with the highest number of collaborations is Germany, which has nine studies. This high level of collaboration demonstrates the strength of the academic ties between the USA and Germany compared to those with other countries. In addition to Germany, the USA has conducted three studies with Korea and two with the United Kingdom. Countries like Finland, India, Israel, Norway, and Sweden have collaborated with the USA. Other collaborating countries include Bulgaria and Greece, the United Kingdom and Sweden, Korea and Japan.

The difference between the international study data for the USA in Figure 7 and Figure 8 is that Figure 7 focuses on the nationality of the authors. In contrast, Figure 8 focuses on the country of affiliation.

3.4 What are the most commonly used concepts related to the researched topic and their distribution?

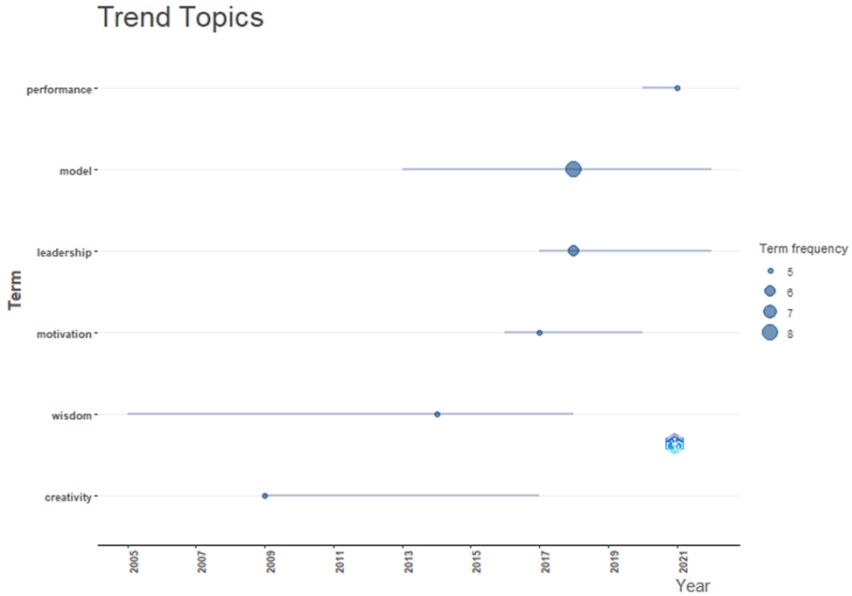


Fig. 9. Trend Topics

Figure 9 shows the years in which the topics used in the studies are trending. Looking at the figure, the topic 'model' was used between 2013 and 2022. In 2018, although it became a trend, along with the topic of 'leadership,' it can be seen that the topic of 'model' is used more often. We can say that the topic of 'performance' became a trend in 2021, 'motivation' in 2017, 'wisdom' in 2014, and 'creativity' in 2009. In the analysis of Figure 9, the topics of 'children, intelligence, giftedness, students and education' were excluded as they are generic expressions that are likely to be encountered in studies.

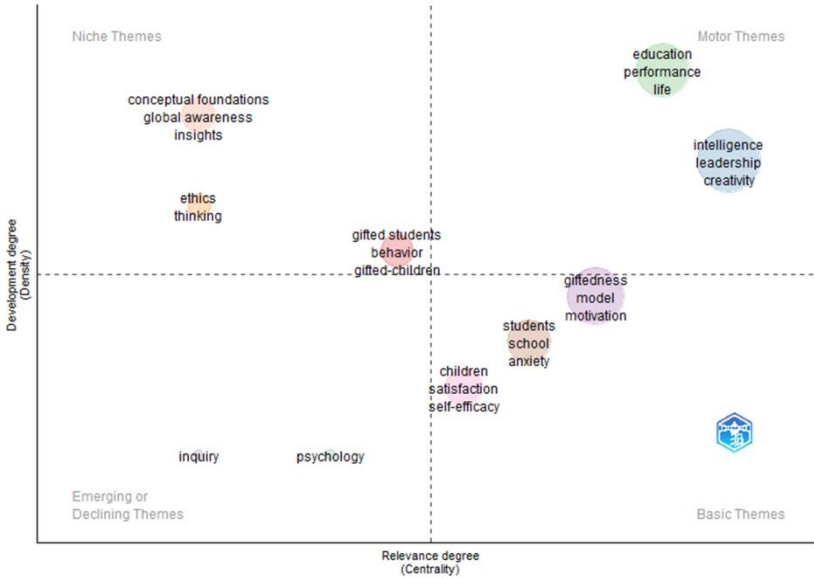


Fig. 10. Thematic Map

Figure 10 shows the density and centrality of the concepts on the coordinate plane. This plane is divided into four different parts and named after different themes. These are; "Motor Themes" shows the concepts of 'education, performance, life' and 'intelligence, leadership, creativity,' which have high prevalence and centrality. "Niche Themes" refer to 'ethics, thinking,' 'gifted students, behavior, gifted children' and 'conceptual foundations, global awareness, insight,' which have high density but low centrality. "Emerging or Declining Themes" shows the concepts of 'inquiry' and 'psychology' with low density and low centrality. "Basic Themes" shows the concepts of 'giftedness, model, motivation,' 'students, school, anxiety' and 'children, satisfaction, self-efficacy' with low density but high centrality.

4 Conclusions

This study used bibliometric analysis to draw attention to the importance of character and moral education in gifted education and provide a panoramic perspective. As a result of the analysis, we analysed 115 documents published between 1982 and 2024 based on their authors, citation status, relationships with each other, productivity, and sources of inspiration. When the distribution of studies by years is analysed, annual scientific productivity reached its highest level in 2009 with 21 studies and its second highest level in 2017 with 14 studies. This increase in 2009 is due to the publication of *Morality, Ethics, and Gifted Minds* [39]. The increase in 2017 is due to the special issue titled *Wisdom in a Changing World* in Volume 39, Issue 3 of *Roeper Review*. Although the number of studies on wisdom, ethics, and character education increased in 2017 and 2009, there are very few studies compared to thousands of studies in the gifted education field. These results show us that we need more studies in this field.

Analysing the authors and their citation distribution, we see that Robert Sternberg's 16 studies received 301 citations between 2000 and 2024. This high citation count makes him the most productive author. Analysing the intellectual cluster reveals that Sternberg comprises most of the green cluster with his works from different years and connects with other authors. When scrutinizing this cluster, Sternberg frequently refers to his works. The

references he made enabled him to strengthen his work and deepen and develop his subject. The fact that the other coloured intellectual clusters have strong connections with the green cluster and within themselves shows that the authors have similar thoughts and follow their work. The isolation of the blue cluster shows that it stays away from the general trends in other clusters. This situation indicates that the authors in the blue cluster are either more independent or have worked on new approaches.

When the authors' inspirations for each other are analysed, Sternberg stands out again. His 2017 study "ACCEL: A New Model for Identifying the Gifted" strengthened and guided the literature. The intense interaction in the red cluster supports the progress of the literature in steps. On the other hand, the discrete stance of the blue cluster shows that it enriches and develops the field with different approaches. As a result, when we look at the findings in this field, it can be said that Sternberg has served as a milestone.

When we analyse the affiliations and countries that produce publications in this field, we see that the top three publishing affiliations (Cornell, Yale, and Tufts) account for 50.43% of the studies on this subject in the USA. This high percentage shows that the USA engages more intensively in the character education, wisdom and ethics dimension of giftedness studies than other countries. This focus may stem from the USA's educational policy, which aims to utilize the full capacities of gifted individuals to enhance global competitiveness [40]. Korea and Finland follow the USA. Although Korea and Finland have conducted 17 studies, they have not even reached half of the USA. In particular, the increase in international cooperation contributes to the analysis of developments from different perspectives in a multicultural manner without being dependent on a single country.

When we examine the most frequently used concepts and their distribution, we see that the concepts of model and leadership stand out. Researchers mainly use the model concept because they are either developing new models or re-examining and grounding existing ones. The reason for the prominence of the concept of leadership is that Sternberg's study on leadership in giftedness, leadership in dark giftedness, and leadership in transformational/humanitarian giftedness [6] may be practical. Considering the density and centrality of the concepts, we see that concepts associated with this field, such as intelligence, leadership, and creativity, are frequently used, while concepts like motivation, satisfaction, self-efficacy, and anxiety are becoming more common. Generally, the concepts used in the subject repeat each other and do not draw from diverse fields to enrich their understanding.

As a result, although there are 3617 studies on gifted education in the same database (WoS), there are very few studies on character and moral education, and there is a need for more studies in this area. conduct relational research, while applied studies are relatively rare. At a time when character and moral education have become so crucial for humanity, the need for studies in this field is increasing.

As with any study, this study has some limitations. Most importantly, the analysed studies were taken only from the WoS database due to the package used. This led to the exclusion of studies from other databases. Due to this limitation, analysing data from different databases in future studies would be helpful. This study hopes to contribute to the field by demonstrating the need for more applied studies on character education, ethical sensitivity, and wisdom in gifted education and by showing a panoramic view of the existing studies for researchers who would like to study in this field.

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