

Strategic Framing Matters But Varies: A Structural Topic Modeling Approach to Analyzing China's Foreign Propaganda About the 2019 Hong Kong Protests on Twitter

Social Science Computer Review
1-21

© The Author(s) 2021

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/08944393211042575

journals.sagepub.com/home/ssc



Maggie Mengqing Zhang¹, Xiao Wang², and Yang Hu³

Abstract

Drawing upon the approach of strategic framing, this study investigated how China's state-run media mobilize foreign propaganda machine and use specific patterns to describe the 2019 Hong Kong protests on Twitter. It also shed light on the heterogeneity of both production and reception of the strategic frames used by state media. Structural topic modeling was employed to analyze a large amount of Twitter content (i.e., 14,412 tweets) posted by 13 verified organizational accounts, and six strategic frames were identified as *conflicts and violence*, *calling for stability and order*, *marginalizing protests*, *criticizing the West as accomplices*, *delegitimizing protests*, and *social and economic disruption*. These frames highlighted *insider–outsider* and *causes and consequences* as two overarching communication strategies. The results also revealed that the bureaucratic rank of state media and the engagement rate of each tweet were closely associated with the content prevalence of various strategic frames. In addition to enhancing our understanding of the construction of “protest paradigm” against the social media context, these empirical findings uncover the often overlooked mobility and flexibility of China's state media discourse as well as the communication ecology shaped and consolidated by the increasing importance state media communicators attach to online engagement metrics.

Keywords

engagement, foreign propaganda, Hong Kong protests, state media, strategic framing, structural topic modeling, Twitter

¹ University of Illinois Urbana–Champaign, IL, USA

² Nanjing University, Jiangsu, China

³ The Chinese University of Hong Kong, Hong Kong

Corresponding Author:

Xiao Wang, School of Journalism and Communication, Nanjing University, 163 Xianlin Avenue, Qixia District, Nanjing, Jiangsu 210023, China.

Email: xiaowang@link.cuhk.edu.hk

Multifarious strategies have been utilized to promote China's soft power and to uphold its national image, of which, developing a stronger presence of overseas media outlets and implementing propaganda work on social media platforms of worldwide popularity are important ones (Edney, 2015; W. Zhang, 2012). The majority of existing literature on China's foreign propaganda has focused on the news coverage of state media striving to engage in the overseas public sphere in order to tell China's story well and spread China's voice well (e.g., Brady, 2015; Tsai, 2017). In vying for the digital influence, however, mainstream media organizations around the world are actively embracing social media platforms such as Facebook and Twitter. The coverage of the same contentious issue on these sites could differ widely from that on traditional newspaper outlets, partly because of the new challenges of communicating effectively in a limited-length short text as well as a highly fragmented form (Wasike, 2013). Moreover, users' reaction to posts is instantly presented and quantified in audience metrics, which may further guide media organizations' selection of frames.

A rising concern in recent years points to Chinese government's computational propaganda scheme wherein the party state may use bots and automation to influence public opinion and spread pro-Beijing voices on foreign social media (Bradshaw & Howard, 2017). Various forms of large-scale influence campaigns were suspected to be closely associated with the Chinese-state-led online information manipulation. Although empirical research reveals no evidence of such instances of computational propaganda (Bolsover & Howard, 2019), Twitter announced the suspension of several batches of accounts claimed to be Chinese government's trolls spreading pro-establishment propaganda in English about 2019 Hong Kong (HK) protests. Besides, an emerging group of state media-affiliated personnel (e.g., @HuXijin_GT, @LiuXininBeijing) and "shadow influencers" with no overt party affiliations (e.g., @CarlZha) have also been observed to be constantly active in propagating state-sanctioned narratives on Twitter. While these individual-level international propaganda efforts taking a bottom-up approach have received massive public and scholarly attention, the top-down state media channels for spreading government-initiated official narratives have yet been sufficiently investigated. Such a gap combined with the increasing prominence of online propaganda highlights the significance of reexamining the construction of state media's foreign propaganda against the social media context as an essential supplement to extant literature.

In particular, *China Central Television (CCTV)*, *Xinhua News Agency*, and *China Daily* act as three major information providers for China's foreign propaganda, on which the Chinese government invested billions (Shambaugh, 2010). Despite a wealth of efforts focusing on these three ministry-level state media (e.g., Fook, 2010; Sun, 2014; X. Zhang, 2011), prior studies suggest that the repertoire of propaganda machine in China is not homogenous (Jaros & Pan, 2018) and media with a lower bureaucratic rank may play an essential role in using covert framing strategies to cast pro-state narratives (Qing & Shiffman, 2015). In the absence of a specific categorization to address the hybridity of media organizations, the party state has placed public media groups at the periphery of the bureaucratic system. As thus, each media conglomerate has an administrative rank within the party-state power hierarchy (Zhao, 2008). The overall production of foreign propaganda on social media sites therefore represents an integrative structure in which state media placed at different political-administrative positions are incorporated. Such "a hierarchy in discursive authority" (Zhao, 2008, p. 260), however, has yet been empirically evidenced in prior efforts.

The reception of state media discourse on social media also merits attention in this regard. Building upon prior experiences and guiding principles stipulated in the central government's official regulation (e.g., Regulation on the Party's Publicity and Communication Work), professional communicators within state media tend to manifest their strategic orientations on social media sites to either align with or adapt to the instant audience metrics in order to achieve a higher level of user engagement (Aruguete & Calvo, 2018). Since news framing is rarely independent of its

audiences and social media engagement metrics such as sharing and commenting are likely to propagate news frames, it is meaningful to investigate how a diverse range of pro-state frames are reacted upon.

To address the abovementioned research gaps, this study takes a strategic framing approach to analyze how China's state-run media mobilize foreign propaganda machine and use specific patterns to represent the 2019 HK protests on their verified Twitter accounts. We employed the computational content analysis and contended for the heterogeneity of both production and reception of strategic frames of the protests. That is, the bureaucratic rank of state media and the engagement rate of each tweet could be closely associated with the content prevalence of identified frames. Further than examining the construction of China's foreign propaganda of social protests within the social media environment, this study also seeks to explore the often neglected flexibility of state media discourse in nondemocratic regimes as well as the communication ecology transformed and consolidated by the ever increasing significance of engagement metrics on social media.

Strategic Framing of Contentious Issues in China

One major objective of the present study is to examine how China's state media strategically frame contentious issues on their Twitter accounts. As a notion closely associated with frames, framing conceptualizes the ongoing process of devising specific frames in the construction of news discourse and social meaning. *Strategic framing* refers to the phenomenon that communicators intentionally make use of frames to garner more publicity, to justify standpoints on specific issues, and to fulfill the mission of convincing potential followers (Guenther et al., 2020). For Chinese state media, the strategic objective of framing contentious issues might be to mitigate the disturbance and to maintain the status quo of the state. In times of covering social controversies and disputes, media organizations often face the state's pressure, either by the coercive control of blocking the dissemination of sensitive topics or by the hegemonic control of revealing systematic preferences (Lin, 2018). In practice, these issues are usually represented as social nuisances. In a case study on the media representation of environmental activism, Chen (2017) noted that *Xinhua News Agency* and *China Daily* frame the anti-PX movement—the most influential stream of environmental disputes in China over the past decade—as unfortunate incidents whose participants are irrational residents. Moreover, the nature of liberal resistance in a civil society is rarely manifested largely because it touches the “redline” of political sensitivity. That is, the liberal frame of environmental activism has been overlooked or devalued by state media when reporting such collective actions.

More pertinent to the current concern, Chan and Lee (1984) developed the “protest paradigm” to describe how mainstream media outlets report protests and social movements in a civil society. Using the approach of critical political economy, they argued that mainstream media are deeply embedded in the power structure largely due to their heavy reliance on the advertising revenue as well as news sources from political elites. As thus, these media organizations tend to assist the power holders in social control and report negatively on protests and social unrests, which have challenged the pro-establishment status quo. To devaluate and delegitimize a protest, news reports usually focus on intensive actions and conflicts, describe organizers and participants as irrational or even weird people, and bias public views in favor of the authority. Later studies have confirmed the protest paradigm in various social and political contexts (e.g., Boyle et al., 2012; Veneti et al., 2016). For example, Veneti et al. (2016) recently investigated how *China Daily* covers the 2014 Umbrella Movement in HK. They found that a vast majority of news coverage is conflict-oriented and expressed in negative tones. These reports present a highly confrontational picture of radical protesters with various pillars of the society (e.g., government, law, social order). Five central frames have been identified across texts: conflict and violence, delegitimization, marginalization, social and economic disruption, and devaluation of the causes and aims of the protests.

As per the logic of strategic framing in the above cases, state media in China are guided by the general principle of representing the government's voices and constantly construct their narration of contentious issues by drawing a clear distinction between different groups (e.g., corrupt officials vs. honest and upright ones), picturing social disturbances (e.g., labeling radical acts as irrational and illegal), and providing plausible explanations insofar as they shun the crux of the problem. When framing protests and social movements, state media tend to adopt two overarching communication strategies in order to undermine the disturbance and thereby protecting the status quo in the ideological sense. The first strategy is to separate "outsiders" from "insiders" (Lynn & Williams, 2018). State actors such as political officials, mainstream media, and the judicial system are often defined as insiders, while groups or individuals that challenge the status quo are treated as outsiders. Insiders are usually power holders representing the state authority and constructing moral meanings for the society at large. Hence, the separation indicates power relations and moral judgments that situate outsiders at a disadvantaged position in communication texts.

The second strategy is to interpret the causes and consequences in favor of the state. This strategy consists of two types of communication practice: highlighting the negative consequences of protests and explaining in service of the authority. These interpretations constitute a competing discourse, which strengthens the function of ideological state apparatuses (Althusser, 2006) and moderates the public opinion in effect.

Networked Authoritarianism and the Politics of Foreign Propaganda

Empirically, there are three sites in the strategic communication process in which framing analysis can be conducted (Pan, 2006): the communicator, the text, and the receiver. In addition to identifying the framing patterns across texts, the production and reception of frames are critical for understanding the complete logic of strategic framing implemented by China's state media.

Since journalism is often intertwined with politics, producing strategic frames becomes not only communicators' "routinized control of social meanings" (Durham, 1998, p. 104), but more importantly, a process subject to the influence of external social forces, especially the political power. Scholars following the critical paradigm contend that frames reflect values held by political and economic elites whose ideas tend to be supportive of the status quo and have dominated the news coverage (e.g., D'Angelo, 2002). As the mouthpiece of the Communist Party of China (CPC), Chinese state media keep in line with the ruling ideology and strictly comply with the government's policies. This principle of "political alignment" (Sparks, 2010) works for both domestic and overseas publicity regardless of several slight differences. Against a networked communication environment covering a variety of online platforms, the Chinese government has effectively adapted to new technologies for its own advantages and embraced the changes engendered by digital communications through an approach characterized by "networked authoritarianism" (MacKinnon, 2011; Pearce & Kendzior, 2012). It represents a diversified set of practices aiming for a highly centralized news power associated with a steerable digitized communication system free of adverse ideas and contending values (Chan, 2019). This approach has proven to achieve significant success in reinforcing regime legitimacy and facilitating authoritarian consolidation (Tsai, 2016).

One fundamental precondition for networked authoritarianism, as the case of China demonstrates, is that all media organizations must submit themselves to the party state as the power center. Despite several technological affordances of online communication platforms that tend to ease the strict control, the CPC has managed to govern the networked communication environment "through the use of directives, the withholding of licenses, personnel appointment, as well as administrative rewards and punishment" (Chan, 2019, p. 66). Therefore, the state-media relationship has been sustained primarily through the political-administrative arrangements. In China, state-owned groups or institutions are classified as extra-bureaucracies or "service units" (*shiye danwei*), which

constitute, along with “administrative units” (*jiguan danwei*), the whole bureaucratic system of the party state (Ang, 2017). Institutionalized into this power hierarchy, each state media group has a fixed bureaucratic rank, which depends on the level of the supervisory department or sponsoring work unit it is affiliated to. Lin et al. (2015) argued that the bureaucratic rank represents the power structure inherent in a media group and plays a significant role in shaping news frames. Specifically, state media positioned high in the bureaucratic rank enjoy several advantages because they have more institutional ties and hold more political capital. This privilege is, however, bounded and restrained largely due to the unified supervision from the Publicity Department of the CPC. Such centralized leadership makes it unlikely to create structural fragmentations for high-ranking state media to deviate from the CPC’s frames (Lei, 2016). Moreover, the personnel administration system has further reinforced the political alignment of top-ranked media institutions because their heads (i.e., the editor in chief and the publisher) are appointed directly by the CPC Central Committee. On the other hand, the CPC takes a different route than other authoritarian regimes by extensively embracing commercialization to strengthen its propaganda apparatus (Esarey, 2006). Many low-ranking state media outlets, driven by commercial revenue or market competition, turn out to be highly active in implementing foreign propaganda work. By and large, the power hierarchy of bureaucratic ranks may lead to different framing strategies adopted by state media placed at different political-administrative positions.

Strategic frames of contentious issues are also closely associated with their receivers. Prior research suggests that frame usage can influence how people perceive and react to an event (e.g., Riles et al., 2015). Specifically, individuals’ exposure to frames can lead to emotional reactions, which may further influence their political opinions, attitudes, and behavioral intentions (Lecheler et al., 2015). Apart from the shortened text and the massive scale of dissemination, the quantified user reaction proves to be another distinctive feature of news coverage on social media platforms. This feature brings about opportunities for communicators to observe users’ reception of and reaction to frames and to adapt to the instant engagement metrics in a dialogic manner. Engagement, which broadly refers to users’ interaction with news content on social media, is the consequence of both content characteristics and emotions contained in a post (Schreiner et al., 2021). On the social media landscape, engagement metrics not only reflect the reception of strategic frames (e.g., views, impressions, favorites) but help reproduce the communication patterns and amplify the framing effect (e.g., shares, retweets; Aruguete & Calvo, 2018).

This Study: Strategic Frames in the 2019 HK Protests

This study aims to analyze strategic frames state media used in covering 2019 HK protests on their Twitter accounts. In early 2019, the Extradition Law Amendment Bill, which aims to enable the HK Special Administrative Region government to reach an extradition agreement with mainland China, triggered HK citizens’ objection to sending fugitive offenders back to the mainland. Starting from early June, peaceful marches and rallies had gradually developed into mass protests. In the following 6 months, the city has been roiled by increasingly violent clashes between police and protesters as well as severe vandalism to local infrastructure. The initial demonstration also morphed into large-scale social movements, and the long-lasting protests are sorely parts of HK-mainland China conflicts, which have become intense well into the new century. Following the Umbrella Movement in 2014 when citizens occupied the city demanding more transparent elections, the 2019 HK protests have indeed intensified the relational crisis partly derived from the distinct interpretation of the “one country, two systems” policy. While protesters regard their collective actions as a reasonable political appeal under the basic principle of “two systems,” the central government views the violent protests as a fundamental challenge to the “one country” principle. Moreover, China has recently

proposed the “Great Bay Area” initiative to deepen the cooperation between mainland and two special administrative regions (i.e., HK and Macau), thus enhancing the “one country” principle.

The case of 2019 HK protests fits the current concern for several reasons. First, collective actions of protesters are considered by the authority as threats to the stability of China’s political system and challenges to the status quo, and therefore, fall in the broad category of contentious issues described above. Second, despite the central government’s firm assertion that the issue belongs to China’s internal affairs, protesters sought international assistance and global media attention. In the battle to win over overseas public opinion, China’s foreign propaganda machine has mobilized multiple resources and channels to spread the pro-state voice on social media platforms. Analyzing state media contents can capture a representative set of framing patterns and bring to light how the protest paradigm followed by traditional media is presented on social media. Moreover, a diverse range of state media and users have been involved in constructing, receiving, and reproducing strategic frames. The visibility of communicators’ profile information and posts’ engagement metrics ensures a feasible way to examine both production and reception of strategic frames.

In the present study, using the framing approach to analyze state media’s foreign propaganda about protests on Twitter involves examining how communicators select, emphasize, and exclude the content of posts to achieve their strategic goal to delegitimize the protests and to protect the status quo (Veneti et al., 2016). If framing patterns can be identified across tweets posted concerning the protests, then they reveal the strategic frames used by state media on Twitter. Nonetheless, no scholarship has focused specifically on state media’s strategic framing of 2019 HK protests on their Twitter accounts. Therefore, the first research question (RQ1) was posited: *Which strategic frames did the Chinese state media use in tweets concerning 2019 HK protests on their official Twitter accounts?* Since the production of contentious issues on Twitter incorporates foreign propaganda efforts made by state media scattered at different political-administrative positions, the second research question (RQ2) was posited to inspect the power hierarchy of discursive authority (Zhao, 2008): *How did the strategic frames used by the state media with high bureaucratic rank on Twitter differ from those used by the state media with low bureaucratic rank?* With respect to the reception of strategic frames, the quantified engagement metrics on Twitter (e.g., retweets, replies, favorites) can both reflect and influence users’ perception and reaction to online posts, and in turn, affect the dissemination of strategic frames (Lecheler et al., 2015; Riles et al., 2015). Analyzing the interactive metrics of posts can help investigate how the identified strategic frames were received and reproduced (Aruguete & Calvo, 2018). Therefore, the third research question (RQ3) was raised: *How did the engagement vary across different strategic frames used by the state media on their official Twitter accounts?*

Method

Data Collection and Preprocessing

Data used in the present study were collected using Twitter Application Programming Interfaces (APIs) since Twitter has been proved to serve as a field for the Chinese government to exercise foreign propaganda measures (Bolsover & Howard, 2019). The data collection and processing procedure was conducted as follows. The first step is to select Twitter accounts that represent state-affiliated media organizations in China. We initially identified 26 central-level online media outlets and 63 central-level news units, of which eight were running verified accounts on Twitter with a considerable number of followers. To capture a more comprehensive and well-defined repertoire of official Chinese propaganda on Twitter, we further adopted a snowball sampling technique and referred to all state media organizations followed by the eight media accounts. Five

Table 1. Description of Sampled Twitter Accounts.

Organizational Accounts	Brief Description	Followers	Sampled Tweets
High bureaucratic rank			
CGTN (@CGTNOfficial)	A multilanguage and multiplatform news channel owned and operated by the China Central Television (CCTV)	14,193,579	2,253
Xinhua News (@XHNews)	An official state-run press agency and the biggest media organization in China	12,648,594	1,538
People's Daily (@PDChina)	The largest newspaper group in China and the official mouthpiece of the Central Committee of the Communist Party of China (CCCPC)	7,071,558	634
CCTV (@CCTV)	The predominant state television network in China	808,041	382
China Plus News (@ChinaPlusNews)	The only state-level radio and television media group specializing in international communication	767,356	404
Guangming Daily (@Guangming Daily)	A national daily newspaper focusing on education, science and technology, culture, and theory	242,302	135
Low bureaucratic rank			
China Daily (@ChinaDaily)	The only English-language national newspaper in China	4,276,128	2,153
Global Times (@globaltimesnews)	An English-language daily newspaper under the auspices of People's Daily	1,575,925	4,259
China.org.cn (@chinaorgcn)	A multilanguage online official news outlet	1,114,845	993
China News (@Echinanews)	The second largest state-owned news agency in China	597,626	1,313
Beijing Review (@BeijingReview)	China's only national news weekly (magazine) in English	79,347	117
Sixth Tone (@SixthTone)	A Shanghai-based online magazine producing coverage on contemporary China	72,400	26
Caixin Global (@caixin)	The English outlet of Caixin, a Beijing-based market-oriented financial media group	62,753	205
Total			14,412

more verified accounts were discerned, resulting in a total of 13 organizational accounts as the source for data acquisition.¹

The second step is to obtain research data. In early February 2020, we programmed a crawler using Python and scrapped all tweets posted by the identified organizational accounts from June 1, 2019 (i.e., around the early stage of protests) to November 30, 2019 (i.e., immediately after the District Council election, which witnessed the unprecedented electoral success of the pro-democracy camp and contributed to a decrease in frequency and intensity of protests). The data acquired can be divided into three categories: organization-, tweet-, and engagement-level items. The organization-level items included the name and ID of each media organization, their self-reported bios, and profiles. The tweet-level items included tweeting data, text content, link, hashtag, and geo-location of each tweet. We also collected the engagement metrics of each tweet, such as the number of likes, replies, and retweets. Next, we collected tweets that contained one or more key words of "Hong Kong" and "HK" in a case-insensitive manner. Thereafter, we excluded items irrelevant with 2019 HK protests and all non-English tweets,² thus resulting in 14,412 tweets for further analysis. Table 1 presents the summary statistics of this data set.

To get the corpus ready for modeling, we preprocessed our collected tweets. Specifically, we conducted (1) word normalization to convert all letters to lowercase, (2) word stemming to truncate terms to their root forms in order to unify words across documents, and (3) removal of stop words (i.e., typical English articles, conjunctions, prepositions, and transitive verbs that contribute little to the text), punctuations, numbers, as well as a number of platform-specific features such as retweets (RT), mentions, hashtags, and links. The preprocessed corpus was thus prepared for data analysis.

Bureaucratic Rank and Engagement Rate

The current civil service ranking system in China was consulted to determine the bureaucratic rank of each media organization. Specifically, state media at the subministerial level or above (i.e., *CGTN*, *Xinhua News Agency*, *People's Daily*, *CCTV*, *China Radio International*, and *Guangming Daily*) were considered as “high bureaucratic rank,” whereas those below the subministerial level (i.e., *China Daily*, *Global Times*, *China.org.cn*, *China News Service*, *Beijing Review*, *Sixth Tone*, and *Caixin Global*) were categorized as “low bureaucratic rank.” It is worth noting that this dichotomy by no means mirrors the significance of media outlets over the landscape of China’s foreign propaganda. Instead, it roughly indicates a media organization’s proximity to the central power, which serves as an effective channel for researchers to infer the internal mechanism of the state propaganda machine. For example, while *China Daily* and *Global Times* were categorized as low bureaucratic rank, they are playing increasingly important roles in China’s overseas publicity operations. Such a contradiction indeed unfolds a holistic structure of state propaganda system wherein media outlets sitting in different bureaucratic positions are mobilized in a collaborative way to “tell a good Chinese story.” As a result, 5,346 tweets were posted by high-ranking media accounts, while 9,066 by low-ranking media accounts.

Engagement is one of the key outcome measures of tweeting for organizational users on Twitter. To calculate a tweet’s engagement, marketing analytic tools (e.g., Twitter Analytics) and prior research (e.g., Wadhwa et al., 2017) usually employed a weighted engagement rate which was defined as the number of engagements divided by impressions. Impressions refer to the number of times a given tweet showed up in other users’ time line or as part of a search result; while engagement represents the total number of times a tweet was responded in any platform-afforded features (e.g., retweets, replies, favorites). As the number of impressions was not accessible in Twitter’s APIs, we treated the number of followers of a media account as the proxy for impressions assuming that the visualized popularity of an organizational user roughly indicates the extent to which its tweets get exposed to online others. Therefore, we calculated the engagement rate of each tweet as the totality of retweets, comments, and likes divided by the number of followers of the media poster. The mean engagement rate of all tweets was 0.34‰ and the median was 0.15‰. To alleviate the potential impact of unbalanced samples on further analysis (Iacus et al., 2012), tweets with an engagement rate higher than the median were categorized as “high engagement” and otherwise considered as “low engagement.”

Structural Topic Modeling (STM)

In this study, we employed a newly introduced topic modeling technique, namely, STM (Roberts et al., 2014) to address the potential heterogeneity of tweet corpus. Unlike traditional mixed membership models represented by Latent Dirichlet Allocation (LDA), STM allows us to incorporate document-level metadata, such as profile and engagement information, into the model estimation. This renders an opportunity for examining the effects of covariates on both topical prevalence (i.e., document-topic proportion) and topic content (i.e., word distribution within a topic). Compared with LDA, STM shows prominent advantages and suitability for the current concern. It allows the

inclusion of both organization- and tweet-level covariates to the topic model (Roberts et al., 2014). Therefore, STM enables us to test how topical prevalence parameters that represent document-topic proportions vary across distinct levels of covariates. Moreover, similar covariates can also be introduced to the topic content parameters to investigate their effects on topic-term proportion. This enables the inspection of how topic-term distributions vary across different levels of bureaucratic rank and engagement rate, and more importantly, the most likely words in each topic.

STM Setup

This study aims to identify topics that are significantly more salient in tweets posted by media organizations with a high bureaucratic rank than in tweets posted by media organizations with a low bureaucratic rank and how the topical prevalence varies across different levels of tweet engagement. Therefore, we investigated the potential of media organization type (high vs. low bureaucratic rank) and tweet engagement (high vs. low engagement) to influence the occurrence of topics, namely, the topical prevalence parameter μ of STM, which determines the document-topic proportions θ .

For our purpose, STM shows its prominent advantage in estimating how organization- and engagement-level covariates are associated with the topical prevalence parameter μ using a generalized linear model. Therefore, *BureaucraticRank* and *Engagement* were defined as covariates representing the media organization type and tweet engagement, respectively. *BureaucraticRank* was encoded into a binary form, where it equals 1 if the media organization is positioned high in the administrative rank (i.e., at the subministerial level or above) and 0 otherwise. In a similar vein, *Engagement* was coded 1 if the engagement rate of a given tweet is higher than 0.15‰ and 0 otherwise. Equation 1 exhibits the association between these two covariates and the topical prevalence and $g()$ represents a generalized linear function.

$$\text{Prevalence} = g(\text{BureaucraticRank}, \text{Engagement}). \quad (1)$$

As STM is an unsupervised modeling technique, a critical case-specific parameter to be determined is the number of topics K . Although several commonly used quantitative indicators (e.g., average cosine distance, KL-Divergence, perplexity) can be used to select the optimal number of topics, these measures usually fail to obtain the interpretability of results, which proves to be more important for achieving social science purposes (Jacobi et al., 2016). Hence, we used metrics including semantic coherence and exclusivity only for an initial selection ensuring an acceptable level of information loss, and then determined the value of K to achieve a satisfactory explanatory power of modeling outcomes rather than for optimizing the goodness of model fit. Specifically, we evaluated different numbers of topics K ranging from 25 to 50 and selected the 30-topic model as it demonstrated a reasonable trade-off between semantic coherence and yielded a stronger interpretive power for our tweet corpus.³

Results

Tweets Trend and Topic Summary

The sampled 14,412 tweets were posted between June 1, 2019, and November 30, 2019. Figure 1 presents the temporal trend of all tweets relevant to anti-extradition protests in HK published by 13 state media accounts. The daily publication number of all tweets increased from less than 10 in early June to more than 150 in mid-August and then decreased to a fine-tuning fluctuation across 100 until late November. A closer inspection revealed that the tweeting trend matched well with the evolution of the anti-extradition issue, particularly several large-scale demonstrations and protests (see Online Appendix A for further illustration).

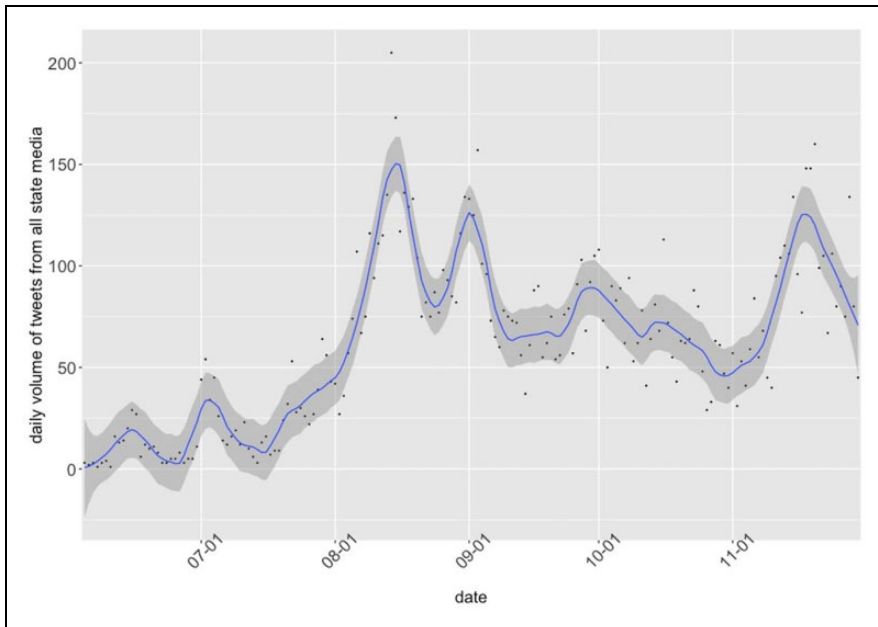


Figure 1. Trend of all sampled tweets. *Note.* The line displays smoothed conditional means, and the shaded area represents the standard error.

The STM model was implemented and Table 2 presents the results. To identify the most discriminating words in each topic, the 10 most high-probability terms and the 10 highest frequency-exclusivity terms were discerned (Roberts et al., 2016). The third column of Table 2 shows the top words of each topic while the fourth column presents the topic proportion. The first manual task is to infer the topic labels based on the top words of each topic and prior knowledge about the focal event. Before labeling 30 topics, we intensively collected information about anti-extradition protests to learn about the various causes, consequences, and responses issued by all parties involved. Given that each tweet is a mixture of latent topics, 10 most representative tweets of each topic were also analyzed to assess the semantic context of the most discriminating words. Taking this step ensured a thorough understanding of the focal event as well as the external validity of suggested labels. Thereafter, each topic was given an inferential label presented in the second column of Table 2. As the lowest topic proportion is less than 2% (1.17%), the results can be concluded to have captured the major latent semantic structures of the corpus (see Online Appendix B for the temporal trends of the 30 topics in the whole corpus).

Strategic Frames

To answer RQ1, we further identified six strategic frames used by Chinese state media in describing 2019 HK protests on their Twitter accounts (see Table 2).

Frame 1: Conflicts and violence (six topics; 26.05%). This frame focused on describing the violent confrontations between police and protesters (police-rioter conflict: 5.39%; arresting rioters: 4.70%; mob attack: 4.11%) and the severe damage to local infrastructure such as the mass transit railway services (4.11%) and the international airport (3.70%). In addition, this strategic frame

Table 2. Topic Summary.

Strategic Frame	Suggested Label	Top Words	Proportion (%)
Conflicts and violence	Police-rioter conflict	HP: polic-/offic-/forc-/use/live/attack/hold/press/assault/warn FLEX: rumor/laser/polic-/umbrella/dispers-/use/shoot/forc-/beam/restraint	5.39
	Arresting rioters	HP: protest/violent/radic-/arrest/illeg-/assembli-/peopl-/sinc-/weekend/incid- FLEX: protest/offens-/arrest/radic-/assembli-/unlaw-/possess/illeg-/violent/incid-	4.70
	MTR disruption	HP: station/vandal/damag-/sunday/mtr/road/saturday/public/block/night FLEX: vandal/mtr/block/facil-/metro/subway/author-/damag-/road/commut-	4.11
	Mob attack	HP: rioter/fire/set/mask/attack/man/mob/street/black-clad/resid- FLEX: rampag-/kok/rioter/road/block/barricad-/fire/mong/innoc-/ablaz-/spree	4.11
	University battles	HP: bomb/petrol/injur-/univers-/wan/brick/polytechn-/campus/hurl/year-old FLEX: bomb/petrol/brick/polytechn-/hurl/throw/explos-/injury-/cocktail/molotov-	4.04
	Airport destruction	HP: airport/intern/report/suspect/author-/flight/time/involv-/cancel/case FLEX: airport/flight/alleg-/injurct/airlin-/aviat-/interim/cathay/involv-/suspect	3.70
	CE's community dialogue	HP: chief/lam/execut-/carri-/region/administr-/special/govern/sar/dialogu- FLEX: chief/lam/execut-/carri-/region/administr-/special/dialogu-/yuet-ngor/amend	5.40
	Calling for stability and order	HP: violenc-/order/endor/restor-/stop/escal-/chaolaw/public/bring FLEX: violenc-/restor-/escal-/enforc-/lend/possibl-/order/strict/bring/action	4.07
	Curbing violence and restoring order	HP: situat-/can/time/make/face/want/citizen/happen/hope/current FLEX: can/want/happen/just/give/let/child/situat-/dont/truth	2.86
	Citizens' appeal for peace	HP: china/top/beiji-/case/miss/bank/list/issu-/world/billion FLEX: top/miss/list/yuan/design/negoti-/bond/rank/strateg-/xinjiang	2.79
Marginalizing protests	Relief measures	HP: address/polici-/meet/econom-/measur-/hous-/govern/announc-/center/help FLEX: feder-/focus/pansi-/han-/relief/address/expo/package-/premier/chairperson	2.32
	President Xi's stance	HP: take/presid-/justic-/part/secur-/now/said/respons-/safeguard/activ- FLEX: justic-/legal/task/necessari-/jinp-/care/prevent/presid-/take/teresa	2.17
	Patriotic sentiments	HP: nation/flag/chines-/day/celebr-/peopl-/china/held/anniversari-/found FLEX: nation/flag/celebr-/anniversari-/love/patriot/anthem/ceremoni-/sing/republ-	4.02
	Anti-violence rally	HP: support/call/resid-/peac-/ralli-/voic-/express/local/saturday/appeal FLEX: call/peac-/ralli-/save/silent/support/voic-/anti-viol/children/bulli-	3.81
	PLA Garrison rotation	HP: chines-/mainland/student/univers-/school/garrison/educ/pla/oversea/campus FLEX: mainland/student/school/garrison/pla/studi-/class/liber-/armi-/parent	3.41
	Voices from pro-Beijing politicians and scholars	HP: riot/former/deal/tell/exclus-/chun-/jacqu-/longer/martin/influenc- FLEX: riot/former/deal/tell/exclus-/chun-/jacqu-/longer/martin/influenc-	2.13
	District Council election	HP: district/elect/council/vote/ordinari-/poll/sunday/candid/voter/cast FLEX: district/elect/council/vote/ordinari-/poll/candid/voter/cast/turnout/ping-keung	1.91

(continued)

Table 2. (continued)

Strategic Frame	Suggested Label	Top Words	Proportion (%)
Criticizing the West as accomplices	Condemning Western interference	HP: china/affair/urg-/internl/chines-/stop/interfer-/interf-/state/unit FREQ: interfer-/interf-/ambassador/meddl-/xiaom-/summon/lodge-/represent/urg-/affair	4.32
	HKHRDA	HP: law/right/act/rule/democraci-/human/anti-mask/relat-/pass/-call FREQ: rule/democraci-/and-mask/committe-/violat-/congress/passag-/right/enact/pass	4.09
	Remarks by MOFA	HP: foreign/ministri-/chines-/commission/remark/politician/offic-/said/china/spokesperson FREQ: ministri-/remark/politician/standard/doubl-/separatist/refut-/wang/german/motiv-	3.44
	Criticizing biased reports	HP: media/report/western/expert/opinion/bias/news/fact/watch/may FREQ: media/western/bias/tension/generat-/lost/blame/younger/opinion/obvious	2.30
Delegitimizing protests	Condemning knife attack against legislator	HP: condemn/govern/act/central/strong/govt/offic-/council/legisl-/violent FREQ: condemn/liaison/junius/complex/activist/legco/joshua/knife/central/stab	3.97
	Greater Bay Area	HP: countri-/one/two/system/develop/macao/area/guangdong/bay/greater FREQ: system/guangdong/greater/opportun-/bottom/one/integr-/system/singapor-/neighbor	2.95
	HK-Zhuhai-Macao Bridge	HP: photo/show/video/netizen/post/group/seen/receiv-/analyst/bridg- FREQ: photo/video/netizen/post/bridg-/vsg/brand/boycott/zhuhai-macao/servant	2.39
	Transportation linkage	HP: new/launch/start/first/freedom/terror/will/xinhua/west/threat FREQ: new/terror/xinhua/link/fear/chen/high-spe-/qingqinggt/dark/tianjin	2.27
Social and economic disruption	Condemning protest leaders	HP: recent/demonstr-/month/past/behind/see/last/life/week/three FREQ: demonstr-/past/last/life/fight/woman/afp/lai/jimmi-/account	2.26
	Declined economy	HP: unrest/economi-/busi-/social/financi-/amid/year/tourism/industri-/sector FREQ: unrest/economi-/financi-/tourism/sector/impact/declin-/prolong/retail/paul	4.44
	Reduced HK-mainland business	HP: will/say/polit-/societi-/stabil-/futur-/interest/prosper/way/hurt FREQ: futur-/status/someth-/hurt/polit-/say/societi-/interest/understand/core	3.06
	Destroying economy	HP: peopl-/young/mani-/work/becom-/like/get/differ/destroy/toward FREQ: mani-/like/feel/young/enough/get/instig-/thing/look/work	2.39
Citywide strike	HP: citi-/said/also/includ-/strike/scale/note/annoy/today/far FREQ: citi-/also/said/includ-/scale/strike/annoy/note/per/cross-sector	1.17	

Note. CE = chief executive; FREQ = frequency-exclusivity terms; HKHRDA = Hong Kong Human Rights and Democracy Act; HP = high-probability terms; MOFA = Ministry of Foreign Affairs; MTR = mass transit railway; PLA = People's Liberation Army.

highlighted critical events along the 6-month history of protests including the sieges of public universities (4.04%).

Frame 2: Calling for stability and order (six topics; 19.61%). The second largest frame focused on the call for stability and social order from various parties. These appeals were proposed by both the CE Carrie Lam who pledged to hold a much-awaited dialogue with communities (5.40%) and President Xi Jinping who made his stance at the 11th BRICS Summit that the most pressing task for HK was to bring violence and chaos to an end and restore the order (2.17%). Citizens' appeal for peace (4.07%) and request for curbing violence and restoring social order (2.86%) were also highlighted. In addition, the economic aid from the central government (2.79%) and a series of relief measures taken by the local government (2.32%) were mentioned to unveil practical solutions to social and economic disruption.

Frame 3: Marginalizing protests (five topics; 15.28%). A variety of topics laid stress on state media's efforts to construct the pro-state "mainstream" public opinion by edging out those pro-democracy activists and groups. These topics depicted the patriotic sentiments expressed by HK citizens to celebrate China's National Day (4.02%), the citywide anti-violence rally organized to voice support for local police (3.81%), 22nd rotation of China's People's Liberation Army garrison in HK (3.41%), and the District Council election (1.91%). Moreover, voices from pro-Beijing politicians and scholars (2.13%), such as George Pippas and Dennis Elter, were also quoted to further unveil the bogus nature of the call for democracy in HK and marginalize anti-government protests.

Frame 4: Criticizing the West as accomplices (four topics; 14.15%). In this frame, the firm assertion of the central government was reiterated that the protests belong to China's internal affairs requiring the earnest respect for China's sovereignty. Specifically, western countries represented by the United States and the United Kingdom were urged to stop meddling in HK affairs and interfering in China's internal affairs in any form (4.32%). This topic was followed by the strong opposition expressed to the passage of the Hong Kong Human Rights and Democracy Act by the U.S. House of Representatives (4.09%) as well as the resolute objection of the Ministry of Foreign Affairs in response to some western politicians' statements on HK affairs (3.44%). Moreover, western media outlets were also criticized to selectively report the protests with ideological biases and dubious rhetoric for the sake of manipulating public opinion with the assistance of social media networks such as Twitter (2.30%).

Frame 5: Delegitimizing protests (five topics; 13.84%). Both direct and indirect subframes can be observed from the efforts of state media accounts in delegitimizing organizers and participants of the protests. On the one hand, a stunning denunciation was directly delivered toward both protesters making a knife attack against the pro-establishment Legislator Junius Ho (3.97%) and high-profile leaders of the rapidly escalating street demonstrations (2.26%), such as Nathan Law and Jimmy Lai. On the other hand, state media indirectly nullified the protests by highlighting social and economic benefits HK could have seized to prosper under the "one country, two systems" principle. These benefits were largely stressed as the opportunity costs of protests, which included the outline development plan for the Guangdong-HK-Macao Greater Bay Area (2.95%), the official opening of the HK-Zhuhai-Macao Bridge (2.39%), and the high-speed railway linking HK and mainland (2.27%).

Frame 6: Social and economic disruption (four topics; 11.06%). The smallest of identified frames emphasized the impact of protests on the social and economic performance of HK as one of the world's most significant financial centers. The explicit impacts included an abrupt deterioration in the economy (4.44%), the reduced HK-mainland business (3.06%), and the general strike staged by

protesters (1.17%) due to local social unrests, while the implicit impacts would be those damaging future opportunities and moral values of young people.

Topic Difference in Bureaucratic Rank and Engagement Rate

With respect to RQ2 and RQ3, the STM was further used to investigate how the bureaucratic rank of state media and the engagement rate of each tweet are associated with topical prevalence by incorporating two dummy covariates into the model. The estimation enables us to obtain the document-level proportion of each topic across different levels of bureaucratic rank (*low* = 0; *high* = 1) and engagement rate (*low* = 0; *high* = 1). For instance, if the proportion of a given topic in the tweets posted by highly ranked media is significantly greater than those by lowly ranked media, features of such topic can be recognized as semantically more proximate to the higher bureaucratic authority.

Figure 2 presents the estimated changes of topical prevalence as shifting from low to high media rank and tweet engagement. Specifically, the dots represent the mean values of topic differences while the bars indicate the 95% confidence intervals for the estimated difference (see Online Appendix C for complete statistical results). It has been evidently shown that topics subsumed under *conflicts and violence* and *criticizing the West as accomplices* were discussed significantly more frequently by high-ranking media accounts ($p < .01$), while topics depicting *social and economic disruption* were discussed significantly more frequently in low-ranking media accounts ($p < .01$). In a similar vein, topics describing *conflicts and violence* and *criticizing the West as accomplices* were discussed significantly more frequently by tweets with high engagement rate ($p < .01$), while topics included in *calling for stability and order*, *delegitimizing protests*, and *social and economic disruption* were discussed more frequently in tweets with low engagement rate ($p < .01$).

Discussion

As a vigorous rising power, China is facing the challenge of being regarded as a potential threat to the global society; therefore, one salient strategic task of contemporary China is considered to be the national image building (Ramo, 2007). This study takes the approach of strategic communication and employs the STM to analyze how China's state-run media mobilize foreign propaganda machine and use specific patterns to describe 2019 HK protests on their Twitter accounts. Six strategic frames identified in this study are part of the "protest paradigm" (Chan & Lee, 1984), which is largely conflict-oriented and stated in negative tones with the goal to mitigate the disturbance and protect the status quo (Veneti et al., 2016). As discussed earlier, one prominent communication strategy is to separate "outsiders" (e.g., radical protesters, pro-democracy politicians, organizers of nonpermitted assemblies, western politicians supporting the protests) from "insiders" (e.g., HK government, pro-Beijing politicians and scholars, patriotic or anti-violence citizens; see also Lynn & Williams, 2018). By means of delegitimizing and marginalizing those challenging the pro-establishment authority, the separation reflects both power relations and moral judgements that situate outsiders at a disadvantaged position in social media content. Another noticeable framing strategy is to emphasize the negative consequences of the protests (i.e., *social and economic disruption*) and interpret to serve the state's interests (i.e., *criticizing the West as accomplices*).

According to Entman (1993), four essential components constitute a *framing package*: problem definition, causal interpretation, moral evaluation, and treatment recommendation. For the entire corpus, frames stressing problem definition that depicts issues and agents of protests (i.e., *conflicts and violence*, 26.05%; *marginalizing protests*, 15.28%; *delegitimizing protests*, 13.84%) and treatment recommendation that renders and justifies solutions for problems (i.e., *calling for stability and*

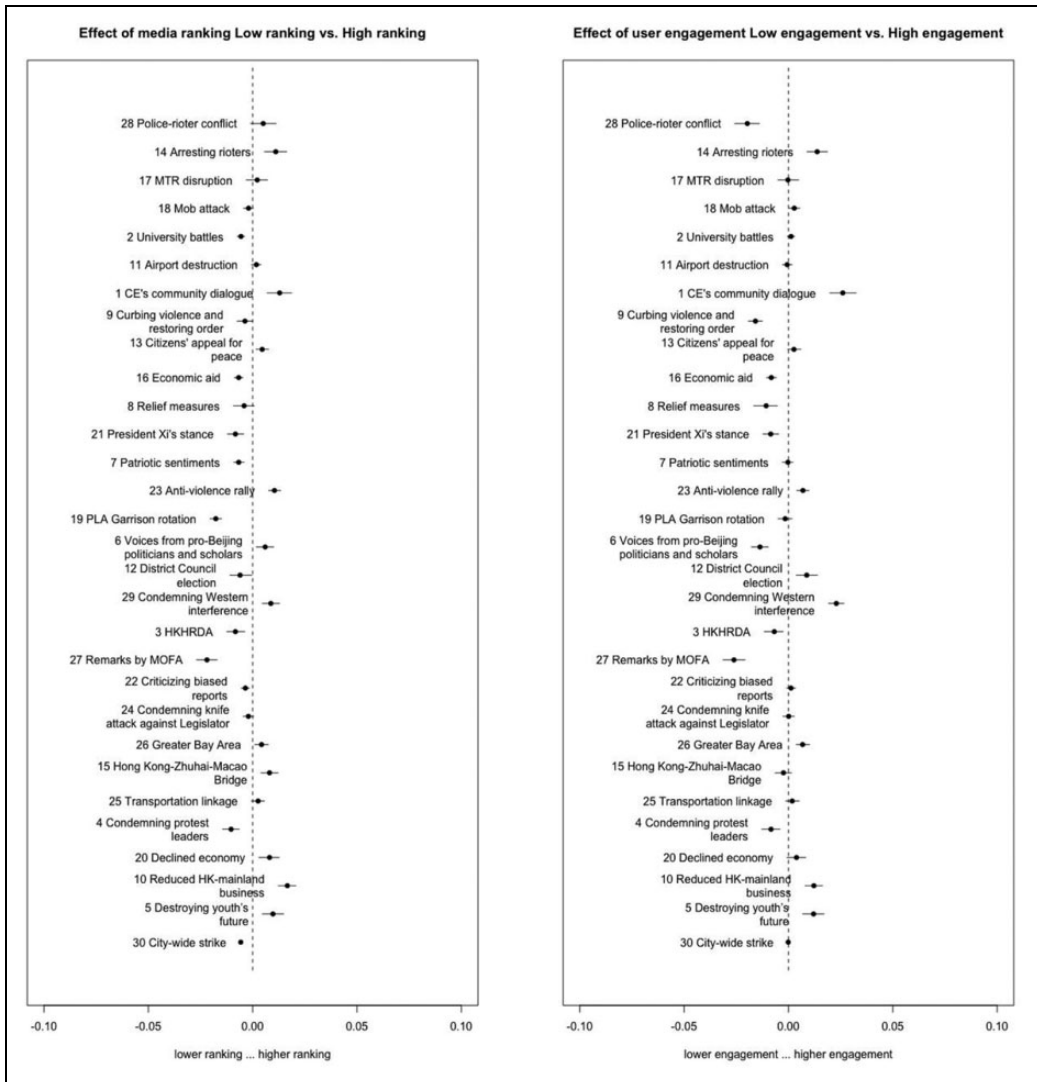


Figure 2. Differences in topical prevalence (left: low vs. high bureaucratic rank; right: low vs. high engagement rate).

order, 19.61%) prove to gain more salience from social media propaganda efforts made by state media communicators. In contrast, frames underling causal attribution (i.e., *criticizing the West as accomplices*, 14.15%) and moral judgement (i.e., *social and economic disruption*, 11.06%) have been relatively downplayed. This finding partially echoes Li's (2010) investigation of how *People's Daily* frames corruption scandals in China, which concludes that state media frames demonstrate a strong compliance on government policies in describing and suggesting solutions to contentious issues as well as an explicit tendency to avoid causal attribution.

Against the backdrop of foreign propaganda, such unbalanced strategic frames are usually a double-edged sword. The process of defining problems and raising solutions to social unrests can convince the Chinese public that the state's enacted policies and practices are reasonable and feasible. However, since the key target audience of state media's foreign propaganda are

English-speaking users on Twitter, minimizing causal interpretations and moral evaluations is likely to further decontextualize those unfamiliar with the protests, thus enhancing the alleged “Tacitus Trap” whereby an unpopular government is hated regardless of its intended goals and actual performance.

We have further demonstrated that the bureaucratic rank of each state media organization plays a key role in building its strategic frames. For instance, high-ranking media accounts tend to use the insider–outsider strategy by picturing violent confrontations and attributing such conflicts to the interference from western countries and politicians. To the opposite, tweets posted by low-ranking state media stick to the communication strategy highlighting the negative consequences of protests, which are likely to engender great damage to the financial and economic status of HK. This finding concurs with the constantly neglected mobility and flexibility of state media discourse in China regardless of the party-dominated political public opinion (King et al., 2017). The foreign propaganda machine is not homogenous because state media positioned at different positions of power hierarchy may adopt different framing strategies.

More specifically, such finding is also consistent with the prior argument that although state media with higher bureaucratic ranks have been allowed more institutional ties and political resources, they have to game with the centralized supervision from the Publicity Department in response to structural constraints. Social protests or movements, under these circumstances, are usually covered from the perspective of authorities in power by stressing the deviance of protesters and diluting the threat (McLeod & Detenber, 1999). On the other hand, low-ranking state media have been afforded more space to communicate without aligning strictly with the CPC. Operating against the exponential growth of social applications and channels, media organizations are supposed to find their own “niche” (Bennett & Iyengar, 2008). For state media focusing on hard news and current politics, one way to capture and consolidate their niche is to express an explicit yet unique position on political and social issues of public concern. This trend has been further enhanced by social media platforms on account of Gerbaudo’s (2018) observation that even the most extreme opinions on social media can find a certain number of supporters or followers. Moreover, users are highly divided and grouped because they tend to form and maintain connections with those sharing similar opinions. This may prompt low-ranking state media to slightly deviate from the official discourse of HK protests to seek their own audience and structural fragmentations.

Granted, China’s propaganda system per se is constantly expanding as a sprawling bureaucratic establishment into virtually every medium throughout the process of producing and disseminating information (Shambaugh, 2007). The party state is increasingly aware of “the benefits of a pluralized media environment for the effective transmission of its discourse to international audiences” (Edney, 2014, p. 15) and has therefore utilized a “saturation” strategy, according to Brady (2017), making use of every possible channel to propagate pro-Beijing opinions. This strategy makes it not surprising for media outlets with an apolitical focus to be incorporated into the current propaganda system, albeit their vague or even loose connections with the party state. From this perspective, *Caixin Global* and *Sixth Tone*, seeing their apolitical nature and business/cultural focus, can be viewed as the state’s attempt to influence foreign propaganda operations in a comparatively softer and less intrusive way.

With respect to the reception of strategic frames, topics exemplifying semantically emotional content, including violent conflicts, patriotic sentiments, and criticizing western interference, have been discussed more frequently in high engagement tweets, whereas those highlighting public appeals for stability and order, as well as the potential social and economic losses of HK society, have been discussed more frequently in low engagement tweets. This reflects that users appear to be more engaged with emotional or sensational content characteristics deployed in tweets. Nonetheless, it should be noted that prior studies demonstrate that multimedia features including emoticons, pictures, and videos are significantly associated with engagement metrics such as retweetability

(Chung, 2017). One confounding explanation for the varying levels of frame reception is that state media probably tend to visualize provocative tweets by attaching pictures, images (e.g., infographics), or videos, which may prompt users' reactions giving rise to a greater engagement rate. It is largely unknown whether and the extent to which the emotion-driven user engagement should be attributed to textual frames or visual elements.

The communication ecology transformed and consolidated by social media platforms has weakened the gatekeeping role of professional journalists. Surrounded by social media sites and channels in their routinized operations, state media communicators may not be able to put the same efforts and time into conducting interviews and news verification as they did before. The increasing importance that news organizations attach to the web traffic and online engagement metrics is also likely to affect communicators' news value judgement (Carlson, 2018). These developments have fragmented social media content, thus making it easier for irrational sentiments to be disseminated, shared, and reproduced online. Nevertheless, once the publics' irrational emotions represented by nationalism and patriotism are incited and mobilized by the reproduced online propaganda machine, the potential outcomes are likely to go beyond the authorities' expectation and control.

Limitations and Future Research

Several limitations of this study and suggestions for future research should be addressed. First, although strategic framing turns out to be a suitable approach to answering the research questions, it should be noted that how the framing process can be adequately operationalized is still contested. The influence of frame usage on Twitter users' reaction was merely investigated in line with static engagement metrics. In addition, when defining the measurement of engagement rate, we were not able to rule out the possibility of social media bots and inauthentic coordination networks in routinely retweeting or commenting on state media outlets. For example, a recent large-scale analysis of tweets associated with Chinese politics yields strong evidence of automation and bot activities on Twitter inextricably linked to anti-Chinese-state stances (Bolsover & Howard, 2019). The potential sensitivity of our findings to automation and algorithms has brought about further challenges in exploring the extent to which individuals' exposure to strategic frames have altered their perceptions, attitudes, or even behavioral intentions. Second, we only analyzed verbal content posted by state media accounts. Future efforts could consider conducting content analysis of various elements contained in Twitter posts (e.g., memes, Guenther et al., 2020) to further explore both production and reception of state media's foreign propaganda on social media platforms. Similarly, the data collection was implemented 2 months after the pro-democracy protests. The research data could not take into account posts deleted or blocked before early February 2020. Third, partly due to information privacy issues, the knowledge about how pro-state voices were produced, disseminated, and received on mobile applications was extremely limited. During the 2019 HK protests, Telegram and WhatsApp became important tools for HK citizens to access information and coordinate collective actions. Compared with Twitter, messages and interactions circulated on mobile applications tend to be more privatized. Afforded by private settings and chat groups of high demographic homogeneity, these platforms are usually a mixture of public and private spheres. These features have further blurred the distinction between personal contents and public information. Nonetheless, it remains unclear whether and to what extent the strategic frames adopted in the public domain are applicable in the privatized environment. Finally, the scope of this study is restricted to state media in mainland China, so part of findings may be prompted by the absolute political alignment to the ruling ideology (Sparks, 2010). Future studies could take a closer look at the communication ecology wherein media organizations with opposite political stances use strikingly different frames to represent social protests. Since media tend to give positive coverage to social protests with ideologies closer to their own (Kim & Shahin, 2020), media political parallelism (Hallin & Mancini,

2004) has been a more prevailing phenomenon that reflects the plurality of strategic framing. In this regard, more convincing findings can be obtained by analyzing diverse media representations in such a civil society as HK.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author, Xiao Wang, upon reasonable request.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the GESIS (Leibniz Institute for the Social Sciences) Grant (Grant No. GG-2019-017).

Supplemental Material

The supplemental material is available in the online version of the article.

Notes

1. We thank one anonymous reviewer for suggesting the use of Twitter's state-affiliated media label as an alternative approach for identifying and sampling state media accounts. We started the project and collected our research data in early February 2020, much earlier than the date when Twitter announced its labeling of political accounts in August 2020. Moreover, Twitter did not disclose a full list of its labeled accounts. Hence, we used the Twitter label as an effective post hoc validation of our sampled accounts and found that all these accounts were labeled as "China state-affiliated media."
2. Non-English tweets were excluded for several reasons. First, the target audience of China's foreign propaganda work implemented on social media are those living abroad such as foreign citizens and diasporic Chinese, given the fact that Twitter has long been blocked in mainland China. Hence, sampled state media accounts are primarily organized and managed in an English-language context wherein only a very limited proportion of tweets were posted in Chinese or other languages. Second, tweets in Chinese contribute little additional information to our understanding of state media discourses because most of them, if not all, were no more than a translated version of their English origins serving bilingual purposes. Third, excluding the tiny fraction of tweets in Chinese can enable a more consistent effort in training the STM model and presenting our research findings.
3. It is noteworthy that topic modeling techniques such as the Bidirectional Encoder Representations from Transformers and network-based textnets may work better than structural topic modeling (STM) in processing short texts (i.e., tweets in our case) without a preset value of K . Even so, STM fits the current concern because it enables the inclusion of covariates (i.e., bureaucratic rank and engagement rate) into the topic model. The human validation of modeling results can also secure researchers' theoretical needs and interpretive expectations. Moreover, recent studies have revealed an acceptable level of applicability of STM to analyzing tweets (e.g., Kwon et al., 2019).

References

- Althusser, L. (2006). Ideology and ideological state apparatuses (Notes towards an investigation). In M. G. Durham & D. M. Kellner (Eds.), *Media and cultural studies: Keywords* (pp. 79–87). Blackwell.
- Ang, Y. Y. (2017). Beyond Weber: Conceptualizing an alternative ideal type of bureaucracy in developing contexts. *Regulation & Governance*, 11(3), 282–298.

- Aruguete, N., & Calvo, E. (2018). Time to #protest: Selective exposure, cascading activation, and framing in social media. *Journal of Communication*, 68(3), 480–502.
- Bennett, W. L., & Iyengar, S. (2008). A new era of minimal effects? The changing foundations of political communication. *Journal of Communication*, 58(4), 707–731.
- Bolsover, G., & Howard, P. (2019). Chinese computational propaganda: Automation, algorithms and the manipulation of information about Chinese politics on Twitter and Weibo. *Information, Communication & Society*, 22(14), 2063–2080.
- Boyle, M. P., McLeod, D. M., & Armstrong, C. L. (2012). Adherence to the protest paradigm: The influence of protest goals and tactics on news coverage in US and international newspapers. *International Journal of Press/Politics*, 17(2), 127–144.
- Bradshaw, S., & Howard, P. (2017, December). *Troops, trolls, and troublemakers: A global inventory of organized social media manipulation*. COMPROP Working Paper.
- Brady, A.-M. (2015). Authoritarianism goes global (II): China's foreign propaganda machine. *Journal of Democracy*, 26(4), 51–59.
- Brady, A.-M. (2017). *Magic weapons: China's political influence activities under Xi Jinping*. Wilson Center.
- Carlson, M. (2018). Confronting measurable journalism. *Digital Journalism*, 6(4), 406–417.
- Chan, J. M. (2019). From networked commercialism to networked authoritarianism: The biggest challenge to journalism. *Journalism*, 20(1), 64–68.
- Chan, J. M., & Lee, C. C. (1984). Journalistic paradigms on civil protests: A case study of Hong Kong. In A. Arno & W. Dissanayake (Eds.), *The news media in national and international conflict* (pp.183–202). Westview.
- Chen, S. (2017). Environmental disputes in China: A case study of media coverage of the 2012 Ningbo anti-PX protest. *Global Media and China*, 2(3–4), 303–316.
- Chung, J. E. (2017). Retweeting in health promotion: Analysis of tweets about Breast Cancer Awareness Month. *Computers in Human Behavior*, 74, 112–119.
- D'Angelo, P. (2002). News framing as a multiparadigmatic research program: A response to Entman. *Journal of Communication*, 52(4), 870–888.
- Durham, F. (1998). News frames as social narratives: TWA flight 800. *Journal of Communication*, 48(4), 100–117.
- Edney, K. (2014). *The globalization of Chinese propaganda: International power and domestic political cohesion*. Palgrave Macmillan.
- Edney, K. (2015). Building national cohesion and domestic legitimacy: A regime security approach to soft power in China. *Politics*, 35(3–4), 259–272.
- Entman, R. M. (1993). Framing: Towards clarification of a fractured paradigm. *Journal of Communication*, 43(4), 51–58.
- Esarey, A. (2006) *Speak no evil: Mass media control in contemporary China. Freedom at issue*. A Freedom House Special Report, Washington, DC.
- Fook, L. L. (2010). China's media initiatives and its international image building. *International Journal of China Studies*, 1(2), 545–568.
- Gerbaudo, P. (2018). Social media and populism: An elective affinity? *Media, Culture & Society*, 40(5), 745–753.
- Guenther, L., Ruhrmann, G., Bischoff, J., Penzel, T., & Weber, A. (2020). Strategic framing and social media engagement: Analyzing memes posted by the German Identitarian Movement on Facebook. *Social Media + Society*, 6(1), 1–13.
- Hallin, D., & Mancini, P. (2004). *Comparing media systems*. Cambridge University Press.
- Iacus, S. M., King, G., & Porro, G. (2012). Causal inference without balance checking: Coarsened exact matching. *Political Analysis*, 20(1), 1–24.
- Jacobi, C., van Atteveldt, W., & Welbers, K. (2016). Quantitative analysis of large amounts of journalistic texts using topic modelling. *Digital Journalism*, 4(1), 89–106.

- Jaros, K., & Pan, J. (2018). China's newsmakers: Official media coverage and political shifts in the Xi Jinping era. *The China Quarterly*, 233, 111–136.
- Kim, K., & Shahin, S. (2020). Ideological parallelism: Toward a transnational understanding of the protest paradigm. *Social Movement Studies*, 19(4), 391–407.
- King, G., Pan, J., & Roberts, M. E. (2017). How the Chinese government fabricates social media posts for strategic distraction, not engaged argument. *American Political Science Review*, 111(3), 484–501.
- Kwon, K. H., Chadha, M., & Wang, F. (2019). Proximity and networked news public: Structural topic modeling of global Twitter conversations about the 2017 Quebec mosque shooting. *International Journal of Communication*, 13, 2652–2675.
- Lecheler, S., Bos, L., & Vliegenthart, R. (2015). The mediating role of emotions: News framing effects on opinions about immigration. *Journalism & Mass Communication Quarterly*, 92(4), 812–838.
- Lei, Y. W. (2016). Freeing the press: How field environment explains critical news reporting in China. *American Journal of Sociology*, 122(1), 1–48.
- Li, X. (2010). *Corruption scandals in China: Media frames and news making* [Unpublished doctoral dissertation]. Zhejiang University.
- Lin, F. (2018). Power and information paradox: A state perspective on studying Chinese media (in Chinese). *Communication & Society*, 45, 19–46.
- Lin, F., Chang, T., & Zhang, X. (2015). After the spillover effect: News flows and power relations in Chinese mainstream media. *Asian Journal of Communication*, 25(3), 235–254.
- Lynn, T., & Williams, L. (2018). “Have a quiet, orderly, polite revolution”: Framing political protest and protecting the status quo. *Critical Sociology*, 44(4–5), 733–751.
- MacKinnon, R. (2011). China's “networked authoritarianism.” *Journal of Democracy*, 22(2), 32–46.
- McLeod, D., & Detenber, B. (1999). Framing effects of television news coverage of social protest. *Journal of Communication*, 49(3), 3–23.
- Pan, Z. (2006). Framing analysis: Toward an integrative perspective (in Chinese). *Communication & Society*, 1, 17–46.
- Pearce, K. E., & Kendzior, S. (2012). Networked authoritarianism and social media in Azerbaijan. *Journal of Communication*, 62, 283–298.
- Qing, K., & Shiffman, J. (2015, November 2). Exposed: China's covert global radio network. *Reuters*. <https://www.reuters.com/investigates/special-report/china-radio/>
- Ramo, J. C. (2007). *Brand China*. The Foreign Policy Centre.
- Riles, J., Sangalang, A., Hurley, R., & Tewksbury, D. (2015). Framing cancer for online news: Implications for popular perceptions of cancer. *Journal of Communication*, 65(6), 1018–1040.
- Roberts, M. E., Stewart, B. M., & Airoidi, E. M. (2016). A model of text for experimentation in the social sciences. *Journal of the American Statistical Association*, 111(515), 988–1003.
- Roberts, M. E., Stewart, B. M., Tingley, D., Lucas, C., Leder-Luis, J., Gadarian, S. K., Albertson, B., & Rand, D. G. (2014). Structural topic models for open-ended survey responses. *American Journal of Political Science*, 58(4), 1064–1082.
- Schreiner, M., Fischer, T., & Riedl, R. (2021). Impact of content characteristics and emotion on behavioral engagement in social media: Literature review and research agenda. *Electronic Commerce Research*, 21(2), 329–345.
- Shambaugh, D. (2007). China's propaganda system: Institutions, processes and efficacy. *The China Journal*, 57, 25–58.
- Shambaugh, D. (2010, July 7). China flexes its soft power. *New York Times*, IHT Op-Ed. https://www.nytimes.com/2010/06/08/opinion/08iht-edshambaugh.html?emc=eta1&_r=0
- Sparks, C. (2010). China's media in comparative perspective. *International Journal of Communication*, 4, 552–566.
- Sun, W. (2014). Foreign or Chinese? Reconfiguring the symbolic space of Chinese media. *International Journal of Communication*, 8(1), 1894–1911.

- Tsai, W. H. (2016). How “networked authoritarianism” was operationalized in China: Methods and procedures of public opinion control. *Journal of Contemporary China*, 25(101), 731–744.
- Tsai, W. H. (2017). Enabling China’s voice to be heard by the world: Ideas and operations of the Chinese Communist Party’s external propaganda system. *Problems of Post-Communism*, 64(3–4), 203–213.
- Veneti, A., Karadimitriou, A., & Poulakidakos, S. (2016). Media ecology and the politics of dissent: Representations of the Hong Kong protests in the Guardian and China Daily. *Social Media + Society*, 2(3), 1–13.
- Wadhwa, V., Latimer, E., Chatterjee, K., McCarty, J., & Fitzgerald, R. T. (2017). Maximizing the tweet engagement rate in academia: Analysis of the AJNR Twitter feed. *American Journal of Neuroradiology*, 38(10), 1866–1868.
- Wasike, B. S. (2013). Framing news in 140 characters: How social media editors frame the news and interact with audiences via Twitter. *Global Media Journal: Canadian Edition*, 6(1), 5–23.
- Zhang, W. (2012). Has Beijing started to bare its teeth? China’s tapping of soft power revisited. *Asian Perspective*, 36(4), 615–639.
- Zhang, X. (2011). China’s international broadcasting: A case study of CCTV international. In J. Wang (Ed.), *Soft power in China* (pp. 57–71). Palgrave Macmillan.
- Zhao, Y. (2008). *Communication in China: Political economy, power, and conflict*. Rowman & Littlefield.

Author Biographies

Maggie Mengqing Zhang is a PhD student at the Institute of Communication Research, University of Illinois at Urbana–Champaign. Her research interest is computational political communication, with particular focuses on communication process and media effect.

Xiao Wang is an Assistant Research Fellow at the School of Journalism and Communication, Nanjing University. His research interests revolve around risk and crisis communication, the evolution of emergency collaborative networks, privacy boundary and data protection, and sports media economics.

Yang Hu is a PhD candidate at the School of Journalism and Communication, The Chinese University of Hong Kong. His research primarily focuses on news audience analysis, media sociology, political communication, and journalism studies.