

02. We Evaluated “Co-Parenting” with ChatGPT and Bard¹

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Abstract

In our globalizing world, the use of artificial intelligence technologies, which have become indispensable in our daily lives and serve various devices and applications, is supported in relevant modules across different disciplines. Accordingly, the main objective of this study is to qualitatively evaluate the chat data created to assess the concept of co-parenting using ChatGPT developed by OpenAI and Bard developed by Google AI. In the interviews conducted in the research, chatbots were directed and parts of the results obtained were created. Content analysis, Ateşman’s readability formula and Information Quality Assessment Tool are used in the analysis of the data. It was reached where the Chatbot responses evaluated within the scope of the research were the same in terms of readability level according to Ateşman’s readability formula. It was determined that Bard received higher scores than both coders in the scores obtained from the Information Quality Assessment Form. According to the content analysis, Bard’s responses were more satisfactory regarding the features in his main point. As a result, both of his chatbots were able to produce responses regarding the “co-parenting” phenomenon, which emphasizes parenting roles. However, since Bard has more up-to-date information as a database, it produced comprehensive content responses presented to researchers. This study provides effective insights into scientific access to contemporary artificial intelligence tools, highlights potential research opportunities, and remains fully relevant from a current perspective.

Keywords: Artificial intelligence, co-parenting, information quality, readability

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ChatGPT ve Bard ile “Birlikte Ebeveynlik” Kavramını Değerlendirdik⁴

Öz

Küreselleşen dünyamızda, günlük hayatımızda vazgeçilmez hale gelen ve çeşitli cihaz ve uygulamalara hizmet eden yapay zeka teknolojilerinin kullanımı, farklı disiplinlerdeki ilgili modüllerde desteklenmektedir. Buna göre, bu çalışmanın temel amacı, OpenAI tarafından geliştirilen ChatGPT ve Google AI tarafından geliştirilen Bard kullanılarak ortak ebeveynlik kavramını değerlendirmek için oluşturulan sohbet verilerini niteliksel olarak değerlendirmektir. Araştırmada yapılan görüşmelerde, sohbet robotları yönlendirilmiş ve elde edilen sonuçların bir kısmı oluşturulmuştur. Verilerin analizinde içerik analizi, Ateşman okunabilirlik formülü ve Bilgi Kalitesi Değerlendirme Aracı kullanılmıştır. Araştırma kapsamında değerlendirilen Chatbot yanıtlarının, Ateşman okunabilirlik formülüne göre okunabilirlik düzeyi açısından aynı olduğu sonucuna varılmıştır. Bard’ın, Bilgi Kalitesi Değerlendirme Formu’ndan elde edilen puanlarda her iki kodlayıcıdan da daha yüksek puanlar aldığı belirlenmiştir. İçerik analizine göre, Bard’ın yanıtlarının ana noktadaki özellikler açısından daha tatmin edici olduğu görülmüştür. Sonuç olarak, her iki chatbot da ebeveynlik rollerini vurgulayan “ortak ebeveynlik” olgusu ile ilgili yanıtlar üretebilmiştir. Ancak Bard’ın daha güncel bir veri tabanına sahip olması nedeniyle araştırmacılara sunulan yanıtların daha kapsamlı olduğu söylenebilmektedir. Bu çalışma, çağdaş yapay zekâ araçlarına bilimsel erişim konusunda etkili bilgiler sunmakta, araştırma fırsatlarını ortaya koymakta ve güncel bakış açısı açısından geçerliliğini korumaktadır.

Anahtar kelimeler: yapay zeka, birlikte ebeveynlik, bilgi kalitesi, okunabilirlik

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Introduction

Systematic changes in individuals’ lives and advances in artificial intelligence technologies make it inevitable for people to take an interest in artificial intelligence. Artificial intelligence transforms the vast amounts of information introduced into our lives through technology into functional forms, offering them to individuals’ service. It is noteworthy that research on chatbots, which entered in our lives about a year ago, is limited in number. Few studies evaluate the functionality of chatbots, especially in a comparative context, and most of the research has been conducted on ChatGPT. This chatbot, which entered our lives prior to Bard, has managed to capture the attention of researchers from various disciplines due to its qualities.

When examining the studies on the use of ChatGPT, it is observed that they are about public health (Biswas, 2023a), the future of global warming (Biswas, 2023b), environmental research (Zhu et al., 2023), radiology (Biswas, 2023c; Koo, 2023), mathematics (Frieder et al., 2023), law (Choi et al., 2023) and medical education (Eysenbach, 2023). The number of studies in which two chatbots are used together has rapidly increased with the introduction of Bard, produced as an alternative to ChatGPT. This trend towards such studies has grown due to concerns about enhancing the reliability of research and enabling users to evaluate the functionality of chatbots comparatively. These studies have been conducted in psychiatry (McGowan et al., 2023), higher education (Rudolph et al., 2023), medicine (Ali et al., 2023; Haver et al., 2023; Rahsepar et al., 2023), language (Kadaoui et al., 2023) and mathematics education (Plevris et al., 2023). In Turkish literature, there are very few studies examining chatbots. These studies are on the psychology of religion (Kızılgeçit et al., 2023), mathematics education (Tapan-BROUTIN, 2023), health services (Yiğit et al., 2023), education (Altan, 2023), elderly care (Çalışır-Kundakçı, 2023), tourism (Erul & Işın, 2023), language teaching (Şenyaman, 2023; Zileli, 2023), and media and communication (Kırık & Özkoçak, 2023).

Upon a thorough review of the extant literature on chatbots, it is evident that a substantial portion of the research is dedicated to predictive analyses concerning the potential integration of these technologies into various academic. On an international scale, the methodological rigor and reliability of studies evaluating chatbot performance have been significantly augmented by the development and implementation of specialized evaluation instruments designed to assess the accuracy, consistency, and overall quality of chatbot responses (Lee et al., 2023). In this way, it is believed that we can eliminate unnecessary information piles, which are the most pressing issue today. When evaluated from this perspective, it was determined that no research had been conducted using any tool to assess the reliability of chatbots’ responses in the national literature. The assessment form developed by the researchers within the scope of the study was designed to evaluate the quality of information in general. Changing work habits due to current conditions and the outcomes of digitalization have led individuals to compile cumulative information in electronic media, make research contributions more visible, examine the accuracy of the information on web pages, and evaluate the contributions and accuracy of classified information obtained through digitalization products in studies on a specific subject. In this context, the study is valuable because it provides a tool for assessing information quality and comparatively evaluates both the comprehensibility and the overall content quality of chatbot responses. Additionally, when examined in the context of co-parenting, which is the subject of this study, it is also valuable in terms of drawing attention to the small number of studies (Erdemir-Aşıkoğlu, 2022; Salman-Engin et al., 2018; Salman-Engin et al., 2019; Özdemir et al., 2020a; Özdemir et al., 2020b; Özdemir & Sağkal, 2020c; Özdemir et al., 2021) conducted on a concept with a historical background in our country (Amato, 2005; Ernst & Altis, 1981; Feinberg, 2003; Jaffe et al., 2008). Moreover, it is important because

chatbots provide a summary of the conceptual framework using information stacks in digital environments to answer questions prepared by the researchers on the concept of co-parenting. Therefore, the main purpose of the study is to qualitatively evaluate the chat data created for assessing the concept of co-parenting using ChatGPT developed by OpenAI and Bard developed by Google AI.

Theoretical framework

In this section, we provide explanations about the chatbots used to gather research data and delve into the concept of co-parenting, which serves as the primary theme of the conversations with the chatbots in this study.

Artificial intelligence and chatbots

The concept of digitalization, which emerged as a result of technological culture, has affected the communication habits, ways of acquiring information, experiences and awareness of societies and individuals. Individuals and their characteristics have also evolved in the digital world, where information is quickly and easily accessible and loses its value very quickly (Özçelik-Baloğlu, 2023). The concept of digitalization, which emerged as a result of technological advances and applications, gained momentum in the early 90s and turned into a structure that contains different concepts and dimensions with today's internet and computer technology (Dilmen, 2007). These concepts have also changed the practices of individuals' daily lives. It has also led us to acquire a number of concepts such as artificial intelligence, data mining, and the internet of things (Olçay, 2018). Over time, these concepts have gained social and cultural significance, reshaping individuals' perspectives and empowering them as active agents in the digital world. In our era, access to digital resources and environments is accepted as one of the most basic indicators of the development level of countries (Özçelik-Baloğlu, 2023).

Artificial intelligence, a significant output of the digital world, was first introduced by McCarthy in 1956. McCarthy defined the concept as “the science and engineering of making human-like intelligent machines, especially intelligent computer programs”. In this definition, it is seen that artificial intelligence is considered as the ability of a computer to exhibit human-specific abilities, that is, to use high-level thinking skills such as understanding, reasoning, generalizing and even problem solving (Arslan, 2020). When the development of artificial intelligence in the historical process is analyzed, it can be thought to be parallel to the development of transistors. However, it's important to note that artificial intelligence is not solely confined to computer technologies; it has connections to various disciplines, including medicine, engineering, and even psychology (Doğan, 2002).

One of the significant outputs of artificial intelligence technology is chatbots. These elements, which means “sohbet robotu” in Turkish, are algorithm-based software that can interact and automatically generate responses to some questions/tasks through conversational interfaces. Individuals can communicate with these chatbots by voice or in writing. After users ask the question, they can analyze the question and produce logical responses using artificial intelligence algorithms (Sari et al. 2020). ChatGPT, described as the most up-to-date artificial intelligence with humanoid qualities that has been expected for more than 50 years, entered our lives on November 30, 2022, and Bard on March 21, 2023. ChatGPT, developed by OpenAI, can perform functions such as generating, completing and summarizing texts. Bard, developed by Google AI, shares similar capabilities with ChatGPT in these respects.

The use of chatbots offers numerous opportunities to individuals. They can generate responses and offer opportunities according to the usage purposes and needs of individuals. One of their most important qualities is their contribution to providing fast and easy communication. Individuals can use them to get information, seek guidance and find responses to their questions. Thanks to their large database, they can provide individuals with up-to-date information in a wide perspective. They can also be personalized according to the needs of individuals. They allow for a natural interaction with individuals. They make cumulative information meaningful by classifying it in data collection and organization (Biswas, 2023d; Guzman & Lewis, 2020; Koçyiğit & Darı, 2023). In addition to all these opportunities, chatbots have some limitations. Lack of empathy in interaction is one of them. The fact that they have a large text database is an obstacle to providing individuals with information free from prejudices or mistakes. Another disadvantage is their inability to understand relationships, that is, their inability to create context. Lastly, the information they provide needs the confirmability of individuals (Biswas, 2023d).

When ChatGPT and Bard, the chatbots whose responses will be evaluated within the scope of the study, are compared in terms of their qualities, some differences are noticeable. Both chatbots are produced by different companies. While individuals need to obtain an e-mail address when using ChatGPT, they must have a Google account for Bard. While ChatGPT Plus is available to individuals for a fee, Bard is available completely free of charge. In fact, there are aspects in which one is better than the other, even though they basically have the same functions in certain qualities. While ChatGPT is more competent in generating ideas and content, Bard is more effective in providing responses and solutions to a specific topic. While the ChatGPT database is for the year 2021 and before, the Bard database allows us to obtain real-time information. In this context, it is important to analyze the responses of two different chatbots comparatively within the scope of the study.

Co-Parenting

The active role of individuals in raising children and their biological bond with their children is defined as parenting. Parenting is both a responsibility and a unique personal experience. Undoubtedly, a child's upbringing is greatly influenced by their parents and the environment prepared for them. For this reason, the impact of parenting practices on child development has been the focus of research. While the parenting practices of mothers, who are seen as the primary caregivers of children in our culture, are examined, it is observed that there is a noticeable increase in studies on parenting styles in which spouses participate equally and actively (Choi et al., 2019; Özdemir & Sağkal, 2020c; Seyhan, 2023).

The phenomenon, conceptualized as “co-parenting” in the relevant literature, has been translated into our language as “ortak ebeveynlik” and “birlikte ebeveynlik”. McHale (1995) defined this phenomenon as individuals jointly raising their children and and equally sharing the responsibilities in the process, implying that both parents have equal leadership within the family. It is observed that studies on this phenomenon in the national literature, while an established concept in international literature, are quite limited. Therefore, there is a need for more studies addressing the relationship or dimensions of co-parenting, which is a phenomenon that can be affected by cultural context, with different variables (Hohmann-Marriott, 2011; Salman-Engin et al., 2019).

A healthy relationship between spouses in the transition to parenting is one of the protective factors for individuals. Co-parenting, which is a fair approach, emphasizes the need for father involvement in the upbringing of the child. In other words, it considers spousal support necessary. Perceived spousal

support is expressed as a helpful factor for individuals to cope with problems. In this context, having a healthy co-parenting relationship not only contributes to the development of the child but is also seen as a significant predictor of marital satisfaction (Altenburger, 2022; Durtschi et al., 2017; Parkes et al., 2019; Williams, 2019). This concept, which has meanings other than traditional gender roles, has an egalitarian understanding. In particular, the increasing responsibilities of women in working life have led to changes in the family and roles within the family in this egalitarian context (Eisend, 2019; Saygan & Uludağlı, 2021; Sönmez, 2021). Therefore, it is important that this phenomenon, which emphasizes changing parenting roles, is summarized by chatbots that classify the cumulative information stacks in the electronic environment and answer the questions on the subject.

Materials and Methods

Ethics committee approval was not required since publicly accessible information was used in the study and no application was performed on humans. The data of the qualitative design study consisted of chatbot responses. In order to determine the conceptual framework of the co-parenting phenomenon, chatbots were asked eight questions prepared by the researchers and about which expert opinion was obtained. Chatbots were accessed through their own platforms to increase the reliability of the data. The researchers started to use chatbots through their e-mail addresses and Google accounts. Then, in August-2023, the questions prepared by the researchers were asked to the chatbots. The questions were asked in Turkish and the Turkish texts were copied and a separate Microsoft® Word [Microsoft Corporation, Redmond, Washington, USA] file was created for ChatGPT-3.5 and Bard. The files were analyzed according to Ateşman’s readability formula, and the information quality assessment form created by the researchers within the scope of the study. Ateşman’s (1997) formula was employed to assess readability, and the results were expressed in terms of readability levels. The form created by the researchers was used for quality assessment. In this context, the content validity rate and content validity index of the form were calculated. Chatbot responses were evaluated based on the final form. The inter-observer reliability coefficient was calculated according to Miles and Huberman’s (1994) formula. Furthermore, a content analysis of the responses was carried out.

Readability assessment

Readability can be defined as the understanding of texts by individuals. Ateşman, who first addressed the concept of readability in Turkey and conducted the adaptation study, explains readability as “expressing how easy or difficult it is to understand the texts by the reader”. In this sense, the readability value of a text is an indicator that contributes to making predictions about its effectiveness. A calculation is made using the word and sentence lengths of the formula, which Ateşman adapted into Turkish in 1997.

X - 1: Average word length in syllables, X - 2: Average sentence length in words

$$\text{Readability score} = 198.825 - (40.175.X - 1) - (2.610.X - 2)$$

As a result of the calculation based on the above formula, a value between 1-100 is obtained. The scores are categorized as very easy (90-100), easy (70-89), moderately difficult (50-69), difficult (30-49), very difficult (1-29). In this study, the Turkish readability of the texts obtained from chatbots was calculated using the calculation tool developed according to Ateşman’s readability formula (URL 1).

Quality assessment

Individuals need information depending on their needs and the decisions they will make. However, just the existence of any information on the subject does not mean anything by itself. In terms of quality, it should be appropriate to the subject, concept and situation and sufficient to meet the need. In the relevant literature on the subject, it is expressed as information suitable for use that meets the requirements and even provides feedback beyond them (Wang & Strong, 1996). Wang and Strong (1996) emphasize that there are four basic dimensions of information that can be described as quality. The first of these is the origin of the information, the source, and the other ones are its relevance, adequacy and completeness. The other two qualities are related to the production process and general appearance of information. In this context, an evaluation was made and an information quality assessment form was created by the researchers. Literature review was conducted while creating the assessment form. As a result of the review, it was concluded that Wang and Strong’s views on the quality of information were more comprehensive than other information. A pool of 29 items was created by the researchers in line with Wang and Strong’s views. The draft form was sent to five experts with experience in measurement and evaluation. The experts were asked to rate each item as “appropriate” (3), “appropriate but should be corrected” (2), “should be removed” (1). Their suggestions for the items were obtained by using the expressions “if your response should be corrected, what is your suggestion about how it should be corrected?” and “if your response should be removed, why?” The views of the experts were analyzed using Lawshe (1975) technique. The views of five experts on the items were analyzed with the formula used in the technique to determine the content validity ratios. According to the determined ratios, items 18 and 23 were removed from the form. In studies where the views of five experts are obtained, the content validity ratio of each item is required to be greater than .99 (CVR). In the calculation made accordingly, it was determined that each of the 27 items had a CVR=1, and the average of the CVR, that is, the content validity index, was determined as 1. since the content validity index calculated accordingly is greater than the content validity criterion, it can be said that the evaluation form has content validity. Finally, the information quality assessment form, which consists of 27 items and one dimension, includes the following sample items: “The content of the statements in the information is verifiable.”, “The statements in the information contribute to the relevant field.”, “The statements in the information are a good representation of the content of the subject.”, “The statements in the information are up-to-date.” It is thought that the quality of information increases as the score obtained from the tool that allows scoring as yes (3), partially (2), no (1) increases.

Content analysis

The responses of the chatbots to the questions about the conceptual framework of co-parenting, which were created by the researchers based on expert opinions, were evaluated. The compatibility of the responses with the relevant literature was examined in terms of the content of the responses.

Findings

This section presents the findings on the readability and quality assessment of the study.

Findings on readability

The values obtained by the calculations of the chatbot responses analyzed within the scope of the study according to Ateşman’s readability formula are presented in Table 1. When the descriptive values in the

table were analyzed, it was concluded that the readability level of both chatbots is the same despite the difference in scores between the readability indices (Table 1).

Table 1. Readability calculation results according to Ateşman formula

Chatbot	Average word length	Average sentence length	Ateşman readability index	Readability level
ChatGPT-3.5	2.97	8.2	58.1	11th-12th grade
Bard	2.89	8.7	60	11th-12th grade

Findings of quality assessment

The quality of the chatbot responses evaluated in the study was determined according to the information quality assessment form developed by the researchers. Descriptive statistics for the assessment are presented in Table 2. The assessment was conducted by two independent researchers. According to Miles and Huberman (1994) formula, the inter-coder reliability coefficient was determined as .77 for ChatGPT-3.5 and .70 for Bard. In the context of the relevant literature (Miles & Huberman, 1994; Yıldırım & Şimşek, 2013), results obtained at .70 and above are considered reliable. When an evaluation was made in terms of total score, it was observed that both coders gave higher scores to the information quality of the texts obtained from Bard’s responses (Table 2).

Table 2. Reliability results according to Miles and Huberman formula

Chatbot	Consensus	Disagreement	Reliability coefficient	Scorer-1	Scorer-2
ChatGPT-3.5	21	6	.77	67	73
Bard	19	8	.70	72	80

Findings of content analysis

It was determined that ChatGPT-3.5 had more detailed responses than Bard in the questions about the definition of the concept of co-parenting, its basic concepts, basic components, planning processes and the cooperation between spouses in the child-rearing process. In addition, it was observed that ChatGPT-3.5 used more understandable, simple and proper sentences in terms of sentence structure in its responses. When the conceptual responses were compared with the relevant literature, it was observed that Bard defined the concept of co-parenting more accurately, that is, it did not associate the concept of co-parenting only with individuals who were divorced or in the process of divorce since this phenomenon today refers to the equal involvement of parents in the child-rearing process. In this sense, it was determined that Bard is more reliable as it produces responses by focusing on the current characteristics of the phenomenon. ChatGPT-3.5, on the other hand, was found to be insufficient to define the concept with its current meanings. However, it was determined that ChatGPT-3.5 produces more interpretable, comprehensive, and content-related responses that guide parents in questions about the cooperation between parents in the child-rearing process, feedback, and the ways of separation and reconciliation with their spouses in the decision-making processes of the parents.

Discussion and Conclusion

In this study, it was aimed to analyze the questions about the scope of co-parenting prepared by the researchers within the framework of the responses given by chatbots. For this purpose, the content validity of the information quality assessment form developed in the study was performed and the final form was created. In the study, the information quality of the chatbots’ responses was determined by two independent researchers using the developed form. In addition, the readability of chatbots’ responses was calculated.

Today, chatbots are frequently preferred due to the increase in the use of smartphones and developments in technological devices. In a survey conducted in the USA in 2017, it was stated that 46% of adults interact with voice-based chatbots using smartphones or other devices (Pew Research Center, 2017). Thanks to their artificial intelligence (AI) and natural language processing (NLP) features, chatbots simulate human speech, understand the questions posed to them and produce appropriate responses (IBM, 2023). The use of chatbots in different fields has become quite widespread thanks to their features that make individuals’ lives easier. Some of these areas are education, business, finance, health, support and promotion (Aggarwal et al., 2023). The ChatGPT application, developed by OpenAI and presented to the public, has become the most interesting application for individuals in the first quarter of 2023 (OpenAI, 2023). Therefore, the year 2023 is considered as a turning point in terms of awareness and use of chatbots.

Tapan-BROUTIN (2023) evaluated ChatGPT in the context of the questions asked by pre-service teachers. According to the findings of the study, the fact that pre-service teachers ask questions with scientific knowledge content to ChatGPT is seen as an indicator that individuals can use this chatbot as a source of scientific knowledge. Based on this result, considering the possibility of chatbots to replace the internet, it is crucial to evaluate the content, reliability, comprehensibility, and consistency of the information provided by chatbots to individuals, because no matter how large the data network of chatbots is, the possibility of providing erroneous or incomplete information should be taken into consideration. For this purpose, experts need to critically evaluate chatbots in the use of artificial intelligence that adapts to constantly changing conditions and technology.

When the studies on chatbots, which are the focus of attention by researchers, are examined, it is seen that there are studies in the field of health that question the effectiveness, accuracy, and validity of ChatGPT in the diagnosis and treatment process of the disease (Sallam, 2023). In addition, studies evaluating the use of Bard, another common chatbot, and comparing the comprehensiveness, accuracy or timeliness of ChatGPT and Bard were found (Ali et al., 2023; Yıldız, 2023). In this sense, it can be said that the use of chatbots in research has recently become widespread.

When the studies conducted using ChatGPT and Bard were reviewed in the literature, it was seen that the number of studies on Bard was relatively less than ChatGPT. The reason for this may be that Bard is a relatively new application. However, when the relevant literature is examined, few studies comparing and evaluating the two applications can be found. This study on chatbots, which is still a current topic in the literature, is valuable in that it also addresses the concept of co-parenting. In this study, ChatGPT-3.5 and Bard’s responses to questions about co-parenting were analyzed with the readability index and information quality assessment form. According to the results of the analysis, Bard was the chatbot with higher readability and higher scores according to the features measured by the information quality assessment form. According to these results, it was emphasized that Bard was able to produce more up-to-date, comprehensive, accurate and understandable responses. This can be explained by the fact that Bard is a real-time application and there are deficiencies in this version of ChatGPT-3.5. Similar to the

results of the study, McGowan et al. (2023) asked ChatGPT-3.5 and Bard chatbots to document publications on suicide risk in parents at risk of psychosis. As a result of the study, it was observed that ChatGPT-3.5 made mistakes in the citations it made and that the studies it cited did not reflect the relevant publications. Ahmed et al. (2023) compared the features of ChatGPT and Bard and stated that Bard has a wide range of data and provides accurate real-time data. They concluded that ChatGPT is an artificial intelligence chatbot that performs much better than Bard in terms of sentence generation and prose writing. They also emphasized that both have aspects that need to be improved. Similarly, Patnaik and Hoffmann (2023) concluded that ChatGPT produces longer, more intellectual and effective sentences compared to Bard.

In studies, ChatGPT has been reported to have better performance. Plevris et al. (2023) compared the responses of ChatGPT-3.5, ChatGPT-4 and Bard to logic and math questions. According to the results of the study, more accurate responses were obtained with ChatGPT-4, the current version of ChatGPT, for questions previously prepared by the authors, while more accurate responses were obtained with Bard for online questions. In another study, the performances of chatbots in the questions in the neurosurgery oral board preparation question bank were evaluated, and it was stated that ChatGPT-4 performed better (Ali et al., 2023). In questions about lung cancer prevention, ChatGPT-3.5 gave partially correct responses compared to Bard (Rahsepar et al., 2023), while ChatGPT-4 gave 70% more correct responses than Bard in terms of information about cirrhosis (Yeo et al., 2023). In the study by Johnson et al. (2023) on the National Cancer Institute’s misconceptions about cancer, the accuracy of ChatGPT’s responses was examined and it was stated that ChatGPT reached the correct information. When the research on ChatGPT is analyzed, it is stated that the responses of ChatGPT-4 to questions about health diagnoses are more accurate and its sentences are written in a clear language compared to other chatbots (Howard et al., 2023).

Similarly, in our study, it was determined that ChatGPT-3.5 gave more detailed responses than Bard in the questions about the definition of the concept of co-parenting, its basic concepts, basic components, planning processes and the cooperation between spouses in the child-rearing process. In addition, it was observed that ChatGPT-3.5 uses more understandable, simple and proper sentences in terms of sentence structure in its responses. When the conceptual responses were compared with the relevant literature, it was determined that Bard’s definition of co-parenting was more accurate. Therefore, it was considered more reliable. ChatGPT-3.5, on the other hand, was found to be insufficient in defining the concept. However, it was determined that ChatGPT-3.5 produced more interpretable, comprehensive and guiding responses about the content in the questions about the cooperation between parents in the child-rearing process, feedback and the ways in which parents disagree and reconcile with their spouses in the decision-making processes. Studies confirm that ChatGPT-3.5 produces more comprehensive and qualified responses than Bard, but that it may also produce erroneous or incomplete information. Due to this limitation of ChatGPT-3.5, the information quality of Bard was found to be higher.

Studies in the literature have evaluated the performance of chatbot responses in terms of content and structural features. For example, Bhardwaz and Kumar (2023) evaluated Microsoft Bing, ChatGPT and Bard in terms of accuracy, response time, relevance, user satisfaction and user engagement. The results of their study show that there are significant differences between chatbot technologies in terms of performance. In addition, the study also shows that ChatGPT outperforms other chatbot technologies in terms of accuracy and relevance, and Bard is the chatbot with the fastest response time. In Ventayen’s (2023) study examining the content authenticity, similarity index with sources and performance characteristics of chatbots, it is stated that although ChatGPT shows a significant difference in terms of

creating original content, both ChatGPT and Bard have limitations in terms of accuracy and consistency.

It can be seen that chatbot technologies are diversifying day by day. This requires producers to constantly renew and strengthen these technologies. Even ChatGPT-3.5, which is a new technology, has been updated and ChatGPT-4 has been presented to the public because it lags behind technologies with similar characteristics. However, when evaluated in terms of accessibility, ChatGPT-4 is a paid chatbot with limited access. From this point of view, individuals using ChatGPT-3.5 experience limitations in accessing accurate and up-to-date information since ChatGPT-4, which is a new version, and ChatGPT-3.5 differ in terms of up-to-dateness and comprehensiveness. As a result, it is thought that individuals will be able to access more reliable, comprehensive, accurate and up-to-date information with the continuous development of ChatGPT and other artificial intelligence chatbots and their more widespread and free use in the future. In addition, it is thought that the methodology and findings of this study on chatbot technology, which is still seen as a new trend in studies, will serve as a reference for other studies on chatbot technologies.

Limitations and Recommendations for Future Studies

Making an evaluation within the framework of the responses produced by ChatGPT and Bard, the chatbots used in the study, is seen as a limitation of the study. Combinations can be made by using different chatbots in future studies. Another limitation of the study is to present evaluations in the context of co-parenting. In future studies, different cases or pairs of cases can be examined instead of a single case. Another limitation of the study is that only readability, quality and content of chatbot responses were evaluated. In future studies, different and more information validation methods can be used to increase reliability.

Data availability: Materials and analysis code for the current study are available from the corresponding author on reasonable request.

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