

# COMMUNICATION AND COGNITION THEORY: A THEORETICAL FRAMEWORK FOR CONDUCTING HELPFUL COMMUNICATION IN DIVERSIFIED ENVIRONMENTS IN THE 21<sup>ST</sup> CENTURY

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## ABSTRACT

The current work assessed different aspects, steps and conditions that help people communicate appropriately in the current globalized world deeply affected by modern technologies, such the Internet and artificial intelligence. The results reported in this manuscript are based on an analysis of eight studies in different aspects of human communication and a review of 70 papers published from 2000 to 2023. An online search using WoS and SCOPUS databases was done to record the related published works. A total of 186 items were recorded, and after excluding 116 duplicated and irrelevant items, 70 papers were selected and reviewed thoroughly. According to the results, communication initiation, self-disclosure, overall well-being, positive attitudes, language proficiency, communication competence, and technical skills are among the main factors that affect interactions among individuals from different cultures. Based on the results, cognition, knowing different norms and values, and accommodation in the current diversified environments are the main aims and outcomes of daily interactions among people. The current work introduces communication initiation, disclosure, cognition, and accommodation as the four main steps, and self-knowledge, positive attitudes, self-regulation, heart coherence, cultural awareness, intercultural sensitivity, openness, purposefulness, respect differences, language proficiency, technical skills, communication competence, and effectiveness as the main conditions of effective human communication in the age of the artificial intelligence in the 21<sup>st</sup> century.

## KEY WORDS

human communication, communication theory, communication competence, cognition, artificial intelligence

## CLASSIFICATION

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## INTRODUCTION

Communication is an essential aspect of human life in the current diversified societies deeply affected by the ever-growing and ever-changing modern technologies. The Internet and artificial intelligence (AI) are the main modern technologies profoundly influenced different aspects of human life, including human communication. Communication, as one of the main achievements and requirements of human life, enables human beings to interact with one another, share their information, and know each other. Communication among people enables them to establish relationships, perform their duties, and be helpful to one another as well. In the current globalized world, communication plays a vital role in enabling individuals and societies to exchange their personal, social, cultural and economic information, and to share their values and experiences [1-3]. Currently, people from different cultures, countries and societies are interdependent with one another. Thus, they need to interact with one another to perform their duties well and achieve their personal, educational, social and economic goals [4-6].

Communication competence is one of the main requirements that enable individuals to conduct proper interactions with one another. Based on the reviewed literature, the main elements of communication competence are communication initiation, personal and interpersonal skills, language proficiency, cultural awareness and intercultural sensitivity. Moreover, self-disclosure, effectiveness, conflict management, positive attitudes towards modern technologies, and technical skills are also among the main elements of communication competence [7-12]. The main aspects of technical skills are awareness about the importance, kinds and application of different communication technologies, the ability to use different kinds of modern technologies, and being updated with ever-changing aspects of modern communication technologies [13, 14].

Besides communication competence, communication theories and understanding of different communicative contexts and different communicative norms are among the main issues that help people to conduct successful interactions. Information about different theories may also help individuals evaluate their daily interactions with different people. As stated [15], a theory is not a particular communicative behaviour but helps people know different communicative behaviours and establish easy ways to interact. Communication theories primarily focus on the primary and fundamental levels of interactions among different people [16-19].

Moreover, the structures and requirements of modern communication in the current diversified environments and organizations profoundly influenced by AI and AI-powered technologies, such as ChatGPT. The requirements of ever-changing communication technologies in the 21<sup>st</sup> century are different from the structures and requirements of communication in times and communities that people used basic technologies to communicate. Nowadays, the ever-growing diversified and multicultural environments and also the ever-changing communication technologies ask people to know the different aspects of human communication, and improve their social and cultural awareness and skills. Nowadays, people need to gain essential technical and practical skills to conduct proper communication with different people [7, 8, 11, 14].

In the current diversified environments in the age of AI in the 21<sup>st</sup> century that experience rapid technological changes, human communication has three main and interrelated aspects that must be evaluated and improved. The first aspect of human communication in the current world that is deeply affected by modern technologies is the intrapersonal aspect of communication, which is connected with self-regulation abilities, heart coherence, and the overall well-being of individuals. The second and third aspects of human communication are communication competence and technical skills [8, 20-23]. Overall wellbeing is among the main requirements of conducting helpful communication, and besides other factors, economic and financial

situation of individuals affect their overall wellbeing as well [24, 25]. Based on some scholarly works [14, 26, 27], modern technologies, especially AI and AI-powered machines and systems, profoundly influenced different aspects of human life, such as communication. Thus, humans need to improve their communication, language and technical skills to communicate and learn effectively. As stated by [28], some scholars define AI as a technology that enables machines, including computers, to act intelligently.

Moreover, we have to know that artificial intelligence did not appear suddenly, but it has more than half a century of presence in different fields of human life, including communication. As pointed out, the term ‘artificial intelligence’ was produced in 1956 at the Dartmouth Conference, and prior to that, its primary aspect appeared in 1950 in Turing’s “Game of Imitation” [29]. Since its establishment as an academic discipline more than six decades ago, and AI and its related technologies experienced fast changes and gained more attention [30]. Of course, with the generalization of the use of artificial intelligence in the last two years, access to the use of artificial intelligence has become universal, and widely affected different aspects of human life. Moreover, it should be noted that AI and AI-powered systems and chatbots, such as ChatGPT, work based on what is learned from humans and the commands received from humans and based on natural language processing abilities. For example, ChatGPT (Chat Generative Pre-trained Transformer), which is a natural language processing model, is trained to interact in a dialogue method. Its conversational format and ability enable ChatGPT to answer follow-up questions, confess probable mistakes, challenge and reject inappropriate requests and arguments [31].

According to some works [26, 30, 32], AI technologies offer more innovative functionalities supporting human-like interactions than other computer software, and AI-mediated practice of algorithmic responses increases communication speed and can change linguistic issues and social relations. However, to apply the mentioned modern technology effectively, people need to gain, improve and use some essential skills. Based on some published works [30, 33-36], the primary essential skills for helpful application of AI technologies are positive attitudes towards AI technologies, language skills, technical skills, awareness of the benefits and challenges of AI, prompting, machine-learning abilities, teamwork, and human-machine collaboration. Furthermore, as artificial intelligence can have severe effects on human communication, so can communication affect the development process of AI as well. It means that communication has and will play an essential role in developing and forming the applied aspects of artificial intelligence.

To understand and consider the mentioned issues well, the existence and application of helpful and updated theories and conceptual frameworks may help people to understand, improve and apply the mentioned requirements of human communication in the 21<sup>st</sup> century. However, based on some researchers and scholars [32, 37-41], the existing communication theories primarily developed in the Western parts of the world, based on Western liberal and individualistic norms, and prior to rapid growth and massive use of AI technologies in different aspects of human communication. Thus, such theories may not cover all aspects of communication in different parts of the world. According to the mentioned researchers and scholars, Western theorists and scholars developed their theories based on their norms and values, and the rapid growth and massive use of AI technologies deeply challenging the existing communication theories. Thus, conducting some helpful studies in different aspects of human communication, review of the existing published works in the field of human communication, identifying of main aspects and elements that affect communication among people and enable them to conduct helpful interactions, and developing a new theoretical framework based on results from the mentioned procedures may be helpful in the current diversified environments.

## LITERATURE REVIEW

Communication is one of the most essential parts of human life in all parts of the globe. However, the available theories and conceptual frameworks in communication developed in the Western parts of the world and are based on Western social, cultural and communicative norms. As pointed out, communication science mostly belongs to the Euro-American scheme and communication theories developed by Western scholars, and the main object of communication studies in the West is their people and their issues; if Westerners work on the issues which belong to other people, they may be judged based on their norms and points of view as well [38-40]. According to [40], communication theories were primarily developed by Western scholars and under the Western context of communication. Additionally, there are fundamental differences between the Western liberal and individualistic lifestyles and the Asian collectivistic and indirect communication styles. People in the West primarily practice the low context of communication, which focuses on openness and directness, while people in the Eastern parts of the world practice the high context of communication, which focuses on politeness and indirectness [42-45].

Moreover, the existing literature and works from different societies and cultures focus on human communication's importance. For example, some famous Persian Poets, such as Mawlana Rumi and Saadi Shirazi, focus on the importance of communication, cognition, and solidarity among human beings and societies. The famous poem of Saadi Shirazi (1210-1291) in his famous book *Gulistan* illustrates the mentioned issues [46]:

Human beings are members of a whole  
In the creation of one essence and soul  
If one member is afflicted with pain  
Other members uneasy will remain  
If you have no sympathy for human pain  
The name of human you cannot retain..

Also, Mawlana Jalāl al-Dīn Muḥammad Balki Rūmī (1207-1273), another famous Persian poet, in the beginning of his masterpiece and famous book *Masnavi i Ma'navi* wrote [47]:

Listen to the reed (flute) how it is complaining! It is telling about separations;  
(Saying), Ever since I was severed from the reed field, men and women have  
lamented in (the presence of) my shrill cries.

Those mentioned poems focus on the importance of human communication, cognition and cohesion among human beings. Some scholars and theorists, e.g. [48-51], who developed and introduced some of the mostly used theories in field of communication, focus on the importance and effectiveness of human communication as well.

Furthermore, in the 21<sup>st</sup> century, different types and aspects of human communication are interrelated, and people mostly conduct mediated interactions and share information and knowledge without consideration of time and space with the help of modern communication technologies [11, 52]. Modern communication theories may help individuals to distinguish and perform different aspects of human communication properly. A theory, which is an organized conceptual framework, helps people to know and distinguish different behaviors and skills and establishes helpful ways and methods to interact with one another [16-18, 41]. Thus, the current work assessed the available published works to develop and introduce a new theoretical framework based on the requirements of fundamental changes in different aspects of human communication the 21<sup>st</sup> century.

## METHODS

Based on the experiences of the author of the current work from different studies and works and also based on results from different works by the author from 2014 to 2023 [2, 22, 41, 53-56], and based some other researchers and scholars [42, 43, 45], the existing communication theories that mainly developed in the Western parts of the world and prior to the vast application of different technologies in different types and aspects of human communication, cannot cover all aspects of human communication in the current diversified environments. To review the existing published works and somehow fill the mentioned gap by the identification, arrangement and introduction of the main aspects, elements and requirements of human communication in the 21<sup>st</sup> century, eight scholarly publications from the author of the current work, which includes six published papers and two dissertations (MA and PhD dissertations) reviewed and assessed thoroughly.

The main instruments used in the mentioned eight studies are the interpersonal competence questionnaire (ICQ) of Buhrmester et al. [9], and the intercultural communication competence questionnaire [57]. Both instruments are designed based on Likert Scale with five options per item. The first data set reported in the current work is from eight original research projects on communication among university students from different nationalities. The findings from the four original studies were analyzed using the actual tests from SPSS. Table 1 summarizes the eight mentioned studies conducted from 2014 to 2023.

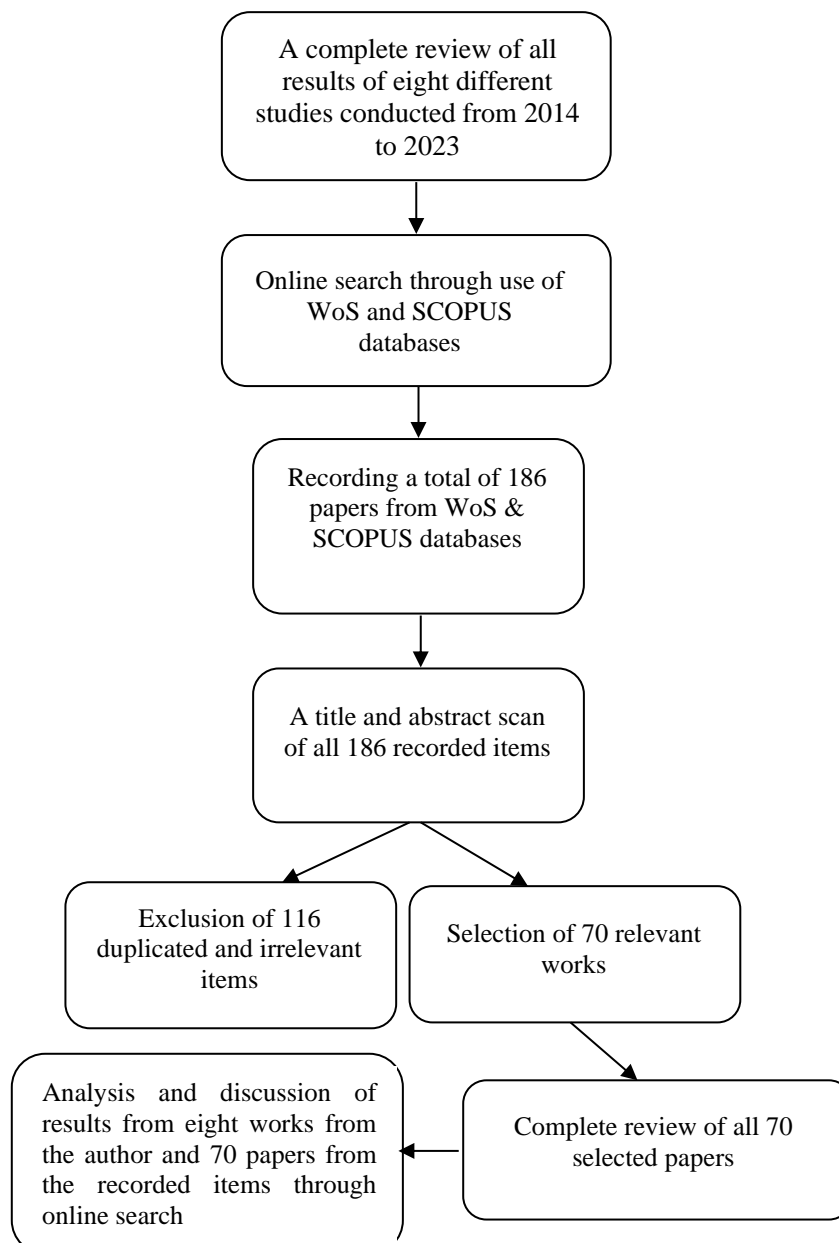
The second data set stands on a review of 70 papers on human communication among different people published from 2000 to 2023 in 34 different WoS and SCOPUS-indexed journals. In the light of results from the mentioned eight works, an online search using Web of Science

**Table 1.** Summary of eight different studies conducted from 2000 to 2023.

Reference	Study	Method	Participants
[53]	Characteristics and factors affecting interpersonal communication among university students	IPC survey questionnaire	220 local and international students
[54]	The impact of English language proficiency on interpersonal interactions among students	IPC & ELP survey questionnaires	220 students
[41]	The relationship between interpersonal communication competence, intercultural communication competence and heart rate variability	ICQ, ICCQ & emWave PC biofeedback (1.0)	128 international postgraduate students
[2]	study of the relationship between intercultural sensitivity and intercultural communication competence	ISS & ICCQ	108 international postgraduate students
[22]	The effectiveness of the quick coherence technique using heart rate variability-biofeedback technology on the recovery of heart coherence	QCT of the HeartMath.org & emWave PC biofeedback	20 undergraduate students of an international university
[22]	A study on the relationship between English language proficiency and intercultural communication competence	ICCQ LEAP-Q	108 students of an international university
[55]	Assessment of the characteristics of interpersonal communication competence among students	ICQ survey questionnaire	130 international postgraduate students
[56]	Factors influencing interpersonal interactions among students from different nationalities	IPC & ELP survey questionnaires	220 students of an international university

(WoS) and SCOPUS databases was applied to record and review the existing related published works. Six key terms, which are ‘human communication’, ‘communication competence’, ‘intrapersonal communication’, ‘intercultural communication’, ‘mediated communication’, and ‘factors affecting human communication’, were used to conduct online searches.

A total of 186 items were recorded through an online search, and after a quick title and abstract scan of all recorded works, 116 duplicated and irrelevant records were excluded, and 70 papers that published from 2000 to 2023 in 34 WoS, and SCOPUS-indexed journals were selected and thoroughly reviewed. The quantitative content analysis method was used to analyze the related works from the literature. The quantitative content analysis method determined the quantity and percentage of terms and attributes, including the main concepts and perspectives of communication in different contexts. According to Allen and Reser [58], the content analysis method as a fruitful analytical tool has been used in different studies. The flowchart in Figure 1 below includes the process of online search, record exclusion/ selection, and review of all selected papers.



**Figure1.** The process of online search, record exclusion/ selection, and review of selected papers.

After selecting 70 papers, the index of all journals that published the mentioned works was checked through WoS and SCOPUS journal search options. Table 2 illustrates the name and index of journals published in the selected papers and the number of works selected from each journal.

**Table 2.** Name and index of journals that published the selected works (continued on p.8).

<b>Name of Journal</b>	<b>Index</b>	<b>Number of papers selected</b>
International Journal of Intercultural Relations	WoS (SSCI) & SCOPUS	15
Journal of Intercultural Communication Research	SCOPUS	6
Intercultural Education	WoS (ESCI) & SCOPUS	4
Computers in Human Behavior	WoS & SCOPUS	3
Human Communication Research	WoS & SCOPUS	3
Journal of Computer-Mediated Communication	WoS & SCOPUS	2
Communication Research	WoS & SCOPUS	2
New Media & Society	WoS	2
Teaching and Teacher Education	WoS (SSCI) & SCOPUS	1
American Communication Journal	SCOPUS	1
Computer Assisted Language Learning	WoS & SCOPUS	1
Journal of Social and Personal Relationships	WoS & SCOPUS	1
Journal of Computer Assisted Learning	WoS & SCOPUS	1
Education and Information Technologies	WoS & SCOPUS	1
Education Tech Research Dev	WoS	1
European Journal of Social Psychology	WoS & SCOPUS	1
Journal of Social Issues	WoS & SCOPUS	1
Journal of e-Learning and Knowledge Society	WoS (Emerging) & SCOPUS	1
Cogent Social Sciences	WoS (ESCI) & SCOPUS	1
Media Psychology	WoS & SCOPUS	1
Journal of Intercultural Communication	SCOPUS	1
Organizational Behavior and Human Decision Processes	WoS & SCOPUS	1
Journal of Language and Linguistic Studies	SCOPUS	1
ELT Journal	WoS (AHCI) & SCOPUS	1
Industrial Marketing Management	WoS (ESCI) & SCOPUS	1
Language Teaching	WoS (AHCI) & SCOPUS	1
Language and Intercultural Communication	WoS (AHCI) & SCOPUS	1
European Journal of Interdisciplinary Studies	SCOPUS	1
Research Papers in Language Teaching and Learning	DOAJ	1
Citizenship, Social and Economics Education	SCOPUS	1
tripleC	WoS & SCOPUS	1
Turkish Online Journal of Distance Education	WoS (Emerging) & SCOPUS	1
Social Science Computer Review	WoS & SCOPUS	1
Cogent Education	WoS (ESCI) & SCOPUS	1
Pertanika Journal of Science and Technology	WoS (ESCI) & SCOPUS	1
Educación XXI	WoS (ESCI) & SCOPUS	1
Journal of Personality Assessment	WoS (SSCI) & SCOPUS	1
Theory into Practice	WoS (SSCI) & SCOPUS	1
Annual Review of Psychology	WoS (SCIE) & SCOPUS	1
Multicultural Perspectives	WoS (ESCI) & SCOPUS	1
American Psychologist	WoS (SSCI) & SCOPUS	1
Interchange	SCOPUS	1
Thinking Skills and Creativity	WoS (SSCI) & SCOPUS	1
Nurse Education Today	WoS (SCIE) & SCOPUS	1
Education and Urban Society	WoS (SSCI) & SCOPUS	1
International Journal of Hospitality Management	WoS (SSCI) & SCOPUS	1

**Table 2.** Name and index of journals that published the selected works (continuation from p.7).

High Ability Studies	WoS (SSCI) & SCOPUS	1
Chinese Journal of Applied Linguistics	WoS (ESCI) & SCOPUS	1
Journal of Ethnic and Cultural Studies	SCOPUS	1
BMC Nursing	WoS (SCIE) & SCOPUS	1
Journal of Travel & Tourism Marketing	WoS	1
Journal of Medical Ethics	WoS (SCIE) & SCOPUS	1
Journal of Services Marketing	WoS (SSCI) & SCOPUS	1
International Journal of Chinese Education	SCOPUS	1
International Journal of Sociology of Education	WoS (ESCI) & SCOPUS	1
Nurse Education in Practice	WoS (SCIE) & SCOPUS	1
Educational Research Review	WoS (SSCI) & SCOPUS	1
System	WoS (SSCI) & SCOPUS	1
ETS Research Report Series	SCOPUS	1

## FINDINGS

The findings reported in this manuscript are the main results of eight studies in different aspects of human communication from 2014 to 2023 conducted by the author of the current work and also based on a review of 70 papers published from 2000 to 2023. The results from a review of eight studies conducted on different aspects of human communication indicate the importance and effectiveness of communication initiation, information sharing, positive attitudes, and self-disclosure abilities of individuals in their personal, social and professional lives in the current diversified environments. Table 3 illustrates the main findings from analyzing eight studies conducted on different aspects of human communication.

**Table 3.** Main findings of eight studies conducted on different aspects of human communication.

Reference	Main findings
[53]	Communication initiation and information sharing among individuals positively affect their personal and professional lives. Obtaining new communication skills and cultural information helps individuals collaborate more and have broader perspectives towards the world.
[54]	English language proficiency (ELP) is among the main factors that affect daily interactions among international students. Individuals with higher levels of ELP have more interactions with different people.
[41]	Self-regulation abilities and the levels of individuals' heart coherence affect their interpersonal and intercultural communication competence (ICC). Communication initiation and daily interactions with different people help individuals to gain new skills and improve their communication competence.
[2]	Increasing cultural awareness and intercultural sensitivity enables individuals to improve their intercultural communication competence and conduct helpful intercultural communication. Cultural awareness belongs to obtained information and knowledge, cognitive and intercultural sensitivity belongs to personal attitudes, openness, and practicality.
[22]	Self-regulation abilities help individuals to improve the levels of their heart coherence and psychophysiological well-being. Their coherent heart and psychophysiological well-being enable individuals to increase their overall well-being.
[22]	ELP and ICC are the main factors that affect daily interactions among individuals from different cultures
[55]	Individuals with higher levels of ELP and ICC have higher communication initiation and effectiveness in culturally diversified environments.
[56]	Daily interactions among different people enable them to improve their ELP and gain new cultural information. ELP and communication competence are among the main factors that affect the personal and professional lives of students in current modern international universities



Results from a review of 70 works recorded and selected through an online search by the use of WoS and SCOPUS databases indicate the importance of modern technologies and technology-mediated communication, language proficiency, cultural awareness, intercultural sensitivity, positive attitudes and openness in daily interactions among different people in the 21<sup>st</sup> century. According to [11], in current modern societies, modern technologies and the Internet are essential for different aspects of human life. Mediated communication (MC) helps individuals know the clarity and ambiguity aspects of their interactions and enables students to have access outside their classrooms [59]. Table 4 summarizes the main findings from a review of 70 published papers recorded and selected through an online search from the existing literature.

**Table 4.** Summary of main findings from a review of 70 papers published from 2000 to 2023 (continued on p.10).

<b>Ref.</b>	<b>Main findings</b>
[59]	MC helps individuals to know the clarity and ambiguity aspects of their interactions
[60]	Language skills, adaption, flexibility, integration, and communication effectiveness are the main components of intercultural communication competence (ICC)
[61]	MC can experience more rapid changes than the emergence of scholars' work and publications
[62]	Communicators have higher self-disclosure levels in MC than in face-to-face communication
[63]	Acquisition of a second language and staying in other countries and cultures increase the level of intercultural sensitivity (IS)
[64]	Communicators use different symbols and cues in MC to express their emotions while interacting online
[65]	MC can be considered a quick way of information distribution
[66]	Individuals' personal characteristics and communicative goals affect the quality of their communication
[67]	MC enables individuals to establish relationships and acquire information
[6]	Cultural awareness (CA) and intercultural sensitivity (IS) are essential for healthcare professionals
[68]	MC is more effective in uncertainty reduction than direct interactions
[23]	People with effectual self-regulation practically direct their plans to attain their own self-arranged goals
[69]	Interactions through the Internet enable lonely people to connect with others
[70]	In increasingly diversified patient populations, IS is essential
[71]	ICC is a well-recognized aspect of modern life in local and global contexts
[72]	MC decreases shy communicators' receiving negative feedback from their interactions
[7]	Practical interventions could complement informative issues related to IA and IS
[73]	ICC is related to empathy, intercultural experience, and bilingualism
[74]	MC is an increasingly used approach in collaborations and decision-making processes in schools
[75]	MC helps students to increase the level of their cultural awareness and also their awareness regarding current events
[76]	Students' IS can be increased by participating in short-term courses
[77]	Their engagement in direct interactions helped students transform their prior information about other people
[78]	Self-regulation is to maintain one's focus on concentration on a particular goal in the presence of interruptions.
[79]	Individuals with good respect for cultural differences have higher interaction engagement
[80]	Attentiveness, self-disclosure, expressivity, impression-management, and other skills are among the main parts of MC competence
[81]	MC between friends through the use of instant messaging has positive effects on the overall well-being of teenagers

**Table 4.** Summary of main findings from a review of 70 papers published from 2000 to 2023 (continuation from p.9).

[82]	It is difficult for teachers with no multicultural experiences to help students increase their IS
[83]	Students who speak the same language use a foreign language more in MC than in face-to-face interaction in their classes
[84]	Both direct and mediated collaboration is helpful in the learning processes
[85]	Students with better academic ability reported higher IS
[86]	Computers, multimedia, and the Internet have revolutionized communication and mass media
[87]	Sensation-seeking can positively affect ICC
[20]	CA is essential in language teaching conceptualization
[88]	Good IS levels help people deal with differences
[5]	People from diverse cultures are interdependent with one another and are familiar with intercultural communication
[89]	MC enables people to share and exchange information without considering time and space limitations
[90]	The development of ICC includes observing emotions and feelings, questioning stereotypes, and dealing with confusion
[91]	Students focus on cultural aspects of language learning helps them increase their CA
[92]	The relationship between the disclosure reciprocity rule and the perceptual strengthening process in MC generates a perception-performance effect
[93]	Differences in the level of ICC of citizens affect the levels of eagerness, effort, and time they allocate to learning other languages
[94]	Self-differentiation mediates the relationship between spiritual comfort and ICC
[11]	In current modern societies, modern technologies and the Internet are essential for different aspects of human life
[95]	The value of ICC in international business is very high
[96]	Their stay abroad is a good chance for many students, but many students do not benefit from it
[97]	Assessment of ICC needs to be focused on practical aspects related to theories
[98]	ICC directly and positively relates to team performance
[99]	Some particular domestic programs help students improve their ICC
[100]	Improving ICC in different cultures is different
[4]	In the 21st-century, it is essential to increase ICC
[101]	The availability of opportunities for intercultural contact among students helps them to improve their ICC
[102]	Developing ICC with focus on IS as a should be considered in teacher education
[103]	Exposure to different cultures helped people improve their IS and ICC
[2]	A good level of ICC helps individuals to conduct helpful communication with other people
[104]	ICC has a relationship with interaction enjoyment and respecting different cultures
[105]	Intercultural activities can help students to promote their CA and ICC
[106]	As nurses need to look beyond individuals' cultural perspectives
[107]	IS decreases cultural distances between people of different cultures
[108]	Participation in seminars helps students improve their ICC
[109]	ICC is an essential requirement of the current globalized world
[8]	ICC is essential to today's economy
[110]	Meta-cognitive skills are related to ICC
[111]	ICC is essential in building harmonious communities
[112]	ICC plays a crucial role in the globalized environments
[113]	The improvement of ICC increase the effectiveness of workers
[114]	IS affects the improvement of ICC
[115]	Particular frameworks are required to assess ICC
[116]	The development of ICC manifests the vitality of transition
[117]	Overseas study is crucial to improving ICC
[118]	Engaging in online materials helps students to increase ICC

Moreover, the results from the reviewed works show that the vast majority (79 %) of the contents of the works belonged to Western issues and were collected and reported based on Western communication norms, especially the attribution theory of Heider [51], the psychosocial development theory of Chickering [49], the communication accommodation theory of Giles et al. [50], and the contact theory of Allport [48]. About 21 % works did not use a clear theoretical framework. Based on the results from the content analyses, communication initiation, disclosure, cognition, accommodation, communication competence, self-knowledge, respect differences, cultural awareness, positive attitudes, openness, purposefulness, effectiveness, intercultural sensitivity, self-regulation, technical skills, language proficiency, and heart coherence were mentioned in different parts of the contents as elements for communication competence and requirements for conducting successful interactions. Table 5 includes the results from the content analyses of the reviewed works.

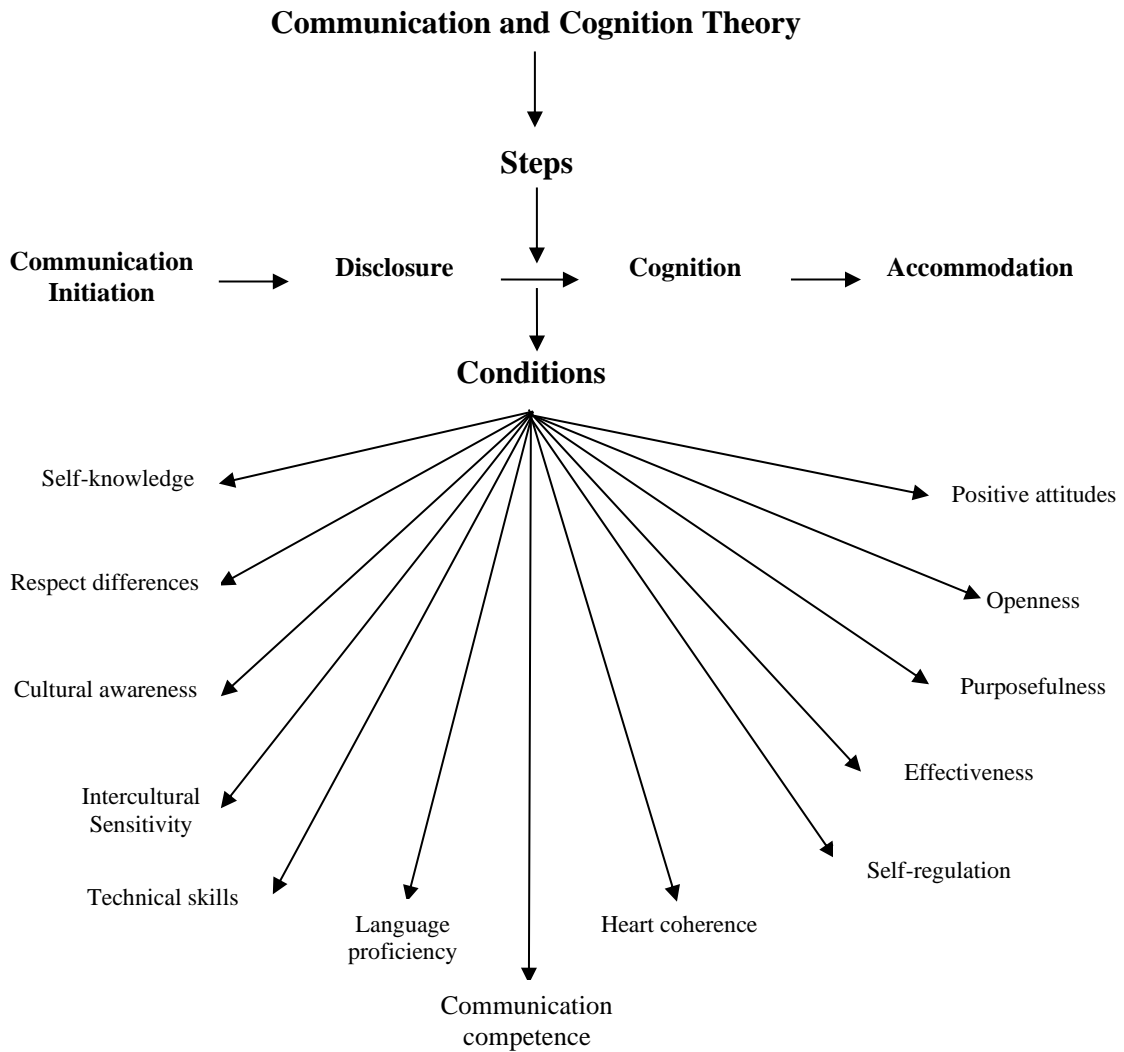
**Table 5.** The descriptive results from the content analyses.

<b>Element/Attribute</b>	<b>Number of works that used the term</b>	<b>Percentage</b>
Initiation	53	75,7
Disclosure	42	62,8
Cognition	38	54,2
Accommodation	23	12,5
Comm. competence	62	88,5
Self-knowledge	27	38,5
Respect differences	46	65,7
Cultural awareness	42	60,0
Positive attitudes	27	38,5
Openness	43	61,4
Purposefulness	37	52,8
Effectiveness	35	50,0
Intercultural sensitivity	42	60,0
Self-regulation	17	24,2
Technical skills	41	58,7
Language proficiency	51	72,8
Heart coherence	9	12,8

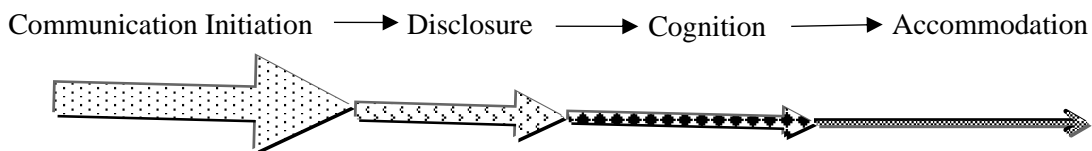
Based on the analysis and assessment of findings from eight studies conducted in different aspects of human communication and the results from a review of 70 papers published from 2000 to 2023, four main steps and 13 primary conditions and requirements for conducting proper and helpful communication in the current diversified environments in the 21<sup>st</sup> century identified and introduced. Figure 2 includes the four steps and 13 conditions introduced for Communication and Cognition Theory.

Based on the results from eight studies and 70 reviewed works, in the current globalized world, people communicate with many people, have self-disclosure with some, remember information about some people they interacted with, and reach a level of accommodation with some people less than three other steps. Figure 3 indicates the four listed steps.

As Figure 3 indicates, based on the reviewed works, individuals communicate with many people based on their daily needs, but they share their personal information with some people based on their own needs and requirements, become familiar with a smaller number of people, and accommodate with a limited number of individuals. By following the above-mentioned steps, the number of communicators will be decreased, but the level of their closeness will be increased step by step.



**Figure 2.** Four Steps and 13 Conditions of Communication and Cognition Theory.



**Figure 3.** Four Steps of Communication and Cognition Theory.

## DISCUSSION

Communication is an essential aspect and requirement of human life, and people of different cultures and societies are interdependent in the current globalized world, that deeply affected by modern technologies, such as the Internet and AI. The author of the current work, based on results from eight studies conducted in different aspects of human communication from 2014 to 2023 and based on his personal and academic experiences in different cultures and countries, found that the existing theories in the field of human communication developed and introduced prior to the rapid growth of ever-changing communication technologies and based on norms and values of homogenous societies or based on individualistic norms and values of some Western countries and societies cannot cover all aspects of human communication in the current diversified environments. Based on some researchers and scholars [42-45], people in the West primarily practice the low context of communication, which focuses on openness and

directness, while people in the Eastern parts of the world practice the high context of communication, which focuses on politeness and indirectness.

Moreover, the existing literature and works from different societies and cultures focus on human communication's importance. For example, some famous Poets, such as Mawlana Rumi and Saadi Shirazi, focus on the importance of communication, cognition, and solidarity among humans and societies. To be active and productive in the current world, people need to interact with one another appropriately and correctly; they need to improve their communication competence, know how to interact with different people, and use the ever-growing modern technologies properly. Helpful communication theories enable and help people to adequately know, differentiate and apply different norms and skills when interacting with different people.

Thus, the current work assessed different aspects, steps and conditions that help people properly communicate in ever-growing diversified environments in the globalized world. Besides analyzing results from eight studies in different aspects of human communication, an online search of the existing published literature using Web of Science (WoS) and SCOPUS databases was applied to record and select related published works. A total of 186 items were recorded, and after the exclusion of 116 duplicated and irrelevant items, 70 papers published from 2000 to 2023 were selected and thoroughly reviewed.

The results from the mentioned eight studies focus on the importance and effectiveness of communication initiation, information sharing, positive attitudes, and self-disclosure abilities in individuals' personal, social and professional lives in diversified environments. The results show that overall well-being, language proficiency, and communication competence are among the main factors affecting interactions among individuals from different cultures. The results indicate that self-regulation, participation in daily interactions with different people, and technology-mediated communication help individuals improve their overall well-being, language proficiency, and communication competence [22, 55].

Moreover, results from a review of 70 works published from 2000 to 2023 indicate the importance and effectiveness of modern technologies and technology-mediated communication, language proficiency, cultural awareness, intercultural sensitivity, positive attitudes and openness in daily interactions among different people in the 21<sup>st</sup> century. Results from the reviewed works focus on the importance of ICC in human life in the current diversified environments. Based on the results, engaging in online materials helps students to increase ICC, and language skills, adaption, flexibility, integration, and communication effectiveness are the main components of ICC [4, 60, 90, 111]. Moreover, the improvement of cultural awareness, intercultural sensitivity, and English language proficiency are essential for individuals working in different professions in the current globalized world [63, 77, 88]. Based on the results, CA and IS are different but interrelated concepts, as CA is mainly related to individuals' obtained information and cognitive skills. In contrast, IS is mainly related to individuals' attitudes, intercultural experiences, and affective abilities.

The results indicate that personal attitudes and levels of openness and purposefulness affect daily interactions among different people. The results focus on the effectiveness of self-regulation and heart coherence on overall well-being, especially in daily interactions among different people [22, 23]. The results indicate that overall well-being is a requirement of conducting helpful interactions, and their financial and economic situations affect the overall well-being of individuals. Based on the results, cognition, getting information, knowing different people, understanding different norms, values and perspectives and reaching a state of accommodation in the current ever-growing multicultural environments in the 21<sup>st</sup> century are modern communication's main aims and aspects.

Some researchers and scholars [1, 2], focus on the effectiveness of interactions among people in sharing their different values and establishing social and cultural relationships. According to them, social skills, intercultural sensitivity, communication competence, and understanding and applying unified theories and conceptual frameworks help different people conduct fruitful interactions. Miller [15] believes that communication theory helps individuals to know different communicative norms and to choose suitable ways to communicate.

So far, most theories and conceptual frameworks in communication have been developed by Western scholars and focus on the Western norms of social lives and communication. Based on [38] and [40], communication theories mainly focus on Western communicative and social norms because almost all communication theories were developed by Westerners. As different societies and cultures have their communicative norms, thus theories which developed based on the social and cultural norms of one context of communication may not work in other areas and under different contexts of communication.

Theories developed based on Western norms and Western cultural values mainly focus on individualistic and liberal lifestyles. At the same time, people in the Eastern parts of the world primarily practice different perspectives and interact based on the collectivistic norms of communication. According to [42] and [43], there are many differences between Western and Eastern lifestyles and communicative norms. Westerners prefer to be open, friendly, dramatic and direct when interacting, while Easterners prefer to be polite and exchange their messages indirectly. Thus, the theoretical norms could also bring different results from one context to another. The results from this study confirmed that some principal elements and attributes that help individuals interact with different people in the Eastern parts of the world are different from the main elements of the same process under the Western context of communication.

Based on the results reported in the current work, communication initiation, disclosure, cognition, and accommodation are the main steps of human communication in the 21<sup>st</sup> century. According to the mentioned results, self-knowledge, positive attitudes, self-regulation, heart coherence, cultural awareness, intercultural sensitivity, openness, purposefulness, respect differences, language proficiency, technical skills, communication competence, especially intercultural communication competence, and effectiveness are among the main conditions and requirements that help and enable individuals to conduct proper interactions in the current multicultural environments.

Moreover, according to researchers and scholars [30, 33-35], positive attitudes towards AI technologies, language skills, technical skills, awareness of the benefits and challenges of AI, prompting, machine-learning abilities, teamwork and human-machine collaboration are among the main AI skills. Thus, some conditions proposed in the current theory, such as positive attitudes, language skills, technical skills, openness and flexibility, can help individuals to overcome some probable AI-related challenges in their daily interactions. The findings, steps and conditions reported in the current manuscript may help individuals and researchers to conduct proper communication with different people and design and conduct helpful studies in the field of human communication in the age of artificial technology.

## **CONCLUSIONS**

Communication is an essential aspect and requirement of human life in the current world diversified and globalized world deeply affected by modern technologies, such as AI. To interact appropriately with one another, individuals need to improve their communication competence and know how to interact with different people. The current work assessed different aspects, steps and conditions that help and enable people to communicate correctly in the current diversified environments. The findings reported in the current manuscript stand on

an analysis of the results of eight studies conducted in different aspects of human communication and a review of 70 papers published from 2000 to 2023. The results from eight studies from 2014 to 2023 focus on the importance and effectiveness of communication initiation, information sharing, positive attitudes, and self-disclosure abilities in individuals' personal, social and professional lives in the current diversified environments. The results show that overall well-being, language proficiency, technical skills, and communication competence are among the main factors affecting interactions among individuals from different cultures.

Moreover, a review of 70 works indicates the effectiveness of modern technologies and technology-mediated communication, language proficiency, cultural awareness and intercultural sensitivity, technical skills, positive attitudes and openness in daily interactions among people in the 21<sup>st</sup> century. The results from the reviewed works focus on the importance of overall well-being, positive attitudes, openness, cultural awareness, intercultural sensitivity, English language proficiency, and intercultural communication competence in human life in the current diversified environments in the 21<sup>st</sup> century as well. Results reported in the current study indicate that cognition and knowing different people and different norms and values, and reaching a state of accommodation in the current diversified environments are among the main aims and outcomes of daily interactions among different people.

Based on the results reported in the current manuscript, communication initiation, disclosure, cognition, and accommodation are the main four steps, and self-knowledge, positive attitudes, self-regulation, heart coherence, cultural awareness, intercultural sensitivity, openness, purposefulness, respect differences, language proficiency, technical skills, communication competence, and effectiveness are the top 13 conditions and requirements that help and enable individuals to conduct proper interactions with different people in the current multicultural environments in the age of AI in the 21<sup>st</sup> century. Furthermore, based on the literature, the primary and essential skills for the helpful application of AI technologies are positive attitudes towards AI technologies, language skills, technical skills, awareness of the benefits and challenges of AI, concise prompting, machine-learning abilities, teamwork, and human-machine collaboration. Steps and condition proposed in the current manuscript/ theory could help individuals from different cultures to conduct proper interactions in the current world broadly diversified and deeply affected by modern technologies, such as the Internet and AI. Some conditions proposed in the current theory, such as positive attitudes, language skills, technical skills, openness and flexibility, can help individuals to overcome some probable AI-related challenges in their daily interactions.

## **PRACTICAL ASPECTS**

The current work suggests a new theoretical framework based on the consideration of different aspects of human communication in the 21<sup>st</sup> century. This work addresses the different social, cultural, and communicative norms in the different communication contexts and societies, and also focuses on the ever-changing aspects of communication technologies. This work suggests some practical steps and conditions for conducting helpful communication in the current diversified environments deeply influenced by modern technologies. Thus, this work could help individuals to conduct effective communication with one another, could help researchers and scholars to assess daily interactions among different people, and also could help policymakers to establish and apply helpful communication strategies based on the requirements of current ever-growing diversified environments.

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