



How Interactional Metadiscourse Shapes Sentiment: A Corpus-Based Study of BRI News in China and Papua New Guinea

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Abstract. The Belt and Road Initiative (BRI) has increased connectivity among the South Pacific countries. As a key element of intercultural communication, language strategies directly influence the spread of the BRI. While existing discussions have addressed relevant theoretical perspectives, empirical analyses focusing on media discourse in the South Pacific have received limited attention. Drawing upon Hyland's theory of interactional metadiscourse and the VADER sentiment analyzer, the study examines metadiscourse features and sentiment analysis in BRI-related coverage (2019-2024) by English-language media in China and Papua New Guinea (PNG), and explores underlying relationship between metadiscourse and sentiment expression. The findings reveal news outlets generally show a positive orientation. China's media tend to use self-mentions and boosters with higher frequency, explicitly taking a position as the initiating country of the BRI. In contrast, PNG media adopt a more neutral orientation, featuring frequent use of hedges to reflect a cautious attitude and relatively common use of attitude markers that show a strong correlation with positive sentiment. Moreover, the relationship between metadiscourse and sentiment varies across domains, with stronger correlations observed in non-sensitive issues and weaker associations in sensitive topics.

Keywords: Interactional Metadiscourse; Sentiment Analysis; Belt and Road Initiative; South Pacific Island Countries.

1 Introduction

The Belt and Road Initiative (BRI) proposed by China in 2013 serves as China's proposition for deepening regional cooperation to enhance mutual learning among civilizations and safeguard world peace and stability. The effectiveness of its international communication largely depends on the acceptance of the initiative by partner countries, and is therefore closely related to the public opinion environment in these countries and regions. Among them, Papua New Guinea (PNG), a crucial hub connecting Asia with the Pacific Island Countries, became the first South Pacific Island Country to sign the *Memorandum of Understanding on the Belt and Road Initiative*, marking a milestone

in bilateral relations. How PNG media presents the BRI and shapes local public perception of China has gradually become a new topic.

Situated as a hub connecting Asia with the Pacific, PNG guards the Pacific shipping route from the Americas to Asia as a vital maritime link between the Pacific and Indian Oceans and a key node in great-power rivalry. With the military deployments by the US and Australia, including the construction of Manus Island naval base, PNG faces complex geopolitical pressure ^[1]. Against this backdrop, mainstream PNG media has encountered many challenges in international reports ^[2]: For one thing, government control, influence from transnational capital and discursive penetration of extra-regional powers constitute external constraints on independent news discourse; for another, the local journalism industry is limited by varying professionalism among journalists and a commercialized operations, affecting the objectivity and stability of discursive strategies. This endows PNG media's China-related reports with unique discursive features and emotional tendencies, worthy of in-depth analysis.

In previous related researches, some scholars have examined the international communication of the BRI from perspectives such as macro-narratives, discursive frameworks, while a minority have focused on the micro-linguistic level. Interactional metadiscourse serves as a productive analytical lens for examining BRI reporting from a micro perspective. Rooted in Systemic Functional Linguistics, it offers a new angle for systematically analyzing news texts. Applying metadiscourse analysis to news discourse to examine reports on the BRI in mainstream English media from different countries can not only reveal strategic differences in metadiscourse use but also investigate the affective influence of metadiscourse from a linguistic perspective.

According to the metadiscourse theory, this study investigates cross-national differences in metadiscourse use and their correlation with sentimental tendencies in mainstream media reports on the BRI (2019-2024) in PNG and China. Specifically, this study attempts to answer the following two core questions:

(1) Are there systematic differences in the frequency and distribution of the five categories of interactional metadiscourse between China's and PNG media? If so, how do these differences reflect the distinct communication positioning and discursive strategies of the media in the two countries?

(2) What is the correlation between the use of interactional metadiscourse and the emotional tendencies expressed in news reports?

By addressing above questions, the study aims to reveal the interactive mechanism between discursive strategies and sentiments in cross-cultural communication from the micro-linguistic level, providing evidence-based strategic references for the international communication practice of the BRI.

2 Literature Review

2.1 Applications of Metadiscourse Theory

Metadiscourse, broadly understood as discourse about discourse, can be traced back to 1959. Zellig Harris first proposed the concept and noted its role in organizing and commenting on primary content despite conveying secondary information ^[3]. Since then, it

has evolved from a newly introduced linguistic notion into a key framework for analyzing interaction. Scholars' understandings of it have gradually converged on a dichotomy between a narrow text-centered view and a broad interpersonal one. The narrow perspective, represented by Anna Mauranen, defines metadiscourse as discourse features referring to organizational structure of the text, or "text reflexivity" ^[4]. The broader perspective, in contrast, emphasizes interpersonal interaction, focusing on elements such as attitude and reader engagement. Building on broader view, Ken Hyland proposed an interpersonal model, conceptualizing metadiscourse as linguistic resources through which communicators interact with readers. He classified metadiscourse into interactive and interactional resources: the former guides readers in understanding structure, while the latter emphasizes interpersonal functions, including expression of authorial stance and interaction with readers ^[5].

The theoretical framework proposed by Hyland (2004) was initially developed to explain how writers guide readers and state stance in academic writing^[6]. More recently, its application has expanded to a wider range of genres such as academic writing, English textbooks, and political discourse. For example, Xu compared attitude markers in academic writing between advanced English learners in China and native speakers, finding the former express their attitude more directly ^[7]. Song observed metadiscourse in English textbooks and found they are unevenly distributed across sections with limited variety and insufficient communicative function ^[8].

Recently, more scholars have focused on interactional functions of metadiscourse in news texts. For example, Noorian and Biria compared the use of interpersonal metadiscourse in opinion articles by American and Iranian columnists and found culture-driven preferences and genre-driven conventions jointly influence it. This suggests metadiscourse strategies play a key role in shaping communicative impact of intercultural journalism ^[9]. Chen and Li drew on a comparison of news commentaries from *China Daily* and *The New York Times*. It's notable that the latter employed a more balanced combination of engagement and attitude markers, whereas *China Daily* relied more on attitude markers to convey evaluations and commitments^[10]. Al-Subhi's study of editorials on the Russia-Ukraine war explores strategies of interactional resources to construct ideological positioning ^[11]. Taken together, the studies confirm the value of metadiscourse analysis in intercultural contexts and provide a comparative lens and enlightens the study of how media in China and PNG, situated in distinct geopolitical settings, differ in use of metadiscourse resources.

Research on metadiscourse has also concentrated on specific domains. For example, Alsharif's diachronic analysis of AI-related articles from *MIT News* (2015- 2024) shows not only sectional variation in distribution of metadiscourse in different parts, but also a decline over time. The results indicate a shift in technology reports to a more neutral and concise style ^[12]. As for variability of metadiscourse across domains, the research further subdivides its two corpora into topic-based subcorpora, allowing for detailed exploration of how metadiscourse is differently deployed across domains.

2.2 Sentiment Analysis in News Reporting

Traditionally, journalism should establish authority on the principle of objectivity^[13], but it's almost impossible to detach emotional dimension of news from journalistic practice. Indeed, it exerts a substantive influence on the communicative effectiveness of news texts and readers' cognitive judgments^[14]. With transformation of modern media ecology, objectivity as a core of journalism has increasingly been questioned by scholars^[15], facilitating the integration of emotions into communication theories. From Michel Foucault's perspective, the production of discourse is regulated by established procedures that control, organize, and distribute what can be said^[16]. The diversification of media forms and ongoing transformations in the industry have brought emotional factors gradually into prominence. Sentiments, which were once marginalized by such mechanisms, have emerged as a critical dimension for examining ideological orientations and geopolitical influences in modern news study.

This theoretical basis is relevant to studies of international communication of the BRI. As a strategic international initiative proposed by China, the BRI has received extensive media coverage. Such reports do not only play a part in conveying information but also carry political positions, which directly shape public perceptions. Chinese scholars have begun to examine the issue from linguistic perspectives. For instance, Liu and Zhang analyzed distribution of attitude markers in BRI-related news in *China Daily* based on Appraisal Theory, arguing the media sets a positive tone^[17].

Overall, existing studies focus primarily on specific discursive strategies. However, relatively little attention has been paid to a systematic comparison of sentiments between the media of the initiative's proposing country and those of partner countries, as well as to the discursive mechanisms underlying such differences. In this context, conducting sentiment analysis of news reports can further reveal the emotional tone embedded in context but also offer new insights into the underlying attitudes and discursive strategies deployed by PNG media in their coverage of the BRI.

As for the methodology, there exists three mainstream methods, including lexicon-based methods, machine-learning methods and deep-learning models. Among these, lexicon- and rule-based approaches are widely used in analysis of news texts, owing to their interpretability and computational efficiency. VADER (Valence Aware Dictionary and sEntiment Reasoner) is a widely used rule-based sentiment analyzer. It incorporates a sentiment lexicon derived from several widely used lexical resources and comprises a list of 7,517 lexical features, along with heuristic rules that account for grammatical structure and intensity modifiers^[18]. One advantage of VADER is sensitivity to typographical cues, which allows it to capture nuances of sentiment. In addition, when dealing with political terms that appear in reports, the general-purpose lexicon can be flexibly adapted by manually adjusting the scores of high-frequency items, enabling a more fine-grained optimization of sentiment indices.

While previous research has predominantly focused on overall orientation or thematic distribution in BRI-related coverage, limited attention has been paid to how specific linguistic resources shape sentiments. Although some studies have investigated the international communication of the BRI from perspectives such as cultural distance, the underlying mechanisms linking reader sentiment with discursive strategies haven't

been systematically explored. Thus, the study combines sentiment analysis with meta-discourse annotation to investigate correlation between interactional resources and sentiment analysis. By doing so, it try to analyze how media influences the tone of news texts through metadiscourse strategies, offering a new perspective for understanding the communicative effectiveness of international communication.

3 Research Design

3.1 Corpus Construction

When selecting media sources, the study took major English media in two countries according to their representativeness.

For PNG, the study selected *Post-Courier* as the target. Established in 1969, *Post-Courier* is the longest-running national newspaper in PNG, with the largest circulation among Pacific Islands. With approximately 370,000 monthly unique visitors, it is the most influential English news websites in PNG^[19]. As a representative media, *Post-Courier* is often honored as “the voice of PNG”, which exerts significant social influence in PNG media landscape. Therefore, it can proffer a panoramic view of public perceptions and attitudes to China-related issues in PNG.

As a comparative corpus, representative Chinese English-language media outlets were selected, including *China Daily*, *Xinhua News Agency*, *Qiushi* and the like. *China Daily* is a national English daily newspaper in China with distribution across more than 150 countries and regions. It’s widely recognized as the most authoritative English media in China and the most frequently cited China’s media source by international media. *Xinhua News Agency*’s English reports constitute a major channel through which international community obtains official information about China. *Qiushi*, the English edition of the Communist Party of China’s flagship journal, aims to systematically explain governing philosophy and path of China. These English media collectively provide a holistic representation of the mainstream narration and discourse of China’s official media in the international spread of the BRI.

To construct the corpus, the study drew on a data collection procedure to retrieve news reports (2019-2024) from the selected media’s official websites. Through keyword search queries and iterative page navigation, article links were collected. After filtering irrelevant materials, it compiles corpora of English reports.

Different search strategies were applied in two media groups for keyword retrieval. For PNG media, keywords “China” and “Chinese” were used in the first round of filtering to collect reports related to China. For China’s media, keywords “PNG” and the like were used to retrieve reports about PNG. Subsequently, redundant symbols (such as caption and ads) were removed. After cleaning, keyword retrieval was conducted by using terms closely associated with the BRI, such as “One Belt One Road”, “New Silk Road”, “OBOR”. The filtered texts were then manually screened.

To investigate the relationship between metadiscourse and sentiment in news texts, the study compiled two corpora: PNG Media English News Corpus on China (namely PNG Corpus), China’s media English News Corpus on PNG (namely China Corpus). Each corpus contains 400 reports, with size of roughly 350,000 words. This allows for

further exploration of wordings for developing bilateral relations, particularly to capture emotional expressions beyond the context of BRI. Based on thematic focus, it was divided into following three interrelated sub-corpora. This categorization can ensure the representativeness of data. The specific data is illustrated in Table 1.

Table 1. Detailed data of corpora.

	Files	Tokens	Subcorpora	Files	Tokens
PNG Media English News Corpus on China	400	160770	BRI and Economy-related Subcorpus	184	78539
			Humanitarian Aid Subcorpus	90	36651
			Politics and Strategic Security Subcorpus	126	45580
China's media Eng- lish News Corpus on PNG	400	174661	BRI and Economy-related Subcorpus	183	86317
			Humanitarian Aid Subcorpus	84	29659
			Politics and Strategic Security Subcorpus	133	58685

3.2 Theoretical Framework for Metadiscourse Analysis

To investigate how metadiscourse in news texts shapes sentiments, this study adopts the model proposed by Hyland (2004). Accordingly, five categories of interactional resources were annotated in the corpus systematically. Considering the features of news, the definitions were further refined to better accommodate the present data. Table 2 presents the refined classification used in this study.

Table 2. A model of interactional metadiscourse in news text.

Interactional re- sources	Function	Examples
Hedges (H)	withhold writer's full commitment to proposition	Modal verbs expressing possibility: could, would, might Adjectives/adverbs/conjunctions indicating possibility or approximation: possible, potential, perhaps, roughly Other expressions: seem, sometimes Modal verbs expressing strong certainty: should, must Adverbs/connective expressions: more importantly, very
Boosters (B)	emphasize certainty in proposition	Adjectives: 1) adjectives denoting importance, e.g. crucial, critical 2) superlative forms 3) adjectives with semantic prefixes or roots indicating intensification or extremity, e.g. unwavering, marvelous
Attitude Markers (AM)	express writer's attitude to proposition explicitly	Adjectives and corresponding adverbs: thankful, active Verbs: support, agree, deny
Self-mentions (SM)	explicit reference to authors	Nouns: appreciation, respect, encouragement, gratitude first-person references by Chinese/PNG spokespersons and references to China/PNG or related governmental institutions Second-person pronouns
Engagement Markers (EM)	lead readers to build relationship with speakers	Interactive rhetorical question/interrogative construction Directive expressions introducing reader engagement: consider, note

Note: This classification is based on the model proposed by Hyland (2004) and Hyland&Tse [20], and is further refined regarding the results of manual identification.

According to the framework, the research team use a Python script as a preprocessing tool for semi-automatic annotation. The script tags explicit metadiscourse by matching items against a predefined lexicon. For instance, the item “undoubtedly” is initially tagged as “undoubtedly ” to annotate its function as a booster.

Subsequently, all automatic annotations were manually verified and supplemented by using the BFSU Qualitative Coder. The procedure is illustrated in Figure 1, involving three rounds of cross-checking conducted by three researchers. Uncertain cases were discussed collectively, and instances for which consensus could not be reached were resolved through consultation to ensure reliability and consistency of the annotation.

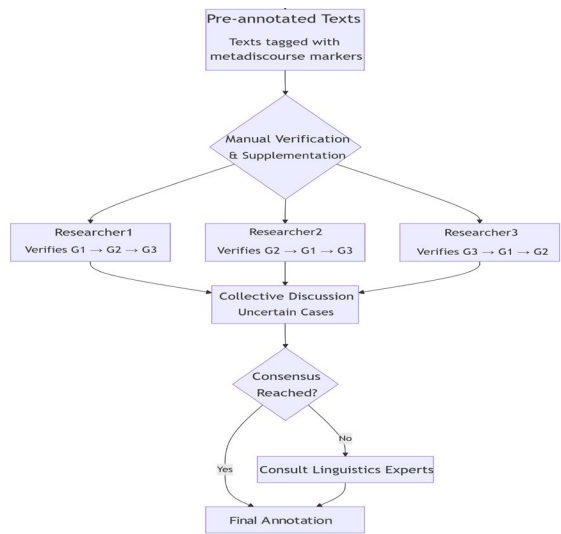


Fig. 1. A flow chart of annotation process.

3.3 Sentiment Analysis Method

The systematic annotation and statistical analysis of interactional metadiscourse suggest differences in discursive strategies in two countries. However, communicative effects of strategies need to be evaluated through overall level, to assess whether such strategies effectively guide readers’ affective responses. The study leverages VADER to quantify the sentiment orientation of news texts, which can accurately recognize sentiment-bearing lexes and contextual modifiers. VADER will generate a sentiment scores, ranging from -1 to 1, representing negative, neutral, and positive sentiments. Nevertheless, the VADER lexicon contains limitations when applied to news texts. Its general lexicon can’t fully capture specialized terms and specific expressions, leading to potential misclassification. To improve the accuracy, the study optimized the original lexicon by manually annotating and adjusting the sentiment scores of selected high-frequency terms. This enables it to evaluate the indicators of reports more accurately. Based on above refinements, the adaptability for the study was enhanced and accuracy

of classification was improved. The script ultimately calculates the compound sentiment score (Compound) and the proportion of positive (Pos), negative (Neg), and neutral (Neu) sentiment, enabling a more quantifiable description.

4 Results and Discussion

Based on a corpus from media in China and PNG, this study will systematically analyze data from three levels. First, through statistics of interactional metadiscourse, discrepancies across five resources can be revealed. Second, the VADER analyzer will quantitatively help with depiction of emotional tendencies distribution. This will lay a foundation for subsequent exploration of the relationship between metadiscourse and emotion. Finally, utilizing Pearson correlation coefficient analysis, the intrinsic correlation between frequency of metadiscourse and sentiment will be investigated. The comparison of topic-based subcorpora will further demonstrate the similarities and differences in the affective priming effect of metadiscourse across domains.

4.1 Distribution of Interactional Metadiscourse

To eliminate the impact of varying text lengths, the frequencies are standardized, calculating the frequency per thousand words for each type of metadiscourse^[21]. The results are shown in Table 3 and Table 4.

Table 3. Metadiscourse frequency in PNG media English news corpus on China.

Categories	Hedges	Boosters	Attitude Markers	Self-mentions	Engagement Markers
Metadiscourse Frequency in PNG Media English News Corpus on China	9.23	21.49	13.8	21.33	4.56
PNG—BRI and Economy-related Subcorpus	9.33	21.95	12.12	21.94	4.79
PNG—Humanitarian aid Subcorpus	8.18	21.77	13.66	18.67	4.09
PNG—Politics and Strategic Security Subcorpus	9.82	20.67	13.95	17.05	4.79

Table 4. Metadiscourse frequency in China's media English news corpus on PNG.

Categories	Hedges	Boosters	Attitude Markers	Self-mentions	Engagement Markers
Metadiscourse Frequency in China's media English News Corpus on PNG	5.35	13.24	6.09	25.54	5.41
China—BRI and Economy-related Subcorpus	5.61	13.77	6.47	27.78	6.65
China—Humanitarian aid Subcorpus	4.53	15.20	3.75	23.41	3.41
China—Politics and Strategic Security Subcorpus	4.42	13.91	6.92	22.40	5.35

As shown above, self-mentions occur more frequently in China's media corpus, especially in the BRI subcorpus. Self-mentions signal the authorial subject and state stance. As the initiating country, China's official media are tasked with a cooperative

attitude. The higher frequency of self-mentions therefore reinforces China’s stance and projects sincerity to PNG. For instance, *Xinhua* often uses phrases like “China’s cooperation with Pacific island countries” to introduce goals and achievements, repeatedly linking China with positive semantics and building a positive image.

Conversely, hedges appear roughly twice as often in PNG’s BRI-related reports as in China’s, peaking in political topics. By reducing certainty, hedges create rhetorical manoeuvring space. PNG media use them frequently, especially on sensitive political issues. For example, when discussing domestic politics or diplomatic decisions, PNG media employ hedges to raise speculative questions like “Perhaps we’re preoccupied with domestic issues and development challenges?”, indirectly suggesting that PNG may be overly focused on internal matters. This preference is closely tied to complex geopolitical situation. Influenced by discursive penetration from extra-regional powers and constraints on local media development, using more hedges in politically sensitive reports is a necessary strategy for PNG to adopt a cautious tone, mitigate communication risks, and maintain diplomatic flexibility amid multiple forces.

Furthermore, boosters and attitude markers are also more frequent in the PNG corpus. Boosters enhance certainty, while attitude markers directly express evaluation. Their frequent use suggests PNG media tends to strengthen persuasiveness. For example, it tends to combine boosters with positive attitude markers, like “tremendous support,” “immense support,” to highlight China’s strong and sincere assistance.

In contrast to author-oriented attitude markers, engagement markers functioning to guide readers to interact. PNG media use slightly fewer engagement markers, revealing it tend to position readers as recipients of information rather than directly engaging them in obvious interaction through appeals or rhetorical questions. For example, “let’s” appeared 7 times in PNG corpus, but appeared 14 times in China corpus, confirming PNG media position readers as passive receivers of information.

4.2 Sentiment Analysis Results

The different preference of interactional resources indicates the nuances in interactive strategies. To further explore the communicative effects of discursive strategies, they can be examined through sentiment analyses which do not only manifest media stance but it’s also a key dimension to measure effectiveness of cross-border outreach. To investigate the correlation, the study first provides an overall depiction and comparative analysis of the emotional tendencies, paving the way for exploration of the relationship. Based on calculations of VADER, the reports related to the BRI in both countries’ media generally show a positive tendency, as detailed in Tables 5-8.

Table 5. Sentiment scores in China's media English news corpus on PNG.

China Corpus	Mean	Standard	Deviation	Range
Compound Sentiment Score	0.7	0.62	0.39	2
Negative	0.03	0.04	0	0.26
Neutral	0.84	0.06	0	0.34
Positive	0.12	0.06	0	0.32

Table 6. Sentiment scores in PNG media English news corpus on China.

PNG Corpus	Mean	Standard	Deviation	Range
Compound Sentiment Score	0.67	0.63	0.40	2.00
Negative	0.03	0.04	0	0.18
Neutral	0.86	0.05	0	0.34
Positive	0.10	0.05	0	0.29

Based on Tables 5 and 6, the overall mean of compound score for China's media is slightly higher than for PNG media. Reports from both countries are generally based on a neutral tone with a slight tendency to positive sentiment. The mean proportion of neutrality in Chinese reports is 0.84, and in PNG reports it is 0.86, while proportions of positive sentiment are 0.12 and 0.10. The data shows although the overall tendency is positive, the majority of texts actually adopt a relatively objective narrative style.

Table 7. Sentiment scores in China's media English news corpus on PNG — BRI and economy-related subcorpus.

China — BRI Subcorpus	Mean	Standard	Deviation	Range
Compound Sentiment Score	0.91	0.25	0.06	1.96
Negative	0.02	0.02	0	0.12
Neutral	0.85	0.05	0	0.30
Positive	0.13	0.05	0	0.25

Table 8. Sentiment scores in PNG media English news corpus on China — BRI and economy-related subcorpus.

PNG — BRI Subcorpus	Mean	Standard	Deviation	Range
Compound Sentiment Score	0.82	0.47	0.22	2
Negative	0.02	0.03	0	0.18
Neutral	0.86	0.05	0	0.28
Positive	0.11	0.05	0	0.25

As shown above, China's BRI subcorpus shows a higher mean compound score and a lower standard deviation than overall level, indicating Chinese media is more positive with highly consistent sentiment. In contrast, while PNG BRI subcorpus also has a higher mean compound score, its standard deviation is much higher than that of China's, suggesting greater emotional fluctuation and a lack of a stable narrative.

Although proportion of negative sentiment is low, it's worth analyzing why it appears in generally positive context. Through specific cases, reports with negative tendencies in China's media primarily stem from statements about objective risks, rather than questioning the BRI or China's positioning. Example (1) below is US President canceling his visit to PNG due to collapse of debt ceiling negotiations:

Example (1) US President Joe Biden announced that he will skip visits to Australia and PNG. ... triggering a worldwide financial tsunami. — CD230519_(S)

This report contains negative words such as “growing worries,” “financial crisis,” and “tsunami,” leading the VADER model to identify a relatively high negative sentiment score (neg=0.21). However, most of negative sentiment words in the report actually point to US policy risks rather than questioning China's stance.

A small portion of China-related reports from PNG media do contain relatively distinct negative sentiments towards China, but these mostly involve quoting critical remarks from Western political forces. Example (2) quotes accusations made by a US law firm against the Chinese government in a COVID-19 origin lawsuit:

Example (2) China’s rigid controls on information, bureaucratic hurdles and a reluctance to send bad news up the chain of ... — PC200421_(S)

In the text, negative expressions like “bureaucratic hurdles” are quoted from accusations by the US law firm against China. Although it mentions China’s rebuttal, negative orientation is relatively obvious. These reports reflect PNG media may present mixed attitudes on China-related topics due to geopolitical pressure. This explains why negative sentiment always remains at a low proportion. It is notable that negative reports rarely appear in PNG BRI and economy-related subcorpus, indicating PNG media tend to maintain a positive tone in reports about BRI cooperation.

4.3 Correlation between Metadiscourse and Sentiment Orientation

To further explore how metadiscourse and sentiment are intrinsically related, the study examines correlation across three domains. Pearson correlation coefficients between metadiscourse and sentiment scores were computed by using Python’s pandas library. The coefficient value ranges from -1 to 1, with positive or negative values indicating correlations. Stronger correlations as absolute values approach one. Figures 2 and 3 present the correlation matrices for PNG and Chinese media corpora.

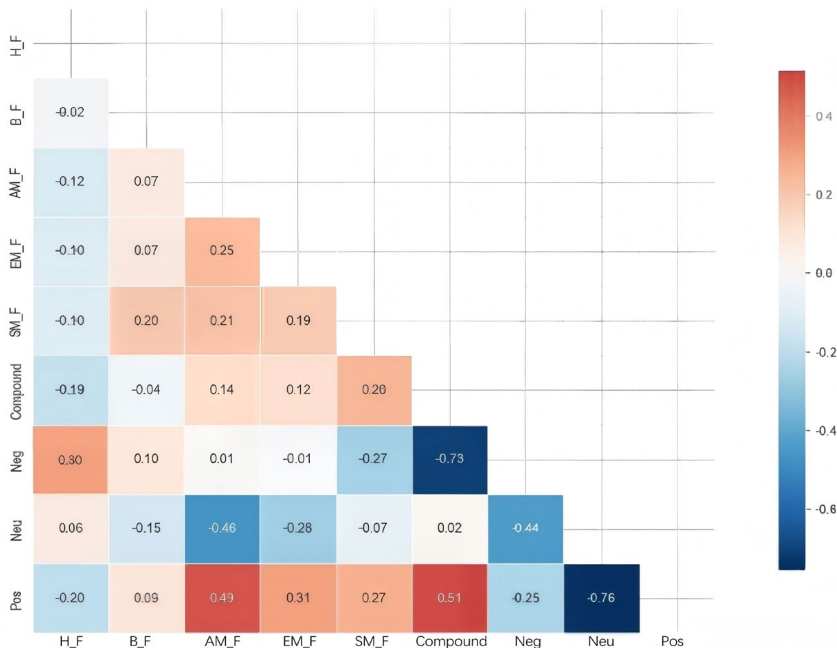


Fig. 2. Correlation Matrix of PNG Media English News Corpus on China.

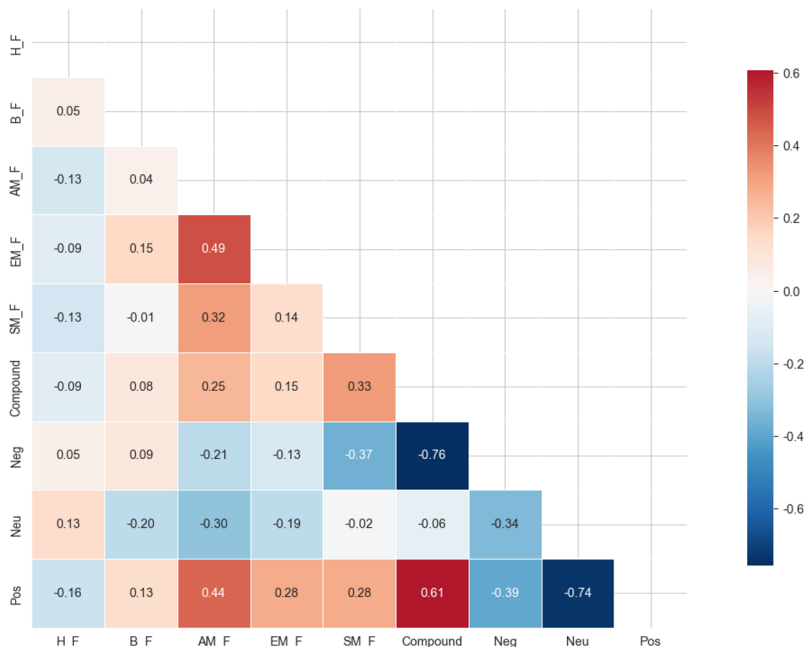


Fig. 3. Correlation Matrix of China’s media English News Corpus on PNG.

In both corpora, the frequency of attitude markers shows a positive correlation with positive sentiment, suggesting that while attitude markers are two-sided, media tend to use clearly positive expressions. Example (3) reports PNG’s invitation to the China International Import Expo and cites a statement from China’s Minister of Commerce.

Example (3) China wants to increase trade with PNG and import more PNG goods to the Chinese market. The second CIIE will be held in China soon, so we sincerely welcome all enterprises here in PNG to join us at Shanghai. — PC191028_(B)

Here, attitude markers like “sincerely” express optimism about bilateral economic cooperation and extend a cordial invitation at interpersonal level. Beyond conveying information about cooperation, it highlight China’s image as a passionate partner, guiding readers toward a positive emotional perception of bilateral relations.

Meanwhile, in the PNG corpus, hedges show a moderate positive correlation with negative sentiment, indicating hedges often accompany negative emotion. By lowering certainty, hedges frequently appear in contexts involving uncertainty or controversy, making them more likely to be related to negative sentiment. Example (4) illustrates the discursive function of hedges when addressing sensitive topics.

Example (4) Some critics, however, fear that the defense buildup might end up being a magnet for China’s aggression. — PC240927_(S)

In Example (4), “aggression” carries strong negative connotations, expressing criticism of China’s behavior. However, the accusation isn’t presented an established fact because the hedge “might” reduces certainty of the claim, indirectly creating a cautious and concerned tone. It provides room for interpretive flexibility, suggesting PNG media employ hedges to blur negative sentiment on controversial issues.

Self-mentions positively correlate with positive emotions, suggesting that media tends to convey a positive emotion when explicitly positioning their own country as the agent. This mechanism is more pronounced in China’s media where frequent use of self-mentions is closely aligned with national image construction. By frequently mentioning feats or visions, the media effectively position readers in an imagined community of shared identity and common destiny, as illustrated in Example (5).

Example (5) China is willing to work together with Papua New Guinea to synergize the Belt and Road Initiative with PNG’s development plans, so as to benefit peoples of the two countries through pragmatic cooperation. — GT190426_(B)

The emotional associations of engagement markers have similar patterns. China’s reports show a moderate positive correlation with positive sentiment, reflecting primary function of guiding reader participation and creating a positive ambience.

Example (6) PNG and China are doing a feasibility study on a possible free trade agreement, therefore let’s try to grasp the opportunity and do things in quick steps to reap the benefit that our two governments have to offer. — PC191028_(B)

As shown above, PNG’s participation in the CIIE was stressed by invitational expressions to encourage readers to take action, creating a shared vision emotionally. Adversely, boosters show weak correlations with sentiment and display a unstable directional pattern, indicating that although boosters strengthen the certainty, they do not inherently carry a clear polarity. Furthermore, based on analyses of the three topic-based subcorpora, the study finds that the correlations between metadiscourse and sentiment vary across different news domains, as shown in Figure 4.

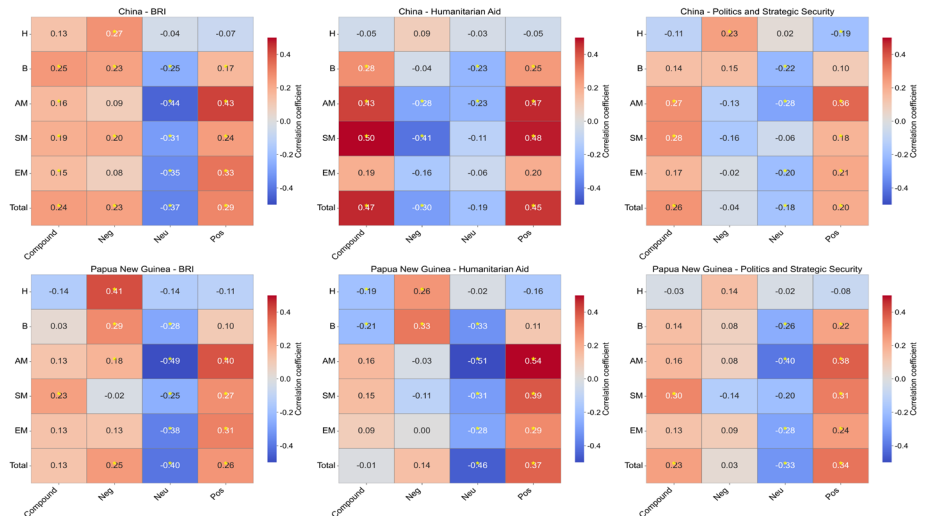


Fig. 4. Heat map of the correlation across different news fields in PNG and China’s media.

In the BRI and economy-related subcorpus, the frequency of attitude markers shows a moderate positive correlation with positive sentiment. However, hedges in PNG media display a moderate positive correlation with negative sentiment, whereas the corre-

lation in China's media is weaker. This suggests PNG media remain sensitive to potential risks on BRI-related issues and tend to use hedges to mitigate controversial sentiments. Engagement markers in PNG media exhibit a stronger positive correlation with positive sentiment, reflecting a tendency to adopt exhortative language in economic cooperation reports to attract readers' attention and stimulate resonance.

As for reports about aid, sentimental correlations of self-mentions and attitude markers are stronger. China's media frequently mention the nation, closely linking assistance to official action, which encourages readers to form a positive image of China. In PNG media, relatively strong correlation between attitude markers and positive sentiment suggests reports about aid often explicitly express gratitude, conveying recognition and appreciation to assisting party. This reveals both countries' media strategically deploy the resources to reinforce affective expressions and project a positive national image when directly pertaining to aid provided or received.

However, metadiscourse-sentiment correlations are weaker in political texts. As for China, only attitude markers correlate moderately with positive sentiment. In PNG corpus, attitude markers and self-mentions moderately correlate with positive sentiment, but engagement markers correlate more weakly with it. This suggests media revert to an objective style and avoid excessive emotional engagement.

Overall, the study finds interactional metadiscourse in news discourse plays a vital role in shaping sentiments. Different resources exhibit distinct associations with emotional tendency, through which media in both countries achieve their objectives of affective influence. The function of hedges is to weaken commitment to propositions and express uncertainty. In news texts, they frequently appear alongside risk assessment, complex situations or claims that remain open to doubt. The affective effect of boosters is quite weak, indicating that they don't inherently carry clear emotion polarity though enhancing certainty. Self-mentions, which explicitly indicate the speaking subject, often co-occur with positive sentiment in texts because they emphasize the subjectivity of speaker while fostering identification and a sense of belonging simultaneously. Engagement markers, by stimulating readers' resonance and participation, can also generate positive sentiment. In news texts, when media use engagement markers to actively invite readers into the text and encourage shared reflection, they not only convey information but also strengthen readers' sense of participation at the emotional level, enhancing persuasiveness of positive sentiment.

5 Conclusion

Based on Hyland's metadiscourse theory and VADER sentiment analyzer, the study conducts a systematic analyse of BRI-related reports in mainstream media from China and PNG. The study examines distributional features of metadiscourse, investigates the mechanisms linking metadiscourse and sentiments, and explores variations in relationships across different topics. The study draws the following main conclusions.

First, Chinese and PNG media differ greatly in their metadiscourse strategies. China's media use self-mentions frequently to articulate China's discursive authority. PNG media, by contrast, prefer to use hedges, reflecting a cautious approach for risk

management. Meanwhile, PNG media favor boosters and attitude markers, adopting a more explicit tone when expressing certainty or declaring positions on key issues. This enables PNG media to strike a balance in complex geopolitical landscape of the South Pacific while clearly asserting their position at critical moments.

Second, a systematic correlation exists between metadiscourse and sentiment, with distinct roles of different metadiscourse in affective priming effect. Media exhibit a preference for positive attitude markers to convey stance, fostering positive tone. Self-mentions attribute positive sentiment to specific actors and help to built national image. Engagement markers create a sense of participation by invitational expressions, enhancing positive impressions and identification. Hedges are often associated with negative sentiment, leaving room for maneuver when addressing controversial issues by reducing propositional certainty. The emotional effect of boosters is weak, indicating boosters do not inherently carry clear sentiment polarity.

Finally, the affective priming effect of metadiscourse exhibits strong domain specificity. In reports about humanitarian aid, the emotional correlations of attitude markers and self-mentions are stronger, indicating the explicit positive expressions in contexts are less controversial and serve as a key strategy in both countries to convey positive views. By contrast, in reports about politics, the correlations are generally weaker. This suggests media in both countries tend to adopt a restrained and objective narrative style on sensitive issues involving multi-actor competition and national security, avoiding excessive emotional involvement that might provoke controversy.

This study not only confirms the applicability of metadiscourse theory in analyzing news discourse but also reveals affective priming function of interactional resources. Given that the advancement of the BRI in the South Pacific has profoundly shaped the regional opinion environment, the study provides empirical evidence derived from the integration of linguistics and data science that may contribute to the communication and further development of the BRI in the South Pacific region.

Nevertheless, certain limitations remain. First, despite optimization, the VADER analyzer has technical limitations in handling complex semantic structures such as negation. Future research may improve accuracy by incorporating advanced NLP techniques. Moreover, the study primarily focuses on linguistic features and sentiment at the textual level but does not examine the communicative effects on readers. Future studies could further verify influence of metadiscourse strategies on readers reception.

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