



Intermedia emotional agenda-setting and cultural distance: a cross-cultural analysis of global coverage of traditional Chinese medicine (2018–2024)

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Abstract Since the World Health Organization incorporated Traditional Chinese Medicine (TCM) into its scientific framework and established "World Traditional Medicine Day" in 2018, TCM has garnered widespread attention globally. This study analyzes the emotional agenda-setting among global media regarding TCM from a global perspective, based on the Intermedia agenda-setting theory, considering the context of global hotspots and policy backgrounds. It examines the Intermedia emotional agenda-setting of TCM before, during, and after the pandemic, constructing an emotional agenda network among nations and incorporating cultural distance as a factor influencing agenda-setting to explore global cross-cultural communication. The findings reveal a significant contrast in emotional agendas between China and the United States, with the U.S. exhibiting more positive emotions while China struggled to counteract negative publicity during the pandemic. Globally, the emotional agenda surrounding TCM has undergone four stages: controversy, fluctuation, reversal, and recognition, reflecting a trend of increasing negativity with more coverage. Granger causality test results reveal that across three distinct periods, China, Turkey, the United States, and Vietnam successively demonstrated a relay

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effect in setting both positive and negative emotional agendas. Furthermore, based on the Granger causality test data among countries, Europe has emerged as the center of the global emotional agenda network. The process of communication the global emotional agenda transcends traditional temporal and spatial boundaries and cultural distances, no longer relying on geographic proximity or economic strength. Instead, it shifts towards a mutual nourishment of cultures among different countries, where greater cultural distance facilitates the contagion and influence of emotional agendas.

Keywords Global emotional agenda-setting · Traditional Chinese medicine · Cultural distance · GDELT · Computational analysis

Introduction

With the passage of time, agenda-setting theory has continually evolved, expanding from its initial focus on how media determines what the public "thinks about" (first level) to exploring how media conveys the emotional attributes of issues (second level), and further to the more complex third level of network agenda-setting. Existing research has primarily concentrated on the influence of media topics (first level) on the public; however, with the diversification of the media ecosystem, the intermedia effects have become increasingly significant. Especially in the context of globalization and rapid advancements in information technology, the role of news media in shaping public perception and influencing national image has become particularly crucial. Public diplomacy significantly depends on media communication to convey information and shape the perceptions of foreign audiences (Gilboa 2002; Golan & Himelboim 2015). In this context, this study aims to explore the emotional agenda-setting among nations in the flow of global news, with Traditional Chinese Medicine (TCM) culture serving as a suitable subject for examining the intermedia emotional agenda flow between global media. The year 2018 marked a turning point for TCM on the global stage, as the World Health Organization (WHO) officially recognized TCM as a scientific discipline for the first time in the International Classification of Diseases on June 18 (WHO 2018). In November of the same year, the World Traditional Medicine Conference designated October 11 as "World Traditional Medicine Day" (AIA 2018). Subsequently, the outbreak of the COVID-19 pandemic sparked widespread attention and discussion regarding the global communication of TCM. The changes in the volume and emotional attributes of media coverage on TCM provide a significant opportunity for research on the emotional agenda-setting among global media. By analyzing global news coverage of Traditional Chinese Medicine (TCM) from 2018 to 2024, this study aims to uncover patterns and influencing factors of emotional agenda-setting among international media, and to reveal how emotional framing contributes to intermedia influence and the shaping of public perception and national image in the context of globalization.

Literature review

Theoretical foundation — intermedia emotional agenda-setting

The primary assertion of traditional agenda-setting theory is that the prominence of news coverage influences not only what the public thinks about but also how they think about it (McCombs & Shaw 1972; Shaw & McCombs 1977). The first level of agenda-setting focuses on the volume of coverage of an issue, exploring the media's role in determining what issues the public becomes aware of. The second level of agenda-setting emphasizes how issues are defined, or how the media conveys the emotional attributes of those issues (Coleman & Wu 2010). The third level represents a combination of the first and second levels.

Research indicates that agendas should be clearly distinguished as media agendas, policy agendas, and public agendas (Tan & Weaver 2007). Intermedia agenda-setting is associated with media agendas and raises the question: "When the media sets the public agenda, who sets the media's agenda?" Traditional agenda-setting theory focuses on agenda construction and agenda influence research, examining how media agendas are affected by external sources such as public opinion (Kioussis, Popescu, & Mitrook, 2007) and policy agendas, while public agendas are influenced by media agendas (McCombs et al. 1997; Tan & Weaver 2007). However, the reporting of one media outlet can also be influenced by the agendas of other media outlets (Vliegenthart & Walgrave 2008). Intermedia agenda-setting addresses the interactions between different types of media and whether certain media influence each other.

Research on intermedia agenda-setting primarily focuses on the agenda influence networks among media within a single country and how the issues themselves affect other media (first level). It explores the patterns of agenda-setting influence among different types of media (Vonbun et al. 2016). This research on cross-media agenda-setting networks based on local media provides a nuanced perspective for agenda-setting theory, indicating that intermedia agenda-setting effects vary by media type, issue type, and time period (Vargo & Guo 2017). While a substantial body of literature provides empirical evidence for international news flow theory, it often focuses on a limited number of traditional elite news media or their online versions. Existing studies have begun to shift toward a global perspective, examining how a country's global standing influences the issue salience in news reporting from other countries (Guo & Vargo 2017). In summary, their research predominantly emphasizes the first level of agenda-setting (i.e., "what to think about"), concentrating on the issue concerns of these groups (Song et al. 2024).

The emotional attributes of the second level, however, have not received much attention. Emotions are a significant aspect of human experience, as they can influence people's attitudes and behaviors, thereby affecting interpersonal relationships and group norms (Vince & Broussine 1996; Zhang et al. 2024). Furthermore, the contagion of emotions largely originates from the media. In political communication, individuals' emotions toward candidates are significantly

correlated with the media's emotional evaluations of those candidates, confirming the impact of media emotional agenda-setting on public sentiment. The way we think and discuss public issues is influenced by how news media report on these issues, making the attributes presented by the media prominent in the public's mind (McCombs & Valenzuela 2021: 92).

Studying intermedia emotional agenda-setting helps to understand the mutual influences within the media ecosystem. In the modern information communication environment, media interactions play a crucial role in shaping news content and emotional tone. Analyzing these interactions can reveal information manipulation behaviors and help identify the impact of emotional manipulation on public opinion or political leanings. This research has guiding significance for social emotion management and policy-making, as it aids in promoting the communication of positive emotions, reducing the spread of negative emotions, and fostering social harmony and stability. Although the second level of attributes encompasses various aspects that focus on how the public thinks, in political communication, morality, rationality, and personal qualities are all part of these attributes (Song et al. 2024; McCombs & Valenzuela 2014: 96; Coleman & Wu 2010). However, emotions are considered a key component, and intermedia emotional agenda-setting is the focal point of this study.

Building on the classical agenda-setting theory, which distinguishes between first-level agenda setting (issue salience) and second-level agenda setting (attribute salience), this study further extends the framework to the domain of emotional agenda setting. While the first level emphasizes "what to think about," and the second level highlights "how to think about it," emotional agenda setting focuses on "how to feel about it." This theoretical progression is particularly meaningful in the context of cross-cultural health communication, where public sentiment plays a key role in the acceptance of Traditional Chinese Medicine (TCM). Previous studies have applied emotional agenda-setting theory to political and disaster communication (e.g., Wanta et al. 2004; Vliegenthart et al., 2008), but few have explored its role in the international diffusion of traditional health systems. Therefore, this research bridges the gap by demonstrating how emotional tones embedded in media reports shape cross-border perceptions of TCM.

Global flow and diffusion of international news

Over the past 20 years, empirical research has found that the flow of global news has significantly increased, both in traditional news media such as newspapers and television networks (Golan 2008) and in new media channels, including online news sites and social media (Segev & Blondheim 2013). Core countries like the United States and the United Kingdom have attracted a disproportionate amount of news attention in this process compared to other regions of the world (Guo & Vargo 2017). This phenomenon is viewed as a form of informational colonialism in international communication (McPhail 2010: 17), particularly in the context of the "free flow of information" brought about by the electronic information technology revolution, where news communication is no longer confined by national borders,

allowing anyone to freely access networks and content. This free flow accelerates the communication of culture in a multimedia world, expanding the global influence of media and gradually establishing a shared media culture that shapes global ideas and values (McPhail 2010: 18). The impact of a media event can now extend from regional to national levels and may even become a global media event (Hepp & Krotz 2008). For instance, one study on the diffusion of global news agenda themes confirmed that wealthier countries not only continue to attract the majority of global news attention but are also more likely to influence how other countries perceive the world, while the media in peripheral countries are increasingly impacting the global agenda (Guo & Vargo 2017).

Moreover, the media serves as a key tool of soft power, with public diplomacy largely relying on media communication to inform and influence foreign audiences (Gilboa 2002; Golan & Himelboim 2015). In particular, technological innovations and the spread of social media platforms have completely transformed the way soft power is utilized. As a means of cultural communication, these platforms help shape global recognition of national cultures (Mavrodiëva et al. 2019).

In summary, investigating intermedia agenda-setting among news media in different countries can significantly enhance our understanding of the flow of international news and the agenda interactions among media from various nations, ultimately enriching our comprehension of international relations. This approach allows for the continuous adjustment of communication strategies and tools to accommodate cultural differences at local, national, and global levels, thereby improving communication practices and enhancing cultural soft power and cultural confidence (Papa 2012).

Global communication of traditional Chinese medicine culture: research issues and hypotheses

Before the COVID-19 pandemic, Traditional Chinese Medicine (TCM) received widespread attention. On June 18, 2018, the World Health Organization (WHO) began to scientifically approach traditional medicine in a standardized and internationally comparable manner. The Astana Declaration on Primary Health Care, issued in 2018, recognized the need to integrate traditional medicine knowledge and techniques into primary health care services, specifically mentioning TCM, which originated in ancient China. In November of the same year, the 15th World Traditional Chinese Medicine Conference held in Rome designated October 11 as "World Traditional Chinese Medicine Day." This initiative sparked significant global interest (XINHUANET 2019).

During the COVID-19 pandemic, China undertook a large-scale promotion of Traditional Chinese Medicine (TCM) (GM Daily 2020a, b; XINHUANET 2020). Academician Zhang Boli from the Chinese Academy of Engineering stated that his team compared the clinical data of 34 COVID-19 cases treated with a combination of traditional and Western medicine to 18 cases treated solely with Western medicine, finding that the overall efficacy of the combined treatment was significantly better than that of pure Western medicine (Economic Daily 2020a, b). Interestingly,

the English website of the World Health Organization (WHO) included a measure listed as "taking traditional herbal medicine" among ineffective and potentially harmful treatments for COVID-19.

In November 2023, following the end of the pandemic, American media reported that Traditional Chinese Medicine (TCM) has been proven effective in modern clinical trials (Newsweek 2023). The descriptions above indicate that different media sentiment expressions emerged before, during, and after the pandemic, reflecting both positive and negative attitudes. Therefore, this study includes these three time periods and poses the following research question:

RQ1: What fluctuations have occurred in the quantity of global reports on TCM and the sentiment index?(First-level agenda-setting) What differences exist between the periods before and after the pandemic? What factors contribute to these differences?

During the pandemic, Chinese media widely promoted the effectiveness of Traditional Chinese Medicine (TCM) in treating this new disease (Kang 2020). In contrast, Western media expressed considerable skepticism regarding the lack of scientific evidence, the potential dangers of recommended treatments, and the profit-driven nature of China's promotion of TCM (Cyranoski 2020). Scientific American criticized the World Health Organization's definition of TCM as scientific in April 2019, deeming it a misguided idea (SCIAM 2019). The New York Times even defined TCM as the opposite of modern medicine (Peng & Song 2022).

Additionally, TCM holds a mainstream status in China as part of the healthcare system, whereas in many other countries, traditional medicine like TCM exists as an alternative to modern medicine (Zhu & Horst 2019). In light of this study's theme on intermedia agenda-setting, which includes the first level (quantity) and the second level (emotional attributes), the following research hypotheses and questions are proposed:

H1: Chinese media reports on TCM rank first globally and primarily express positive sentiment.

H2: Reports on TCM in Western countries, led by the United States, predominantly convey negative sentiment.

The first level of agenda-setting theory focuses on the volume of coverage of an issue, exploring the media's role in determining what issues the public becomes aware of. The second level of agenda-setting emphasizes how issues are defined or how the media conveys the emotional attributes of those issues (Coleman & Wu 2010). Few studies have combined both levels of agenda-setting to explore the relationship between them, as they are often considered separate and independent. The accumulation of media coverage is believed to have a greater potential to influence the public's emotional perception. However, the nature of the relationship between the first and second levels of emotional agenda-setting in media reporting remains unknown. This leads to the following research hypothesis:

H3: The volume of global reports on Traditional Chinese Medicine (first level) has a significant impact on the emotional index of global reporting (second level).

Moreover, the literature review indicates that in the current context of globalization, news events flow globally, and media have become important tools for constructing national images and enhancing cultural soft power. However, there is a

lack of attention to the second level (emotional attributes) in intermedia agenda-setting. Therefore, this study aims to address a global issue of intermedia emotional agenda-setting, providing a global perspective on media emotions. Media agendas are considered intermittent and cyclical (Tan & Weaver 2007), suggesting that agenda-setting is a time-series phenomenon. However, how this time-series intermedia emotional agenda-setting operates globally remains unknown, particularly in the context of TCM reporting during the pandemic. This leads to the following research questions:

RQ2a: Based on the global communication of TCM, who sets the global emotional agenda for TCM? What differences exist before and after the pandemic? What kind of time-series effects are produced?

RQ2b: How is the intermedia emotional agenda-setting of TCM represented among media in different countries? What differences exist before and after the pandemic?

During the COVID-19 pandemic, the lack of effective vaccines or biomedical sources increased public interest in discussions about the efficacy of Traditional Chinese Medicine (TCM) (Zhou 2023). In China, the success of TCM in helping to control COVID-19 is seen as a potential turning point in the history of Chinese medicine. A Chinese TCM expert remarked, "This pandemic is a significant test—now, after passing this test, the medical community needs to reassess the role of TCM in the future healthcare system" (Bai & Wang, 2020). Furthermore, China's unprecedented rise on the world stage, along with its achievements and growing influence in global forums, has garnered attention. Many Chinese commentators, and even ordinary citizens, are now eager to change the historically established international political order (Cong 2009). As a treasure of ancient Chinese science, TCM has been continuously promoted by the government as part of its cultural outreach. During the pandemic, the Chinese government extensively publicized the efficacy of TCM (Kang 2020). This leads to the following hypotheses:

H4a: China has a greater capacity and impact for global intermedia emotional agenda-setting during the pandemic.

H4b: China has a longer duration of capacity and impact for global intermedia emotional agenda-setting during the pandemic.

Cultural distance has long been regarded as a critical factor in cross-national research, influencing individuals' perceptions and behaviors across cultural contexts (Gan, Li, & Liu 2024). Cultural differences at the local, national, and global levels can influence global intermedia agenda-setting. To achieve better global intermedia agenda-setting, it is essential to consider cultural background differences. The theory of cultural distance provides a theoretical foundation for analyzing cultural differences, tracing back to the research of Dutch sociologist and psychologist Geert Hofstede. Its core concept refers to the degree of differences between countries or cultures in aspects such as language, values, behavioral norms, institutions, and cognition. It emphasizes the impact of cultural differences on international communication, business cooperation, and multinational management. By measuring the extent of cultural differences, researchers can better understand and explain communication barriers, cooperation issues, and the emergence of cultural conflicts between different cultures (Hofstede 2019).

Additionally, studies on the flow of international news indicate that certain countries are generally perceived as having more "news value" than others. In general, it has been found that national characteristics (e.g., a country's political and economic strength), relevance (e.g., geographical or cultural proximity between the reporting and reported countries), and events (e.g., disasters, wars) largely determine the prominence of foreign countries in the news (Segev 2016). However, more attention has been given to the first level of global intermedia agenda-setting, while the emotional attributes of the second level have not received sufficient focus.

Based on the above analysis, the following research questions and hypotheses are proposed:

H5: The greater the GDP representing a country's economic strength, the more it can influence the emotional agenda-setting of media in other countries.

H6: The smaller the geographical distance between countries, the more it can influence the emotional agenda-setting of media in other countries.

H7: The smaller the cultural distance between countries, the more it can influence the emotional agenda-setting of media in other countries.

Method

Database and time frame

The GDELT Global Knowledge Graph (GKG) continuously "monitors local news media from around the world in over a hundred languages to identify the people, places, numbers, themes, sentiments, narratives, events, and patterns that underpin global society" (Leetaru 2015: 43). GDELT ingests stories from news media websites worldwide, and it also collects data from Google News. More than 100 academic studies across disciplines from political science to mass communication have utilized or cited GDELT news data (Hammond & Weidmann 2014; Vargo & Guo 2016).

This study will use the API to scrape global news reports on TCM from June 18, 2018, to July 2024. On one hand, the queries provided by the API do not support searches for time frames prior to 2017. On the other hand, 2018 marked a significant signal of high-level development for TCM on the international stage. First, on June 18, the World Health Organization released a new version of the International Classification of Diseases (WHO 2018), which scientifically addressed traditional medicine in a standardized and internationally comparable manner, marking the integration of TCM into mainstream international medicine. In November of the same year, the 15th World Traditional Chinese Medicine Conference held in Rome designated October 11 each year as "World Traditional Chinese Medicine Day" (AIA 2018). This initiative garnered widespread attention globally and sent a clear signal to TCM practitioners worldwide: to inherit, develop, and effectively utilize TCM, advancing its high-level development internationally (XINHUANET 2019). Both of these events are milestones in the international communication of TCM culture; therefore,

this study will select June 18, 2018, as the starting point for the sample collection time frame.

Keyword selection

The culture of Traditional Chinese Medicine (TCM) encompasses not only medical knowledge related to TCM but also cultural concepts associated with it. Therefore, the thematic keywords related to TCM culture can be divided into two main categories: the medical category of "Traditional Chinese Medicine" and the cultural category of "TCM culture." To ensure the completeness of the retrieved data, a keyword repository has been established for these two categories of thematic keywords. This repository will be used to search for news reports related to TCM culture in the GDELT database, thereby constructing a foundational corpus.

First, a keyword repository related to "Traditional Chinese Medicine culture" was established using the works "Keywords of TCM Culture" (Li, 2018) and "Keywords of TCM Culture 2" (Li, 2021).

Second, common terms used in TCM for combating the COVID-19 pandemic were added. This included 38 terms published in the "Reference for English Translation of TCM Culture International Communication Related to Pandemic" (World Federation of Chinese Medicine Societies 2022), as well as 12 expressions related to TCM published on the National Important Concept Category Translation Release Platform (2022).

Finally, additional keywords directly related to "Traditional Chinese Medicine culture" and popular terms in the international communication of TCM were included. The supplementary terms encompass directly related keywords such as "TCM," "Chinese medicine," "Chinese herbs," "herbal medicine," "herbal medicines," "Chinese herbal medicine," "Chinese herbal formula," "traditional Chinese medicine," and "Traditional Chinese Medicine." Currently, the keyword repository contains a total of 292 keywords. After removing 23 terms that are not exclusive to TCM culture and could lead to ambiguity, as well as 5 keywords that were too short or too long to be effectively searched, the final effective keyword count for this study is 264. These keywords have been made publicly available on GitHub (Weifeng-Z 2025).

Data collection

This study employs Python-based programming code to retrieve data from the GDELT 2.0 API. First, two query modes, ArtList and Timeline, are used. The ArtList query mode filters and retrieves a list of news articles that match the keyword repository and the study's time frame. The data collected encodes each news report as a single record, including information such as the article title, source country/region, language, and publication date.

The Timeline query mode offers five available modes, with this study primarily utilizing the Timelinetone mode. This mode allows for the retrieval of a timeline of

the average tone of news reports that match the filters, containing two fields: time and average tone.

Using the ArtList query mode, a total of 76,910 news articles were initially retrieved based on 264 TCM-related keywords. To ensure data quality, records with missing values were removed, and duplicates were eliminated based on identical titles using the "drop_duplicates()" function in Pandas. After preprocessing, 71,797 unique news items remained, covering 175 countries or regions.

In the Timelinetone query mode, a timeline of the tone of news reports was obtained daily for the 175 target countries. As the subsequent analysis will address the impact of cultural distance on intermedia emotional agenda-setting, according to the calculations based on Hofstede's Cultural Dimensions Model (Culture Factor 2024; Hofstede 2019), there are 93 countries and regions for which cultural dimension values can be obtained. Due to controversies in some countries and the absence of certain dimension values, this study focuses on 54 target countries, which are geographically diverse and representative across all continents, to analyze the timeline of report volume and tone—addressing RQ2a, RQ2b, H4, H5, H6, and H7.

Data processing

Daily/monthly emotional averages

Although the ArtList query mode does not provide tone values for individual news articles, the Timelinetone search mode offers daily tone data at the country level (-100 to +100). Based on this, daily averages are calculated by dividing the tone value by the total number of articles for that day. Monthly averages are then computed by summing the daily tone values and dividing by the total number of articles published that month.

GDP distance

GDP is an important indicator for measuring the economic development of different countries and is a factor that cannot be overlooked when evaluating the international communication of TCM culture. This study defines the GDP distance between China and the target countries from the perspective of GDP disparity, measured by the absolute value of the difference in GDP between the target countries.

Geographical distance

Geographical distance serves as an indicator of the degree of geographical separation between countries and typically has a direct impact on international communication effectiveness. Generally, the greater the geographical distance, the higher the communication costs. This study utilizes Python's geodesic library to calculate the straight-line distance between the capitals of the two countries based on their latitude and longitude.

Cultural distance

This study obtains cultural distance data from the latest Hofstede database (Culture Factor 2024), covering six cultural dimensions: power distance, individualism, drive to success, uncertainty avoidance, long-term orientation, and indulgence.

For single-dimension cultural distance, the absolute value of the difference between two countries in each dimension is used to reflect the cultural gap in that specific aspect. That is:

$$D_{ij}^{(k)} = |C_{ik} - C_{jk}|$$

where $D_{ij}^{(k)}$ is the cultural distance between country i and country j in the k -th dimension.

To obtain the overall cultural distance between two countries, this study adopts the commonly used Euclidean distance method, which synthesizes all six dimensions into a single scalar measure. This method assumes that each cultural dimension may contribute differently to the overall distance. The calculation is as follows:

$$CD_{ij} = \sqrt{\sum_{k=1}^6 w_k (C_{ik} - C_{jk})^2}$$

where CD_{ij} denotes the cultural distance between country i and country j , C_{ik} and C_{jk} are the values of countries i and j on dimension k ; and w_k denotes the weight assigned to dimension k . In this study, equal weighting is applied (i.e., $w_k=1$). A larger value of CD_{ij} indicates greater overall cultural disparity between the two countries.

Time division basis

On December 31, 2019, the Wuhan Municipal Health Committee first publicly announced the occurrence of pneumonia of unknown cause (BBC 2020). The World Health Organization declared the end of the pandemic in May 2023 (WHO 2023). Therefore, this study divides the timeline into three periods: pre-pandemic (before 2020), during the pandemic (from 2020 to April 2023), and post-pandemic (from May 2023 to the present), using these as the three-phase watershed for the research.

Granger causality test

The Granger causality test is a statistical method used to analyze the causal relationships between different variables in time series data. The core idea is that if a variable X has predictive power over the future values of another variable Y , then X is said to Granger-cause Y (Granger 1969). By introducing time lags, the Granger causality test can clearly reveal which variables have predictive capabilities over time. Many studies discussing causal correlations in agenda-setting have employed

the Granger causality test; for example, Baumann et al. used Granger causality testing in their research on media and party agenda-setting during the Indian elections to determine causal relationships (Baumann et al. 2018). Granger causality analysis yields more precise results compared to cross-lagged analysis, as it not only elucidates the direction of the agenda-setting process but also quantifies the temporal intervals necessary for establishing connections among various agendas in specific research contexts (Russell Neuman et al. 2014).

In this study, RQ2a measures the temporal differences in the global emotional agenda-setting of TCM before and after the pandemic. To address RQ2b and further explore the intermedia emotional agenda-setting among various countries globally following RQ2a, Granger causality analysis will be employed for temporal causal measurement.

Results

To validate H1, the study conducted statistical analysis, revealing that the number of global reports on TCM from China ranks first in the world (Fig. 1). Additionally, negative sentiment was predominant for 14 months, while positive sentiment prevailed for 26 months (Fig. 2). Therefore, H1 is established.

Validation of H2 revealed a discrepancy with the original hypothesis: the number of reports on TCM from the United States ranks second globally. Among the top ten countries, only the United Kingdom and the United States are Western nations (Fig. 1). During the pandemic, the positive sentiment towards TCM in the U.S. lasted for 26 months, while negative sentiment was present for 14 months (Fig. 3). Overall, the distribution of report numbers is similar to that of China; however, prior

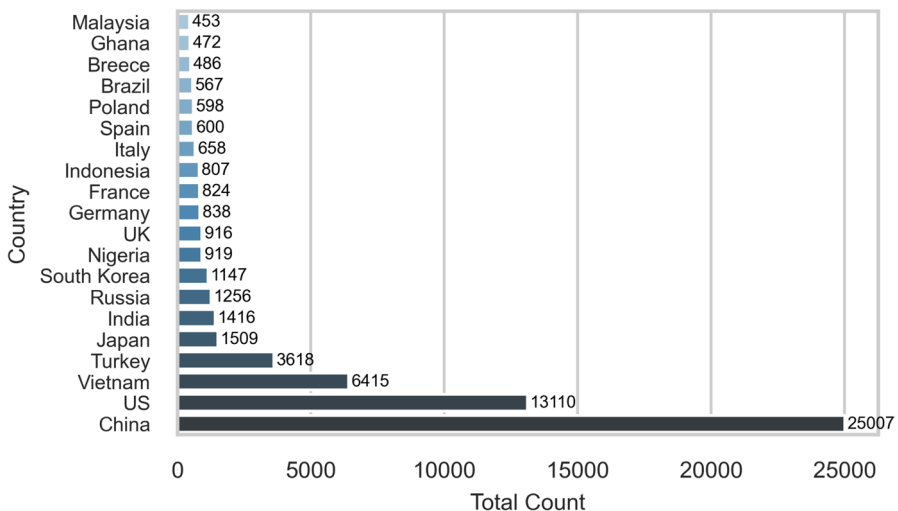


Fig. 1 Top 20 countries ranked by global TCM reporting

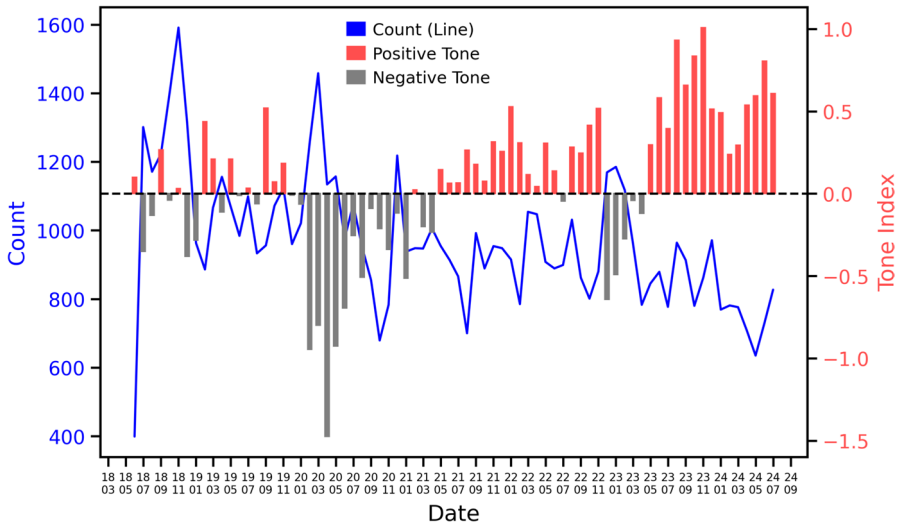


Fig. 2 Number of reports from China and monthly average daily tone index

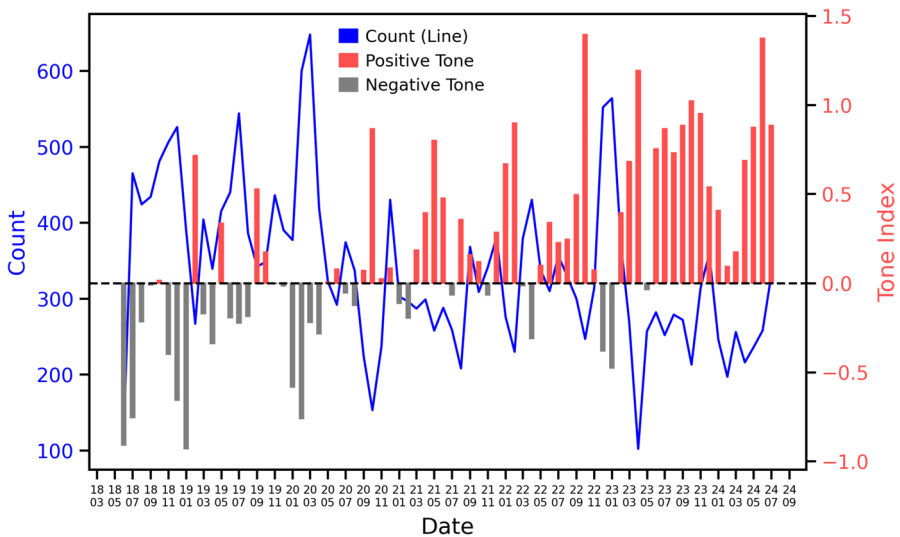


Fig. 3 Number of reports from the United States and monthly average daily tone index

to the pandemic, the U.S. consistently reported positively on TCM, with no evidence of negative sentiment. Therefore, H2 is not established.

To address RQ1, the study conducted an analysis of the quantity and sentiment of global reports on TCM. The communication of TCM culture reflects four stages: controversy, emotional fluctuation, reversal, and recognition.

Since November 2018, the number of reports on TCM in international communication has experienced fluctuations. During the early stages of the pandemic (from 2018 to the end of 2019), the global reporting volume on TCM showed a fluctuating trend, gradually decreasing from a peak of 1,591 reports in November 2018 to between 900 and 1,100 reports before the outbreak of the pandemic, with sentiment generally leaning towards the positive. During this period, the establishment of TCM as a new criterion in science and the designation of World Traditional Medicine Day sparked widespread discussion and controversy, reflecting the strong debates and uncertainties that TCM still faces in the process of gaining global recognition.

However, with the outbreak of COVID-19 in 2020, media attention on TCM surged dramatically, with the number of reports rising from 960 in December 2019 to 1,458 in March 2020. However, due to initial skepticism regarding the effectiveness of TCM treatments, the sentiment of these reports was largely negative, with many asserting that TCM had limited efficacy against COVID-19. This negative sentiment persisted until April 2021, when it began to reverse.

Entering the mid-pandemic phase (from April 2021 to December 2022), although the global reporting volume fluctuated between 700 and 1,000 reports, the sentiment towards TCM shifted to positive, indicating broader recognition of its effectiveness. In December 2022, with the resurgence of the pandemic (WHO 2023), the number of reports slightly increased to 1,200, but this was accompanied by strong negative sentiment, reflecting the severity of the pandemic situation and public anxiety.

After May 2023, as the pandemic came to an end, global attention on TCM began to decline, and the number of reports gradually decreased. However, sentiment improved significantly, displaying a clear positive trend, indicating a gradual increase in the global recognition of TCM.

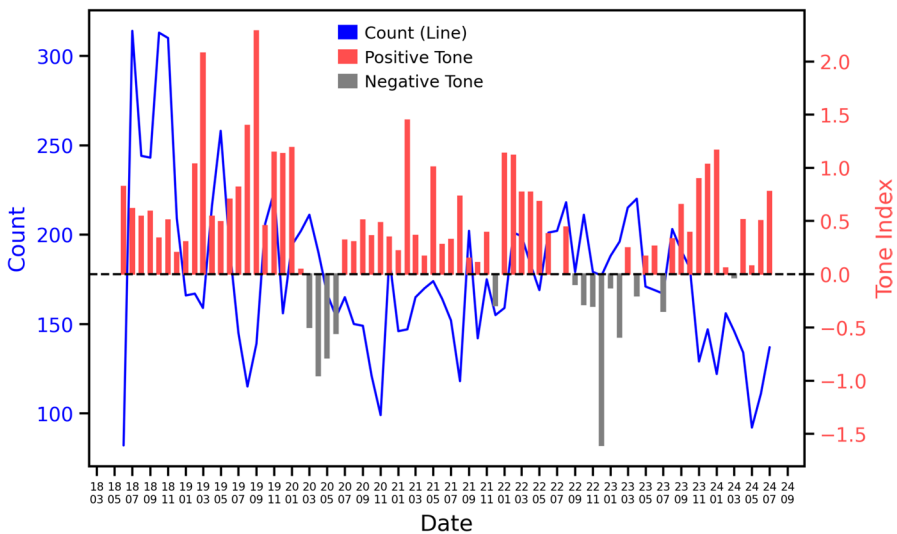


Fig. 4 Global reporting volume and monthly average daily tone index

Table 1 Pearson correlation test for monthly tone

	Tone(Pre-Pandemic)	Tone(During Pandemic)	Tone(Post-Pandemic)
Report Quantity	-.304	-.579**	.230

p<0.05*, p<0.01**, p<0.001***

H3 posits that the quantity of global reports on TCM (Level 1) significantly impacts the sentiment index of global reports (Level 2). The study conducted a Pearson correlation analysis between the quantity of reports and the sentiment index to explore the relationship between the first and second levels of agenda-setting theory. From Fig. 4, it appears that a higher quantity of reports is associated with more negative coverage. Further Pearson correlation statistical tests indicate (Table 1) that there is no significant relationship between the increase in report quantity and changes in sentiment index before and after the pandemic. However, during the pandemic, the increase in report quantity had a more negative impact on the sentiment index ($r = -0.579$, $p < 0.01$). This suggests that a greater number of TCM news reports correlates with more negative news coverage, partially supporting H3 during the pandemic period.

To further analyze the factors influencing the sentiment index during the pandemic and to address RQ2a, the study conducted a multiple linear regression analysis on countries with report quantities exceeding 1,000, controlling for the variable of "report quantity." In the regression model (Table 2), the R^2 value is 0.842, indicating that the model has an explanatory power of 84.2%, demonstrating a high level of fit. Turkey exhibits the largest and most significant positive impact on the global sentiment agenda regarding TCM ($\beta = 0.361$, $p < 0.001$), followed by India and Vietnam. The positive influences of these three countries are greater than those of the United States and China. It appears that countries with significant international

Table 2 Impact of media sentiment index on global monthly average sentiment index for TCM in eight major countries during the pandemic

Dependent Variable: Global Monthly Average Sentiment Index			
	β	t	VIF
(Number of reports ranking)		1.138	
China No.1	0.113	1.114	1.949
United States No.2	0.213*	2.150	1.854
Turkey No.3	0.361***	4.378	1.285
Vietnam No.4	0.277**	3.307	1.333
Japan No.5	0.136	1.670	1.248
India No.6	0.262**	2.982	1.458
Russia No.7	0.181	2.028	1.501
South Korea No.8	-0.065	-.732	1.482
Report Quantity(Control)	-		
R^2	.842		

p<0.05*, p<0.01**, p<0.001***

influence have not effectively impacted the intermedia sentiment agenda setting of global TCM reporting.

Regression and correlation analyses indicate that the global monthly tone index has a strong correlation with the monthly tone of individual countries. However, based on monthly average data, it is not possible to accurately predict causal relationships or address the time series effects of RQ2a. To further analyze the daily global tone index influenced by different countries, a Granger causality analysis was conducted using eight countries from the regression model that explains 84.2% of the global sentiment index. The unit root test (ADF test)

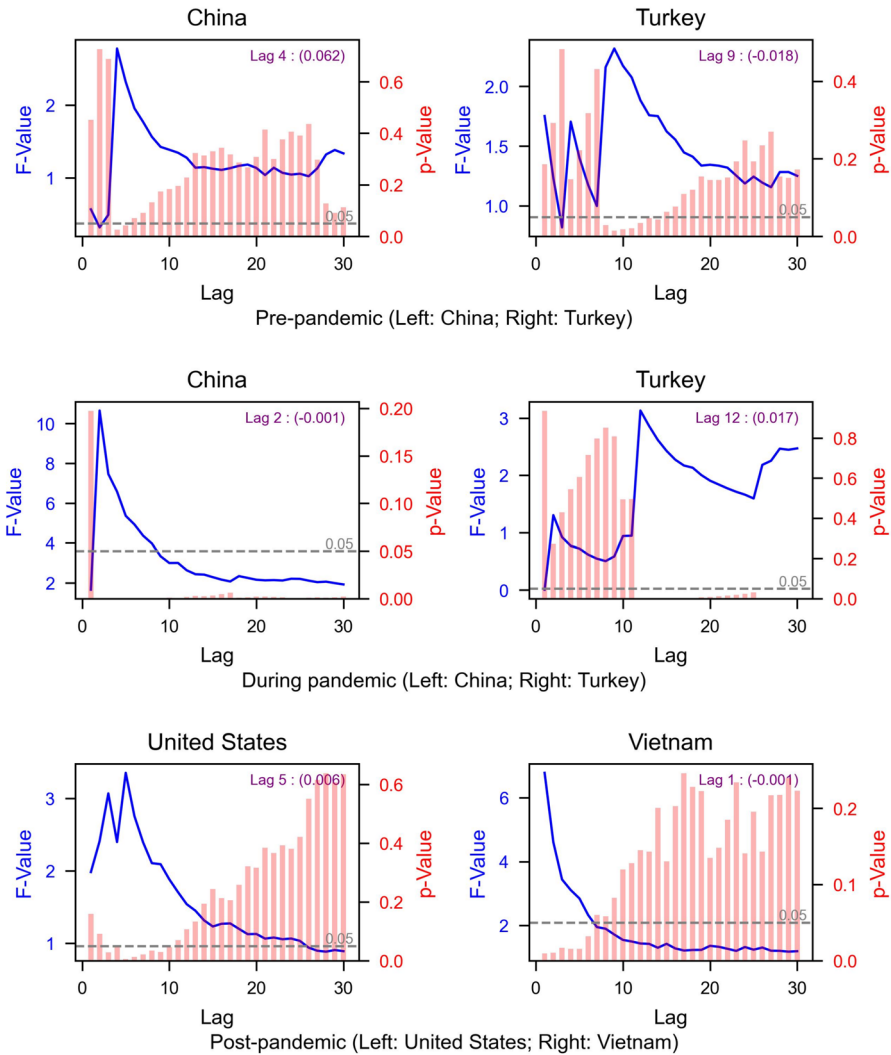


Fig. 5 Granger causality test of global daily average sentiment (Time Series)

showed that all data were significant ($P < 0.001$), demonstrating that the data is stable and suitable for Granger causality testing. Through a phased analysis of the eight countries, it was found that only two countries exhibited significance in the time series for each period (Fig. 5). Meanwhile, we also conducted VAR vector autoregression on the significance and F values that performed best in all Lags to observe whether it had a positive or negative impact.

Before the pandemic, China's sentiment agenda regarding traditional Chinese medicine (TCM) had the most significant impact on the global sentiment agenda, particularly on Day 4 ($F = 2.77$, $p < 0.05$), with Lag 4 producing a positive global sentiment agenda-setting effect (0.062). Turkey's influence occurred slightly later, mainly concentrated between Days 8 and 14, with the greatest impact on Day 9 ($F = 2.31$, $p < 0.05$), where Lag 9 produced a negative global sentiment agenda-setting effect (-0.018).

During the pandemic, China's TCM sentiment agenda exerted a sustained influence on the global sentiment agenda; however, it sharply declined starting from Day 2 ($F = 10.65$, $p < 0.000$), with Lag 2 producing a negative global sentiment agenda-setting effect (-0.001). Turkey's influence became significant on Day 12 ($F = 3.13$, $p < 0.000$), with Lag 12 producing a positive global sentiment agenda-setting effect (0.017). Although its later influence was smaller, it exhibited a long-term impact on agenda setting. Therefore, H4a is supported, while H4b is not supported, indicating that Turkey's influence on the global TCM agenda lasts longer.

After the pandemic ended, the global sentiment agenda regarding TCM experienced a reversal, with the influence of China and Turkey dissipating. The United States and Vietnam each had significant impacts on the global sentiment agenda at different time intervals. Vietnam's influence was mainly concentrated from Days 1 to 6, such as on Day 1 ($F = 6.77$, $p < 0.01$) and Day 2 ($F = 4.60$, $p < 0.05$), with Lag 1 producing a positive global sentiment agenda-setting effect (-0.001). The United States followed closely behind, significantly impacting the global sentiment agenda on Day 5 ($F = 3.35$, $p < 0.01$), with Lag 5 producing a positive global sentiment agenda-setting effect (0.006).

To address RQ2b and further explore the media sentiment agenda setting among various countries globally after RQ2a, this study first conducted a unit root test (ADF) to assess the stability of data for 54 countries before, during, and after the pandemic, excluding Finland and El Salvador due to their unstable daily tone values. Granger causality tests were then performed between each country and all other 51 counterparts, yielding 2,652 country-pair observations per period (52×51). Across all three periods, this generated a total of 7,956 observations. After integrating all the relational data, a multiple linear regression analysis was conducted. In this analysis, the dependent variable was defined as the respective F-values from the Granger causality analyses, where any non-significant Granger causality results were coded as 0. The independent variables included the differences in geographic distance, cultural distance, and GDP distance between each pair of countries derived from the causality analysis. This regression model was used to test hypotheses H5, H6, and H7 (Table 3).

Table 3 Analysis of influencing factors on media sentiment agenda transmission among all countries

Dependent Variable: F-value from Granger Causality Analysis

	Pre-Pandemic β	During Pandemic β	Post-Pandemic β	VIF
Geographical Distance Difference	– .088***	– 0.07**	– 0.018	1-1.5
GDP Distance Difference	– .061**	– 0.04*	– 0.071***	1-1.5
Cultural Distance Difference	– 0.017	– 0.009	– 0.026	1-1.5
Power Distance Difference	– 0.011	– 0.017	0.026	1-1.5
Individualism Distance Difference	0.045*	0.016	0.076***	1-1.5
Motivation for Success Distance Difference	– 0.017	– 0.03	0.024	1-1.5
Uncertainty Avoidance Distance Difference	0.021	0.028	0.018	1-1.5
Long-Term Orientation Distance Difference	– 0.004	0.007	0.045*	1-1.5
Indulgence Distance Difference	0.055**	0.055**	0.033	1-1.5
	R ² .015	R ² .009	R ² .019	-

p<0.05*, p<0.01**, p<0.001***

For RQ2b, building on the Granger causality analysis from RQ2a, this study further examined the significant sentiment agenda-setting relationships between national media outlets to construct a global communication network. A vector autoregression (VAR) was integrated for each pairwise influence relationship, generating both positive sentiment and negative sentiment networks (Fig. 6). Significant F-values were used to represent the strength of sentiment agenda-setting between national media, and these values were standardized and used as the weights of the network edges. Overall, the agenda for traditional Chinese medicine (TCM) was found to be centered in Europe.

Before and during the pandemic, Europe consistently emerged as the hub of both positive and negative sentiment agenda-setting. European countries transmitted positive sentiment agendas to the Americas and South Asia. For negative sentiment, Southeast Asian countries such as Vietnam and Thailand also exerted sentiment agenda-setting influences on Europe. However, during the pandemic, the global network of negative sentiment agenda-setting was relatively weaker, as reflected by thinner edge weights and reduced cross-national diffusion.

In the post-pandemic pattern, European countries first expanded outward, dominating the global sentiment agenda-setting among media outlets. This influence extended to regions such as South Asia, South America, exerting a stronger impact on both positive and negative sentiment agendas. Additionally, Southeast Asian countries like Vietnam and Thailand also set Europe's positive sentiment agenda in reverse. Based on the edge color intensity, the transmission of sentiment in TCM reporting became more robust after the pandemic, reflecting a more active global media landscape regarding TCM coverage compared to the pre-pandemic

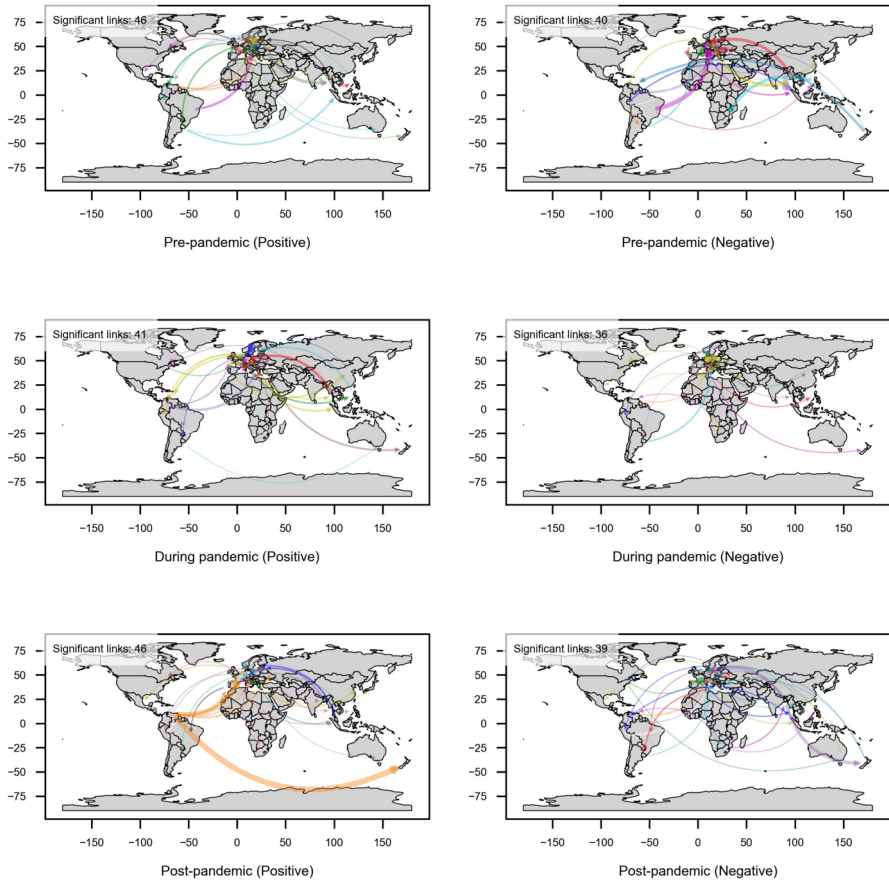


Fig. 6 Network diagram of media agenda setting among global countries (“→” Represents emotional agenda setting influence direction)

and pandemic periods, as well as stronger interactions in sentiment indices among national media outlets worldwide.

H5 is not supported. A larger GDP difference negatively impacts the media sentiment agenda setting among countries during all three periods (Pre-Pandemic: $\beta = -0.061$, $p < 0.01$; During Pandemic: $\beta = -0.004$, $p < 0.05$; Post-Pandemic: $\beta = -0.071$, $p < 0.001$). This suggests that economic strength does not contribute to the sentiment agenda setting for TCM globally at any time.

H6 is not supported. The proximity of geographical distance between countries does not effectively promote the sentiment agenda setting or emotional communication of TCM. This is particularly evident in the pre-pandemic ($\beta = -0.088$, $p < 0.001$) and during the pandemic periods ($\beta = -0.07$, $p < 0.01$), indicating that the sentiment agenda setting for TCM during these two periods transcends geographical boundaries. In fact, closer geographical proximity between countries reduces the effectiveness of sentiment agenda setting.

H7 is not supported. Overall, the total cultural distance difference does not influence the agenda setting among global countries during any period of the pandemic. However, each specific factor of cultural distance exhibits different effects across the various time periods.

Before the pandemic, a greater individualism cultural gap between countries positively influenced the media sentiment agenda setting for TCM in the other country ($\beta = 0.045$, $p < 0.05$). Similarly, a larger indulgence cultural gap between countries also contributed to influencing the media sentiment agenda setting for TCM ($\beta = 0.055$, $p < 0.01$). This indulgence cultural gap continued into the pandemic period, indicating that the greater the disparity in countries' willingness to fulfill their impulses and desires for enjoyment and entertainment, the more effective the media sentiment agenda setting for TCM becomes among countries.

After the pandemic, in the current context, the individualism difference ($\beta = 0.076$, $p < 0.001$) and long-term orientation difference ($\beta = 0.045$, $p < 0.05$) have influenced the media sentiment agenda setting among countries. Notably, the individualism difference shows greater significance, indicating that countries with larger individualism cultural differences are more likely to promote the sentiment agenda setting for TCM during normal periods. Additionally, countries with greater long-term orientation cultural differences also significantly contribute to advancing the sentiment agenda setting for TCM during these times.

Discussion and conclusion

Global: the controversy, emotional fluctuations, reversals, and recognition of traditional Chinese medicine (TCM) culture

Between 2018 and 2019, prior to the pandemic, the global emotional agenda surrounding Traditional Chinese Medicine (TCM) experienced significant fluctuations. During this period, the recognition of TCM as a scientific field and the establishment of World Traditional Chinese Medicine Day sparked widespread discussions and debates, reflecting the ongoing uncertainties and controversies in the global recognition process of TCM.

During the pandemic, the global emotional agenda towards TCM exhibited noticeable fluctuations and reversals. The initial peak of negative sentiment occurred in April 2020, marking the lowest point (-1.5) in global feelings towards TCM. As the pandemic progressed and the effectiveness of TCM became gradually evident, positive feedback increased. This shift highlights the need for time to assess the therapeutic effects of TCM, emphasizing that communication strategies in public health crises must take into account the prolonged process of demonstrating efficacy.

In the later stages of the pandemic, especially in December 2022, as COVID-19 cases surged again, negative sentiment regained dominance. This period confirmed that communication strategies for TCM in public health crises must address the rapid emotional reversals and fluctuations triggered by repeated outbreaks.

After the pandemic, the global emotional index for TCM was predominantly positive, receiving widespread recognition.

Refinement: the contrast in media emotional agendas between eastern and western countries, represented by China and the United States

According to the analyses of Hypotheses 1 (H1) and 2 (H2), China and the United States, as representatives of Eastern and Western countries, exhibited significant contrasts in their media emotional agendas during the pandemic. In the pre-pandemic period and at the early stages of the outbreak, Chinese media tended to portray TCM negatively. This reflected the ongoing global debate on the legitimacy of TCM, particularly during 2018, when China failed to leverage the World Health Organization's treatment of TCM as scientific medicine and the declaration of World Traditional Chinese Medicine Day by the Rome Conference to promote a positive image of TCM.

In contrast, the United States' media emotional agenda was predominantly positive, with relatively smaller emotional fluctuations. This suggests that American media exhibited clearer support and recognition of TCM. During the pandemic in 2020, the U.S. media's emotional agenda showed positive evaluations of TCM, creating a sharp contrast to the negative sentiment in Chinese media at the same time.

The conflict between information timeliness and TCM's efficacy

During the pandemic, the public's demand for real-time information surged, prompting frequent media coverage. However, TCM's healing process is relatively prolonged, a characteristic that conflicts with the media's focus on timeliness. To meet the need for immediate news, media outlets often focused on the latest developments, which, however, lacked in-depth analysis and background information.

This fast-paced reporting led to an excessive emphasis on short-term negative emotions and events, while the long-term efficacy and actual impact of TCM were often overlooked. This tendency not only affected the public's comprehensive understanding of TCM but also exacerbated information anxiety during the pandemic. This phenomenon highlights the need for media to balance emotional tone and depth in crisis reporting, ensuring that the pursuit of immediacy does not skew the overall emotional agenda negatively. In crisis management, media should emphasize the completeness and depth of reporting to better convey information and alleviate public anxiety.

Dynamic changes in global emotional agenda setting: the relay role of different countries

(1) Emotional Agenda Setting Before and During the Pandemic

Before and during the pandemic, China and Turkey led the global emotional agenda for TCM. Chinese media had a strong, quick impact—usually within 3 to 5

days after reports. Turkey's influence came later, around 10 days after, but its coverage was often negative. If Turkey increased positive reporting, it could improve the global perception of TCM.

(2) Post-Pandemic Agenda Relay: The Rise of the United States and Vietnam

After the pandemic, China and Turkey's influence declined, while the U.S. and Vietnam became key in shaping the emotional agenda. Vietnam's media affected the global agenda mostly within 1 to 6 days, and the U.S. peaked around day 5. This shows that post-pandemic, the U.S. and Vietnam played important roles in promoting TCM worldwide.

Overall, different countries took turns leading the emotional agenda: China and Turkey before and during the pandemic, and the U.S. and Vietnam afterward.

Media agenda setting across countries: the rise of Europe and the reorientation of global influence

Building on Granger causality and VAR network analysis, this study reveals a clear shift in the global emotional agenda-setting landscape for Traditional Chinese Medicine (TCM). During and especially after the pandemic, European countries gradually moved from being agenda recipients to becoming central agenda setters, influencing both positive and negative sentiment across multiple regions.

Before and during the pandemic, Europe primarily served as a recipient of emotional agendas from South and Southeast Asian countries, such as Vietnam and Thailand. Although it had some outward influence—especially transmitting negative sentiment to the Americas and South Asia.

However, post-pandemic, Europe transformed into the main hub of global sentiment agenda-setting. European media significantly influenced emotional agendas in South Asia, South America, with stronger edge weights indicating more robust sentiment transmission. Notably, some Southeast Asian countries also began shaping Europe's positive sentiment agendas in return, signaling increased two-way interactions and deeper global entanglement.

Compared to earlier phases, the post-pandemic period exhibited a more dynamic and interconnected media environment, with sentiment agenda-setting relationships spanning over 50 countries—exceeding the combined scope of the pre- and mid-pandemic phases.

In contrast, China and the U.S.—once dominant players—experienced a notable decline in their global media influence. This shift toward a Europe-centered emotional agenda-setting landscape is not merely a reflection of media interactions, but also rooted in Europe's institutional, professional, and market contexts. European countries generally possess more professionalized and publicly oriented media systems, which are better positioned to stabilize and amplify emotional narratives across borders (Hallin & Mancini 2004). Additionally, the gradual legal recognition and integration of Traditional Chinese Medicine (TCM) into healthcare frameworks in several EU member states—such as Germany, France, and Italy has fostered a more receptive and structured media environment (European Parliament 2017).

Structurally, this openness aligns with broader trends of cultural pluralism and evidence-informed complementary medicine, particularly in countries with regulated public health governance. Economically, Europe now accounts for over 30% of the global TCM market, which reached an estimated USD 65.89 billion (Gore 2025), highlighting the region's growing material stake in TCM's global visibility. Institutionally, this momentum is exemplified by the 2024 UK TCM Congress, where the British Acupuncture Council (BAcC) and the Register of Chinese Herbal Medicine (RCHM) united with other national-level associations to promote the advancement of acupuncture and Chinese medicine across Europe.

Together, these legal, economic, and professional developments have provided fertile ground for TCM-related emotional agendas to be widely disseminated, normalized, and even coordinated within European media discourse-reinforcing Europe's new role as the central hub of global emotional agenda-setting in the post-pandemic period.

The contrast effect of cultural distance: from hedonism to individualism and the mutual complementary effect of long-term and short-term orientation

In cross-cultural communication, seemingly contradictory values often coexist within the same culture—a phenomenon described by De Mooij (2005) as the value paradox. For instance, societies may simultaneously value both collectivist and individualist tendencies, or combine indulgent lifestyles with elements of restraint. This internal complexity opens up opportunities for strategic message adaptation across cultures.

Further, Hornikx and O'Keefe (2009) argue that greater cultural differences between sender and receiver do not necessarily weaken message effectiveness. Their meta-analysis of advertising studies shows that when messages are adapted to the target culture, greater cultural distance may actually enhance persuasive outcomes, due to increased novelty, attention, and processing effort. These findings help explain why emotional agenda-setting efforts across culturally distant countries may thrive—not despite difference, but because of it—when messages are framed to highlight value complementarity and cultural curiosity.

1. Cultural Mutual Complementarity of Hedonism and Restraint Before and During the Pandemic

Before and during the pandemic, differences in indulgence (hedonism vs. restraint) positively influenced emotional agenda setting for Traditional Chinese Medicine (TCM). Countries with high indulgence cultures—characterized by openness, freedom of expression, and acceptance of new ideas—were more receptive to TCM and curious about cultures with lower indulgence. Conversely, restrained cultures, though more conservative, were intrigued by the openness of indulgent cultures, facilitating cross-cultural communication. This mutual openness helped the spread and acceptance of TCM during its early global recognition phase.

2. Mutual Complementarity of Individualism vs. Collectivism and Long-Term vs. Short-Term Orientation After the Pandemic

As the pandemic subsided, emotional agenda setting shifted toward long-term, rational planning. Differences between individualism and collectivism, as well as long- vs. short-term orientation, became more influential. Collectivist countries tended to promote TCM's role in social harmony and collective health, appealing to individualist countries as a beneficial supplement to personal health. Meanwhile, individualist countries emphasized TCM's personalized treatments, offering new perspectives attractive to collectivist nations.

Influence

Theoretical significance

Firstly, we expand the application scope of agenda-setting theory by applying the theory of intermedia sentiment agenda setting to cross-cultural communication in a globalized context. This approach breaks the traditional research limitation of focusing on individual countries, particularly by shifting from first-level agenda setting to second-level attribute setting. Through this expansion, the study reveals how to understand the influence of media and its agenda-setting mechanisms in different cultural environments.

Secondly, by introducing three dimensions—cultural distance, geographical distance, and economic distance—this research enriches the framework of sentiment agenda setting. This innovation helps identify the critical role of cultural differences in media sentiment communication and communication in transnational contexts, challenging the previous assumptions that economic and geographical factors dominate. The study confirms that greater cultural distance facilitates mutual agenda attraction and influence. In future communications, emphasis can be placed on cross-cultural communication with countries that have significant cultural distance, enhancing their positive emotional responses to different cultures and achieving cultural mutual feeding.

In analyzing the relationship between sentiment attributes and the quantity of reports, the study finds a complex interaction between the two, particularly during specific circumstances such as the pandemic (a period of risk), where a significant increase in negative reporting presents intricate interrelations. This finding indicates that, during public crises, media sentiment may influence public perception and trigger cognitive imbalances.

Practical significance

This study offers practical insights for the global promotion of Traditional Chinese Medicine (TCM) within cross-cultural communication contexts.

First, the findings highlight the need to address the tension between media timeliness and TCM's long-term therapeutic efficacy. During the pandemic, short-term

media expectations often conflicted with TCM's gradual treatment processes. To mitigate this gap, it is important to develop communication strategies that combine timely updates, such as news reports and social media engagement, with long-term campaigns emphasizing TCM's scientific foundations and clinical outcomes. Strengthening expert advisory mechanisms and providing data-driven reporting can also help counteract negative sentiments and enhance public understanding. In addition, legal developments—such as the classification of defamation or slander against TCM as a criminal offense (Cui, 2020)—have provided political and institutional support for Chinese media coverage, guiding subsequent narratives in a more favorable direction.

Second, the research underlines the necessity of transcending geographical and temporal barriers by building an international cooperative relay system for cultural communication. As geographical proximity was found to have limited influence, collaboration with countries that play a leading role in emotional agenda setting, such as the U.S., Vietnam, and key European, South American, and Southeast Asian nations, should be prioritized. Strengthening cross-border cooperation during both crises and normalized periods can ensure continuous and effective global dissemination of TCM.

Third, the study emphasizes the importance of cultural, rather than purely economic, factors in emotional agenda setting. Greater cultural distance was associated with stronger emotional attraction, suggesting that communication strategies should account for cultural values such as indulgence, individualism, and long-term orientation. Tailoring messages to fit the emotional and cultural characteristics of target countries—highlighting TCM's personalized treatment in individualistic cultures or its short-term effectiveness in short-term oriented societies—can enhance TCM's global acceptance and foster cultural mutual understanding.

Overall, this research provides a framework for integrating media strategies, cross-cultural sensitivity, and emotional agenda setting to support the international promotion of TCM.

Limitation

This study has several limitations. Firstly, although it focuses on intermedia sentiment agenda setting on a global scale, it does not sufficiently consider the impact and feedback of audiences on these sentiment agendas. Future research should explore how audience cognition and emotional responses interact and influence media agenda setting. Secondly, the analysis of sentiment agenda setting primarily concentrates on second-level intermedia attribute sentiment agendas, without delving deeply into the relationship between first-level and second-level media sentiment attributes. It is recommended that future studies combine analyses of both levels to gain a more comprehensive understanding of the dynamics and complexities of sentiment agendas.

Finally, the data for this study is primarily derived from media reports within a specific time frame. Future research could expand the temporal scope and sample types to obtain more representative and long-term trend analyses. These improvements will contribute to a deeper understanding of the mechanisms and impacts of global intermedia sentiment agenda setting.

Author contributions The first author designed the study, collected data, and drafted the manuscript. The second author contributed to data collection and preliminary analysis. The corresponding author (third author) provided critical guidance on data analysis, conceptualized the research framework, optimized the manuscript structure, and revised the manuscript thoroughly.

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Data availability The data/code will be shared on reasonable request to the corresponding author.

Declarations

Conflict of interest The authors declare that there is no conflict of interest.

Ethical approval The data mining process in this study relied on publicly accessible datasets from Gdelt, in accordance with the terms of use and China’s data protection laws. No ethical approval was required as no human/animal subjects were involved.

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