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Digital empathy in online communication: A systematic literature review

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Abstract

The rapid development of digital technology has transformed how individuals communicate in modern society, reducing nonverbal cues essential for emotional understanding. Consequently, digital empathy defined as the ability to understand and respond to others' emotions through digital media has gained increasing attention. This study aims to synthesize research trends and challenges related to digital empathy in online communication through a Systematic Literature Review (SLR) of peer-reviewed articles published between 2018 and 2026. The findings show that digital empathy research spans social media, online education, digital mental health, and human computer interaction. However, challenges remain, including limited nonverbal cues, emotional misinterpretation, and limitations of artificial intelligence in recognizing human emotions.

Introduction

The development of digital technology in recent decades has fundamentally changed the way humans communicate and interact. Advances in the internet, social media, instant messaging applications, and online learning platforms have created a new communication environment that allows individuals to interact without geographical or time constraints. Communication, previously dominated by face-to-face interactions, is now increasingly shifting toward digital technology-based communication. This transformation has created new forms of social interaction that are faster, more flexible, and more globally connected (Collins et al., 2024; Sharma et al., 2020).

While digital technology offers many conveniences in exchanging information, online communication also presents new challenges in understanding others' emotions and perspectives. In face-to-face communication, individuals can use various nonverbal signals

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such as facial expressions, voice intonation, and body language to interpret the other person's emotions. However, in digital communication, which is often text-based, most of these emotional signals are limited or even lost. This situation raises the need for a new form of empathy that can function in the digital communication environment, known as digital empathy (Sharma et al., 2020).

Digital empathy refers to an individual's ability to understand, express, and respond to the emotions of others through digital communication. This concept is becoming increasingly important in various online communication contexts, including social media, online education, digital communities, and technology-based mental health services. Research shows that the ability to express empathy in digital communication can help improve the quality of social relationships, strengthen emotional support within online communities, and create a more positive and inclusive communication environment (Alimardani et al., n.d.; Collins et al., 2024).

In the context of education, digital empathy plays a crucial role in building effective relationships between educators and students in online learning environments. Studies show that empathetic communication in online classes can increase student engagement, strengthen learning motivation, and enhance satisfaction with digital learning experiences (Chen, 2018; Issn & No, 2025) In a learning environment that is increasingly dependent on technology, the ability of lecturers to convey empathy through digital media is a crucial factor in creating meaningful academic interactions.

Furthermore, social media has become an important space for practicing digital empathy. Platforms such as community forums, discussion groups, and social networks allow individuals to share emotional experiences, provide social support, and build community solidarity online. Research shows that emotional support provided through social media can help individuals cope with stress, loneliness, and various mental health issues (Ibrahim, 2025). However, digital communication can also trigger emotional misunderstandings due to the limited communication context and differing interpretations of messages among users.

The development of artificial intelligence (AI) technology has also opened up new opportunities in the study of digital empathy. AI-based systems, including chatbots and natural language processing technologies, are increasingly being used to support social interactions across various digital platforms. Several studies have shown that these technologies can be used to detect user emotions and provide responses designed to mimic empathetic communication (Welivita & Pu, 2023; Wolfe et al., 2025). In the context of digital mental health services, for example, AI-based chatbots have been used to provide initial emotional support to users before they access professional services.

However, the effectiveness of technology-mediated empathy remains a matter of debate in the scientific literature. Several studies have shown that while digital systems can generate seemingly empathetic responses, the technology's ability to truly understand human emotions is still limited (Roshanaei, 2025). Furthermore, other challenges in digital communication include phenomena such as online disinhibition, emotional misunderstandings, and the rise in negative behaviors such as cyberbullying, which frequently occur in online interactions.

Numerous studies have explored various aspects of digital empathy, including emotional expression in text-based communication, the use of emojis and digital symbols to convey emotions, and the role of empathy in building social relationships in online communities (Ibrahim, 2025; Sharma et al., 2020). However, research on digital empathy remains scattered across disciplines such as psychology, communication, education, and computer science. Consequently, a comprehensive understanding of research developments, conceptual challenges, and future research directions in the field of digital empathy remains relatively limited.

Although research on digital empathy has flourished in recent years, the existing literature still exhibits several limitations. Most studies have been conducted separately across disciplines

such as psychology, communication, education, and computer science, resulting in a fragmented understanding of the concept and practice of digital empathy in online communication. Furthermore, many studies focus on specific contexts or phenomena, such as the use of emojis in emotional expression, empathetic communication on social media, or interactions in online learning, without providing a comprehensive overview of research developments in this area. Consequently, there are still limitations in understanding emerging research trends, key challenges in implementing digital empathy in digital communication environments, and opportunities for future research directions. Therefore, a systematic literature review is needed that can integrate previous research findings to map study trends, identify key challenges, and formulate directions for the development of digital empathy research in online communication.

Methods

Design

This study employed a qualitative research design using the Systematic Literature Review (SLR) approach to identify, evaluate, and synthesize previous studies related to digital empathy in online communication. The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to ensure a systematic, transparent, and replicable article selection process. The SLR design was considered appropriate because the study aimed to comprehensively examine research trends, challenges, and future directions regarding digital empathy within digital communication environments.

The study addressed the following research questions: (1) What are the main research trends in studies on digital empathy in online communication? (2) What are the key challenges in implementing digital empathy in online communication? and (3) What future research directions can be identified to advance the study of digital empathy in online communication?

This stage is done by determining the keywords used to find relevant articles. In addition, this study also determined the range of research years, databases, languages, PICO principles, and article types. The articles searched for are international publications related to digital empathy in online communication, therefore the databases used in this study include Scopus, ScienceDirect, and Taylor & Francis. Next, the range of years used is from 2018–2026, and the type of article used is a research article published in peer-reviewed journals. Examples of keywords used are “digital empathy”, “online communication”, “social media interaction”, and “computer-mediated communication”. Additional related keywords were also applied to ensure comprehensive coverage of relevant studies. Lastly, the PICO (Participant, Intervention, Comparison, and Outcome) principles are used to determine the keywords used in the article search process. Examples of PICO-based keywords can be seen in Table 2. This stage resulted in a total number of articles that were then processed to the next stage of screening.

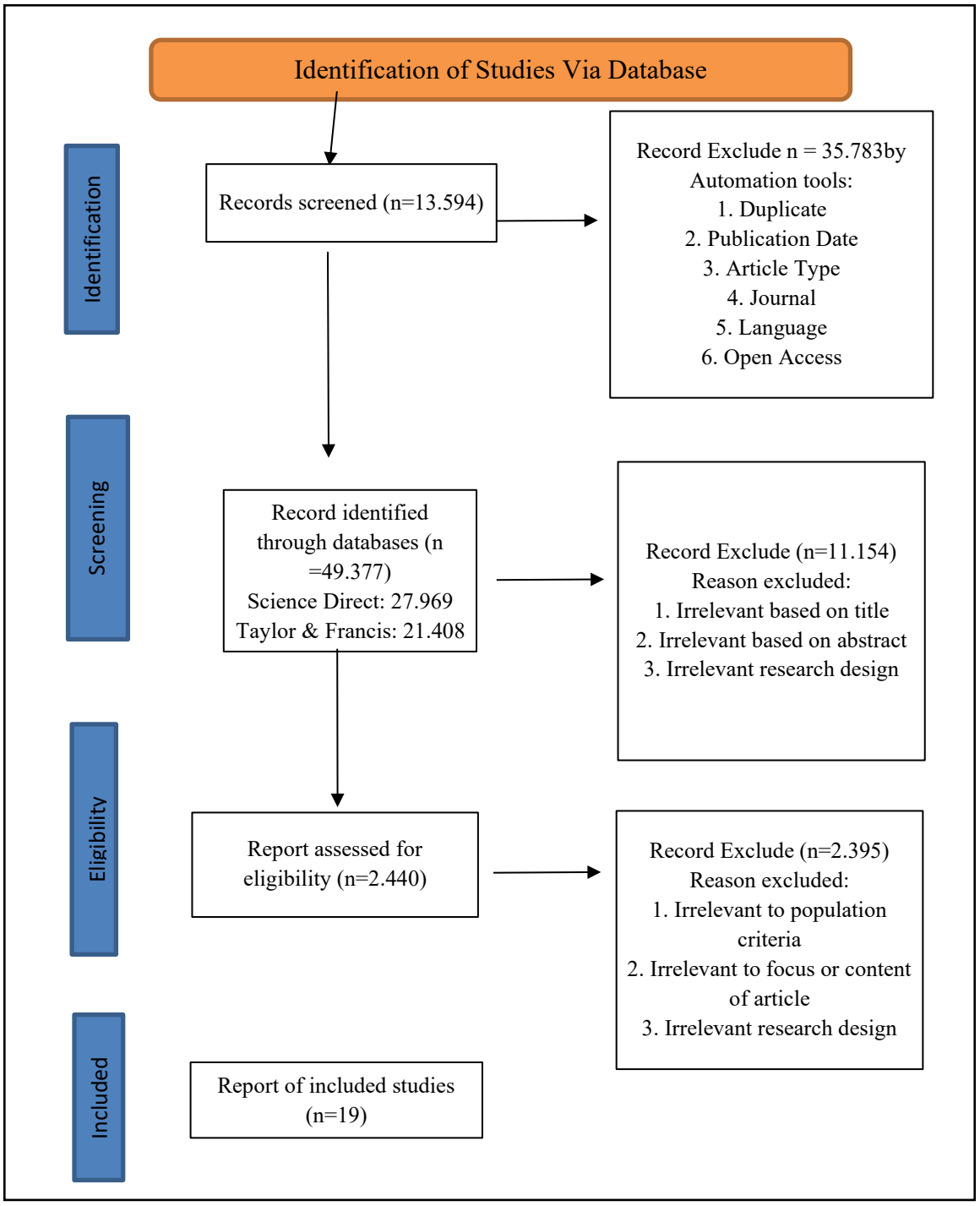

Diagram 1. PRISMA

Table 1. PICO Aspect

PICO Aspect	Keywords
Participants	"Social Media Users", "Students", "Adolescents", "Online Community Members", "Digital Platform Users"
Intervention	"Digital Empathy", "Empathic Communication", "Online Interaction", "Computer-Mediated Communication"
Comparison	"Face-to-Face Communication", "Low Empathy Communication", "Non-Empathic Digital Interaction"
Outcomes	"Emotional Understanding", "Social Support", "User Engagement", "Reduction of Cyberbullying", "Communication Effectiveness"

Participants

The participants in this study were not individuals directly recruited by researchers, but rather scientific articles selected through a systematic review process. The selection of articles followed clearly defined inclusion and exclusion criteria to ensure the relevance and quality of the reviewed literature. Articles were included if they: (1) were published in reputable peer-reviewed international journals; (2) were published between 2018 and 2026; (3) were written in English or Indonesian; and (4) focused on empathy in the context of digital or online communication.

Studies were excluded if they did not discuss empathy within online communication settings, focused solely on digital communication without emotional or empathy-related aspects, or consisted of non-scientific publications such as editorials, book reviews, technical reports, theses, and letters to editors. A total of 19 articles met the eligibility criteria and were included in the final analysis.

The article selection process was conducted independently by two researchers to maintain objectivity and consistency. Screening was carried out in stages, including title review, abstract screening, and full-text assessment. In cases of disagreement between reviewers, discussions were conducted to achieve consensus. If no agreement could be reached, a third researcher acted as an independent reviewer to determine the final decision.

Table 2. Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion	Criteria
Population	Studies that examine individuals or groups involved in digital communication such as social media users, students, lecturers, online communities, or digital platform users.	Studies that are not related to human interaction in digital communication or do not discuss empathy in an online context.	Population
Outcome	Articles that discuss the concept, measurement, application, or impact of digital empathy in online communication.	An article that only discusses digital communication without examining the aspects of empathy or emotion.	Outcome
Document Type	Research articles published in indexed scientific journals	Editorial, book review, letter to editor, tesis, laporan teknis, dan artikel non-ilmiah.	Document Type
Publication Year	Articles published between 2018–2026	Articles published before 2018	Publication Year
Language	English or Indonesian	Besides English and Indonesian	Language

Instruments

The primary instrument used in this study was a systematic literature review protocol developed based on the PRISMA framework. The protocol guided the identification, screening, eligibility assessment, and inclusion of relevant studies. Data extraction was conducted using a structured review form designed to record essential information from each selected article, including author information, publication year, research objectives, methodology, key findings, and identified research gaps.

The search strategy employed combinations of predefined keywords and Boolean operators to ensure consistency and relevance during the database search process. The selected articles were then categorized according to the study research questions to facilitate thematic synthesis and interpretation of findings related to digital empathy in online communication.

Procedure

The study began with the formulation of research questions related to digital empathy in online communication. Subsequently, a systematic literature search was conducted in Scopus, ScienceDirect, and Taylor & Francis databases using predetermined keywords and Boolean operators. All identified articles were exported and screened to remove duplicates.

The screening process consisted of three stages: title screening, abstract review, and full-text evaluation. Articles meeting the inclusion criteria proceeded to the final review stage. The entire selection process was independently conducted by two researchers to ensure transparency and reduce selection bias. Disagreements between reviewers were resolved through discussion, while unresolved cases were reviewed by a third researcher.

After the final articles were selected, relevant data were extracted and synthesized according to the predefined research questions. Ethical considerations in this study focused on maintaining academic integrity through proper citation practices, transparent reporting procedures, and objective interpretation of previous research findings.

Data Analysis

Data were analysed using qualitative thematic analysis to synthesize findings from the selected studies. The analysis focused on identifying patterns, themes, and relationships related to research trends, implementation challenges, and future directions of digital empathy in online communication.

The selected articles were first categorized according to study characteristics such as publication year, research methods, research context, and major findings. Subsequently, thematic coding was applied to identify recurring concepts and emerging themes across studies. The synthesis process enabled researchers to compare findings, identify research gaps, and develop a comprehensive understanding of digital empathy research trends. The analysis process was conducted manually using structured data extraction tables and thematic categorization techniques to ensure consistency and transparency throughout the review process.

Results

Based on a literature search conducted through several scientific databases such as Scopus, ScienceDirect, SpringerLink, IEEE Xplore, and Google Scholar, several articles relevant to the topic of digital empathy in online communication were identified. After a screening process based on inclusion and exclusion criteria, 19 scientific articles published between 2018 and 2026 were selected for further analysis in this study. These articles reflect the development of digital empathy research across various disciplines, including digital communication, social psychology, education, human–computer interaction (HCI), and artificial intelligence (AI). This demonstrates that digital empathy is a multidisciplinary concept that continues to evolve along with the increasing use of digital communication technology in everyday life. In terms of methodology, the articles analyzed used various research approaches, including quantitative surveys, experiments, natural language processing (NLP)-based computational analysis, qualitative studies, and systematic literature reviews. This diversity of methodological approaches indicates that research on digital empathy focuses not only on psychological aspects, but also on technological aspects and the design of digital communication systems.

Based on an analysis of the 19 reviewed articles, the majority of studies used a quantitative experimental approach (n = 7). Additionally, there were correlational or survey quantitative

studies (n = 3), as well as quantitative studies with cross-sectional designs, computational analysis, and instrument development (n = 4). Meanwhile, five studies used a qualitative approach and literature analysis (n = 5).

Table 3. Article Result

No	Writer	Title	Types of research	Method or Instrument	Populasi dan Sampel	Findings	Publisher
1.	(Chen, 2018)	Developing EFL Students' Digital Empathy through Video Production	Educational experiments	Observation, questionnaire	60 Elf Students	Video collaboration increases digital empathy and communication	Elsevier
2.	(Barlińska et al., 2018)	Cyberbullying among adolescent bystanders: Role of empathy and moral disengagement	Quantitative Survey	Empathy questionnaire	Teenagers who use social media	High empathy increases the tendency to help victims of cyberbullying.	Frontiers
3.	(Sharma et al., 2020)	A Computational Approach to Understanding Empathy in Online Mental Health Support	Computational Research	NLP and Text Analysis	Mental health forum posts	NLP model able to detect empathy in online text	ACM (Association for Computing Machinery)
4.	(Collins et al., 2024)	Factor Structure and Psychometric Properties of the Digital Communication Empathy Scale (DCES)	Instrument development	DCES Scale	Students and social media users	A valid scale for measuring digital empathy	Elsevier
5.	(Welivita & Pu, 2023)	Large Language Models Show Human-Level Empathy in Text-Based Communication	Eksperimental	Comparative experiments and evaluation of AI empathic responses using conversational scenarios	User participants rated AI and human responses	LLM is able to produce responses that are considered quite empathetic by users, but is still limited in understanding complex emotional contexts.	arXiv / Cornell University

No	Writer	Title	Types of research	Method or Instrument	Populasi dan Sampel	Findings	Publisher
6.	(Setiawan Wijaya et al., 2023)	Computational Analysis of Empathy in Online Donation Campaigns	Computational research	Text mining, sentiment analysis	Online donation campaign data	Empathetic messages increase donation participation	STMIK Amikom
7.	(Sharma et al., n.d.)	Human-AI Collaboration Enables More Empathic Conversations	Quantitative experiments	Pengguna chatbot	Human-AI interaction experiments	chatbot AI helps improve empathetic responses	ACM
8.	(Syakhrani, 2025)	Communicating with Empathy in Social Media	Qualitative	Content analysis	Online community posts	Empathy increases social support	University Publication
9	(Hidayat, 2024)	Empathy in the Digital Age	Literature review	Literature analysis	Digital communication studies	The limitations of nonverbal signals are a major challenge.	Communica Journal (Universitas)
10	(Ibrahim, 2025)	Cyber Empathy as a Digital Shield Against Cyberbullying	Systematic literature review	Literature analysis	Articles related to cyber empathy	Digital empathy reduces cyberbullying	Journal of Counseling and Psychology (University)
11	(Pjesivac et al., 2024)	360° Journalism and Empathy	Quantitative experiments	VR Experiment	120 participants	VR increases empathy for social issues	Taylor & Francis
12	(Čekić, 2025)	Virtual Empathy and Digital Communication	Quantitative survey	Digital empathy questionnaire	Social media users	Digital interactions influence social empathy	International Journal of Psychology (Wiley)
13	(Hirschberg & Manning, 2015)	Needs-Conscious Design for AI Communication	Technology design research	User experience testing	Pengguna sistem AI	Empathetic design improves the quality of communication	Taylor & Francis
14	Kathleen Collins, Emily Rogers, Michael J. Brown, & Sarah	Digital Communication Empathy Scale Validation	Instrument development	Statistical analysis	Student	Reliable digital empathy scale	Elsevier

No	Writer	Title	Types of research	Method or Instrument	Populasi dan Sampel	Findings	Publisher
	Thompson (2024)						
15	(Alimardani et al., n.d.)	Assessment of Empathy in VR Environment	Neuroscience experiments	EEG and VR experiment	Experimental participants	VR triggers empathetic responses	IEEE Access (IEEE)
16	(Roshanaei, 2025)	Empathy in Human-AI Interaction	HCI experiment	Experimental HCL instrument measurement	Chatbot users	AI empathy increases user satisfaction	ACM Transactions on Computer-Human Interaction
17	Daniel Thompson, Laura Smith, & Peter Johnson (2025)	Virtual Social Interaction and Empathy Development	Quantitative survey	Psychological questionnaire	Students who use digital media	Digital interactions influence the development of empathy	Journal of Advanced Psychology (Springer)
18	(Stockdale & Coyne, 2020)	Bored and Online: Reasons for Using Social Networking Sites and Links to Empathy	Survei kuantitatif	Social media usage and empathy questionnaire	Teenagers and young adults using social media	Motives for using social media influence users' empathy levels	Elsevier
19	Andrzej Zwoliński, Katarzyna Nowak, & Piotr Lewandowski (2025)	Teaching Empathy: A Comparative Analysis of Real, Virtual, and AI-Based Methods	Comparative research / educational experiments	Comparative experiment with empathy questionnaire analysis and learning experience evaluation	Empathy learning participants	Face-to-face methods show the highest empathy, but virtual and AI methods are also effective in increasing empathy through simulation and digital interaction.	Taylor & Francis

Research Trends in Digital Empathy

Digital Empathy in Social Media Interaction

Research on digital empathy has grown rapidly in recent years with the increasing use of social media and digital communication technologies worldwide. Social media serves not only as a means of sharing information but also as a social space where individuals express emotions, seek social support, and construct their digital identities. One major trend in digital empathy research is the study of the role of empathy in social media communication. Social media has become a primary platform for individuals to interact, share emotional experiences, and build social connections in the digital environment. Therefore, the ability to understand and respond empathetically to others' emotions in digital communication is becoming an increasingly important social competency (Wright & Wachs, 2020). a network-based communication environment, users not only share information but also build social connections that enable the formation of collective empathy and emotional support in digital communities (Pandey et al., 2021). Digital communication behavior also shows that social media has evolved into a new social space that allows individuals to build interpersonal relationships through the exchange of emotional messages, providing social support, and collaborative interactions between users in online communities. Research also shows that digital spaces enable the formation of social support interactions through text-based communication and online communities that can facilitate empathetic conversations between users (Kemp et al., 2020) In a network-based communication environment, users not only share information but also build social connections that enable the formation of collective empathy in digital communities. In addition, social interactions in digital media can influence the development of empathy and psychological well-being, especially through social engagement and the exchange of emotional experiences in online networks (Baumann et al., 2026). This kind of interaction can also strengthen the sense of togetherness and social solidarity in digital communities because users feel that their emotional experiences are understood by others (Wirtz et al., 2021).

Furthermore, advances in communication technology have expanded the scope of human social interaction into a global digital environment. Individuals can now interact with others from diverse cultural backgrounds, languages, and life experiences. In this context, empathy plays a crucial role in facilitating cross-cultural communication and preventing conflict in online communication (Xu, 2018).

Research by (Čekić, 2025)) shows that interactions on social media can influence the development of users' social empathy. The study found that users who frequently engage in supportive and empathetic conversations tend to have higher levels of digital empathy compared to users who frequently engage in conflict communication. This finding aligns with previous research showing that empathy is an important factor in building healthy interpersonal relationships in digital environments. Individuals who are able to understand the emotional perspectives of others tend to be more careful in their communications and more sensitive to the emotional impact of the messages they send (Graf et al., 2019)

Another study by (Syakhrani, 2025) found that, through social media content analysis, empathetic communication in online communities can increase digital social support. In this context, social media users often provide emotional responses such as moral support, sympathy, and encouragement to individuals experiencing emotional difficulties.This is supported by a study conducted by (Kowalski et al., 2025) which found that individuals with higher empathy tend to be better able to consider the emotional impact of their actions on others. Therefore, digital empathy is often considered a protective factor that can help reduce aggressive behavior in online communication (Donat et al., 2023).

Digital Empathy in Online Education

Beyond social media, research on digital empathy has also been extensively conducted in the context of online learning. Advances in educational technology have transformed the way lecturers and students interact, with communication often taking place through digital platforms such as learning management systems, discussion forums, and video conferencing.

Research by (Chen, 2018) shows that collaborative learning activities can improve students' empathy skills in digital communication. In the study, students involved in collaborative video-making projects demonstrated an increased ability to. Research shows that students who feel emotionally supported by their lecturers and peers in online learning environments tend to have higher levels of learning motivation (Donat et al., 2023).

Measurement of Digital Empathy

As attention has grown to the concept of digital empathy, researchers have begun to focus on developing instruments that can be used to measure empathy in the context of digital communication. Measuring empathy in digital environments is crucial because the characteristics of technology-based communication differ significantly from face-to-face communication. In digital communication, interactions often take place through text, emojis, or other visual symbols, which are limited in conveying complete emotional nuances. Therefore, a methodological approach is needed that can capture the dimensions of empathy that emerge in digital communication.

One measurement instrument used by (Collins et al., 2024)was the Digital Communication Empathy Scale (DCES), designed to measure an individual's ability to understand and respond to others' emotions in text-based communication. In further research, (Collins et al., 2025) conducted a confirmatory factor analysis on the scale and found that digital empathy consists of two main dimensions: cognitive empathy and affective empathy.

The development of a digital empathy measurement instrument is also supported by other research focused on analyzing online communication behavior. In their study (Graf et al., 2019) a questionnaire was developed to measure the relationship between online empathy and cyberbullying behavior in adolescents. The results showed that individuals with higher levels of digital empathy tended to be less likely to engage in aggressive behavior in digital communication.

Thus, the development of digital empathy measurement methods has made an important contribution to digital communication research by enabling researchers to understand how empathy is expressed and perceived in various technology-based communication contexts. Instruments such as the DCES provide a strong methodological foundation for future research focusing on the relationship between digital empathy and various social phenomena in online environments.

Computational Analysis of Digital Empathy

Technological developments have also enabled research on digital empathy through computational approaches.Research by (Sharma et al., 2020) used natural language processing (NLP) techniques to analyze expressions of empathy in online mental health forums. The results showed that the NLP model can identify various forms of empathic responses in digital conversations.

Research by (Setiawan Wijaya et al., 2023) used sentiment analysis techniques to analyze empathetic messages in online donation campaigns. The results showed that messages containing empathetic expressions can increase user engagement and the amount of donations given. Research by (Setiawan Wijaya et al., 2023) used sentiment analysis techniques to analyze empathetic messages in online donation campaigns. The results showed that messages containing empathetic expressions can increase user engagement and the amount of donations given.

Furthermore, advances in artificial intelligence technology have also opened up new opportunities for research on digital empathy, particularly in the context of interactions between humans and AI systems. Research shows that AI-based systems, such as chatbots or conversational agents, are increasingly capable of generating responses perceived as empathetic by users (Lee & Hahn, 2024) This is made possible by the use of machine learning algorithms trained to recognize emotional patterns in human language and generate emotionally appropriate responses.

However, research also suggests that there are limitations to technology's ability to fully replicate human empathy. A study by (Cui et al., 2026)menunjukkan bahwa meskipun sistem AI dapat menghasilkan showed that even though AI systems can produce seemingly empathetic responses, users can still distinguish between empathy generated by humans and empathy simulated by technological systems. This suggests that human empathy still has complex emotional dimensions that cannot yet be fully replicated by technology.

Challenges in Digital Empathy

Loss of Nonverbal Communication

One of the main challenges in digital empathy is the loss of nonverbal signals that usually help individuals understand others' emotions in face-to-face communication.According tot (Hidayat & Palangkaraya, 2024) digital communication is often limited to text or visual symbols such as emojis which cannot completely replace facial expressions, tone of voice, and body language.

Online Disinhibition and Cyberbullying

The phenomenon of online disinhibition also poses a challenge in digital communication. Several recent studies have shown that this disinhibition effect can exacerbate communication dynamics on social media, particularly when individuals engage in controversial or emotional discussions(Cinelli et al., 2021)Furthermore, the phenomenon of online disinhibition is often linked to the rise in cyberbullying cases on digital platforms. When individuals feel anonymous or unrecognizable, they may be more likely to send aggressive or harmful messages to others (Pennycook & Rand, 2021). Research by (Ibrahim, 2025) shows that developing cyber empathy can be an effective strategy to reduce cyberbullying behavior.

Technological Limitations

Another challenge relates to the limitations of technology in accurately understanding human emotions. Research by (Roshanaei, 2025) shows that although chatbots can provide seemingly empathetic responses, users can still distinguish between human empathy and empathy simulated by AI systems. Furthermore, research in the field of human–computer interaction shows that artificial intelligence systems still have limitations in understanding the emotional nuances contained in human language, especially in ambiguous or contextual conversations (Dwivedi et al., 2021). Therefore , developing AI-based communication systems that can more accurately understand human emotions remains a major challenge in digital communication research. Other research also shows that while technology can help facilitate empathetic communication, human interaction still plays a crucial role in building authentic emotional connections in digital communication (Kaplan & Haenlein, 2020) Thus, technology should be viewed as a tool that supports empathetic communication, not as a substitute for human emotional interaction.

Future Research Directions

AI and Empathic Communication

Research shows that collaboration between humans and artificial intelligence (AI) can help improve the quality of empathetic communication in digital conversations, particularly through systems that can recognize and respond adaptively to user emotions (Laranjo et al., 2018). Other research also shows that the use of AI in digital communication, such as mental health chatbots, can increase the effectiveness of emotional support and help provide initial psychological support services to users on online mental health platforms (Abd-Alrazaq et al., 2020). This increased effectiveness occurs because AI-based systems are able to provide fast and consistent responses to users who need emotional support in certain situations, such as when individuals experience stress, anxiety, or feelings of loneliness (Dwivedi et al., 2021). Various digital mental health services such as therapeutic chatbots, online counseling applications, and psychological support platforms are now increasingly developing and allow users to express their emotional states and receive support directly through technology-based interactions (Fulmer et al., 2018). These services utilize artificial intelligence to provide rapid responses and provide initial psychological support to users experiencing stress, anxiety, or other mental health issues. In addition to providing rapid responses, AI systems are also capable of analyzing users' language patterns and emotional expressions, enabling them to provide more adaptive responses tailored to their emotional state in digital interactions. In addition to providing rapid responses, AI systems are also capable of analyzing users' language patterns to detect specific emotional indicators, such as sadness, frustration, or anxiety, that frequently arise in digital conversations (Hancock et al., 2020).

Virtual Reality and Empathy Development

Research by (Čekić, 2025) shows that virtual reality (VR) technology can increase users' empathy by allowing them to experience experiences from another person's perspective.VR technology allows users to engage in immersive experiences that simulate specific social situations, thereby helping them understand the emotional states of others more deeply. Previous research also shows that immersive experiences in virtual environments can enhance an individual's ability to understand others' perspectives, a key component of empathy (Martingano et al., 2021). Furthermore, other studies have shown that the use of VR technology in social education and training can help improve users' emotional awareness and empathic abilities toward the experiences of others in various social contexts Bertrand et al., 2018).

Discussion

Research Trends in Digital Empathy in Online Communication

The literature synthesis shows that research on digital empathy has flourished in various digital communication contexts. One major trend is research on empathy in social media interactions. Social media has become a primary platform for individuals to express emotions, share personal experiences, and seek social support from online communities.

Research shows that expressing empathy in social media communication can improve the quality of social relationships among users. For example, research by (Alimardani et al., n.d.)shows that empathetic interactions in social media can strengthen the sense of social connectedness and increase emotional support among members of digital communities. Social media has become a primary space for individuals to express emotions, share personal experiences, and seek social support from online communities. Research shows that expressing empathy in digital communication can strengthen interpersonal relationships and increase the sense of social connectedness among users. Studies on digital communication behavior show that empathetic communication practices in social media can create a more supportive and inclusive communication environment for users (Syakhrani, 2025) In this

context, empathy not only functions as a mechanism for emotional support but also as a basis for creating more harmonious social interactions in digital communities.

Other research has also found that digital communication involving empathetic responses can strengthen social solidarity among online community members (Batson, 2024). In the context of modern digital communication, empathy also plays a crucial role in building trust and improving the quality of interpersonal relationships in technology-based interactions (Wang et al., 2021). Therefore, empathy in digital communication is a crucial element that can foster more positive interactions, enhance mutual understanding between individuals, and strengthen the quality of social relationships in technology-based communication spaces (Hasanah & Smita, 2025).

Recent research also suggests that digital empathy plays a crucial role in building supportive online communities. Studies show that individuals who express empathy in online discussion forums tend to receive Other research also suggests that empathetic communication on social media can increase user engagement in digital community activities and strengthen social interactions and a sense of connectedness among members in online environments (Hasanah & Smita, 2025). In this context, digital empathy serves not only as an emotional expression but also as a social mechanism that helps strengthen online community cohesion (Frison & Eggermont, 2020). Therefore, the practice of empathic communication is a crucial element in maintaining the sustainability of social interactions in digital ecosystems (Seering et al., 2019)

Furthermore, digital empathy also plays an important role in reducing negative behavior in online communication. For example, studies on cyber empathy show that empathy serves as a protective factor against aggressive behavior such as cyberbullying in digital environments (Ibrahim, 2025) This is supported by research (Francisco et al., 2024) which found that individuals with higher levels of empathy tend to be less likely to engage in cyberbullying behavior and show more prosocial behavior towards victims. The study found that individuals with higher levels of empathy tend to be more careful in communicating online and are better able to consider the emotional impact of the messages they send to others. These findings suggest that digital empathy not only contributes to improving the quality of social relationships but also plays a role in creating a safer online communication environment.

Another research trend concerns the role of digital empathy in online learning. Advances in educational technology have increased the use of digital platforms in the learning process, resulting in increasingly frequent communication between lecturers and students through digital media. In this context, the ability to convey empathy effectively is a crucial factor in creating a supportive learning environment. This is supported by the measurement and analysis of empathy in digital communication. As the complexity of online interactions increases, researchers have begun to develop specific instruments to measure empathy in the context of digital communication. One important contribution in this field is showing that social media usage motives influence empathy levels, with socially-oriented use increasing empathy, while addictive use decreasing it (Stockdale & Coyne, 2020) This instrument allows researchers to analyze various dimensions of digital empathy more systematically, thereby broadening our understanding of how empathy is expressed in text-based communication.

In addition to psychological approaches, research on digital empathy is also developing in the fields of computational social science and digital communication data analysis. By utilizing techniques such as natural language processing and social media data analysis, researchers can identify empathic communication patterns in large-scale online conversations. For example, research on empathy analysis in text-based conversations shows that empathic responses can be identified through specific linguistic patterns in digital communication (Sharma et al., 2020) This computational approach opens up new

opportunities in digital communication research because it allows empathy analysis in very large communication datasets, such as online forums or social media.

Research by (Syakhrani, 2025) shows that collaborative learning activities in digital environments can improve students' empathy skills in online communication. Students involved in collaborative projects showed an increased ability to understand their peers' emotional perspectives. This is in line with research by (Issn & No, 2025) found that active social interaction in digital learning platforms can enhance students' empathy development. Students who frequently participate in online discussions show higher levels of empathy compared to students who rarely interact in digital environments.

In addition, recent research has also begun to explore the role of empathy in interactions between humans and technology, particularly in the context of artificial intelligence and digital communication systems. Recent studies have shown that AI-based systems, including large language models, are capable of generating responses that are perceived as empathetic by users in digital conversations (Chen, 2018) These findings suggest that technology has the potential to play an important role in supporting empathetic communication in digital environments, particularly in contexts such as online mental health services and digital social support.

Challenges in Digital Empathy in Online Communication

Although digital empathy has great potential to improve the quality of online communication, the literature analyzed indicates that there are various challenges in implementing empathy in digital environments. One of the main challenges in implementing digital empathy is the limited nonverbal signals in digital communication. In face-to-face communication, individuals can use various nonverbal cues such as facial expressions, gestures, eye contact, and voice intonation to understand others' emotions. However, in text-based communication such as social media, email, or instant messaging, most of these signals are absent. Research shows that the reduction of nonverbal cues in digital communication can make it difficult for individuals to recognize the emotions and communication intentions of the other person. For example, research on text-based communication shows that reliance on written messages can hinder the process of recognizing emotions and As a result, messages intended as support, humor, or sympathy can be interpreted negatively by the recipient due to the lack of emotional context in digital communication.

In addition, studies on interpersonal communication in digital environments show that individuals often have difficulty recognizing the emotions of their interlocutors when communication takes place without adequate nonverbal context support (Montag et al., 2021)

Future Research Directions in Digital Empathy

The results of the literature synthesis show that research on digital empathy still has many opportunities to be developed in the future. One of the most promising research directions is the development of artificial intelligence systems capable of recognizing and responding more empathetically to human emotions. Research in human–computer interaction suggests that integrating artificial intelligence and emotion analysis can help create digital communication systems that are more responsive to users' emotional needs.Research by (Sharma et al., n.d.) shows that collaboration between humans and AI can improve the quality of empathetic communication in digital conversations. AI systems can help users generate more empathetic responses by providing message recommendations that are more sensitive to the other person's emotions. Furthermore, virtual reality (VR) technology also has great potential to enhance user empathy. Research by (Alimardani et al., n.d.) shows that immersive experiences in VR environments can help individuals understand others' perspectives more deeply, thereby enhancing empathic responses.Another research direction is the development of digital empathy training programs aimed at improving

individuals' ability to communicate empathetically in digital environments. Such training programs can be applied in various contexts, including education, organizations, and online communities. Research by (Wolfe et al., 2025) shows that designing digital communication systems that consider users' emotional needs can improve the quality of social interactions in digital platforms.

Research shows that the integration of technologies such as virtual simulations and AI can be an innovative strategy in increasing the effectiveness of empathy learning in the digital era, while opening up new opportunities for the development of more adaptive social-emotional education in the future (Zwoliński et al., 2025)

Implications

The findings of this systematic literature review provide several theoretical and practical implications for the development of digital empathy research in online communication. Theoretically, this study contributes to the growing body of knowledge regarding the multidimensional nature of digital empathy by integrating perspectives from communication studies, psychology, education, and human–computer interaction. The review demonstrates that digital empathy is not only a psychological construct but also a social and technological phenomenon shaped by the characteristics of digital communication environments.

Practically, the findings highlight the importance of integrating empathetic communication practices into digital platforms such as online learning systems, social media, and digital mental health services. In educational settings, the development of digital empathy can support more meaningful interactions between lecturers and students, improve student engagement, and foster supportive online learning environments. In social media contexts, empathetic communication may help reduce cyberbullying, strengthen social support, and encourage healthier online interactions.

The findings also have implications for technology developers and designers of artificial intelligence systems. The increasing use of AI-based communication technologies, such as chatbots and virtual assistants, indicates the need for communication systems capable of recognizing emotional expressions and responding appropriately to users' emotional needs. Therefore, developers should consider emotional sensitivity and ethical communication principles when designing AI-mediated communication systems.

Furthermore, this review may serve as a reference for counselors, educators, and communication practitioners in developing digital communication strategies that emphasize empathy, emotional awareness, and positive social interaction in online environments.

Limitations and Future Directions

This study has several limitations that should be acknowledged. First, the review only included articles published in three major databases, namely Scopus, ScienceDirect, and Taylor & Francis. Consequently, relevant studies indexed in other databases may not have been included in the analysis. Second, the study only reviewed articles published between 2018 and 2026, which may limit the identification of earlier foundational studies related to empathy in digital communication.

Third, the inclusion criteria were limited to articles written in English and Indonesian, potentially excluding relevant findings published in other languages. In addition, the reviewed studies used diverse methodologies and research contexts, making it difficult to directly compare findings across all studies. Another limitation concerns the relatively small number of final articles included in the synthesis, which may limit the generalizability of conclusions regarding global research trends in digital empathy.

Future research is recommended to expand the scope of databases and include studies from broader international sources to obtain a more comprehensive understanding of digital

empathy research developments. Further studies may also investigate digital empathy in specific contexts such as online counseling, virtual learning environments, healthcare communication, and intercultural communication. In addition, future researchers are encouraged to explore the effectiveness of artificial intelligence, virtual reality, and immersive technologies in supporting empathetic communication in digital environments.

Moreover, future empirical studies should examine the relationship between digital empathy and psychological well-being, social connectedness, cyberbullying prevention, and communication effectiveness across different age groups and cultural backgrounds. The development of standardized instruments for measuring digital empathy in various digital contexts is also recommended to strengthen future research in this field.

Conclusion

The development of digital technology has transformed the way humans communicate and interact in everyday life. The shift from face-to-face communication to technology-based communication such as social media, instant messaging apps, and online learning platforms has created new and increasingly complex forms of social interaction. In this context, the ability to understand and respond to others' emotions through digital media has become a crucial aspect in maintaining the quality of social relationships. Therefore, the concept of digital empathy has emerged as a crucial element in understanding the dynamics of interpersonal communication in the digital age.

Based on a literature review of various studies published in recent years, it can be concluded that digital empathy has become a rapidly growing research focus in various fields, including digital communication, online education, online mental health, and human interaction with artificial intelligence-based technology. Various studies have shown that practicing empathy in digital communication can strengthen social relationships, increase emotional support in online communities, and create a more positive and inclusive communication environment. Furthermore, the development of computational analysis methods has also enabled researchers to identify and analyze expressions of empathy in digital communication more systematically.

However, the application of empathy in digital communication environments still faces various challenges. The limited nonverbal signals in text-based communication often make it difficult for individuals to understand the emotions and intentions of their interlocutors, which can lead to misunderstandings in online interactions. Furthermore, phenomena such as anonymity in digital media and the tendency towards negative behavior in online communication can also hinder the practice of empathy in digital environments. Another challenge relates to the limitations of technology in understanding the complexity of human emotions, particularly in the context of interactions between humans and artificial intelligence-based systems. On the other hand, the development of digital technology also opens up new opportunities for developing research on digital empathy. The integration of technologies such as artificial intelligence, natural language analysis, and immersive technologies like virtual reality has the potential to support the development of digital communication systems that are more sensitive to users' emotional needs. Furthermore, the development of digital empathy training programs in various contexts, such as education, organizations, and online communities, is also an important step in improving the quality of social interactions in digital environments.

Author Contribution Statement

W.N.A.D. designed and conducted the systematic literature review, including data collection, article selection, data analysis, and manuscript drafting. E.P. contributed to reviewing and revising the manuscript critically for important intellectual content. M. assisted in editing, formatting, and finalizing the manuscript prior to submission.

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