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Strategies of Chinese State Media on Twitter

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ABSTRACT

How do state-controlled broadcasters reach foreign publics to engage in public diplomacy in the era of social media? Previous research suggests that features unique to social media, such as the ability to engage in two-way communication with audiences, provide state-controlled broadcasters new opportunities for online public diplomacy. In this paper, we examine what strategies were used by four Chinese state-controlled media outlets on Twitter to reach foreign publics as the Chinese Communist Party worked to expand its public diplomacy and international media outreach efforts. We find that all outlets increased the volume and diversity of content while none engaged in interactive, two-way communication with audiences, and none appeared to artificially inflate their follower count. One outlet, China Global Television Network, made outsized gains in followership, and it differs from the other Chinese outlets in that it was rebranded, it disseminated a relatively lower share of government-mandated narratives pertaining to China, and the tone of its reporting was more negative. These results show that during a period when Chinese state-controlled broadcasters gained followers on Twitter, outlets made limited use of features unique to social media and instead primarily used social media as a broadcast channel.

Introduction

Countries with global ambitions have incentives to engage in public diplomacy – to communicate with foreign publics to affect their thinking (Gilboa, 2008). This is the case for authoritarian countries such as China and Russia, which use a range of public diplomacy strategies, including communications through state-controlled broadcast media, to reach foreign audiences (Douzet et al., 2021; Farhi, 2012; Just, 2016; Madrid-Morales, 2017; Rawnsley, 2015; Repnikova, 2022; Shi, 2015; Thussu et al., 2017; Westad, 2012; Xin, 2012; X. Zhang, 2013). With the rise of digital media, competition for the attention of audiences has become more intense, and in comparison to the broadcast era, state-media broadcasters are competing with orders-of-magnitude larger numbers of content producers in order to reach foreign publics.

What strategies are state-controlled media broadcasters using to gain the attention of global audiences in this digital context? Previous research on public diplomacy has focused

on how features unique to social media platforms represent a boon to broadcasters. For example, because digital media allows for two-way communication, broadcasters can interact with audiences, listening and responding to people who comment on state media posts in ways that are tailored to specific individuals or groups in foreign countries (Gilboa, 2006; Z. A. Huang & Wang, 2021; Manor & Bjola, 2021; Melissen, 2005; Snow et al., 2020). Existing work in related areas of external propaganda and influence operations has also highlighted how social media provides governments with new tools to selectively influence the beliefs and attitudes of foreign publics – for example, using algorithms, computer programs, and humans to manipulate social media metrics and create the appearance of popularity and support for certain ideas and organizations (Badawy et al., 2018; DiResta et al., 2019; Jamieson, 2020; Sanovich, 2017; Shorey & Howard, 2016; Woolley, 2016).

In this paper, we examine whether state media outlets are employing features unique to social media to reach audiences on these platforms or whether they are relying on strategies that are not specific to digital media. To do this, we analyze four of China's main, English-language, global state-controlled media outlets – China Global Television Network (CGTN), Xinhua News, *People's Daily*, and *China Daily* — in the period before and after the adoption of the Chinese Communist Party's (CCP's) so-called "Going Global" campaign in 2017.[1] We focus on four strategies, two of which are specific to digital media – artificially inflating the appearance of support and interactivity – and two that are not – obfuscating state ties and changing media content.

We find that while all Chinese state media outlets gained audience as measured by the number of followers in this time period, none employed either of the features specific to social media emphasized in previous research. Outlets did not engage in two-way communication with social media users, and we find little evidence that audience gains were due to the use of fake or bot accounts. Instead, two of the four outlets – CGTN and *China Daily* experienced increases in content volume, and all outlets saw changes in media content, including increased share of their social media content containing narratives about China specified by the Chinese Communist Party, increased share of soft news, and increased positivity of reporting. Among the four outlets, CGTN experienced the largest gains in Twitter followership after 2017. By 2020, CGTN had exceeded the audience size of all other Chinese outlets as well as two prominent non-Western state broadcasters: Al-Jazeera and RT. CGTN differs from the other three state outlets in that it was the only outlet whose name, logo, and appearance changed through a rebranding effort, which may have obfuscated its state ties. Compared to the other Chinese state-media outlets, CGTN also had the lowest proportion of content related to Chinese government narratives and was least positive in the tone of its reporting.

Public Diplomacy Through State-Controlled Broadcasting on Social Media

This paper focuses on public diplomacy practiced by the state through state-controlled media on social media. Public diplomacy includes efforts by state as well as non-state actors (Gilboa, 2006; Melissen, 2005); however, public diplomacy is traditionally associated with state practices (Frederick Howard, 1993). Public diplomacy encompasses a range of components, including listening, advocacy, cultural diplomacy, exchange, and international broadcasting. We focus on international broadcasting – the transmission content outside

of a country's domestic borders by media broadcasters – because it overlaps with all other public diplomacy functions (Cull, 2008).

This paper hones in on international broadcasting for public diplomacy where the interests of the broadcaster are closely aligned with those of the state. The nature of the relationship between traditional international broadcasters and governments vary widely. For example, the BBC is a statutory corporation independent of the UK government in strategy, content, and practice. Al-Jazeera is structured to receive funding from the government of Qatar but maintains its editorial independence (Seib, 2010). CGTN is funded by the Chinese regime and is not independent of the regime in its strategy, content, or reporting practices (Nyri, 2017; Zhengrong et al., 2017).

When the state retains editorial control over international broadcasters, outlets' incentives are aligned with those of the state. However, close alignment between the state and the state-controlled broadcasters can decrease the credibility of broadcasters as they are perceived as mouthpieces of their governments rather than objective sources of information (Douzet et al., 2021; Repnikova, 2022; Thussu et al., 2017). For example, Shambaugh (2013) argues that China's unattractive international reputation on account of its political system diminishes the credibility of China's outward facing media outlets. Farhi (2012) finds that foreign journalists employed by Chinese media companies see attracting viewers as a challenge because viewers are skeptical about news sources controlled by the state. Such perceptions of broadcasters are important because of the sometimes blurry line between public diplomacy, which is considered an acceptable means for countries to communicate outside of their borders, and propaganda and influence operations, which are not generally accepted tactics (Bradshaw, 2020; D. A. Martin et al., 2019; Ohlberg, 2018).[2] Without credibility, state broadcasters run the risk of being dismissed as tools for propaganda.

The challenges of state-controlled outlets' lack of credibility in the pursuit of audience attention is exacerbated in the era of social media because of intensified competition. Social media has led to declining viewership of broadcast media, fragmentation of audiences, and increased competition for audience attention (Chadwick, 2017; Fletcher & Kleis Nielsen, 2017; Graber & Dunaway, 2017; Yingdan & Pan, 2021). With social media, anyone can become a producer and broadcast to foreign audiences. On non-digital broadcast channels such as radio and television, traditional broadcasters such as the BBC remain influential and mainly compete against a small set of international and domestic broadcasters. However, as foreign audiences have moved to social media, so too have traditional international broadcasters. On social media, traditional broadcasters are one of an extremely large number of content producers that compete for the attention of global audiences. Public diplomacy scholars have long moved past a Cold War model of public diplomacy that assumes an audience that has an unmet need for information (Seib, 2010). However, the implication of the rise of social media is that (1) unmet audience needs are unlikely, and (2) public diplomacy efforts on social media compete against many other producers to meet any audience need. Without credibility, not only is what is communicated unlikely to be influential, but all else being equal, the lack of credibility diminishes a content producer's ability to capture attention. Because audiences have so many options to choose from, they are less likely to choose a source they perceive as not credible.

Given this challenge, how can state-controlled broadcasters effectively compete for attention on social media platforms? Previous research on public diplomacy and social media has emphasized how technical features unique to social media – specifically that it

allows for two-way rather than one-way communication – provide new opportunities for public diplomacy (Gilboa, 2006; Z. A. Huang & Wang, 2021; Manor & Bjola, 2021; Melissen, 2005; Snow et al., 2020). In addition, previous research on propaganda has similarly emphasized how aspects unique to social media – here, artificial manipulation of metrics such as the number of followers and user engagement – can aid in efforts to reach and influence foreign publics (Sanovich, 2017; Shorey & Howard, 2016; Woolley, 2016). It is important to note that these strategies are not unique to authoritarian governments, but are those that prior research has emphasized as important for such governments.

However, state media outlets can also compete for attention by using strategies from the era of broadcast media instead of those specific to social media – for example, changing the branding of the outlet so as to obfuscate government ties and changing what content is broadcast (Clausen, 2004; Thussu et al., 2017; Xin, 2012; Zhu, 2012). On branding, actions such as changing the name of state-controlled broadcasters can enhance credibility by making it more difficult for audiences to recognize the link between the state and the outlet. For example, Russia Today rebranded as RT in 2009, changing its name and logo, to make its affiliation with the Russian government less apparent (Nassetta & Gross, 2020).

In terms of content, changes to the diversity and overall volume of content are also well-documented strategies for attracting audiences in media and journalism that have carried over to the digital age (Carpenter, 2010; Mullainathan & Shleifer, 2005). Diversity works to attract audience attention because consumers vary in their preferences. By increasing the diversity of content, outlets can increase the number of consumers it can attract. With social media, scholars have found similar demand for diversity (Choudhury et al., 2011; Willemsen et al., 2016), but in addition, social media ranking and recommendation algorithms also tend to preserve topical and sentiment diversity (Moller et al., 2018). On volume, producing content at higher rates is associated with more audience engagement (Sanderson & Hambrick, 2012). On social media, volume signals active participation on a platform, which is an important factor signaling the importance of a content producer (Casalo et al., 2020). Altogether, research suggests that content producers are best served if the diversity of content increases along with volume (Tafesse & Wood, 2021).

Data

This paper focuses on four, central-level Chinese state-controlled media outlets – CGTN (China Central Television or CCTV prior to 2017), Xinhua, *People's Daily*, and *China Daily* – —operating on Twitter.[3] We focus on Twitter, rather than Facebook or YouTube, because of the accessibility of Twitter data and the platform's global reach. We focus on central-level outlets, which represent China's flagship media outlets, because China's "Going Global" campaign states that China's media-based public diplomacy efforts are centered on flagship media outlets.[4] To identify flagship outlets, we began with a list of 172 Chinese media outlets as well as additional outlets from the Cyberspace Administration of China's "Credible News Sources" list (see Appendix Section A.1.1).[5] We narrowed this list down to outlets with verified Twitter accounts publishing in English,[5] which were not subsidiaries (e.g., CGTN Africa is a subsidiary of CGTN), and selected outlets that were ministerial- (正

部级事业单位) or vice-ministerial level (副部级事业单位) entities whose Twitter accounts had more than three million followers.[6]

To study what strategies these Chinese state-controlled outlets are using to gain audience attention, we rely on qualitative analysis of Chinese leaders' speeches, policy documents, and state-controlled media editorial opinions as well as quantitative analysis of the reach and activities of these outlets on Twitter. The quantitative Twitter data we collected is from January 23, 2013 to January 23, 2020, which spans the time period before and after China's Going Global campaign.

To contextualize these Chinese state-controlled outlets, we also compare their activity to that of two non-Western outlets and two Western media outlets. The two non-Western outlets selected for comparison are Al-Jazeera and RT.[7] RT is chosen because of its popularity and because of its similarity to China's state-controlled media in its alignment with its sponsoring government. Al-Jazeera is chosen for its international prominence, but it should be noted that Al-Jazeera retains greater editorial independence from its sponsoring government compared with the Chinese outlets and RT. The two Western outlets selected for comparison are BBC Breaking News and CNN Breaking News[8] because they are international broadcasters with the largest followings on Twitter and because they represent the broadcasters the CCP aims to compete with.[9] "Deconstruction of Western discourse hegemony" is one of the core objectives President Xi Jinping laid out in preparation for the Going Global campaign (see Table 1 in the following section). High level officials such as China's Ministry of Foreign Affairs Spokesperson, Hua Chunying, have explicitly referenced BBC and CNN in talking about China's outward media efforts, saying for example that "the global media environment is dominated by BBC, CNN, and such; China is creating an alternative. . .there should not only be CNN and BBC."[10]

Chinese State Media and Global Social Media

The CCP's public diplomacy efforts are rooted in a desire to correct misconceptions of China and mitigate global fears of the country (Brady, 2015; Hartig, 2016; Zhao, 2019). Party leadership under Deng Xiaoping wanted to make the world aware of economic reforms that began in the late 1970s. To facilitate these efforts, the Central Committee of the Communist Party of China, which represents the top echelons of the CCP, established the Outward Publicity Small Group in 1980 (中共中央对外宣传小组), and in 1991, the Chinese government established the State Council Information Office and International Publicity Office (中共中央对外宣传办公室/国务院新闻办公室). However, for most of the 1990s, China's media efforts directed at foreign audiences were largely driven by domestic concerns (Guo et al., 2005), and in the 2000s, it was largely reactive to what Chinese leadership perceived as unfairly negative international media coverage of domestic events such as the SARS epidemic, ethnic unrest in Tibet and Xinjiang, and tensions with Japan (Wang, 2008). These experiences strengthened the belief among CCP leadership that China is misunderstood by the world due to biases in international media. In 2007, the CCP General Secretary at the time, Hu Jintao, launched new campaigns to more proactively influence global perceptions of China with a focus on hosting mega events such as the 2008 Summer Olympics in

Table 1. Strategies for shaping national image (Xi Jinping Aug. 2013).

Narratives	Sub-Narratives	Chinese
China as great civilization (文明大国形象)	Rich history Ethnicities as one Diverse, harmonious culture	历史底蕴深厚 各民族多元一体 文化多样和谐
China as leader of the East (东方大国形象)	Transparent government Economic development Social stability Unified people Flourishing culture Natural beauty	政治清明 经济发展 社会稳定 人民团结 文化繁荣 山河秀美
China as re-sponsible leader (负责任大国形象)	Peaceful development Mutual development Cooperation not confrontation Contributes to global development Defends international justice Contributes to humanity	坚持和平发展 促进共同发展 要合作而不要对抗 用中国动力推动全球发展 维护国际公平正义 为人类作出贡献
China as socialist success (社会主义大国形象)	Open to the outside Approachable Hopeful Vibrant Deconstruction of Western discourse hegemony	对外更加开放 更加具有亲和力 充满希望 充满活力 解构西方话语霸权

Beijing, promoting Chinese language and culture through Confucius Institutes, and bolstering China's international media presence (Repnikova, 2022).

When Xi Jinping began his tenure as General Secretary in 2013, he immediately pushed for an expansion of previous efforts to shape global public opinion. At his speech at the August 2013 National Propaganda and Ideological Work Conference, Xi urged the CCP to "innovate on external publicity methods, strive to create new ideas, new categories and new narratives for domestic and foreign audiences; to tell Chinese stories well, and to spread Chinese voices well."[11] Xi outlined four broad narratives to be emphasized in public diplomacy.[12] The four narratives and their sub-narratives (see Table 1) describe China as 1) a great civilization with rich history and united ethnic groups; 2) an economic, political, social, and cultural leader of the East; 3) a responsible leader that cooperates and positively contributes to the world; and 4) a successful socialist country that is open and approachable.[13] The first narrative, that China is a great civilization, emphasizes the richness of Chinese history and the country's unified yet diverse cultural-ethnic traditions. The second narrative, of China as a leader in the East, encompasses different dimensions of leadership, including leadership in economic development, government transparency, social stability, culture, natural beauty, and unity of its peoples. The third narrative, of China as a responsible leader, focuses on showing China's cooperation, collaboration, peacefulness, and beneficence on the international stage. The final narrative advances a view of China as a major socialist country that is open to the outside, approachable, hopeful, and vibrant. This last set of characteristics aims to counteract what the CCP perceives as "Western discourse hegemony," which it believes underlies negative and adversarial misconceptions about China.[14] Narratives that deconstruct "Western discourse hegemony" include content explicitly arguing against viewpoints about China expressed in international media, especially outlets based in North America and Western Europe.

By November, 2013, at the Third Plenary Session of the 18th Central Committee of the CPC, Xi emphasized the importance of strengthening China's cultural soft power,[15] and the

CCP's published resolution on key issues specified China's need to "expand cultural exchanges with foreign countries, strengthen international communication capabilities, expedite the construction of a foreign discourse system, and promote Chinese culture to the world."[16] Xinhua, China's official news agency, published an editorial in January 2014, expanding on these goals and justifying their necessity for improving China's public diplomacy capacity. Xinhua claimed that Western governments were actively conveying narratives and values to the rest of the world as a way of expanding their soft power, and used social media to do so. Xinhua further argued that although it had 171 overseas branches, its news coverage and influence remained limited in comparison to the West and urged China to seek new ways to break "the monopoly" and "the absolute advantage" of commercial media of Western developed countries.[17]

In 2016, the goal of strengthening China's international communications and public diplomacy was officially incorporated into the 13th Five-Year Plan (2016 to 2020). This "Going Global" campaign specified the need for China to increase the channels and means of communication (i.e., expanding beyond traditional broadcast channels to digital media). It stipulated that China should create flagship media outlets, take advantage of existing global media platforms (e.g. have a presence on global social media platforms), strengthen joint ventures and cooperation with large international media groups, and fully utilize China's existing information infrastructure to achieve these goals (e.g., leverage existing media footprint).[18]

The flagship outlets we examine in this paper all made gains in followership after China's "Going Global" campaign kicked off. Using data from Social Blade, a social media analytics website, we collect historical daily follower counts,[19] which capture the net gains (minus losses) in followers for each account. Figure 1 shows the trend-line of the number of followers for these four Chinese outlets.

Prior to the 2017 "Going Global" effort, the Twitter accounts of all four outlets had fewer than five million followers. By 2020, *China Daily* had about 4.2 million followers, *People's*

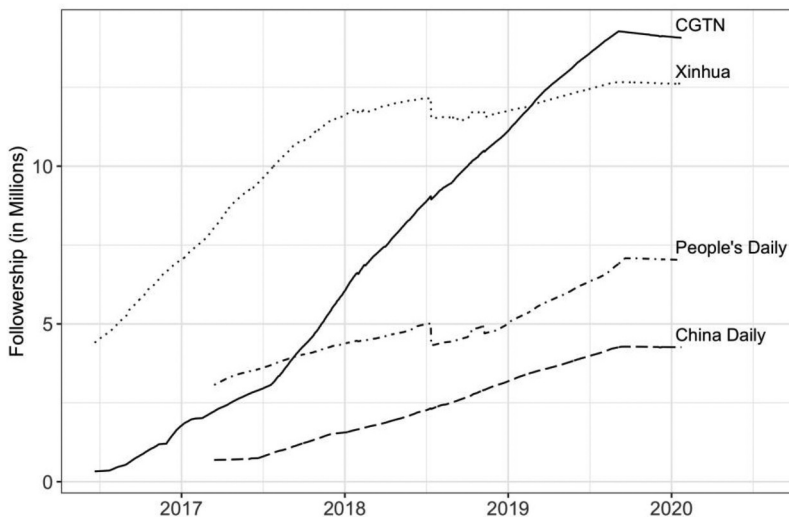**Figure 1.** Number of followers over time.

Daily had roughly seven, Xinhua over 12.5 million, and CGTN over 14 million. Putting this in context, CGTN had a larger following than RT and Al-Jazeera by 2018 (see Appendix A.2.1), but its audience size remained much smaller than that of the BBC (41 million followers) and CNN (56 million). When we use interrupted time series analysis (ITSA), a segmented regression model,[20] to analyze changes before and after the Going Global campaign, we find statistically significant level change in daily follower growth for CGTN (see Appendix Table S4). Prior to the Going Global campaign, CGTN attracted approximately 10,000 new followers per day. After mid-2017, CGTN was able to attract an additional 12,000 followers per day.

Strategies Used by Chinese State Media

As the results detailed below show, Chinese State Media outlets did not use either of the two strategies unique to social media – artificial inflation of follower size and interactivity – but did change their content, and one outlet, CGTN, was rebranded.

Limited Indications of Artificial Inflation of Followership

CGTN's rapid audience growth raises questions of whether this metric is artificially inflated. Figure 1 shows a sharp drop in the number of followers for Xinhua, *People's Daily*, and to a lesser extent CGTN in mid-2018. This is due to a mass culling of inauthentic accounts by Twitter at this time.[21] Assuming that Twitter is adept at identifying fake accounts, this suggests that growing followership of Chinese state media outlets is not based on fake accounts.

To go a step further, we collected the account username, screen name, bio, location (if available), URL of the account, account creation date, number of tweets posted, number of followers and likes, and whether the account is private and verified of all CGTN followers.[22] There are numerous measures and proxies for inauthentic behavior on social media. We rely on two main indicators. First, we look at whether follower accounts have a timeline. If an account does not have a timeline, it means that it has never made any public posts, which is one indicator that the account may not belong to a real user, or an active user. Second, we apply the Botometer tool (v3) to a random 1% sample of CGTN followers randomly sampled based on join date (141,642).[23] This method uses supervised machine learning models to estimate the probability an account is a bot by relying on account features and behaviors (Davis et al., 2016; Sayyadiharikandeh et al., 2020). This method generates a Complete Automation Probability (CAP), which is the likelihood that the account is a bot, based on features that have been identified as relevant for discriminating between human and automated accounts such as user metadata, friend metadata, retweet and mention network structure, content and language, sentiment, and temporal features (Yang et al., 2019). We label accounts with CAP above 95% as bots and calculate the proportion of audience likely to be bots accordingly.[24]

We find little evidence to indicate that CGTN followers are dominated by inactive accounts or bot accounts. Or more precisely, we find little evidence to indicate that CGTN followers are more bot-like than followers of BBC and CNN on Twitter. While the number of CGTN followers with no timeline increased after 2017, it is on par with the

rate of followers with no timeline for BBC and CNN (on average 24% for CGTN between mid-2017 and 2020, 32% for CNN, and 37% for BBC). From Jan. 2013 to Dec. 2016, the proportion of accounts with CAP above 0.95 among followers of CGTN was 2%, substantially lower than that of CNN (5%) and BBC (4%); after mid-2017, the proportion of followers with Complete Automation Probability above 0.95 converged to 3% for CGTN, CNN, and BBC, with rates not being statistically different from one another (see Appendix A.2.2 for details). Note, however, that the methods we use may not be able to identify all social bots on Twitter, and CGTN may rely on human trolls or other tools to increase its audience size.

State Media Accounts Do Not Interact with Twitter Users

Interactivity, or two-way communication, means that content producers listen to and respond to audiences. Unlike traditional broadcast channels, social media allows content producers the opportunity to engage with audience members. We measure interactivity as an account responding to users who interact with posts made by that account. In other words, if a content producer makes a post and a user replies to that post, we consider the content producer to be interactive if the producer replies to the user's response. Alternatively, if a user mentions a content producer in a post, the content producer is interactive if the producer replies to that mention. While content producers can respond in other ways to audiences on social media – e.g., focusing on topics that get the highest engagement – engaging in conversation with audiences is an affordance specific to social media (e.g., television channels can also tailor shows based on ratings and viewership).

To study interactivity, we gather all the replies and mentions of the four Chinese outlets to tabulate the frequency at which these outlets are replying to such replies and mentions, and to whom these relies are targeted. Table 2 shows the number of replies for each Chinese state-controlled media outlet over the period of January 2013 to January 2020, the number of replies as a share the total number of tweets made by outlets, and the share of replies that are to itself.

Table 2 shows that Chinese state-media outlets rarely interact with and respond to users who engage content produced by these outlets. Only 3% of CGTN tweets, 1.7% of Xinhua tweets, 1.1% of *People's Daily* tweets, and 0.8% of *China Daily* tweets are replies to mentions of other Twitter users (see Table 2). Furthermore, within this low rate of interaction, almost all are replies to posts made by the outlet itself (98% of CGTN replies, 94% of Xinhua replies, 90% of *People's Daily* replies, and 74% of *China Daily* replies are replies to self). Finally, of the vanishingly small share of posts that interact with other accounts (e.g., 0.2% of all CGTN posts), most interactions are with other institutional actors or journalists working for these outlets. For example, one of CGTN's replies that is not to itself is to its

Table 2. Number of replies.

Usernames	Number of Replies	Replies as Share of All Tweets	Share of Replies to Self
CGTN	3,339	3.03%	97.69%
Xinhua	2642	1.69%	93.75%
People's Daily	870	1.08%	89.66%
China Daily	858	.84%	73.66%

subsidiary @cgtnamerica: "BREAKING: South Africa President #Zuma resigns "with immediate effect."[25]

Rebranding CCTV as CGTN

Turning to strategies that are not tied to technical characteristics of social media, at the end of 2016, the Chinese government announced plans to rebrand CCTV News and CCTV International as China Global Television Network (CGTN)[26] and elevate the outlet politically by placing it directly under the supervision of the Central Propaganda Department of the CCP (Colley & Moore, 2022; Repnikova, 2022; Varrall, 2020; Y. Zhang & Ong'ong'a, 2022).[27] On March 9, 2017, CGTN completed its registration procedures and was formally launched.[28] In July 2017, social media accounts formerly associated with CCTV began posting content as CGTN on platforms including Twitter, YouTube, and Facebook.[29]

CGTN is the only Chinese state media outlet in our sample that was rebranded under a different name. The rebranding distanced CGTN from the Chinese government, even though in practice CGTN gained political prominence within the CCP after it was rebranded. For example, the profile of CCTV's Twitter account stated that CCTV was "The official Twitter account of China Central Television (中国中央电视台官方账号)," making clear the account's affiliation with the Chinese government. In contrast, in 2019, CGTN's Twitter profile read: "China Global Television Network, or CGTN, is a multi-language, multi-platform media grouping," which does not denote any affiliation with the Chinese government.[30] As of 2022, CGTN's Twitter profile states: "CGTN is an international media organization. It aims to provide global audiences with accurate and timely news coverage as well as rich audiovisual services."[31] Even the CGTN logo, with its neutral beige background, appears further removed from the CCP than the red of CCTV International's logo.

Increases and Decreases in Content Volume

To analyze the volume and diversity of content from CGTN, Xinhua, *People's Daily*, and *China Daily*, we collected all tweets made by these four outlets from the creation of their Twitter accounts, on January 23, 2013, to January 23, 2020.[33] We collected multiple attributes of every tweet, including username, tweet content, timestamp, number of likes, replies, and retweets, hashtags (if any), links included in the tweets (if any), and URLs of pictures (if any).

As shown in Figure 2, we see a large increase in the volume of Xinhua content on Twitter in 2015 and slight decline thereafter. Content from *People's Daily* also increased in 2015, though to a much lesser extent, and declined slightly thereafter. In the second half of 2017, we see increases in the volume of content produced by CGTN and *China Daily*.

We conduct ITSA to capture the immediate effect of changes in China's "Going Global" media efforts in 2017 as well as its longer-term effects. Because there was a rollout period in 2017 rather than sharp implementation, we segment the regression analysis to the period between January 2013 and May 2017 and between September 2017 and January 2020.[32] The results, shown in Table 3, indicate that prior to 2017, Xinhua produced the largest daily volume of tweets (108 tweets/day), followed by *People's Daily* (44 tweets/day) Table 3. CGTN (then CCTV) and *China Daily* hovered at around 30 tweets per day, and this rate of production was relatively stable (Baseline trend in Table 3). After the CCP adopted the "Going Global" strategy in 2017, we see that Xinhua and People's Daily experienced an
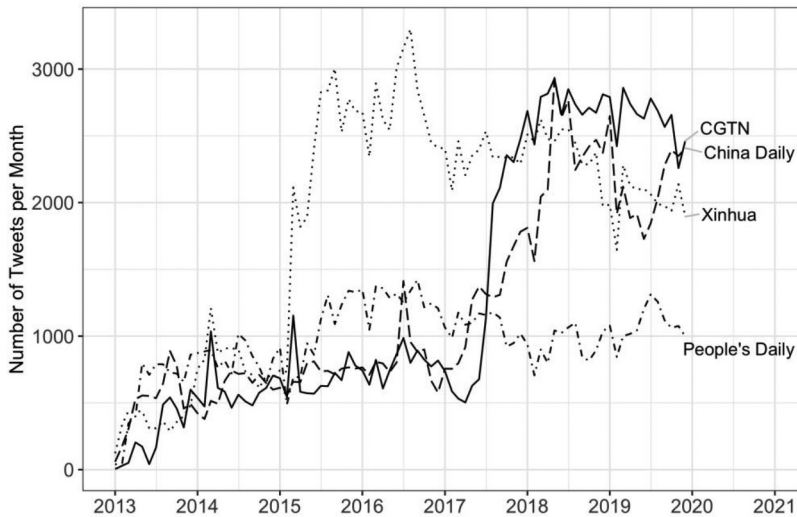
Figure 2. The number of tweets per month.

Table 3. Interrupted time series analysis for tweet volume.

	DV: Daily Tweet Volume			
	CGTN (1)	Xinhua (2)	People's Daily (3)	China Daily (4)
Baseline Volume of Daily Tweets	27.90*** (0.90)	107.63*** (2.29)	44.35*** (1.03)	30.64*** (1.50)
Baseline Trend	0.01*** (0.001)	0.06*** (0.002)	0.01*** (0.001)	0.01*** (0.002)
Level Change	57.00*** (1.51)	-22.26*** (3.87)	-14.39*** (1.75)	30.37*** (2.55)
Trend Change	-0.01*** (0.002)	-0.09*** (0.01)	-0.01*** (0.003)	0.01** (0.004)
Observations	2,340	2,418	2,306	2,429

*$p<0.1$; **$p<0.05$;***$p<0.01$.

immediate negative shift in their level of Twitter activity while CGTN and *China Daily* both experienced statistically significant increases in volume, with CGTN increasing twice as much as *China Daily*, at 85 tweets per day and 60 tweets per day, respectively (Level Change plus Baseline Volume in Table 3). In the longer-term, we see again that trends were relatively stable (Trend Change in Table 3).

Changing Content Diversity

We examine several aspects of content diversity, including the prevalence of government narratives described in Table 1, the prevalence of soft news, the number of countries covered, and the tone of coverage. We examine the prevalence of narratives because propagating narratives is the priority editorial task assigned to state-controlled outlets, which serves to constrain content diversity. We examine the share of soft news, content that combines information with entertainment, because soft news is a well-documented

strategy for diversifying content through entertainment (Baum, 2002; Patterson, 2000). Scholars have conceptualized content diversity as diversity in perspectives, media formats, and newsroom composition, but most frequently, diversity includes topical diversity (Baden & Springer, 2017; Voakes et al., 1996). We examine the number of countries covered in reporting because it serves as one of the most salient forms of topical diversity for international broadcasters (Jones et al., 2013). Finally, we examine the tone of coverage. It is possible that outlet diversity changes by shifting from neutral and/or anodyne coverage (Jirik, 2009, 2016) to more sensational, belligerent, and explicitly counter-hegemonic discourse, which RT adopted (Painter, 2008).

We used supervised machine learning to identify whether tweets pushed regime-promoted narratives about China and whether tweets contain soft news. First, we annotated a random sample of 1% of tweets each month posted by each of the four Chinese state-affiliated media accounts. A tweet is labeled as "narrative" if it contains any of the four types of narratives described in Table 1. A tweet is separately labeled as "soft news" if its content pertains to arts and culture, tourism, entertainment and celebrity news, or sports. Scholars generally agree that soft news is centered on entertainment and less time-bound than hard news, and although researchers diverge on how they operationalize the concept (Baum, 2002; Lehman-Wilzig & Seletzky, 2010; Patterson, 2000), soft news is more often defined based on topic than hard news (Reinemann et al., 2012). Coders went through multiple rounds of training to ensure consistency in annotations as measured by inter-annotator agreement. Two annotators then labeled all tweets in the 1% random sample, achieving inter-annotator agreement on this full training set of 90% for narratives and 93% for soft news. Disagreements were manually resolved for all labels to create a final labeled data set for each outlet. Next, we divided the labeled dataset so that 80% could be used for training and 20% was held out for validation. We trained and compared binary classification models – Naive Bayes, support vector machine (SVM), and logistic regression – with the following features and their various combinations: unigrams, bigrams, term frequency inverse document frequency (TF-IDF)weights, and word embeddings – on the 80% (for all feature combinations see Appendix A.1.3 Table S2).[33] To adjust for the unbalanced proportions of positive and negative labels for narratives and soft news, we trained the SVM and logistic regression model with balanced class weights, i.e., the losses were weighted inversely proportional to class frequencies in the loss function. In addition, we applied preprocessing to tweets when it improved performance.[34] We then evaluated model performance on the 20% held-out validation set (results in Appendix A.1.3 Table S3). Due to different wording and editorial styles, we chose to fit a model for each outlet separately instead of choosing a universally optimal model across four outlets. Therefore, for each of the two labels, we chose the model with the highest F1 score for each outlet.

To measure the number of unique countries present in Chinese state media tweets, we used a dictionary-based approach to identify countries mentioned. We build a lexicon of countries based on a list of world countries, their capitals, and popular names from Wikipedia, and augment this data with adjective forms (e.g., "Swiss," "Burmese") and common abbreviations found on Twitter (e.g., "DPRK" for North Korea and "ROK" for South Korea). Then we combined all the terms associated with each country into a regex pattern and match tweets for each country. This approach provides a high-level understanding of the diversity of countries covered by Chinese state media.

Finally, to measure tone, we used the sentiment analysis from the python library Natural Language Toolkit (NLTK) to compute sentiment scores for each post (Bird, 2006). We use the compound sentiment score reported by NLTK, which is the normalized sum the sentiment scores of each word in the lexicon, as the measurement of tone. The sentiment score ranges between −1 (most extreme negative) and + 1 (most extreme positive) for each tweet.[35]

Figure 3 Panel (a) shows the share of tweets containing at least one of the narratives outlined by Xi Jinping. This shows that after China's "Going Global" campaign, CGTN, *People's Daily*, and *China Daily* increased their share of tweets containing Xi's narratives. However, despite the fact that all outlets have the same mission of positively shaping China's national image among foreign audiences, after 2017, CGTN typically has a lower share of narrative posts than the other three outlets. *People's Daily*, which often directly conveys the viewpoints of the Chinese leadership, has, unsurprisingly, the highest share of narrative posts (Wu 1994). The ITSA results show that, prior to mid-2017, CGTN has an average of 23% of tweets per day containing these narratives, *China Daily* 40%, Xinhua 43%, and *People's Daily* 43% (see Appendix Table S5). Immediately after the Going Global
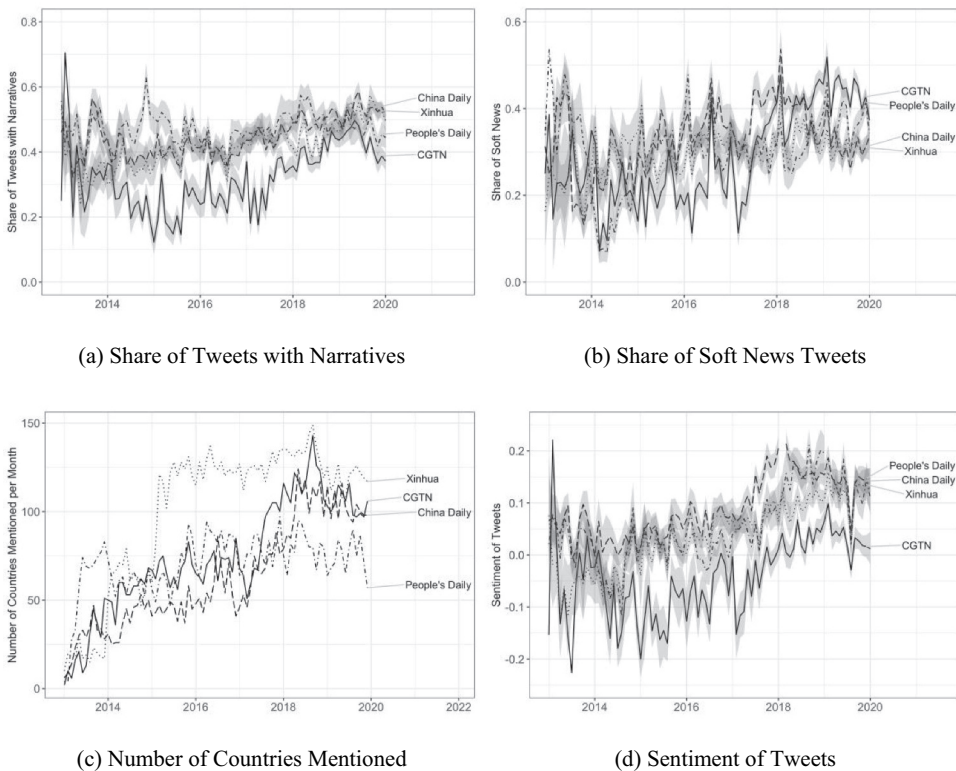

(a) Share of Tweets with Narratives

(b) Share of Soft News Tweets

(c) Number of Countries Mentioned

(d) Sentiment of Tweets

Figure 3. Changing content.
Note: The line types for each account are: CGTN (solid), Xinhua (dotted), People's Daily (dot-dash), and China Daily (long-dash). The point estimates for (a), (b), and (d) are the monthly average. The shaded area represents bootstrap 95% confidence intervals for each monthly average.

campaign, this share increased to 36.6% for CGTN, 46% for *China Daily*, 54% for *People's Daily*, and decreased to 40% for Xinhua (see Appendix Table S5).

Figure 3 Panel (b) illustrates the share of soft news across the four Chinese outlets. Again, in 2017, we see a jump in the share of content containing soft news for CGTN and *China Daily*. For CGTN this goes from 21% to 37% and for *China Daily* 34% to 45%. Figure 3 Panel (c) plots the number of countries mentioned by each outlet on a monthly basis. As the official news agency, Xinhua has maintained a high level of country coverage since March 2015 (around 125 countries per month on average).[36] CGTN and *China Daily* boosted their country coverage to an average of 101 and 99 countries per month, respectively, after mid-2017, catching up to Xinhua.

Finally, Figure 3 Panel (d) shows the sentiment of posts produced by outlets over time, where 0 denotes a neutral tone. Overall, the tone of Chinese outlets on Twitter was positive, with a clear upward trend after 2017. Compared to other Chinese outlets, CGTN remained relatively less positive. Its average sentiment scores increased 0.1 on a −1 to 1 scale after mid-2017, but its overall sentiment was around 0 and consistent over time. However, CGTN is more positive compared to Western broadcasters and much more positive than outlets like RT, which aligns with other research that CGTN is not adopting explicitly counter-hegemonic discourses like RT (Moore & Colley, 2022; Morales, 2022).[37]

Discussion

These results show that after Xi Jinping came to power in 2013 and pushed for an expansion of China's global media presence and public diplomacy efforts, China's flagship global media outlets made changes to content but did not engage in interactivity or artificial inflation of followership as they sought to gain audience attention on Twitter. One Chinese state-controlled outlet, CGTN, also rebranded, adopting a new name and logo.

There are several limitations to this study. First, this analysis is based on a small number of outlets that represent China's flagship media outlets. As a result, the findings may not generalize to other Chinese state media outlets operating on Twitter, or on other social media platforms, or state media outlets beyond China. Second, we did not examine an exhaustive set of strategies, digital and otherwise, that may be employed by state media outlets on Twitter. For example, Chinese state media outlets do engage in digital marketing, and while some may argue that marketing and advertising predate the digital era, others may see digital marketing as a unique technical feature of social media.[38] This means that even though we have focused on the features of social media that have previously been theorized to be important for state media in reaching foreign public, it may be the case that outlets are using other features unique to social media that are not examined in this analysis.

These results have implications for our understanding of how digital media is used by authoritarian governments. In contrast to previous research on authoritarian regimes' use of digital media that shows how the digital technologies are reshaping propaganda strategies (King et al., 2017; Yingdan & Pan, 2021), these results reveal that some things remain the same despite new opportunities provided by digital technologies. State media outlets are present on social media, but they are not necessarily using social media in ways that are different from traditional broadcast channels.

In particular, it is surprising that Chinese state media accounts do not engage in interactivity and two-way communication. The ability of producers to respond and

engage directly with their audience has been highlighted by public diplomacy scholars as a boon to efforts by governments to reach foreign publics. The lack of interactivity may be driven by the fact that interactivity is more useful for retaining audiences than for competing for initial audience attention because users do not experience the benefits of interactivity until they have first consumed content. Another potential explanation is that interactivity may be more easily adopted by individuals, e.g., politicians, government officials, and journalists, on social media than by institutions such as international broadcasters, whose processes and practices are oriented toward one-way communication (Z. A. Huang, 2021; Z. A. Huang & Wang, 2021; Litvak & Pomozova, 2021; Nagy & Nguyen, 2020).

The overall pattern identified in this study of state media outlets using social media for broadcast illustrates how affordances differ from technical features. Affordances are possibilities for action; they are the subjective usage of technical characteristics (Evans et al., 2017; Gibson, 1979; Treem & Leonardi, 2013). In this case, interactivity through two-way communication is a technical feature of social media that scholars have identified as a possible affordance; however, it is not, at present, an affordance of social media for Chinese state outlets. It may be interesting in future research to examine what accounts for this disconnect.

Within the overall pattern, we do observe differences between Chinese state media outlets in their use of non-digital strategies. Xinhua increased the volume of its content in 2015 and experienced declining volume after 2017, as did *People's Daily* while CGTN and *China Daily* volume increased. Outlets differ in how much content related to government narratives and soft news they produce, and outlets vary in their breadth of international coverage as well as tone of reporting. This diversity within state media outlets suggests that despite their status as flagship outlets for the CCP, outlets vary. They may differ in the nature of their relationship with the CCP. Outlets may also vary in their organizational capacity. For example, Xinhua is a news agency like Reuters and AP and it has a larger global footprint than the other outlets. This may explain why Xinhua covers a larger number of countries. Finally, outlets may differ in their mandate. For example, CGTN may have the least positive tone of reporting and smallest share of content with government narratives because its mandate is to reach global audiences and potentially the organization strategically distanced itself from other state media outlets.

It is important to note that this paper does not make any claims about the effect of strategies examined on gains in followership. That said, the observation that three strategies unique to CGTN – disassociating its brand from China, putting out a smaller share of political narratives, and adopting a less positive tone in its reporting – are those that could serve to create greater perceptions of distance between CGTN and the CCP regime is striking. While no Chinese state-controlled outlet is editorially independent from the Chinese regime, and the 2017 "Going Global" initiative strengthened CGTN's political ties to the CCP, CGTN's strategies that differentiated it from other Chinese state-controlled media may have served to create perceptions of distance from the Chinese regime. Future research could examine whether audiences perceive an increase in the distance between outlets and the state, and whether such changes in perception can lead to gains in audience size.

Finally, for our understanding of the role of broadcast media outlets in public diplomacy in the digital age, study results suggest that even though state-controlled

outlets are competing against many other content producers for audience attention, state-controlled outlets can gain large online followings. Importantly, while previous research has shown how Al-Jazeera has achieved prominence by providing a unique perspective and exclusive access to content[39] and how RT gained popularity by shifting to sensational, belligerent, and explicitly counter-hegemonic discourses, this paper shows that Chinese state outlets did not follow these strategies, but has nonetheless expanded its global presence.

Notes

1. Note that this is not the first time the CCP has sought to reach global audiences. This is merely the latest iteration of China's efforts to go global (Jirik, 2009). We use the term "Going Global" in line with others' usage of the term to reference this 2017 effort (c.f. Thussu et al. (2017)).
2. There is debate over the distinction between these concepts, especially since the term propaganda is used differently across disciplines – ranging from any content produced by state-controlled outlets to only content that persuades through deception or coercion (Bakir et al., 2019; H. Huang, 2015; Macdonald, 2006; L. J. Martin, 1971). However, what is common between public diplomacy and propaganda is the idea of intervening in other countries' information environments for geopolitical gain.
3. Their Twitter handles are CGTNOfficial, XHNews, PDChina, and ChinaDaily.
4. See http://www.gov.cn/xinwen/2016-03/17/content_5054992.htm 拓展海外传播网络, 丰富传播渠道和手段。打造旗舰媒体, 推进合作传播, 加强与国际大型传媒集团的合资合作, 发挥各类信息网络设施的文化传播作用。
5. We focus on English-language content to maximize the geographic scope of the analysis. Focusing on English-language content allows us to look at how Chinese state media reaches audiences in Africa, Asia, Australia, Europe, North America, and South America.
6. We chose three million as the threshold because this was the size of RT's following, which we used as a proxy for global reach.
7. Twitter handles are AJEnglish and RT com. Al-Jazeera has two Twitter accounts: AJEnglish with 8.1 million followers and AJENews with 2.1 million followers. We analyze AJEnglish in this paper, but the analysis is consistent if we use AJENews.
8. Twitter handles are BBCBreaking and cnnbrk.
9. What evidence we have suggests that followers of BBC and CNN are global, not domestic. Based on users who allow geolocation on Twitter, the country with the highest number of followers of BBCBreaking is India, followed by the United States, then Nigeria, UK, Pakistan, and South Africa. Overall, among users allowing geo-location, 18% of CNN followers are US-based (the remaining 82% are based elsewhere in the world), and only 11% of BBC followers are UK-based.
10. From https://www.fmprc.gov.cn/web/fyrbt_673021/jzhsl_673025/202105/t20210511_9171262.shtml ; in Chinese: "面对由BBC、CNN等媒体占据主导地位的全球媒体格局, 中国正在创造一个全球新闻媒体的替代选择...不应只有CNN和BBC。"
11. See http://cpc.people.com.cn/n/2013/0821/c64094–22636876.html.
12. This strategy has undergone some revisions in the intervening years. For example, some categories were further clarified in 2018; see http://china.chinadaily.com.cn/2018-12/07/content_37371741.htm.
13. For original text of speech, see http://www.xinhuanet.com/politics/2013-12/31/c_118788013.htm.
14. See http://china.chinadaily.com.cn/2018-12/07/content_37371741.htm.
15. See http://www.china.org.cn/chinese/2014-01/16/content_31213800.htm.
16. See Section 41 http://www.gov.cn/jrzg/2013-11/15/content_2528179.htm. 提高文化开放水平。坚持政府主导、企业主体、市场运作、社会参与, 扩大对外文化交流, 加强国际传播能力和对外话语体系建设, 推动中华文化走向世界。理顺内宣外宣体制, 支持重点媒

体面向国内国际发展。培育外向型文化企业，支持文化企业到境外开拓市场。鼓励社会组织、中资机构等参与孔子学院和海外文化中心建设，承担人文交流项目。

17. See http://www.gov.cn/zhuanti/2014-01/31/content_2596913.htm.
18. See http://www.gov.cn/xinwen/2016-03/17/content_5054992.htm.htm 拓展海外传播网络，丰富传播渠道和手段。打造旗舰媒体，推进合作传播，加强与国际大型传媒集团的合资合作，发挥各类信息网络设施的文化传播作用。
19. See socialblade.com. The earliest available data differs across the four outlets because Social Blade began its data collection at different times (see Section S1 of the SI). However, the same methodology was used for all accounts and over time to collect follower numbers. When we examine audience growth over time by looking at the metadata of accounts' list of followers, which is sorted according to date, the same pattern holds. This method is less precise than a daily snapshot of follower count, which is what Social Blade collects, but the consistency of results gives us reassurance about the validity of Social Blade's methodology.
20. For details on ITSA, see Appendix A.1.4.
21. See https://www.independent.co.uk/tech/twitter-fake-followers-lost-delete-accounts-culla8444236.html, https://www.washingtonpost.com/technology/2018/07/06/twitter-is-sweeping-out-fakeaccounts-like-never-before-putting-user-growth-risk/.
22. There is limited geographic information about CGTN followers. Based on analysis of accounts that do provide geographic info, there is a larger share of followers from regions such as South Asia, Africa, South America, and the Middle East than from North America or Europe.
23. See https://botometer.osome.iu.edu/.
24. The 95% threshold is also recommended by the developers of the Botometer method.
25. See https://twitter.com/CGTNOfficial/status/963880542650368001.
26. A total of six non-Chinese language CCTV channels were rebranded as CGTN.
27. See https://www.cgtn.com/about-us and http://www.xinhuanet.com/politics/201612/31/c1120226953.htm.
28. See https://www.thepaper.cn/newsDetail_forward_1641624 forward 1,641,624. One year later, in March 2018, CGTN merged with China National Radio and China Radio International to form the media conglomerate China Media Group (http://politics.people.com.cn/n1/2018/0322/c1001–29883390.html). This change, which also affected China National Radio and China Radio International, means that while none of the other three outlets in our analysis rebranded, CGTN was not the only Chinese state broadcaster to undergo rebranding.
29. Not all CCTV social media accounts were rebranded as CGTN; some CCTV accounts remained under the CCTV name.
30. See: http://web.archive.org/web/20190216145101/https://twitter.com/CGTNOfficial
31. See: http://web.archive.org/web/20221026071029/https://twitter.com/CGTNOfficial [33]Prior to 2017, the CGTN Twitter account belonged to that of CCTV-9/CCTV News.
32. Although CGTN was announced on December 31st 2016, it was not registered for operations until March 2017 and did not begin actively producing social media content under the CGTN brand until July 2017.
33. We use word2vec to train our own word embeddings with dimension size 100 and window size 5 using all available tweets from each outlet.
34. Preprocessing includes removing unreadable characters, standardizing different stylized references to the same country, removing stop words, and lemmatization. Unreadable characters are removed and all tokens are converted to lowercase regardless of whether the aforementioned custom preprocessing is performed.
35. Results remain the same when we use other sentiment scoring methods such as sentimentr (Rinker, 2019).
36. For reference, international broadcasters RT and Al-Jazeera cover a high but smaller number of countries, an average of 106 countries per month; BBC and CNN cover a smaller number of countries, 32 and 47 countries per month during the period of interest, respectively. Figure S6 in Appendix A.2.4 shows the the trend-line of the number of countries mentioned by both Chinese and non-Chinese outlets.

37. The baseline sentiment for Al-Jazaeera, RT, BBC, and CNN ranged from −0.1 to −0.2 on a −1 to 1 scale. See Figure S7 and Table S8 in the Appendix.

38. In 2018, Xinhua is said to have used Twitter ads to boost Xinhua content portraying Hong Kong protesters as violent (https://techcrunch.com/2019/08/19/twitter-is-blocked-in-china-but-its-state-newsagency-is-buying-promoted-tweets-to-portray-hong-kong-protestors-as-violent/). On Facebook, Xinhua and CGTN are among the largest buyers of ads (Molter & DiResta, 2020; Tambe & Friedman, 2022). Using the Facebook Ad Library,[41], which has data going back to May 7, 2018, we found that between May 7, 2018 and May 7, 2019, Xinhua ran approximately 230 ads, including ads in all content categories, targeting all global regions (@XinhuaNewsAgency on Facebook and @chinaxinhuanews on Instagram). In the same time period, with the same inclusion criteria, CGTN ran approximately 160 ads (@ChinaGlobaTVNetwork on Facebook, @cgtn on Instagram); *People's Daily* ran three ads (@PeoplesDaily on Facebook and @peoples daily on Instagram); and *China Daily* ran 10 ads (@chinadaily on Facebook and @chinadailynews on Instagram).

39. For example, Al Jazeera's popularity is associated with its ability to report breaking news and access information that other outlets could not (Seib, 2010).

Data Availability Statement

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

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This article has earned the Center for Open Science badges for Open Data and Open Materials through Open Practices Disclosure. The data and materials are openly accessible at https://doi.org/10.7910/DVN/EVVQGV.

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