

Harsh Realities and Strategic Alignment: A Computational Analysis of Chinese Feminist Hashtag Activism on Weibo During COVID-19

Abstract

Through computational analysis (LDA topic modeling and linguistic analysis based on emotion dictionaries) of 135,498 Weibo posts with #SeeingFemaleWorkers and #SisterAntiEpidemicReassuranceAction, this study explores feminist hashtag activism during COVID-19 in China. The analysis uncovered evolving word clouds, key themes like harsh realities, media stereotypes, and undervalued labor, as well as linguistic patterns. Findings reveal how activists strategically aligned with state priorities while advocating for marginalized women's recognition.

Introduction

During the COVID-19 pandemic, a remarkable case emerged on the Chinese social media platform Weibo. 24-year-old Liang Yu launched a campaign to address the shortage of sanitary products faced by frontline female healthcare workers. Using the hashtag #SeeingFemaleWorkers and #SisterAntiEpidemicReassuranceAction, Liang Yu and her team of volunteers organized fundraising efforts and coordinated logistics to provide essential items such as sanitary pads, period panties, and disposable underwear to hospitals and medical teams. Despite facing challenges and skepticism, the campaign gained widespread attention and support, ultimately assisting over 100,000 female healthcare workers.

This case highlights the power of feminist discourse and solidarity on social media, as well as the potential of digital platforms to facilitate the spread and organization of social movements. While current academic research on digital feminism in China has largely portrayed a pessimistic outlook, the success of Liang Yu's campaign offers valuable insights and hope for the future of Chinese digital feminism.

Building upon this case, the present study uses computational communication methods to investigate the dynamics and implications of feminist hashtag activism on Weibo during the COVID-19 pandemic. By analyzing a large dataset of Weibo posts containing relevant hashtags, such as #SeeingFemaleWorkers and #SisterAntiEpidemicReassuranceAction, the study aims to uncover the key words, key themes, and linguistic feature that characterize the feminist discourse surrounding the pandemic.

The findings of this study contribute to the growing body of literature on digital feminism, by

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demonstrating the potential of hashtags and platforms like Weibo to facilitate feminist sense-making, community-building, and collective action, even in the context of a highly censored and monitored digital space. Moreover, this study employs computational communication research methods, distinguishing itself from the majority of current research on digital feminism in China, which predominantly relies on qualitative approaches.

By situating the analysis within the broader context of Chinese digital feminism and the ongoing challenges posed by the pandemic, this study offers valuable insights for activists, scholars, and policymakers who are interested in promoting gender equality and social justice in the digital age.

Literature Review

Digital Feminism in China

The rise of digital feminism in China has been marked by a complex interplay of opportunities and challenges. On one hand, digital technologies have provided unprecedented opportunities for Chinese women to challenge patriarchal norms, advocate for gender equality, and forge new forms of feminist identity and solidarity. On the other hand, these opportunities have been shaped and constrained by a range of structural factors, including state censorship, cultural resistance, and the commodification of feminist discourse.

Opportunities

One of the key opportunities afforded by digital technologies is the creation of new spaces for feminist expression and activism. As Chang and Tian (2020) demonstrate in their study of Yaoi fiction,

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digital platforms have enabled female authors to create and disseminate subversive narratives that challenge heteropatriarchal norms and imagine alternative forms of intimacy and female empowerment. Similarly, Chang et al. (2016) highlight how young women's use of social media profile pictures on platforms such as Wechat can serve as a form of resistance against cultural expectations and a means of asserting a distinctly Chinese form of digital feminism.

Digital technologies have also facilitated the formation of new feminist communities and networks, both within China and beyond. As Yin and Sun (2020) note in their analysis of the MeToo movement, digital platforms have enabled Chinese women to connect with and draw inspiration from feminist movements in other parts of the world, while also adapting these movements to the specific cultural and political contexts of China. Similarly, Wang (2018) highlights how a new generation of young feminist activists is using digital media to build solidarity, share resources, and coordinate actions across different regions and issues.

Challenges

However, these opportunities are also accompanied by significant challenges and limitations. One of the key challenges is the pervasive state censorship and surveillance of digital spaces, which have significantly constrained the ability of feminists to express themselves freely, organize collectively, and mobilize for change in the online sphere. As W. Zheng and Nicole G. Albert (2021) note in their analysis of Chinese feminists' resistance and dilemmas, the Chinese state has increasingly tightened its control over the internet in recent years, using a combination of technological tools, legal regulations, and ideological campaigns to monitor and restrict online content and activism. This has created a chilling effect on feminist discourse and organizing, as activists and organizations face the constant

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threat of being censored, harassed, or even arrested for their online activities. Liao(2020) notes how the ever-present specter of state monitoring has led to a climate of self-censorship and caution among feminist activists, who must constantly navigate the fine line between expressing their views and avoiding political backlash. This has made it difficult for feminists to build sustained movements and campaigns, as they are forced to operate within the narrow confines of what is deemed acceptable by the state.

However, Chinese feminist activists have developed a range of creative strategies and tactics to resist and circumvent state censorship and surveillance. For example, as Chang and Tian (2020) show in their analysis of Yaoi fiction, female authors have used subversive narratives and coded language to challenge gender norms and express feminist ideas in ways that are less likely to be censored.

Similarly, as Yin and Sun (2020) note in their study of the MeToo movement in China, activists have used hashtags, memes, and other forms of digital expression to mobilize support and raise awareness about sexual violence, while also navigating the challenges of state censorship. Lixian(2020) notes how activists have used personal stories and experiences to build empathy and mobilize support for structural change, while also being careful to frame their messages in ways that are less likely to trigger censorship. At the same time, Lixian also points to the limitations of these strategies, noting how the constant need to self-censor and navigate state surveillance can lead to a depoliticization of feminist discourse and a focus on individual empowerment over collective action.

The challenges of state censorship and surveillance for feminist activism in China are also situated within the broader context of the Chinese state's ambivalent relationship with feminism. As Qi and Liao (2020) note in their analysis of intellectual debates surrounding the MeToo movement, the Chinese state has at times co-opted and instrumentalized feminist language and ideas for its own

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purposes, while also cracking down on feminist activism that is seen as a threat to social stability. This has created a complex and contradictory environment for feminist organizing, as activists must navigate both the opportunities and constraints presented by the state's selective engagement with gender issues.

Another challenge is the cultural resistance and backlash against feminist ideas and activism, both online and offline. For example, Wang and Chang's (2023) analysis highlight how the spread of feminist ideas online has triggered a counter-mobilization of conservative and patriarchal forces, who use social media platforms to attack and discredit feminist activists and ideas. This backlash is often framed in terms of defending traditional Chinese culture and values against the perceived threat of "Western" feminism, and it has led to a polarization of feminist discourse online. Similarly, Yang and Yong-Yuan's (2023) study of "new feminist activism" on digital platforms notes how the emergence of more radical and confrontational forms of feminism has sparked tensions and divisions within the broader feminist movement, as well as resistance from more conservative segments of Chinese society. These findings are echoed by Lixian (2020), who notes how young women's digital activism often faces cultural and societal backlash, particularly when it challenges deeply entrenched gender norms and power structures.

A third challenge highlighted in the literature is the commodification and depoliticization of feminist discourse in the digital age. This issue has been extensively discussed in the Western context by scholars such as Banet-Weiser and Portwood-Stacer (2017), who argue that the circulation of feminist ideas through mainstream and social media can lead to a focus on individual empowerment over collective action and structural change, ultimately reinforcing rather than challenging existing inequalities. This issue also appears to be relevant in the Chinese context, albeit with some distinct

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characteristics. For example, Wang and Chang's (2023) study of anti-feminist sentiment on social media in China highlights how the commercialization of feminism, such as the co-optation of feminist slogans by businesses and celebrities for marketing purposes, has led to a backlash against feminism as a "trendy" or "superficial" movement. As Tian (2022) notes in her discussion of Critical Socialist Feminism, the specific dynamics of the relationship between feminism, neoliberalism, and state power in China may complicate the narrative of commodification and depoliticization, requiring a more nuanced and context-specific analysis.

In terms of research methods, while qualitative approaches such as ethnography, discourse analysis, and cross-platform comparison have yielded rich insights into the subjective experiences and meaning-making practices of feminist activists, there is a notable lack of quantitative research that could provide a more macro-level understanding of the dynamics and impacts of feminist activism online. This is where this research aims to make a contribution, by employing computational communication methods to analyze the use of hashtags by Chinese feminist activists on Weibo, particularly in the context of the COVID-19 pandemic.

Moreover, by situating this quantitative analysis within the broader historical, cultural, and political contexts of Chinese digital feminism, as illuminated by the qualitative literature reviewed here, this research aims to provide a more holistic and contextually grounded understanding of the phenomenon. It will investigate how hashtag activism on Weibo during the pandemic intersects with and is shaped by the various structural factors and challenges highlighted in the literature, such as state censorship, cultural resistance, and the commodification of feminist discourse. By bridging the gap between macro-level patterns and micro-level practices, and by combining computational methods with contextual analysis, this research seeks to contribute to a more nuanced and comprehensive

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understanding of the dynamics and impacts of feminist hashtag activism in China, with the ultimate goal of informing more effective and empowering strategies for feminist solidarity and social change.

Weibo and Hashtags as Tools for Feminist Discourse and Activism in China

In recent years, social media platforms have become crucial tools for feminist discourse and activism globally. In Western contexts, scholars have extensively examined how feminists use platforms like Twitter and Facebook to raise awareness about gender issues, mobilize supporters, and challenge sexist attitudes and behaviors (Clark-Parsons, 2019; Berridge & Portwood-Stacer, 2015; Mendes et al., 2018). Hashtags, in particular, have emerged as a powerful means of organizing and amplifying feminist messages. These hashtags have provided important opportunities for women to raise collective feminist consciousness and even spark social change (Mendes et al., 2018).

In China, the microblogging platform Weibo has become a central site for feminist activism and discourse, despite the challenges posed by state censorship and surveillance (Xiao, 2018). As several studies have shown, Chinese feminists have used Weibo to raise awareness about a wide range of gender issues, from sexual harassment and domestic violence to employment discrimination and reproductive rights (X. Yang & Hu, 2023; Jue, 2019). They have also used the platform to build solidarity, share resources, and organize offline actions, such as street protests and performance art (Tan, 2017; Yin & Sun, 2020).

Hashtags have played a particularly important role in facilitating feminist discourse and activism on Weibo. As Huang and Sun (2021) notes in the study of the #MeToo movement in China, hashtags have enabled feminists to create a sense of shared identity and purpose, to coordinate their actions across different regions and issues, and to amplify their messages to a wider audience. Similarly, Yin

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and Sun's (2020) analysis of the #MituInChina hashtag demonstrates how feminists have used this tool to challenge dominant narratives about sexual violence, to provide support and resources for survivors, and to pressure institutions to take action against perpetrators. However, the use of Weibo and hashtags for feminist activism in China is also shaped by significant challenges and constraints. As several studies have highlighted, the Chinese government's tight control over social media platforms and its censorship of sensitive topics have made it difficult for feminists to sustain their campaigns and to reach a broader public (Chang & Tian, 2020).

Moreover, the effectiveness of feminist activism on Weibo is also shaped by the specific linguistic practices employed by users. As Feng (2020) notes in her study of the #SeeingFemaleWorkers hashtag, the use of different types of language, such as personal narratives, humor, and sarcasm, can have a significant impact on the resonance and reach of feminist messages. In the #MeToo movement, the use of the first-person pronoun "Me" in the hashtag itself has been seen as a way to capture the complexity of individual experiences while also providing a political grammar for making collective claims (Cole & Atuk, 2019). The frequent use of social process words (such as family, acceptance, greeting) has also been found to provide higher-quality social support in online feminist discourse, as these words emphasize interpersonal relationships and interactions (Cannava et al., 2018).

There remains a notable lack of research on how Chinese feminists are using Weibo and hashtags to navigate the specific context of the COVID-19 pandemic. The pandemic has not only exacerbated existing gender inequalities and created new forms of vulnerability for women, but it has also reshaped the landscape of feminist activism and discourse in China, as offline actions have become more difficult and online spaces have become more important (Feng, 2020).

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This is where my research aims to make a contribution, by using computational communication methods to analyze what strategies have Chinese feminist activists employed in their use of Weibo and hashtags during the COVID-19 pandemic. Specifically, I seek to address the following research questions:

1. How have the content on Weibo changed over time during the pandemic?
2. What are the main themes and topics that have emerged in the overall discussions under these hashtags?
3. What types of language have been most frequently used in these Weibo posts under the selected hashtags?

Methods

Data Collection

The research data was primarily derived from the "Weibo-COV" Sina Weibo dataset collected and made publicly available by Hu et al. (2020). This dataset contains Weibo posts filtered by keywords related to the "COVID-19 pandemic" as defined by the researchers, ultimately consisting of 20 million active user data and 40,893,953 posts. The collected Weibo posts span from December 1, 2019, to December 30, 2020. To obtain Weibo posts under the hashtags #SeeingFemaleWorkers and #SisterAntiEpidemicReassuranceAction, we filtered the data using these two hashtags as keywords and further removed duplicate values and automated posts (such as "project donation successful" and "repost Weibo") in the data. This process yielded a total of 135,498 data points, including 852 original posts and 134,646 reposted posts. The data includes the following fields: ['user_id', 'gender', 'province', 'city', 'birthday', 'fans_num', 'vip_level', 'crawl_time_x', '_id', 'crawl_time_y', 'created_at', 'like_num',

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'repost_num', 'comment_num', 'content', 'origin_weibo', 'geo_info', 'SeeingFemaleWorkers', 'SisterAntiEpidemicReassuranceAction']].

Text Analysis

All data analyses in this study were conducted using Python for data processing and model fitting. Specifically, the Pandas module was used for data integration and cleaning, while the Thulac and Jieba word segmentation modules were employed for word segmentation and frequency statistics. Topic model estimation primarily utilized the Tomotopy topic model library. Previous tests have shown that when performing topic modeling on the same dataset, Tomotopy takes significantly less time than Gensim when Tomotopy iterates 200 times and Gensim iterates 10 times (Dadeng, 2023). And then text analysis based on the C-LIWC sentiment dictionary was performed using the cntext library. Visualization of the results was achieved using the Wordcloud, Seaborn, and pyLDAvis libraries.

Word Frequency Statistics and Descriptive Analysis

First, we conducted simple descriptive statistics and time series analysis on the number of user posts, text length, and gender differences to outline the general trends in public opinion surrounding the hashtags.

After performing word segmentation on the full text of the Weibo posts, we ranked the words according to their frequency of occurrence in the posts. We then created word cloud models by month to describe and compare the changes in the content of Weibo discussions related to #SeeingFemaleWorkers and #SisterAntiEpidemicReassuranceAction over time.

LDA Topic Analysis

Although word frequency statistics and visualization methods can reflect the central content of text discussions to a certain extent, as DiMaggio et al. (2013) pointed out, traditional content analysis methods such as text interpretation are not conducive for researchers to summarize abstract topic categories when dealing with massive texts, especially large-scale online expression data. Different coders may find it difficult to reach a consensus when interpreting the results of different topics embedded in the text, thus reducing inter-coder reliability and potentially leading to a lack of reproducibility in the research results.

To further explore the distribution of discussion topics under the Weibo hashtags of the two feminist discourse actions, this study chose to use the LDA topic model (Latent Dirichlet Allocation Model) to perform unsupervised text classification on all post content. LDA is a document topic generation model that includes a three-layer Bayesian probability structure of words, topics, and documents. The model assumes that there is a set of "topics" with a given number, and each topic has an associated set of words. The generation of a document satisfies the process of first drawing a topic from the topic distribution and then selecting a word from the word distribution corresponding to that topic according to a certain probability. Given the input documents and the number of topics by the researcher, LDA can generate a set of interpretable topics, estimating the topic proportions for each document and assigning each observed word to a topic. Terms that appear more frequently in the document than in the prior distribution will be relatively prominent in the topic. Therefore, compared to word frequency statistics, the LDA topic model can further identify the latent topic structure in a large collection of documents, making it suitable for exploratory topic identification in social media posts (Chen & Yuan, 2021).

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In the operationalization, we first determined the number of topics K for the model using the Coherence metric. A higher value of the Coherence metric indicates a better topic model (Zhou & Liang, 2022). After comparing the Coherence scores, the degree of differentiation between topics, and the readability of the model, we finally decided to report the model results with the number of topics $K=3$.

Language Use Analysis Based on Sentiment Dictionary

Previous studies have classified the identification of language use styles in text similarly to text sentiment classification, which can be divided into two methods: dictionary-based methods and machine learning-based methods. The former uses pre-defined sentiment dictionaries to calculate scores for various language categories, while the latter employs supervised or unsupervised machine learning methods to train sentiment dictionaries for extracting language use styles. Since the granularity of language use is more detailed than emotion classification, current research on language use styles in text mostly adopts dictionary-based analysis methods (L. Hu & Kearney, 2021; Zhou & High, 2023). Based on this, this study proposes to use the Chinese LIWC dictionary extension (Zeng et al., 2018) method to calculate the language vocabulary usage of each Weibo post.

Hypothesis Testing

To test whether there are gender differences in language use, we conducted chi-square tests on the language use statistics of the Weibo text by gender.

Result

Changes in Original Weibo Discussion Content Over Time

The word cloud visualizations of the original Weibo posts under the hashtags #SeeingFemaleWorkers and #SisterAntiEpidemicReassuranceAction reveal notable shifts in the focus and themes of the discussions over the course of the COVID-19 pandemic in China.

In the early months of 2020 (January to March), the word clouds are dominated by terms related to the immediate health crisis and its impact on female workers, such as "epidemic prevention" (防疫), "front-line" (一线), "medical staff" (医护人员), and "protection" (保护). This reflects the initial stage of the pandemic in China, when the outbreak was at its peak and the public attention was focused on the urgent need to contain the virus and support the healthcare workers, many of whom were women.

As the pandemic situation in China began to stabilize in the second quarter of 2020 (April to June), the word clouds show a shift towards topics related to the economic and social impact of the crisis on women, with prominent terms like "employment" (就业), "resumption of work" (复工), "rights protection" (维权), and "support" (支持). This suggests that as the immediate health threat subsided, feminist activists on Weibo started to draw attention to the disproportionate burden borne by women during the pandemic, such as job losses, increased caregiving responsibilities, and domestic violence.

In the latter half of 2020 (July to December), the word clouds reflect a further evolution of the discussion towards more long-term and systemic issues facing women in the post-pandemic recovery, with frequently appearing terms like "gender equality" (性别平等), "discrimination" (歧视), "labor rights" (劳动权益), and "social security" (社会保障). This indicates that as China entered a "new

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normal" of pandemic control, feminist discourse on Weibo began to address the deeper structural inequalities exposed and exacerbated by the crisis, advocating for policies and actions to promote gender equality and protect women's rights in the long run.

Notably, throughout the year, the word clouds consistently feature terms related to specific groups of women that were particularly vulnerable during the pandemic, such as "rural women" (农村妇女), "migrant workers" (农民工), and "service workers" (服务业从业者). This shows that intersectionality was a key theme in the feminist discourse on Weibo, with activists highlighting the compounded challenges faced by women from marginalized communities.

Overall, the evolution of the original Weibo discussion content under the two feminist hashtags reflects the dynamic nature of feminist activism on Chinese social media, as it responded to the unfolding pandemic situation and its gendered impacts. While the early discussions focused on the immediate crisis and its effects on women's health and safety, the later discussions progressively broadened to encompass the socioeconomic dimensions of gender inequality, calling for systemic changes to address the root causes of women's vulnerability and marginalization in Chinese society.

Topic Modeling Results

As reposted Weibo posts often contain repetitive text, we focused our topic modeling on the 852 more topic-focused original posts. After determining the optimal number of topics to be three, the LDA topic modeling yielded the "topic-word" and "document-topic" probability distributions, as shown in the tables and figures below. Using the pyLDAvis library, we visualized the LDA topic classification results, as depicted in the following figure. The results indicate that the discussions in the original Weibo posts align with the core purposes of the two hashtags, #SeeingFemaleWorkers and

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#SisterAntiEpidemicReassuranceAction.

Topic 1: Unsung Heroes: The Harsh Realities and Unmet Needs of Female Frontline Workers

Topic 1 focuses on the harsh realities and challenges faced by frontline workers, particularly female medical staff, in the epicenter of the outbreak, Hubei province. The posts under this topic highlight the rapidly changing and inconsistent policies, the immense pressures and sacrifices endured by healthcare professionals, and the lack of attention to the specific needs of women workers, such as access to menstrual products. By shedding light on these dire conditions, the posts underscore the urgent need for greater support and resources for frontline workers, as well as the importance of recognizing the gendered dimensions of the crisis.

Topic 1 is characterized by Weibo posts such as:

"The situation in Hubei is unimaginable and unfathomable for those of us in other provinces. The saying "darkness under the lamp" is not nonsense. It's not an exaggeration to say that policies change daily, and it's even more frustrating that each place has different policies..."

Note: "Darkness under the lamp" is a Chinese idiom that describes a situation where there are dark shadows or unresolved problems in areas that should be well-illuminated or transparent, alluding to the government's corruption and mismanagement despite its supposed oversight and responsibility.

"Faced with such great difficulties, it seems that 'it's not that urgent yet,' and there are no voices. I fully understand the current difficulties, but it is precisely because of these difficulties that any material policy must have priorities, and those that are not so urgent will naturally be ignored. In a state of 'war', if the menstrual issues of female 'soldiers' are not a priority, they will naturally be overlooked. However, this should not be ignored, and it is very appropriate that period panties and

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sanitary napkins should be included as essential supplies in a state of ‘war’. Don't even mention completing the exam paper on time; it's already good enough to fill it out. I hope everyone can stop and think that the situation there really cannot be measured by ideal conditions. If you have the heart to delve deeper, it's truly eye-opening, witnessing history, the magical 2020 [smile] [bye].

#SeeingFemaleWorkers# #SisterAntiEpidemicReassuranceAction#"

Topic 2: More Than Brides: Challenging Media Stereotypes of Female Medical Workers

Topic 2 critiques the media's portrayal of female medical workers during the pandemic, which often prioritizes traditional gender roles and expectations over their professional achievements and individual agency. The posts express frustration with the excessive emphasis on marriage, family, and personal life in the media coverage of these women, arguing that it undermines their contributions and reinforces patriarchal norms. Instead, the users call for a more nuanced and respectful representation of female healthcare professionals, one that acknowledges their skills, expertise, and unique experiences on the front lines of the pandemic response.

A typical Weibo post for Topic 2 is:

"#SeeingFemaleWorkers# Recently, the publicity on Weibo about female medical staff has focused on organizing blind dates, marriage, engagement, and family. In such a large-scale epidemic, these female medical staff on the front line are currently the greatest exemplary force. As a result, do those people only want other women to learn to get married? I want to see what books these female medical staff like to read, what personalities they have, and what difficulties they have encountered at work. I don't want to see marriage, marriage, marriage!"

Topic 3: Valuing Women's Work: Recognizing and Rewarding Female Contributions in the Fight

Against COVID-19

Topic 3 emphasizes the need for greater recognition and support for female healthcare workers, both during and after the crisis. The posts under this topic highlight the disproportionate burden borne by women in the fight against COVID-19, with female medical staff accounting for over two-thirds of the frontline workforce. The users demand that these women's contributions and sacrifices be properly acknowledged and rewarded, through measures such as promotions, raises, research funding, and increased media visibility. Moreover, they call for a broader societal reckoning with the gendered impacts of the pandemic and the importance of valuing and supporting women's work in all sectors.

For Topic 3, a representative Weibo post is:

"Through this donation of period panties and sanitary napkins, with so many teams and such a large quantity needed, it's impossible to ignore that in the battle against the new coronavirus, the number of female medical personnel is quite huge, and they have contributed an enormous amount, risking their lives (accounting for more than two-thirds). Please record them in history, and may news media platforms give them more coverage, and may artists feature them more as protagonists. Most importantly, when they return safely, please give them the promotions, raises, and research funding they deserve. Please see them, face them, the women who protect our homes and defend our country. #SisterAntiEpidemicReassuranceAction# #SeeingFemaleWorkers#"

Taken together, these three topics paint a complex and multifaceted picture of the feminist discourse surrounding the COVID-19 pandemic on Chinese social media. They reveal how the crisis has exacerbated existing gender inequalities and brought to the forefront the specific challenges faced by women workers, particularly those in the healthcare sector. At the same time, they showcase the

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agency and resilience of Chinese feminist activists, who have used hashtag campaigns to raise awareness, build solidarity, and advocate for change in the face of unprecedented challenges.

Linguistic Characteristics

The analysis of the linguistic characteristics of Weibo posts under the investigated feminist hashtags during the COVID-19 pandemic reveals significant patterns in language use that align with the key themes and concerns identified in the topic modeling results. The prominence of cognitive process words ($M = 35.7167$, $SD = 32.1781$, $p < .00001$, $DOF = 159$) underscores the reflective and sense-making nature of the discourse, as users sought to understand and interpret their experiences related to the gendered impacts of the crisis. This finding resonates with the emphasis on personal narratives and individual perspectives highlighted in Topic 2, which challenged media stereotypes of female medical workers and advocated for a more nuanced representation of their lived realities.

Moreover, the high frequency of social process words ($M = 18.7658$, $SD = 16.9724$, $p < .00001$, $DOF = 92$) and affective process words ($M = 19.6554$, $SD = 16.9898$, $p < .00001$, $DOF = 63$) reflects the communal and expressive dimensions of the feminist discourse on Weibo. The use of language related to family, friends, and human interaction aligns with the emphasis on solidarity and collective action in Topic 3, which called for greater recognition and support for female healthcare professionals. Similarly, the prevalence of emotion-related words underscores the affective labor performed by women during the pandemic, as well as the emotional toll of the crisis on their well-being, as highlighted in Topic 1's focus on the harsh realities and unmet needs of female frontline workers.

Furthermore, the significant gender differences in word usage ($p < .01$) reveal how men and women engaged with the feminist hashtags in distinct ways. The higher prevalence of leisure,

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profanity, death, and past-tense markers among male users suggests a more detached and retrospective stance towards the issues raised by the campaigns. In contrast, the language used by female participants appears to be more anchored in the present realities and challenges faced by women during the pandemic.

Discussion

The findings of this study show complex dynamics of digital feminism in China, particularly in the context of the COVID-19 pandemic. Consistent with previous research, the analysis of Weibo posts under the hashtags #SeeingFemaleWorkers and #SisterAntiEpidemicReassuranceAction reveals how Chinese feminist activists have strategically navigated the constraints and opportunities of the digital landscape to achieve their goals and negotiate with the state and society.

Strategic Alignment and Negotiation

One of the most striking findings of this study is how Chinese feminist discourse on Weibo has strategically aligned itself with the state's broader development goals and policy priorities, which is aligned with previous qualitative studies on Chinese digital feminism: the importance of "negotiating with the state" (Yang, 2023) and "working within the system" (Tian, 2022) to achieve the goals and avoid political backlash. By framing their concerns in terms of social stability, economic recovery, and the well-being of families and communities, feminist activists have sought to find common ground with the state and other stakeholders, leveraging the official rhetoric of "building a harmonious society" to legitimize their demands. Especially under the context of COVID-19 pandemic, the crisis has laid bare the deep-rooted structural inequalities and power imbalances that shape women's lives. By linking gender inequality with other pressing social issues (e.g., labor rights, access to essential

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services), feminist activists have sought to build a broader coalition for change and enhance the urgency of their demands.

At the same time, the findings also reveal the challenges and limitations of this strategy, as feminist activists must navigate a complex and evolving political landscape marked by increasing state surveillance, censorship, and control over civil society (Yin & Sun, 2020; Zeng, 2020). The linguistic analysis of these weibo posts show these tensions. Using high frequency of cognitive process words related to certainty and differentiation suggests a need to carefully calibrate the tone and content of feminist discourse to avoid triggering official backlash or social stigma.

Ultimately, the strategic alignment of feminist discourse with state priorities and societal concerns can be seen as a double-edged sword. While it has enabled feminist activists to gain greater visibility, legitimacy, and influence in the public sphere, it has also constrained their ability to challenge the fundamental power structures and ideologies that underpin women's subordination. Therefore, further research need to explore the long-term impacts and implications of this strategy, as well as the potential for more transformative and radical forms of feminist activism in the digital age.

Addressing the Unique Challenges of Marginalized Women

The present study offers a nuanced perspective on the specific challenges faced by marginalized groups of women, such as female medical workers and migrant workers, highlighting the need for more targeted and differentiated policies and interventions. The thematic analysis of the posts shows the specific challenges faced by different groups of women. For example, Theme 1, which focuses on the harsh realities and unmet needs of female frontline workers, showed the unique risks and burdens borne by women in the healthcare sector, who are disproportionately exposed to the virus and often

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lack access to essential resources and support. Similarly, Theme 2, which critiques the media's portrayal of female medical workers and advocates for a more nuanced representation of their experiences, highlights the ways in which gendered stereotypes and expectations can obscure the diversity and complexity of women's lives.

The Role of Hashtags

The findings also showed the crucial role played by Weibo and hashtags in shaping the dynamics and outcomes of feminist activism during the COVID-19 pandemic in China.

On the one hand, the analysis of the Weibo posts reveals how hashtags like #SeeingFemaleWorkers and #SisterAntiEpidemicReassuranceAction have served as powerful tools for feminist sense-making, community-building, and collective action. By creating a shared discursive space and a sense of common purpose, these hashtags have allowed women to connect their personal experiences to broader structural issues, and to mobilize support and resources for marginalized groups like female medical workers and migrant workers. These findings resonate with previous studies that have highlighted the importance of discursive strategies and collective identity formation in feminist hashtag activism, both in China and beyond.

On the other hand, by examining word clouds (Figure 2), certain phrases are repeated over multiple months. It raises the question of whether the discourse starts to become more performative than substantive. Are influencers and brands simply latching onto these slogans to signal their feminist credentials without engaging in real change? Hashtags and social media can sometimes lead to the oversimplification, polarization, and commodification of feminist discourse, as complex issues and experiences are reduced to catchy slogans, trending topics, and performative gestures.

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These examples suggest that there is still much untapped potential for feminist hashtag activism on Weibo and other social media platforms, particularly in the context of the ongoing pandemic and its aftermath. However, this also requires the interconnections between online and offline struggles. As the COVID-19 pandemic has shown, the challenges facing women and marginalized groups are deeply interconnected and systemic, and cannot be addressed by digital activism alone. Instead, feminist activists will need to work across multiple platforms and spaces, and to engage in both cultural and material struggles for gender justice and social change.

Conclusion

The study makes a contribution to the understanding of digital feminism in China by providing a nuanced and contextualized analysis of how feminist activists have strategically navigated the constraints and opportunities of the digital landscape to advance their goals and negotiate their relationship with the state and society during the COVID-19 pandemic. By using computational methods, this research offers new insights into the complex dynamics of feminist hashtag activism on Weibo, highlighting the importance of strategic alignment with state priorities, the challenges faced by marginalized women, and the role of hashtags in facilitating feminist sense-making, community-building, and collective action.

Besides, these findings extend and complicate previous literature on Chinese digital feminism, demonstrating how the pandemic has intensified the need for feminist solidarity and support while also exposing the limitations and risks of online activism. As such, the study provides a valuable foundation for future research and practice aimed at promoting gender equality and social justice in China and beyond, underscoring the need for more intersectional, context-specific, and politically

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engaged approaches to digital feminism.

Furthermore, in terms of research method, the study uses computational communication methods to demonstrate the potential of this approach to generate new insights into the complex and dynamic nature of online social movements. The use of words cloud, topic modeling, and linguistic analysis has allowed for a more comprehensive and nuanced understanding of the patterns, themes, and narratives that shape feminist activism on Weibo.

However, the study also has some limitations that should be acknowledged. Firstly, the analysis focuses primarily on textual data, and does not take into account other factors such as images, emoji, or context, which may play an important role in shaping the meaning and impact of feminist discourse on social media. Future research could explore these aspects in more depth, using a multi-modal approach to data collection and analysis.

Secondly, the study relies mainly on keyword-based analysis, which may not fully capture the nuances and complexities of feminist activism on Weibo. Future studies could combine computational methods with other qualitative and quantitative approaches, such as semantic analysis and in-depth interviews, to gain a more comprehensive understanding of the evolution and dynamics of feminist discourse on the platform.

Finally, the study is limited to the analysis of the content and characteristics of feminist hashtag activism, and does not directly assess its impact on social change or gender equality in China. Future research could investigate the outcomes and effectiveness of these campaigns in more detail, using a variety of methods such as surveys, experiments, and case studies, to evaluate their role and significance in promoting feminist goals and values.

Figure 1: LDA Topic Model: A Comparison of Topic Model Goodness of Fit Based on

Coherence Metrics

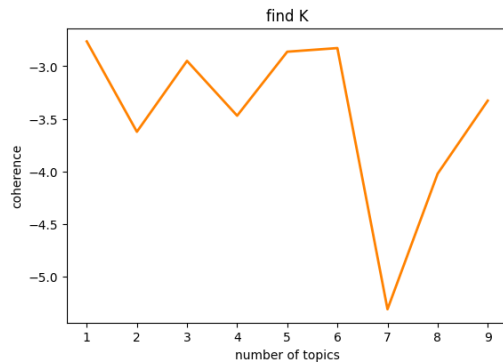


Figure 2: Word Clouds: The Evolution of Original Weibo Discussion Content Over Time



Table 1: Topic Model Results of Original Weibo Posts

主题	1		2		3	
关键词	词语	概率	词语	概率	词语	概率
	女性	0.038	女性	0.042	一起	0.038
	一线	0.018	最美	0.018	支持	0.023
	姐妹	0.017	逆行者	0.018	公益	0.020
	加油	0.016	疫情	0.013	行动	0.018
	梁钰	0.016	抗疫	0.011	抗疫	0.018
	安心	0.012	看到	0.010	项目	0.016
	捐赠	0.012	希望	0.009	计划	0.015
	中国	0.010	工作	0.008	基金会	0.014
	需求	0.010	女	0.007	暖医	0.012
	医护人员	0.009	很多	0.007	慈善	0.012
	医院	0.009	社会	0.007	卫生巾	0.011

Translation:

TOPIC	1		2		3	
KEYWORD	Keyword	Probability	Keyword	Probability	Keyword	Probability
	Women	0.038	Women	0.042	Together	0.038
	Frontline	0.018	Most Beautiful	0.018	Support	0.023
	Sisters	0.017	Forerunner	0.018	Charity	0.020
	Go For It	0.016	Pandemic	0.013	Action	0.018
	Liang Yu	0.016	Anti- Pandemic	0.011	Anti- pandemic	0.018
	Relieved	0.012	Seeing	0.010	Project	0.016
	Donation	0.012	Hope	0.009	Plan	0.015
	China	0.010	Work	0.008	Foundation	0.014
	Need	0.010	Female	0.007	Doctors	0.012
	Medical Staff	0.009	Many	0.007	Philanthropy	0.012
	Hospital	0.009	Society	0.007	Sanitary Pad	0.011

Figure 3: LDA result for Topic 1

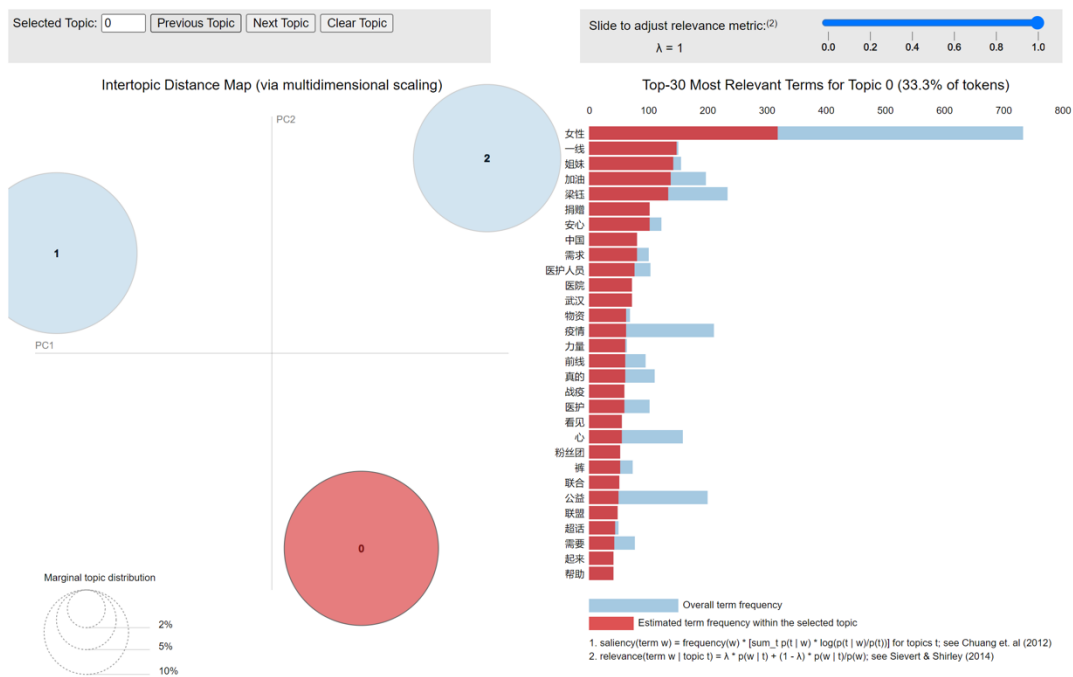


Figure 4: LDA result for Topic 2

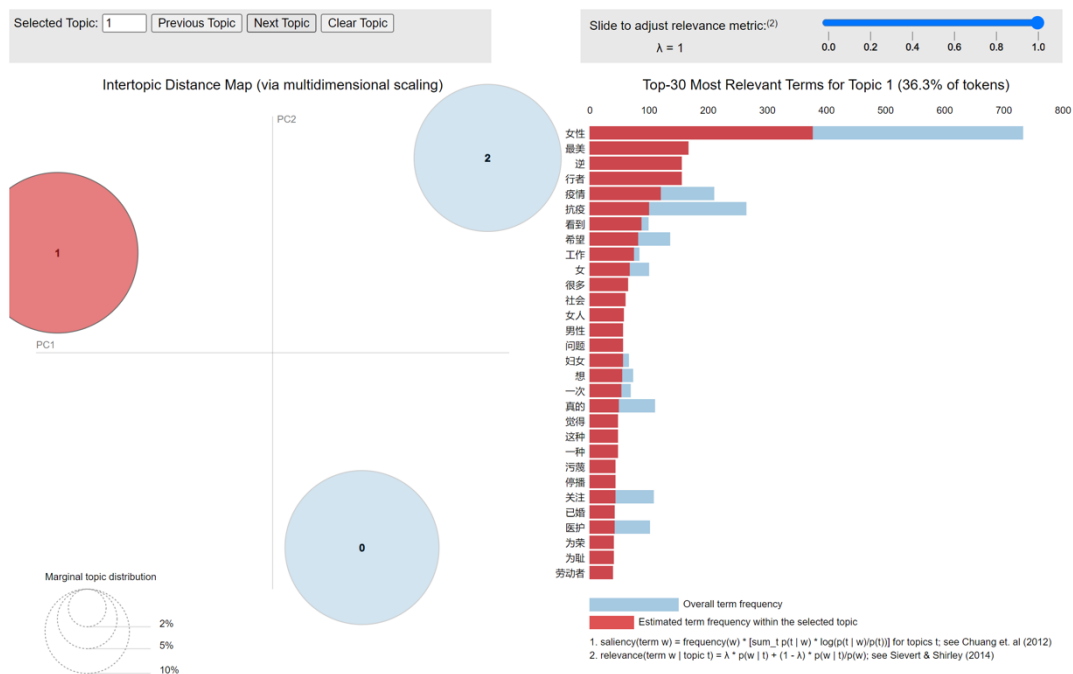


Figure 5: LDA result for Topic 3

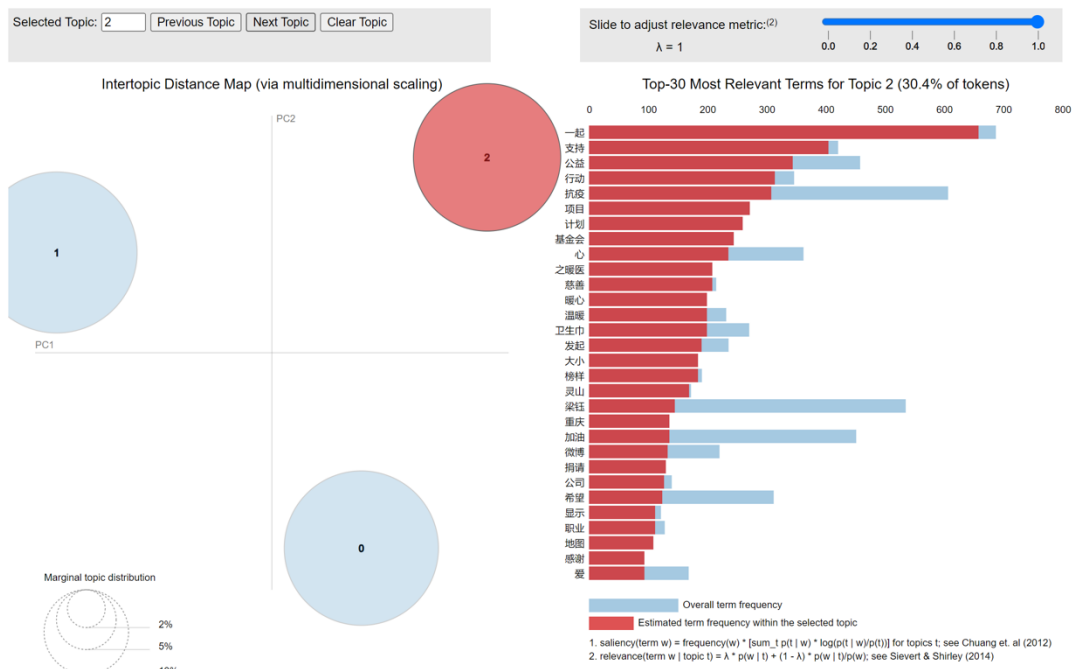


Table 2: Language Use

词类标记	词类	示例词语	女性发帖	男性发帖	χ^2	p	DOF
cogmech	认知历程词	理解、选择、质疑	35.7167	32.1781	444.8708	0.0000	159
relative	相对词	以前、相比、达到	18.7658	16.9724	446.4845	0.0000	92
social	社会历程词	家人、接纳、打招呼	18.6546	16.9692	574.0111	0.0000	88
funct	功能词	或许、许多、那些	14.9466	13.5591	311.9229	0.0000	73
incl	包含词	包括、附近、添加	11.1534	9.8358	227.1156	0.0000	63
space	空间词	里面、街道、台上	9.9559	8.7933	405.8016	0.0000	46
affect	情感历程词	气愤、感恩、失望	9.7143	8.7443	371.2376	0.0000	60
bio	生理历程词	头晕、流汗、拥抱	9.0564	7.7067	425.7486	0.0000	49
insight	洞察词	了解、恍然大悟、体会	8.2856	7.466	336.127	0.0000	41
assent	应和词	了解、真的、好	8.0605	7.4887	442.5703	0.0000	49
humans	人类词	人民、成员、群众	7.3618	6.6417	312.8965	0.0000	36
TenseM	时态标定词	已经、之前、日后	7.1176	6.5257	406.8986	0.0000	38
time	时间词	期间、过去、秋天	6.3726	6.0632	450.483	0.0000	38
posemo	正向情绪词	信心、满足、祝福	4.9263	4.6179	351.8656	0.0000	40
work	工作词	工厂、面试、薪水	4.5881	4.2666	345.5571	0.0000	31
negate	否定词	不要、未必、没有	4.2501	3.8228	391.4356	0.0000	24
discrep	差距词	不足、纳闷、期待	4.2026	3.7223	405.2726	0.0000	32
tentat	暂订词	大约、未定、差不多	3.8809	3.4167	388.407	0.0000	28
motion	移动词	通过、靠近、参加	3.8065	3.4766	231.432	0.0000	25
cause	因果词	引起、使得、变成	3.7401	3.5142	421.3521	0.0000	20
excl	排除词	取消、但是、除外	3.6784	3.3687	375.654	0.0000	24
quant	概数词	一些、所有、众多	3.4968	3.1325	370.8123	0.0000	21
ProgM	完成时态标定词	已经, 早已, 至今, 近日	3.3976	3.1235	255.9799	0.0000	22
certain	确切词	不容置疑、必然、保证	2.8908	2.875	105.8689	0.0000	21
PresentM	现在时态标定词	今天, 今日, 今年, 平时	2.6698	2.3746	297.3482	0.0000	17
percept	感知历程词	温暖、经验、注视	2.6407	2.5145	182.7116	0.0000	24
negemo	负向情绪词	担忧、猜疑、报复	2.5956	2.2726	160.4744	0.0000	24
sexual	性词	上床、性欲、裸体	2.5477	2.0801	197.7689	0.0000	19
body	身体词	脖子、皮肤、肠胃	2.1945	1.8539	166.5094	0.0000	19
health	健康词	失眠、医生、运动	1.8629	1.5971	178.1524	0.0000	21
money	金钱词	富有、年薪、折扣	1.8455	1.6092	258.0219	0.0000	21
inhib	限制词	废止、不准、规则	1.2773	1.0648	337.6759	0.0000	11
see	视觉词	外貌、闪亮、绿色	1.0195	0.9237	118.9768	0.0000	12
leisure	休闲词	唱歌、轻松、假期	0.946	0.9807	46.411	0.0000	10
anger	生气词	可恶、抱怨、破坏	0.8561	0.7668	156.3927	0.0000	12
hear	听觉词	大叫、听见、谈话	0.8015	0.7792	41.2737	0.0009	17

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FutureM	未来时态标定词	之后、即将、将来	0.6954	0.6603	58.6819	0.0000	8
family	家族词	公婆、兄弟、孙女	0.6376	0.5597	121.8717	0.0000	20
sad	悲伤词	心痛、沮丧、无力	0.581	0.5067	86.2326	0.0000	10
feel	感觉词	平滑、弹性、触摸	0.5642	0.5496	267.7469	0.0000	8
relig	宗教词	上帝、慈悲、信仰	0.4643	0.3784	117.0737	0.0000	9
anx	焦虑词	不安、挣扎、紧绷	0.365	0.3077	114.1498	0.0000	7
PastM	过去时态标定词	去年、刚才、昔日	0.3544	0.3669	67.7294	0.0000	8
home	家庭词	房子、家人、宠物	0.2923	0.2599	101.8702	0.0000	10
friend	朋友词	同伴、朋友、麻吉	0.2213	0.2002	43.6343	0.0000	6
swear	脏话	去你的、智障、机车	0.0809	0.1111	233.3343	0.0000	5
death	死亡词	亡故、自杀、遗嘱	0.0706	0.074	27.4626	0.0001	6

Translation

Word Lables	Word Categories	Example Words	Female Posts	Male Posts	χ^2	p	DOF
cogmech	Cognitive process words	understand, choose, question	35.7167	32.1781	444.8708	0.0000	159
relative	Relative words	before, compared to, reach	18.7658	16.9724	446.4845	0.0000	92
social	Social process words	family, accept, greet	18.6546	16.9692	574.0111	0.0000	88
funct	Function words	perhaps, many, those	14.9466	13.5591	311.9229	0.0000	73
incl	Inclusive words	include, near, add	11.1534	9.8358	227.1156	0.0000	63
space	Spatial words	inside, street, on stage	9.9559	8.7933	405.8016	0.0000	46
affect	Affective process words	angry, grateful, disappointed	9.7143	8.7443	371.2376	0.0000	60
bio	Biological process words	dizzy, sweating, hug	9.0564	7.7067	425.7486	0.0000	49
insight	Insight words	understand, epiphany, realize	8.2856	7.466	336.127	0.0000	41
assent	Assent words	understand, really, good	8.0605	7.4887	442.5703	0.0000	49
humans	Human words	people, member, masses	7.3618	6.6417	312.8965	0.0000	36
TenseM	Tense marker words	already, before, in the future	7.1176	6.5257	406.8986	0.0000	38
time	Time words	period, past, autumn	6.3726	6.0632	450.483	0.0000	38
posemo	Positive emotion words	confidence, satisfaction, blessing	4.9263	4.6179	351.8656	0.0000	40
work	Work words	factory, interview, salary	4.5881	4.2666	345.5571	0.0000	31

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negate	Negation words	don't, not necessarily, no	4.2501	3.8228	391.4356	0.0000	24
discrep	Discrepancy words	inadequate, puzzled, expect	4.2026	3.7223	405.2726	0.0000	32
tentat	Tentative words	about, undecided, roughly	3.8809	3.4167	388.407	0.0000	28
motion	Motion words	through, approach, attend	3.8065	3.4766	231.432	0.0000	25
cause	Causation words	cause, make, become	3.7401	3.5142	421.3521	0.0000	20
excl	Exclusive words	cancel, but, except	3.6784	3.3687	375.654	0.0000	24
quant	Quantifier words	some, all, many	3.4968	3.1325	370.8123	0.0000	21
ProgM	Progressive tense marker words	already, long ago, until now	3.3976	3.1235	255.9799	0.0000	22
certain	Certainty words	undoubtedly, definitely, guarantee	2.8908	2.875	105.8689	0.0000	21
PresentM	Present tense marker words	today, nowadays, this year	2.6698	2.3746	297.3482	0.0000	17
percept	Perceptual process words	warm, experience, gaze	2.6407	2.5145	182.7116	0.0000	24
negemo	Negative emotion words	worry, suspect, revenge	2.5956	2.2726	160.4744	0.0000	24
sexual	Sexual words	have sex, lust, naked	2.5477	2.0801	197.7689	0.0000	19
body	Body words	neck, skin, stomach	2.1945	1.8539	166.5094	0.0000	19
health	Health words	insomnia, doctor, exercise	1.8629	1.5971	178.1524	0.0000	21
money	Money words	wealthy, annual salary, discount	1.8455	1.6092	258.0219	0.0000	21
inhib	Inhibition words	abolish, forbid, rules	1.2773	1.0648	337.6759	0.0000	11
see	Seeing words	appearance, shiny, green	1.0195	0.9237	118.9768	0.0000	12
leisure	Leisure words	sing, relaxed, vacation	0.946	0.9807	46.411	0.0000	10
anger	Anger words	annoying, complain, destroy	0.8561	0.7668	156.3927	0.0000	12
hear	Hearing words	shout, hear, talk	0.8015	0.7792	41.2737	0.0009	17
FutureM	Future tense marker words	after, will, in the future	0.6954	0.6603	58.6819	0.0000	8
family	Family words	in-laws, siblings, granddaughter	0.6376	0.5597	121.8717	0.0000	20
sad	Sad words	heartache, depressed, powerless	0.581	0.5067	86.2326	0.0000	10

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feel	Feeling words	smooth, elastic, touch	0.5642	0.5496	267.7469	0.0000	8
relig	Religion words	God, compassionate, faith	0.4643	0.3784	117.0737	0.0000	9
anx	Anxiety words	uneasy, struggle, tense	0.365	0.3077	114.1498	0.0000	7
PastM	Past tense marker words	last year, just now, in the past	0.3544	0.3669	67.7294	0.0000	8
home	Home words	house, family, pet	0.2923	0.2599	101.8702	0.0000	10
friend	Friend words	companion, friend, buddy	0.2213	0.2002	43.6343	0.0000	6
swear	Swear words	fuck you, retard, annoying	0.0809	0.1111	233.3343	0.0000	5
death	Death words	deceased, suicide, will	0.0706	0.074	27.4626	0.0001	6

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