

THE EMOTIONAL CHARACTERISTICS AND EVOLUTIONARY TRENDS OF CHINESE NEWS HEADLINES: A DIACHRONIC ANALYSIS BASED ON THE PAPER

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Abstract: This study investigates the emotional distribution, section-specific characteristics, and evolutionary trends of news headlines from *The Paper* (2019.3–2025.3) using text mining and sentiment analysis. Results show that the headlines exhibit distinct emotional traits: neutrality as the core, a slight predominance of positivity, and concentrated negativity, with rationally controlled emotional intensity. Significant differences exist across sections: Current Affairs is neutral-dominant with mild positivity, Social News features diverse emotions with the highest negative proportion, Technology is predominantly positive, and Entertainment is positive-led with varied moods. Temporally, the emotional orientation presents "long-term stability with periodic fluctuations," influenced by major events and policy cycles. This research provides empirical insights for emotional headline operation in new media and enriches case studies of Chinese news short text sentiment analysis.

Keywords: *The Paper*; News headlines; Emotional characteristics; Evolutionary trends; Text mining; Sentiment analysis

1 INTRODUCTION

Since the launch of reform and opening-up, China has undergone tremendous socioeconomic transformation. Yet social contradictions persist, with economic inequality fueling divisions and antagonism between social strata. Society can be broadly categorized into privileged classes, the middle class, and the grassroots. Due to inequitable distribution of social benefits, the grassroots often harbor resentment or even hostility toward the privileged classes—manifesting as anti-wealth sentiment, anti-official sentiment, and prejudice against professions wielding social authority, such as urban management officers and police.

Amid the conflict between the principle of journalistic objectivity and emotionalization, the objectivity inherent in emotion itself opens up new possibilities. The poor communication effect of emotional clickbait elements applied in relatively objective news reports may stem from the conflict between the public's perception of objectivity and emotions, which blocks the process of emotional arousal, thereby further expanding the connotation and application context of emotional communication theory [1].

In the new media era, marginalized groups have gained greater platforms to voice their concerns, reversing the traditional dynamic where dominant groups defined and labeled others. Media increasingly pander to audiences by incorporating labels like "official offspring," "rich kids," and "urban management officers" in headlines. Labels reflecting gender, racial, ethnic, and regional divisions also frequently appear in news headlines—such as "female drivers" and "Henan natives"—venting societal frustrations [2].

In the current era of deep media convergence and evolving algorithmic intelligent push, while the format of "reading headlines" has changed, news headlines remain the primary factor determining whether audiences will continue reading. They serve as the gateway through which audiences engage with news. The emotional expression in headlines, by shaping the emotional orientation of the disseminator (media), also influences public perception, judgment, and the trajectory of public opinion.

The definition of news headlines in the Encyclopedia of Journalism and Communication—"the briefest text used to reveal, evaluate, generalize, and represent news content"—has been transcended. WeChat official account news headlines are no longer summaries or revelations of content, but tools to stimulate emotions and create suspense. Such excessive exaggeration and information concealment in headlines warrant professional vigilance [3]. The popularization of social media has formed a linkage mechanism between online and offline spheres: the online virtual space completes issue communication and mobilization, generates emotional convergence, and further translates into social actions offline [4]. Rhetoric is employed to make headlines more vivid and lively, provide aesthetic enjoyment, and enrich implied meaning. Yet it must be used appropriately—not excessively, arbitrarily, or for its own sake, still less to show off diction, mislead people, or even harm audiences through language [5].

RQ1: Launched in 2014, *The Paper* has navigated evolving media ecosystems, technological innovations in communication, and shifting societal issues. How does the overall emotional distribution (positive/negative/neutral) of *The Paper's* headlines manifest?

RQ2: Do its sub-channels exhibit distinct emotional characteristics?

RQ3: Over time, how has the overall emotional intensity of *The Paper's* headlines evolved across different periods?

Addressing these questions holds significant importance: on one hand, it reveals the operational mechanisms of emotional headline production in mainstream new media, offering valuable insights for news information delivery; on the other, it enriches the research case studies on emotional analysis of Chinese news short texts.

This study explores the emotional distribution, section-specific traits, and evolutionary trends of news headlines from *The Paper* between March 2019 and March 2025 via text mining and sentiment analysis. The findings reveal that the headlines are characterized by "neutrality as the core, a slight predominance of positivity, and concentrated negativity" with rationally controlled emotional intensity; across sections, Current Affairs is neutral-dominant with mild positivity, Social News features diverse emotions with the highest negative proportion, Technology is predominantly positive, and Entertainment is positive-led with varied moods. Temporally, the emotional orientation presents "long-term stability with periodic fluctuations," shaped by major events, social hotspots, and policy cycles. Methodologically, this research overcomes the "fragmented" limitation of existing short-term or event-specific studies by adopting a six-year diachronic perspective, conducts fine-grained analysis of cross-sectional emotional differences, and unpacks the interactive mechanisms between media inherent positioning and external contextual factors, thereby enriching case studies of Chinese news short text sentiment analysis and providing empirical insights for mainstream new media to balance objectivity, value guidance, and audience engagement in emotional headline operation.

2 LITERATURE REVIEW

News headlines on mainstream media WeChat public accounts exhibit the following characteristics:

- Increased use of longer headlines to convey more information
 - Headlines more frequently displaying journalistic attributes
 - Preference for social life topics in issue selection
 - Greater use of emotionally charged, sensational vocabulary
 - Establishment of fixed sections for "labeling" headlines
 - A tendency toward clickbait-style headlines
- These headline textual characteristics are prevalent across media-focused. In the new media era, news headlines on official WeChat accounts have gradually manifested two main characteristics: first, exaggeration in temporality and emotion; second, the concealment of news elements or key information that interests users, so as to create suspense and induce users to click [6].

With the rapid advancement of internet technology and the continuous emergence of new media formats, the internet has become a vital channel for people to access information. Among these, online news headlines serve as gateways guiding readers into news content. Their emotional expression plays a crucial role in attracting readers, conveying news value, and shaping media image [7].

In recent years, information content on social media has grown exponentially. Taking WeChat Official Accounts as an example, the top 500 accounts alone published 1.121 million articles in 2020. To stand out in this vast sea of information, content creators must employ effective strategies to capture users' attention. Since headlines provide readers with an immediate first impression, publishers often craft eye-catching titles to grab attention [8].

News serves as a window for the public to understand society and the world, while headlines represent the most prominent element of news, encapsulating the essence of its content and holding significant research value. The creation of news headlines can employ clever linguistic strategies to construct meaning, yet audience interpretation remains equally crucial [9].

News headlines serve as the core distillation and entry point for news texts, concisely summarizing the core facts of a story and revealing its main theme. They fulfill multiple functions, including information transmission, attention-grabbing, and conveying the media outlet's tone.

The emotional nature of news headlines manifests through the selection of words, sentence structures, and rhetorical devices to convey emotional tendencies. This emotional quality evolves over time, shaped by both structural shifts and immediate changes triggered by breaking events. It can result from long-term transformations accompanying media development or emerge as short-term shifts influenced by specific incidents, all inseparable from the media's positioning and attributes.

As times advance and media evolves, news headlines have transformed. Initially, headlines were primarily simple and direct. Today's headlines, while still maintaining clarity and directness, have added numerous attention-grabbing and appealing functions. The advent of the internet has opened up new creative possibilities for headlines. Amidst the overwhelming sea of information, headlines must break through with something sufficiently eye-catching—something that makes people want to dig deeper at first glance. Combined with the skillful use of compelling vocabulary, headline crafting often involves wordplay and the incorporation of internet slang, making news more engaging and relatable.

With the advancement of the times and the development of media technology, news headlines have undergone significant transformations. Evolving from simple statements to incorporating more diverse expressive techniques, headlines now emphasize appeal and guidance. The rise of online media has further expanded the creative possibilities for headlines. To stand out amidst a sea of information, headlines now experiment with more inventive language, vivid descriptions, and even incorporate internet slang. This approach aligns with readers' linguistic habits, enhancing the headlines' relatability and appeal [10].

Current research on headline sentiment tends to focus on specific events, time periods, or individual media outlets, resulting in a pronounced "fragmented" approach: most studies concentrate on immediate sentiment analysis within the media agenda-setting framework, using this as a basis for headline sentiment research. A small number of articles

exploring emotional characteristics capture sentiment features at the discourse level but rarely investigate the underlying emotional evolution logic and driving mechanisms. Consequently, they fail to uncover the long-term influencing factors of headline sentiment, primarily including: media ecology, social context, and technological innovation.

This artificial limitation of the research timeframe introduces three shortcomings: First, it fails to reveal structural trends in headline sentiment—such as whether stable evolutionary patterns exist across media types or how emotional proportions shift across different time spans. Second, it prevents the identification of interactive influences among factors. Third, it lacks verification of the long-term effects of sentiment transmission, such as whether sustained emotional preferences can influence media credibility or audience information-processing habits—deeper-level content.

3 RESEARCH METHODS

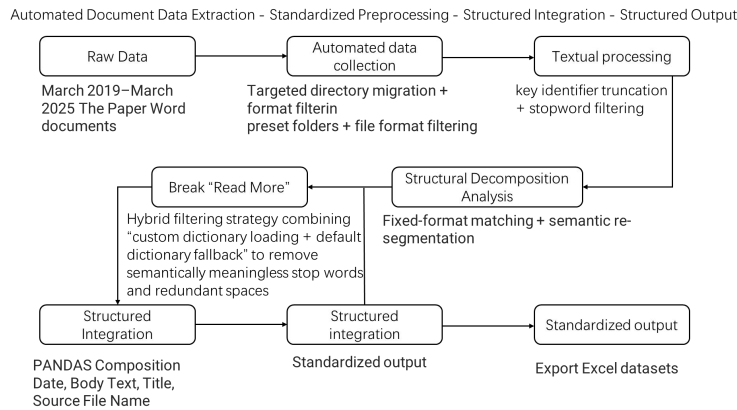


Figure 1 Document Preprocessing Workflow

The above Figure 1 is a flowchart of document preprocessing, with the specific methods as follows: First, news articles from *The Paper* published between March 2019 and March 2025 were collected as Word documents via code and transferred to Excel. The final process involved “automated document data extraction → standardized preprocessing → structured integration → structured output.” Python scripts were used for automated collection: Automated data collection employed “targeted directory traversal + format filtering,” with Python presetting folders and filtering file formats to select compliant Word document samples. Results processed through “key identifier truncation + stopword filtering” were then output to a new Excel sheet. Content following “Read More” was deemed redundant and removed for greater efficiency and conciseness. Custom and default stopword lists eliminate meaningless particles and redundant spaces for noise reduction. Fixed-format matching and semantic segmentation then strip file extensions to yield pure semantic filenames. Finally, adhering to the “first 8 characters as date, followed by title” convention, the system accurately extracts metadata like dates and titles from text.

Using pandas, the extracted content is merged into data frames for fields such as date, cleaned body text, parsed title, and source document name. Structured data is then exported to Excel format via pandas. This processing method generates a standardized research dataset that facilitates subsequent statistical analysis and text mining tasks.

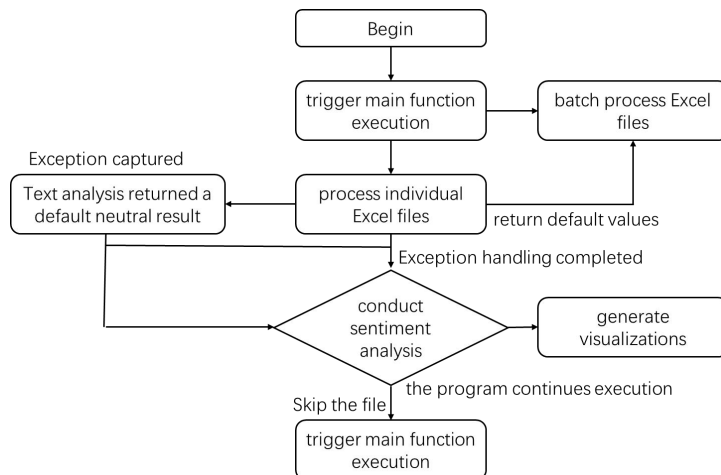


Figure 2 Visualization Flowchart for Sentiment Analysis

The above Figure 2 is a Visualization Flowchart for Sentiment Analysis, with the specific methods as follows: After generating the basic Excel format following the document preprocessing (see: Figure 1 Document Preprocessing Workflow), Python code is used to batch-process multiple monthly Excel news spreadsheets stored in a designated

folder. Sentiment analysis is performed on news headlines, data is aggregated by the “month” dimension, visualization charts are plotted, and results are summarized. Finally, a function is invoked to perform sentiment analysis on individual texts. This involves validating text legitimacy, determining whether it represents a 0-1 sentiment score, identifying sentiment polarity (positive/negative/neutral), and capturing exceptions—returning a default neutral result for failed parsing. Subsequently, process individual Excel files by reading and validating required fields (“Title” and ‘Date’). Parse each row, perform sentiment analysis, append “Sentiment Score” and “Sentiment Polarity” fields, and filter out parsing failures. Finally, batch processing is implemented. The main function serves as the entry point, first calling the batch processing function to obtain the total data. It outputs the overall sentiment orientation for each month's data, calls the charting function to draw the graph, and finally writes the total data into a consolidated Excel file. All exceptions are captured to prevent program errors. The overall sequence is: “Data Reading → Batch Processing → Sentiment Analysis → Date Aggregation → Statistical Visualization → Result Saving.” Exception handling ensures program stability and reusability, see Figure 3.

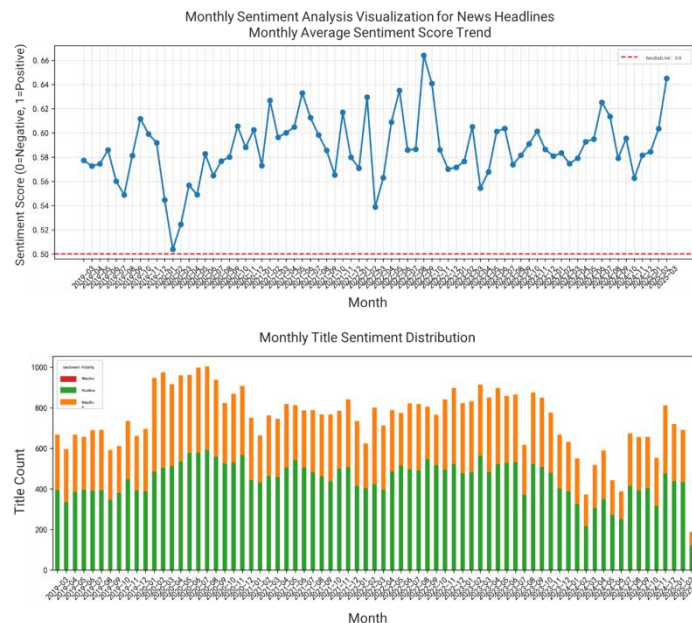


Figure 3 Monthly Sentiment Analysis Chart of News Headlines from *The Paper*, March 2019-March 2025

4 DESCRIPTIVE STATISTICAL ANALYSIS

Based on the principle of objectivity in news dissemination and *The Paper's* established positioning as an in-depth media outlet, the analysis reveals that its headlines exhibit a distinct emotional orientation characterized by “neutrality as the core, slight positive dominance, and relatively concentrated negative sentiment.” Emotional intensity consistently remains within rationally controlled levels. Neutral-toned headlines constitute the largest segment of the overall sentiment distribution, accounting for approximately 40%-50%. The primary function of news reporting is to convey information and present objective facts. The headlines on *The Paper* primarily serve to introduce news stories and summarize factual content, drawing on elements from the news itself and linking them together. Examples include: “National Conference on Ecological and Environmental Protection Held in Beijing” and “China's New Energy Vehicle Production and Sales Rank First Globally for Eight Consecutive Years.” These titles align with reality without adding subjective emotion or value judgments, scoring between 0.45 and 0.55 on the emotional scale. Their avoidance of emotional language enables the authentic transmission of information, which is crucial for maintaining media authority. Positive-emotion headlines slightly outnumber negative ones, accounting for approximately 30%-35%. This reflects mainstream media's commitment to promoting positive energy. Pengpai News headlines often highlight favorable national developments, beneficial policies, social welfare initiatives, and scientific breakthroughs, frequently featuring words like “breakthrough,” “progress,” “heartwarming,” “successful,” and “safeguard.” Positive-sentiment news such as “Individual Income Tax Reform Benefits Millions of Middle-Income Families,” “Volunteers Form Emergency Service Teams to Support Mountainous Region Supply Transportation,” “China Achieves Integrated Satellite-Ground Quantum Communication Breakthrough,” and “Domestic Intangible Cultural Heritage Plays Debut at International Arts Festival to Wide Acclaim” all express social sentiment in a moderate, positive manner. While conveying emotional warmth, they avoid excessive sensationalism, with positive sentiment scores mostly falling between 0.6 and 0.8. Approximately 15%-20% of headlines with negative sentiment exhibit a “problem-oriented” distribution pattern. These headlines typically address societal issues such as safety incidents, illegal activities, public welfare concerns, and public risks. Examples include: “Company Investigated for Illegal Pollution Discharge,” “Multiple Locations Discover Fraudulent Enrollment Scams,” and “Extreme Heat in Several Areas May Trigger Power Load Alerts.” These headlines extensively employ neutral-to-negative terms like “warning,” “investigation,” “hazard,” and “accountability,” with emotional scores mostly falling within the (0.2, 0.4) range. Notably, regarding headlines employing inappropriate

emotional expressions, *The Paper* consistently adopts a relatively composed approach to framing negative events. It avoids extreme emotional language, instead incorporating a tone and methodology that emphasizes “exposing problems—solving problems.”

Regarding overall emotional intensity, *The Paper's* headlines rarely approach absolute extremes like -1 or 1, instead clustering around mid-range values. This reflects the rational emotional stance of in-depth media, achieving a balanced grasp of “objective presentation” and “moderate emotional expression.”

5 EMOTIONAL CHARACTERISTICS ACROSS DIFFERENT NEWS SECTIONS

Due to differences in reporting subjects, core functions, and dissemination objectives, the emotional characteristics of headlines across *The Paper's* various sections exhibit significant differentiation, closely aligning with each section's content positioning.

5.1 Current Affairs Section: Neutral Dominance with Mild Positivity

As the core section focusing on policy announcements, government affairs updates, and major national events, the Current Affairs section exhibits the strongest stability in headline sentiment, characterized by “neutrality as the main tone, supplemented by positivity.” Neutral headlines account for over 50%, predominantly covering factual content such as policy interpretations, conference reports, and government information disclosures. The language is rigorous and standardized, showing no obvious emotional bias, reflecting the authority and objectivity of current affairs reporting. Positive headlines account for approximately 30%-35%, primarily covering national development achievements, livelihood safeguarding measures, and major strategic advancements. Examples include “Beijing-Tianjin-Hebei Coordinated Development Reaches Decade Milestone, Regional Economic Output Exceeds 10 Trillion Yuan” and “126 New Drugs Added to Medical Insurance Reimbursement List, Average Patient Medication Costs Drop 40%.” These headlines convey mildly positive sentiment, signaling the nation's progress. Negative headlines accounted for less than 10%, appearing only in limited contexts such as problem rectification and accountability announcements. Examples include “Local authorities reprimanded for illegal project approvals; responsible parties held strictly accountable.” These headlines focused on “rectification implementation” rather than emotional criticism, maintaining the rational tone of political reporting.

5.2 Social Section: Diverse Emotions, Highest Negative Proportion

The Social section covers diverse topics including public welfare initiatives, social events, public safety, and hot-button issues affecting people's livelihoods. It exhibits the most complex emotional characteristics, with neutral, positive, and negative sentiments all significantly represented—and negative sentiment holding the highest proportion among all sections. Neutral headlines account for approximately 40%, primarily featuring public service announcements and social updates such as “Multiple Regions Nationwide Launch 2024 Fall Semester Enrollment” and “Optimizing Urban Public Transit Networks: 5 New Cross-District Bus Routes Added.” These headlines prioritize practical information delivery without pronounced emotional bias. Positive headlines account for about 25%-30%, focusing on ordinary acts of kindness, public welfare initiatives, and social governance achievements. Examples include “Community ‘Love Canteen’ Opens to Solve Meal Challenges for Elderly Living Alone” and “Volunteers Launch ‘Book Drifting’ Campaign, Benefiting Thousands of Rural Children,” conveying social warmth and positive energy. Negative headlines accounted for about 30%-35%, primarily covering safety incidents, illegal activities, public grievances, and social issues. Examples include: “Man arrested for suspected telecom fraud involving over 10 million yuan,” and “Elevator maintenance failures in a residential complex trigger repeated malfunctions and resident complaints,” and “Food safety inspections uncover three batches of substandard products; involved companies summoned for talks.” While these headlines carry negative connotations, their core purpose is to expose issues and drive social governance rather than merely convey negativity, reflecting the oversight function of social news.

5.3 Technology Section: Positive Dominance with Neutral Supplements

Science and technology coverage primarily focuses on R&D innovation, technological breakthroughs, and industrial development. Positive headlines dominate this section, highlighting its uplifting nature with a 50%-60% positive headline ratio. Titles frequently employ positive emotional vocabulary such as “breakthrough,” “success,” “first,” and “leading”: “China's domestically developed high-thrust rocket engine passes test firing,” “AI-Assisted Diagnosis Technology Improves Lung Cancer Screening Accuracy,” and “China's Domestic New Energy Vehicle Exports Surge 50% Year-on-Year, Leading Globally.” Such headlines score between 0.7 and 0.9 on emotional scales, conveying strong technological confidence and industry momentum. Neutral headlines account for 30%-40%, typically covering pure technical analysis, industry trends, and policy announcements. Examples include headlines like “The 19th World Artificial Intelligence Conference Scheduled for July 2024” and “Ministry of Industry and Information Technology Issues Action Plan for Innovative Development of Next-Generation Information Technology Industry.” Only a small fraction of headlines express negative sentiment, accounting for less than 5% of the total. These primarily address factual issues arising from technical risks or industry irregularities in specific sectors, typically presenting information without emotional overtones.

5.4 Entertainment Sector: Positive Sentiment Prevails with Diverse Moods

The entertainment sector encompasses film, television, variety shows, cultural events, celebrity updates, and art exhibitions. Positive sentiment headlines account for approximately 40%-45% of coverage, primarily featuring outstanding cultural achievements, high-quality works radiating positive energy, and public welfare cultural activities. Examples include:

“The Chinese documentary ‘Intangible Cultural Heritage Chronicles’ wins Best Documentary Film at the 8th Nice International Film Festival in France,”

“The inaugural National Intangible Cultural Heritage Expo,”

and “Celebrity charity concerts raise over ten million yuan to support rural education.”

These reports adopt a lighthearted tone, conveying cultural confidence and social warmth. The First National Intangible Cultural Heritage Expo,“ and ”Celebrity Charity Concert Raises Over 10 Million to Support Rural Education.” These stories convey cultural confidence and social warmth through lighthearted language. Neutral-toned headlines accounted for approximately 35%-40%, mostly conveying event announcements, work releases, or industry updates. Examples include: “Film ‘Farewell My Concubine’ Announces Release Date Change to September 30th and Releases First Trailer,” and “Call for Entries Issued for the 11th China (Beijing) National Calligraphy and Seal Carving Exhibition.” These headlines aim to deliver complete and accurate information to audiences without obvious bias. Negative sentiment headlines accounted for approximately 15%-20%, addressing industry malpractices, negative incidents, or controversial works by name. Examples include: “Artist Under Investigation by State Taxation Administration Task Force for Suspected Tax Evasion” and “A certain variety show has drawn criticism from some viewers for excessive entertainment focus.” However, their expressions remain relatively restrained, avoiding excessive distortion of facts that could cause public panic or exploiting public opinion for sensationalism to achieve negative objectives. This upholds the neutral stance of entertainment reporting and maintains a positive publicity position.

6 THE EVOLUTIONARY TRENDS IN HEADLINE SENTIMENT OVER TIME

From a temporal perspective, the evolution of sentiment in *The Paper's* headlines exhibits a pattern characterized by “long-term stability with periodic fluctuations.” This phenomenon stems both from the media outlet's inherent positioning and focus interacting with shifts in social realities, as well as from the influence of major events, social hotspots, and policy cycle changes.

6.1 Long-Term Trend

Core Emotional Structure Remains Stable In fact, when examining the overall emotional distribution structure of headlines across annual and multi-year timeframes, *The Paper's* headlines consistently exhibit a stable pattern characterized by “predominantly neutral sentiment, slightly elevated positive sentiment, and concentrated negative sentiment.” This stability stems from *The Paper's* commitment to its role as an in-depth media outlet. Maintaining objectivity and rationality as its foundational approach is the fundamental logic of this media institution. Unlike mainstream mass media, it cannot detach itself from the factual substance of events or eliminate risks arising from extreme emotional bias. Consequently, this stability ensures the overall emotional orientation remains consistently aligned throughout, avoiding shifts toward either extreme.

6.2 Phased Fluctuations

Temporary adjustments triggered by significant events. Within specific timeframes, headline sentiment tendencies also exhibit pronounced phased fluctuations, primarily occurring after major events or societal hotspots emerge. This manifests as a climbing or declining trend in overall sentiment.

First, major positive events generate waves of positive sentiment. For instance, during space launch successes, major policy announcements, championship victories in sporting events, or the holding of major domestic/international conferences and large-scale activities, the likelihood of concentrated posts showcasing positive energy from certain industries or groups increases. At such critical junctures, sections like politics, society, and entertainment also publish more positive sentiment articles. For instance, around major events like the 20th CPC National Congress, the National People's Congress, or National Day celebrations, the proportion of positive articles increases. The overall average emotional score rises from the normal range (0.55–0.6) to (0.65–0.75), effectively promoting sound values, uniting societal forces, and guiding public discourse in the right direction.

Second, major negative events or social hotspots can amplify negative sentiment among netizens. This is typically reflected in heightened public attention toward news reports related to such incidents within the social section for a period. Following incidents with significant negative sentiment—such as major accidents, prolonged periods of food safety issues, or sudden public health crises—negative sentiment becomes evident in corresponding news coverage, rising to 25%-30% and exceeding the social section's usual 15%-20% range. During these periods, coverage primarily focuses on the incident itself and its resolution progress. Negative sentiment in the social section is readily observable, but once the event is resolved, discourse in this section typically returns to calm. Moreover, under such circumstances, the logic of “objective reporting + problem-oriented approach” is maintained. There is no typical inflammatory emotional rhetoric, and efforts are made to keep the impact of such negative events within reasonable bounds.

6.3 Cyclical Characteristics: Policy- and Industry-Driven Fluctuations

Certain sections exhibit sentiment patterns correlated with policy cycles or industry trends. For instance:

- Current Affairs: Positive and neutral headlines predominate during annual policy release peaks—such as the National People's Congress in early spring and year-end work conferences—driven by policy implementation and effectiveness, resulting in overall upward sentiment. The technology sector sees a higher proportion of positive headlines during major tech exhibitions (e.g., World Artificial Intelligence Conference, International New Energy Vehicle Exhibition) and periods of concentrated technological breakthroughs (showcasing industry achievements). The entertainment sector experiences a higher proportion of positive headlines during holidays (e.g., Spring Festival or National Day), such as holiday cultural tourism activities and New Year film releases, creating a relatively relaxed overall sentiment. Negative headlines cluster during industry rectification periods (e.g., addressing negative publicity), primarily focusing on governance of sector malpractices. Social sectors see increased neutral or positive headlines during critical public welfare periods like flood seasons or winter heating seasons (e.g., flood response deployments, heating supply measures).

First, major positive events drive an increase in positive sentiment. During periods such as the announcement of significant national achievements (e.g., successful space launches, major policy rollouts, championship victories in sporting events), the hosting of important international conferences, and concentrated public welfare campaigns, the proportion of positive sentiment headlines rises periodically. For instance, during pivotal events like National Day celebrations, the National People's Congress sessions, or the Olympics, positive headlines in political, social, and entertainment sections surge significantly. The overall sentiment score average rises from the typical 0.55–0.6 range to 0.65–0.75. This concentrated transmission of positive signals fosters social consensus and guides positive public sentiment.

Second, major negative events or social hotspots trigger short-term spikes in negative sentiment. Following major safety accidents, natural disasters, or socially contentious incidents, the proportion of negative sentiment headlines in the social section temporarily increases. For instance, during periods marked by major traffic accidents, concentrated exposure of food safety incidents, or sudden public health events, headlines often focus on the issues themselves and response progress. The negative sentiment ratio then rises from the usual 15%-20% to 25%-30%. However, such fluctuations are typically short-lived. As incident resolution progresses and public sentiment cools, the negative sentiment ratio gradually returns to normal levels. Headlines consistently adhere to an “objective reporting + problem-oriented” logic, avoiding emotionally inflammatory language and preventing excessive spread of negative sentiment.

6.4 Cyclical Characteristics: Regular Fluctuations Driven by Policy and Industry Dynamics

Sentiment trends in certain sectors also exhibit regular fluctuations tied to policy cycles and industry developments. In the current affairs sector, during periods of intensive policy releases (such as the annual National People's Congress and Chinese People's Political Consultative Conference sessions at the beginning of the year, or year-end work deployment meetings), the proportion of positive and neutral headlines significantly increases. Coverage focuses on policy interpretation and implementation outcomes, resulting in more positive and stable sentiment. The technology sector experiences periodic increases in positive headlines during major tech exhibitions (e.g., World Artificial Intelligence Conference, International New Energy Vehicle Exhibition) and concentrated periods of technological breakthroughs, highlighting industry achievements. The entertainment sector sees a noticeable rise in positive headlines (e.g., holiday cultural events, New Year film releases) around festivals like Spring Festival and National Day, fostering a more relaxed and positive atmosphere. Conversely, during industry regulatory crackdowns, negative headlines temporarily increase, focusing on addressing industry malpractices. The social sector sees increased neutral and positive headlines (e.g., flood prevention deployments, heating supply measures) during critical periods for public welfare, such as flood seasons and winter heating periods, highlighting a service-oriented approach to people's livelihoods.

7 CONCLUSION

The formation and evolution of emotional characteristics in *The Paper's* headlines result from the interplay of multiple factors. From the perspective of the media outlet's inherent attributes, its commitment to journalistic professionalism as a deep-dive news organization and its core positioning of “objectively conveying information” ensure that neutral headlines remain dominant. This approach serves both as a practical choice for building credibility and navigating the chaotic discourse landscape of the new media era, and as the fundamental pillar sustaining the stability of its long-term emotional structure. Simultaneously, as a mainstream outlet, *The Paper* bears the responsibility of guiding societal values. Against the backdrop of heightened social tensions during a period of transformation, it employs positive headlines to spotlight national development achievements and public welfare initiatives, proactively conveying positive energy to foster social consensus. This approach results in a slightly higher proportion of positive sentiment than negative sentiment. The historical evolution of media oversight from “critical exposure” to “constructive supervision” has shaped negative headlines around the core logic of “exposing issues to drive solutions.” These headlines maintain a moderate proportion and restrained expression, aligning with public demand for safety information and problem governance in a risk society.

Different news sections exhibit distinct emotional profiles, a result of their functional positioning and reporting

attributes. The political section, tasked with policy dissemination, exhibits predominantly neutral and mildly positive sentiment. The social section, covering public services and societal oversight, reflects shifting public concerns during periods of social transformation—from basic needs to greater rights protection and social justice—resulting in more diverse sentiment with a higher proportion of negative sentiment. The technology and entertainment sections respectively align with the goals of “a technologically strong nation” and “a culturally strong nation.” The former focuses on hard-hitting content driven by technological innovation, exhibiting predominantly positive sentiment. The latter leans toward cultural products that inspire thought and guide mindset adjustments, resulting in sentiment characterized as “predominantly positive with diversity.”

From a temporal perspective, the “long-term stability with periodic fluctuations” in sentiment orientation is determined by the core positioning of historical continuity and varying external environmental changes. Over the long term, the structure of “predominantly neutral with a slight positive bias” remains unchanged due to the relative stability of media core values and editorial standards. In the short term, however, it undergoes periodic trend shifts influenced by major historical events, trending topics, and social sentiment. For instance, both positive and negative sentiment may reach elevated levels over time. Additionally, cyclical patterns emerge based on external realities—such as quarterly cycles, industry cycles, or societal rhythms—resulting in regular fluctuations in emotional tone within each cycle. This approach aligns with practical needs while responding to real-world demands, achieving a dialectical unity between objective facts and the ideological depth of news commentary. It also forms the foundation of *The Paper's* balanced emotional framework in headlines—objective presentation, positive guidance, and problem focus.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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