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## ‘ZOUFAN’ AS A ‘TREE HOLE’ FOR ONLINE SHARING OF DEPRESSION: PARTICIPATION PATTERNS, DOMINANT TOPICS AND LINGUISTIC FEATURES

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### Abstract:

The concept of ‘tree hole’ in social media has provided a disinhibited space for depressed individuals to communicate their depressive feelings, emotions and experiences freely. Its proliferation underscores an increasing need for such online spaces. However, their operational mechanisms, content dynamics, and implications for mental health remain under-explored, especially in the Mainland Chinese context. This study describes and interprets what is going on under ‘Zoufan’, the largest ‘tree hole’ on Weibo in China, by analyzing the patterns of online community engagement concerning discussions on depression. In an overarching project, a total of 67,614 comments under the last farewell post of ‘Zoufan’ were collected and compiled for an overview of the user’s participation patterns. This paper draws upon a set of data manually coded on the selected topics and a fine-grained analysis of linguistic features. The findings indicate a limited interest among selected users in interacting with others, with most of the content focusing on their adverse emotional states and the difficulties they face within interpersonal relationships. Moreover, the expressions contain a strong sense of negation and inhibition, often conveyed through fragmented narratives. The implications of this study help stakeholders, especially family members, educators, and mental health workers, to better understand the mental health outcomes of participation in online depression sharing. This, in turn, facilitates a more nuanced approach to addressing depression both online and in real-life interventions.

### Keywords:

Depression; Emotions; Tree Hole; Online Community; ‘Zoufan’ Weibo; Linguistic Features; Narrative

## Introduction

Depression is identified by a sustained sense of sadness and diminished interest or pleasure in activities that were once found rewarding or enjoyable (World Health Organization, 2020), which can affect an individual's thoughts, behaviours, feelings and sense of well-being. The symptoms of depression range from emotional disturbance, such as irritability and self-loathing, to physical changes, like unexplained pains and sleep problems (Zhang, Liu, & Fang, 2019). Besides psychological and physiological impacts, depression is a more complex portfolio containing social, psychological, and biological factors in multiple dimensions other than its literal meaning and concepts. A considerable amount of research has mentioned that depression is typically manifested as the presence of loneliness, social isolation, reduced social connectedness or withdrawal from social relationships (Handley et al., 2012; Hesketh, Ding, & Jenkins, 2002). It is argued that the essence of depression is a response to 'loss' (e.g., Cruwys, Haslam, Dingle, Haslam, & Jetten, 2014), such as a loss of social connectedness and identity.

However, depression has not received enough attention in diagnosis and treatment globally. Much is still misunderstood about depression regarding its recognition, cause, manifestation, influence, and treatment (Dwight-Johnson, Sherbourne, Liao, & Wells, 2000), which hinders people who are affected from seeking assistance and receiving proper care. Among factors that disturb depressed people to have a positive attitude against their mental disorder, stigma plays a salient role by diminishing self-esteem as it leads to a situation where there is a "them" and "us", while stereotype, prejudice and discrimination resulted from stigma rob people of meaningful life opportunities (Corrigan, 2004; Link & Phelan, 2006).

In China, depression is often accompanied by stigma, partly because it goes against the norm of 'face' (*mianzi*) (Yang, 2007) in a collectivist culture and the emotional self-control embedded in Confucianism (Boey, 1999). People's meagre mental health literacy also contributed to the increase of the concept of stigma about mental illness (Huang, Yang, & Pescosolido, 2019), including depression. In the meantime, the limited and unaffordable mental health resources in China discourage the affected people from seeking professional help. On the one hand, China's mental health workforce falls short of its increasing mental health demand (Ng et al., 2017). Additionally, among the counsellors in China, "most are not specially trained and some even lack the knowledge of basic psychology" (Higgins et al., 2008, p. 102). Even those who visited mental hospitals in big cities found that doctors did not offer them accurate diagnoses or inappropriate medication (Zhang, Eschler, & Reddy, 2018). On the other hand, the high charge for counselling and psychotherapy is a prevalent problem for most people. The fees had significant disparity between public hospitals and private institutions, which ranged roughly between RMB 200-900/ hour (Zhang, Wang, & Huang, 2017), which may be beyond the reach of young people, their working-class parents, and even people in some economically developed regions in China.

Probably driven by these challenges, an increasing number of young individuals are seeking emotional relief and social support through social media platforms, including Facebook, Twitter, and Reddit (e.g., Androutsopoulos, 2014; Choudhury & De, 2014; Feldhege, Moessner, & Bauer, 2020; Kupferberg & Gilat, 2012; Mirzaei & Esmailzadeh, 2021). This trend highlights a shift towards digital spaces as critical avenues for sharing experiences, obtaining support, and navigating the complexities of mental health in a connected yet anonymous environment. On these sites, individuals appear to break free from social-cognitive, emotional, interpersonal, and spatial constraints to disclose their 'dark sides', entangled with diverse

experiences and stories. ‘Tree hole’ for depression is one type of such communities that provide virtual spaces where individuals, especially those grappling with depression, can freely share their innermost feelings of despair and thoughts of suicide (Jing, Lin, & Huang, 2020). Given the longstanding stigma associated with depression, identifying with a stigmatized group, such as a ‘tree hole’ for depression, can serve as a stress-buffering mechanism. This mechanism is rooted in the enhanced perception of social support, the rejection of mental illness stereotypes, and resistance to stigma (Crabtree, Haslam, Postmes, & Haslam, 2010). However, that identification may increase health vulnerability to the group’s social influences, particularly social withdrawal, suicidality, the spread of loneliness and self-harm (Handley et al., 2012), and the members could find it difficult to leave the groups (Howard, 2008). Given these contrasting perspectives, it is crucial to further explore which aspect predominates.

This study explores the mechanism and impacts of online mental health communities, with a specific focus on ‘Zoufan’ Weibo, the largest unmanaged ODC in China and the largest ‘tree hole’ on Weibo (Tang, Yu, & Yao, 2020). It aims to provide a broad picture of the social phenomenon of collective sharing by examining how users engage in online communication about depression, what topics they most frequently share, and how their depressive feelings and emotions are expressed in language. The goal is to foster an understanding of the ongoing activities within ‘Zoufan’ and their impact on users’ mental health. Given that this online space serves as a pivotal and enduring ‘tree hole’ for individuals grappling with depression in China, its specificities and possible outcomes for mental health may inform mental health sharing practices on social media and reveal the underlying reasons for the widespread online sharing of experiences related to depression in China.

## Literature Review

### *‘Tree Holes’ on Social Media and ‘Zoufan’ Weibo*

The rapid development and growing significance of social media have received considerable scholarly attention worldwide. The concept of ‘tree hole’ on social media refers to digital spaces, communities, or accounts where individuals can anonymously share their innermost thoughts, secrets, or feelings or simply personal reflections they are not comfortable sharing openly. These platforms serve as a modern iteration of the metaphorical ‘tree hole’, a term from a tale in Western mythology, specifically the story of King Labhraí Loingseach, known for his donkey ears—a secret he fiercely guarded under threat of death to his barber. Unable to bear the weight of this secret alone, the barber confided in a tree hole in the forest, symbolizing the tree hole as a repository for hidden truths (Hu, 2021). As the digital era has evolved, so has the concept of the ‘tree hole’ in digital spaces. This study delves into the ‘tree hole’ phenomenon on Weibo, focusing particularly on ‘Zoufan’ as a ‘tree hole’ for depression.

In 2012, the tragic suicide of a young woman named Jie MA, a college student from Nanjing born in the 1990s and the blogger behind the Weibo page ‘Zoufan’ (走饭), captured widespread attention. On March 17, 2012, she took her own life, leaving behind a scheduled farewell message on her Weibo page through the Pipi time machine function, a tool that allows for the delayed posting of messages. Her final post, which appeared the day after her death, conveyed a chilling resignation to her fate due to depression: “我有抑郁症，所以就去死一死，没什么重要的原因，大家不必在意我的大家不必在意我的离开。拜拜啦。” (I suffer from depression, and just choose to die. Do not worry about my death, since I did not die for any important reason. Bye bye la) (Ma, 2012). This post has since resonated with a vast number of

people. Today, the page has amassed more than 617, 000 followers, and the comments on the farewell post have surged to more than 1 million. Regular members of this community openly share their experiences with depression, offer each other comfort, and find solace in their shared struggles. However, the occurrence of numerous users expressing suicidal thoughts on 'Zoufan' and later exhibiting suicidal behaviours highlights the critical need for further research and intervention among this group of users (Yang et al., 2021).

The dualistic impact of participation in 'Zoufan' mirrors the nuanced and often contradictory findings presented in previous research on the health-related outcomes of such online engagements: Many studies reported that engagement with online mental health communities, such as 'tree holes' and peer-to-peer/Internet support groups, contributed to positive health outcomes, because the users used the health information shared to improve their self-management competence and self-care efficacy (Mirzaei & Esmaeilzadeh, 2021). Besides benefiting from the information resources, research has demonstrated that participation in online support groups contributes to a sense of personal empowerment and the user's general well-being (Bartlett & Coulson, 2011). The self-empowerment is gained from emotional outlet via writing, emotional relief via sharing, information support via feedback, loneliness reduction via building interpersonal relationships and integration, etc. Conversely, other research did not find robust and high-quality evidence on the health benefits of peer-to-peer online support on a general domain of mental health (Eysenbach, Powell, Englesakis, Rizo, & Stern, 2004), and more specifically, regarding the efficacy or effectiveness of reducing depression symptoms from the Internet support groups (Griffiths, Calear, Banfield, & Tam, 2009).

This dichotomy underscores the complexity of online communities' influence on mental health, highlighting that the effects are not uniformly positive or negative but can vary widely based on numerous factors, such as the nature of participation/interaction, duration and frequency of engagement, prevalent topics and themes, and the embedded meanings in the messages.

### ***Participation Characteristic***

The involvement of individuals in 'tree hole' for depression or online depression communities exhibits a broad spectrum of variability (Carron-Arthur, Reynolds, Bennett, Bennett, & Griffiths, 2016). This variation underscores the complex nature of how users interact with these platforms, ranging from passive observation to active engagement in sharing experiences and seeking advice. Factors or evaluative indexes of the engagement include frequency of logging/posting, number of postings, number/frequency of interaction, length of contribution, etc.

The intensity of participation seems to be polarized: The highly engaged users produced many postings, while the low-engaged users were only active for a very few days or hours. The user's participation can be measured not only by quantity and length but also by the preference and degree of interaction between users in relation to the topics. For example, Feldhege et al. (2020) found that users in a depression forum on Reddit who tell longer personal stories are not very active in comments. In contrast, the more active users in comments than posts write shorter texts, representing a group of highly active users akin to the 'Super Users' (Young, 2013). Unlike Feldhege et al. (2020)'s attempt to build the connections between the content and behavior tendency, Nimrod (2013) investigated the participation patterns of 16 English-language-based online depression communities, and identified four member groups according to the user's interest and perceived benefits: 'concerned about daily living', 'information

seekers', 'interested in all topics', and 'relatively less involved'. The research found that the 'interested in all topics' group reported more 'offline improvement' than the other three groups, and more 'online support' than the 'information seekers' and 'the relatively less involved' groups. This is valuable as it associates online practice with offline changes.

### ***The Content of Sharing in Sites for Depression***

The content shared on online sites for depression, including 'tree holes' for depression, depression forums and depression communities, covers a wide range of areas such as treatment, relationships, interactions, emotions, and cognitions, some of which overlap with the prevailing topics found in general mental health communities. These topics play a crucial role in how the Internet builds social connectivity between users who share similar situations, specific interests and needs, and difficulties, and enable them to look for advice and help (Barak, Boniel-Nissim, & Suler, 2008; Naslund, Aschbrenner, Marsch, & Bartels, 2016; Nimrod, 2013). The prevailing topics encompass diverse content types, including prescriptive, informational, instrumental, and emotional exchanges (Griffiths et al., 2009; Rains, Peterson, & Wright, 2015).

Key areas of discussion include relationships (such as those with parents and friends), the day-to-day experience of living with depression (covering causes, symptoms, therapy, care, medication, and treatment), as well as feelings and emotions, cognitions, changes and motivations, and themes of empowerment and hope. Informative and emotional contents are the most common ones. For example, Feldhege et al. (2020) discovered 26 significant topics related to depression on Reddit. Among the 26, the most prominent topics were 'Feelings', 'Motivation', 'The Community on Reddit' and 'Time', which have small but positive correlations with the amounts of responses received. The lowest topics are 'Self-reflection', 'Philosophical Thoughts', 'Leisure Time Activities', and 'Alcohol/Drugs'.

It should be noted that there is not a fixed frame of the topics emerging in online sites for depression, and the topics can vary from one site to another. However, a substantial body of research has discovered that sharing within online communities often revolves around daily life routines or minutiae. This includes updates about users' locations, the people they encounter, and trivial events that occur in their everyday lives, etc. (Androutsopoulos, 2014; Choudhury & De, 2014; John, 2012). This is largely because people make sense of their life experiences in their personal narratives of ordinary stories. It aligns with Georgakopoulou (2016)'s observation that online narratives normally "announce and perform minute-by-minute every life experience" (Georgakopoulou, 2016, pp. 269-270).

### ***The Linguistic Features of Depression Discourse***

Regarding vocabulary features, pronouns have emerged as a distinct and significant linguistic element in the analysis of depression. This focus on pronouns across various studies underscores their importance in understanding the dynamics of communication and self-expression among individuals seeking support or sharing experiences related to mental health. The first-person singular pronouns were ubiquitous, and the inclusive pronouns such as 'we' and 'us' were often used by the users to express their own sufferings and empathy towards others, so as to form a united front in battling the depression. Similarly, other referential choices, such as 'brother' and 'sister' among the users, not only personalized each other to draw the online distance closer but also a kind of collectivity to shape a vital part of the group's identity, value, and practice – mutual caring and support.

Talking from the level of words also, Feldhege et al. (2020) found that a salient feature of depression discourse on Reddit is poetic and creative, such as ‘hollow’, ‘void’ and ‘shell’ used to describe the inner feelings of the users. Similarly, Meng (2019) identified the discourse features via the analytical framework of realis and irrealis worlds by Kupferberg and Gilat (2012) and summarized four common discourse features commonly associated with suicidal tendency, including (1) the interplay between realis and irrealis worlds; (2) decontextualized and fragmented expressions, (3) prevalence of depression-related content, and (4) use of metaphors and imagery related to death. The study offers valuable perspectives on the relationship between self-expression and language resources.

Choudhury and De (2014) also discussed the mental health discourse on Reddit. They conceptualized the vocabulary features into a comprehensive language model that encompasses several key elements indicative of the nature of discourse within the context of interest. This model includes extensive use of emotional or affective expressions, presence of relationships and social life words, visibility of temporal indicators, and cognitive and inhibition words. Likewise, Meng and Sun (2019) analyzed comments within the ‘Zoufan’ community, employing Appraisal Theory as their analytical framework. They concluded that the overall tone of the comments was positive. However, this conclusion appears somewhat detached from the broader cyber language discourse. For example, the authors pointed out that some comments with ‘positive affect’ used emoticons, such as a slightly smiling face 😊. However, had they understood the collective default interpretations of emoticons in the young generation’s Internet culture today, they would discover that in most cases, the slightly smiling face itself is no longer representative of feeling happy or satisfied but more about helplessness, insensibility, weakness, and frustration (in some cases even irony to others or self).

The existing body of literature significantly advances the comprehension of users’ behaviours, concerns, and linguistic expressions in online sites dedicated to the sharing of depression experiences. Yet, the exploration of common topics, participation styles, and linguistic features remains somewhat elementary and fragmented. Specifically, current methodologies tend to classify topics based on users’ specific interests without delving into the interconnections among these topics, and the analysis of linguistic features may be isolated from the actual context of the story told. This study posits a more nuanced approach—linking the most frequently discussed subjects and participation methods to linguistic characteristics and situating depression discourse within a broader sociocultural context—is crucial. By doing so, a more profound understanding can be achieved that highlights universal patterns and appreciates the distinct nuances. This enriched perspective is essential for drawing meaningful conclusions and gaining insights into the complex interplay between individual experiences of depression and the larger societal and cultural frameworks in which they are embedded.

### **Data and Methods**

Under the larger framework of the discourse-analytic approach, this research is qualitative-based, with descriptive quantitative statistics. Overall, it adopts a ‘remix’ approach, which focuses on the engagement in everyday practices of sensemaking situated within a media-saturated culture, in Markham (2013)’s term. The application of the ‘remix’ approach has been embodied in several aspects: (1) The view of taking narratives (i.e., depression narratives in this study) as a textual mode of communication is remixed with the view that narrative is a communicative practice; (2) The study of participation pattern is remixed with the analysis of widely discussed topics and linguistic features; (3) The textualized representation of the

communication on depression is remixed with the contextualized background of the ‘tree hole’, which is also a remix between the contents and the audiences.

Python was utilized to trace and crawl the comments beneath the last farewell post of ‘Zoufan’ from August 2020 to December 2020. A total of 67,614 pieces of comments posted by 11,798 users have been collected during the collection period, after all invalid and blank values were removed.

This entire data population was first merged and imported into an Excel worksheet, enabling an overview of the commenters’ behavior patterns. This overview included insights into login times, frequency of comments, and total number of comments made. Then, the entire dataset was imported into NVivo 12 Plus (hereafter referred to as NVivo) for the calculation of word frequency and the automatic coding of themes. The themes identified by NVivo Auto coding include ‘Person/of Person (人/的人)’, ‘What (什么)’, ‘When (什么时候)’, ‘Life (生活)’, ‘Friend (朋友)’, ‘World (世界)’, ‘Emotion (情绪)’, ‘Work (工作)’, ‘Psychology (心理)’, ‘Child (孩子)’, etc. Among these, the first four themes comprise more than one-third of the total. Aligning with this, the result of word frequency shows top words/phrases like ‘Person (人) -weighted percentage: 1.85%’, ‘Life (生活) - 0.34%’, ‘World (世界) - 0.30%’, ‘Friend (朋友) - 0.23%’. The single word of the highest frequency is ‘No (不) - -4.94%’, reflecting the salient presence of negative, inhibitive, or opposite positions in the comments. The same goes with the ‘wish’ expressions that indicate specific desires. These preliminary findings serve as a foundational step for the more detailed, manual coding of topics.

Purposive sampling is used to select the most active users of ‘Zoufan’: (1) Temporal diversity in participation: Participants must have engaged with the site by posting comments in at least three different months. This criterion ensures that selected participants are not only active but also consistently contribute over a significant portion of the study timeline; (2) Frequency of participation: Participants are required to maintain a minimum level of activity, quantified as posting at least one comment per day on average during the data collection period. This criterion guarantees a substantial volume of data per participant, facilitating a more robust analysis of comment content, engagement patterns, and participant behavior.

The sampling led to the identification of the Top 20 users within this research. A pivotal epistemology here is the challenge and non-priority of verifying whether these participants have received a clinical diagnosis of depression. Instead, through filtration, the study locates a group of participants who have consistently and regularly shared their emotions in the ‘tree hole’, demonstrating a particular behavioral pattern or habitus. To facilitate a detailed analysis, this study selected a subset of 2,000 comments, with 100 pieces from each of these top users.

The theme’s coding is based on the vocabulary and semantic resources emerging in each comment. In Chinese, topic constructions can be very dynamic with three notions: syntactic topic, pragmatic topic and entity topic (Sun, 2019). Therefore, one comment may be coded into several different topics. The coding of the topics co-occurred with the coding of linguistic features. Attention was paid to the vocabulary and sentence structures, encompassing the internal coherence of a sequence of grammatical units, which includes aspects of cohesion and the intricate relationships among words, word groups, phrases, and clauses.

## Results and Analysis

### Participation Pattern

Among the entire data population (67,614 pieces), only 18% (N=12,103 pieces) are replies (回复) to others. Moreover, the emergence of ‘like’ is rare, indicating that most commenters do not have or have minimal interest in interacting with others. The lack of interaction concurs with the findings of previous research (e.g., De Fina, 2016) suggesting that comments on social media are often not made in direct response to an earlier comment, indicating that sustained dialogue or the development of a topic over a series of interactions is not the most common form of engagement. Instead, individual comments may stand alone, reflecting immediate reactions or thoughts rather than contributing to a continuous conversation.

While the observed minimal interaction among commenters on ‘Zoufan’ corroborates previous research indicating that content and information exchange are becoming less important on social media, the case of ‘Zoufan’ does not necessarily align with the shift towards interpersonal or phatic communication that some scholars have proposed (see De Fina, 2016; Herring, 2013; Miller, 2008). Instead, the nature of the discourse within ‘Zoufan’ occupies a middle ground, predominantly characterized by a pattern of overwhelming self-talk rather than moving towards enhancing interpersonal connection.

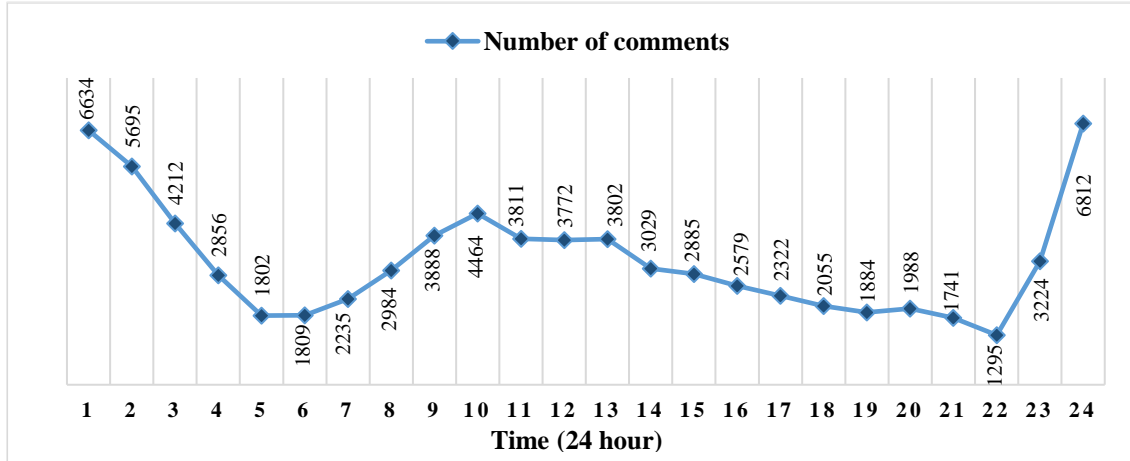
Additionally, the self-talk is primarily fragmented and mundane utterances (short length usually due to the constraint of 140 Chinese characters per comment), which supports the argument the salient textual features of online narratives in a broad spectrum of social media largely depart from the conventional narratives, including fragmentations, a tendency for reporting mundane and ordinary events in everyday life, etc. (Georgakopoulou, 2016). This pattern further evidences the evolving nature of communication and narrative construction in the digital age, where the articulation of everyday life and personal experiences often transcends structured, coherent storytelling. Table 1 provides the statistical features of the data population.

**Table 1: Descriptive Statistics of the Entire Data Population**

Item	Number (Percentage)
Total comments collected within the data collection period	67,614 pieces
Total ‘replies’ collected	12,103 pieces (18%)
The average length of each comment (Chinese characters)	19.6 characters
Total number of ‘like’	19,709 ‘like’

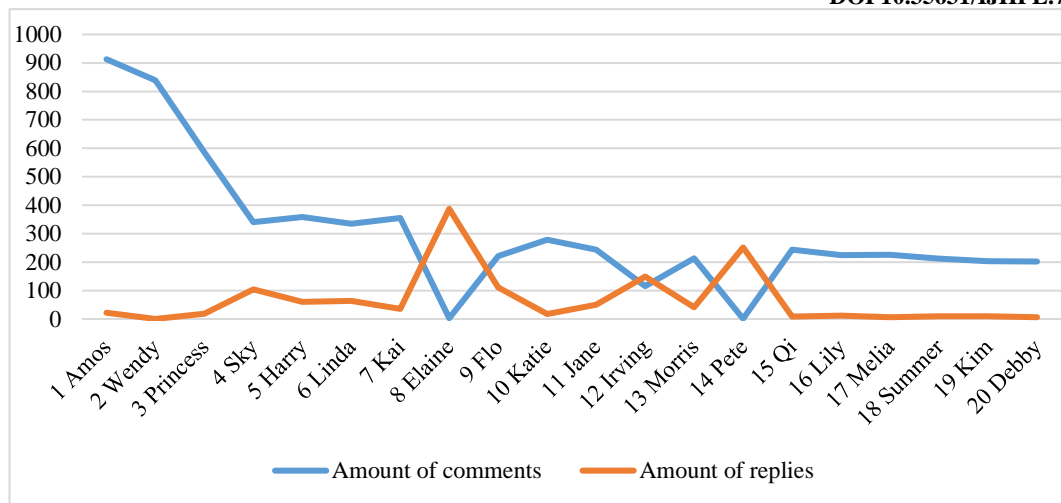
Regarding the timing of commenting, 46 pieces of comments appear per minute on average, and the maximum reached above 113 pieces a minute in terms of the collection period. The peak hours were from 24:00:00 to 03:59:00, which recorded as 6,812 pieces of comments, while the lowest hour was 22:00:00 to 22:59:00 (1,295 pieces), considerably overlapping with what Yang et al. (2019) found in their study of ‘Zoufan’ Weibo comments (22:00:00 to 02:59:00). Overall, the distribution of comments in the daytime (07:00:00-18:59:00) and night (19:00:00-06:59:00) appeared fairly even, which occupy 49% and 51%, respectively. It reveals that any hour of a day could attract a lot of comments, and further suggests that followers may experience a compelling urge to express themselves regardless of typical work or study hours.

Besides, the surge in commenting during the midnight hours could be linked to discussions around the topic of ‘Sleep’, particularly focusing on sleep disorders or difficulties (see the next section).



**Figure 1: Distribution of the Total Collected Comments in 24 Hours  
(Entire Data Population)**

Then, the top 20 users’ dataset is believed to provide a sufficient and representative sample because its percentages of ‘comment’ and ‘reply’ are the same as the total data population (i.e., 82% and 18%, respectively). This smaller subset also shares a similar distribution pattern with the entire data population (see Figure 2). Intriguingly, the opposite symmetry between the ‘comment’ and ‘reply’ types indicates that those who comment the most reply to others the least. Previous studies showed that users who reply to others the most demonstrate a greater interest in establishing relationships and often provide emotional support to fellow commenters — referred to as ‘Super Users’ by Young (2013). However, such users constitute a small percentage in this study. Furthermore, their role in developing and managing the community is not significant, which challenges the connotations of the ‘Super Users’ role.



**Figure 2: The Distribution of ‘Comment’ and ‘Reply’ of the Top 20 Users**

### ***Dominant Topics***

A total of 20 parent nodes with 2,834 references were identified (see Figure 3). The most salient topics are ‘Emotion and mood’ (75% of the core members’ dataset), ‘Life and death’ (12.25%), ‘Relationship’ (8.7%), ‘Depression’ (6.75%), ‘Sleep or rest’ (4.6%), ‘Suicide’ (4.5%), ‘Work’ (4.3%), etc. The lowest-percentage topic is ‘Game’ (0.5%).

Nodes

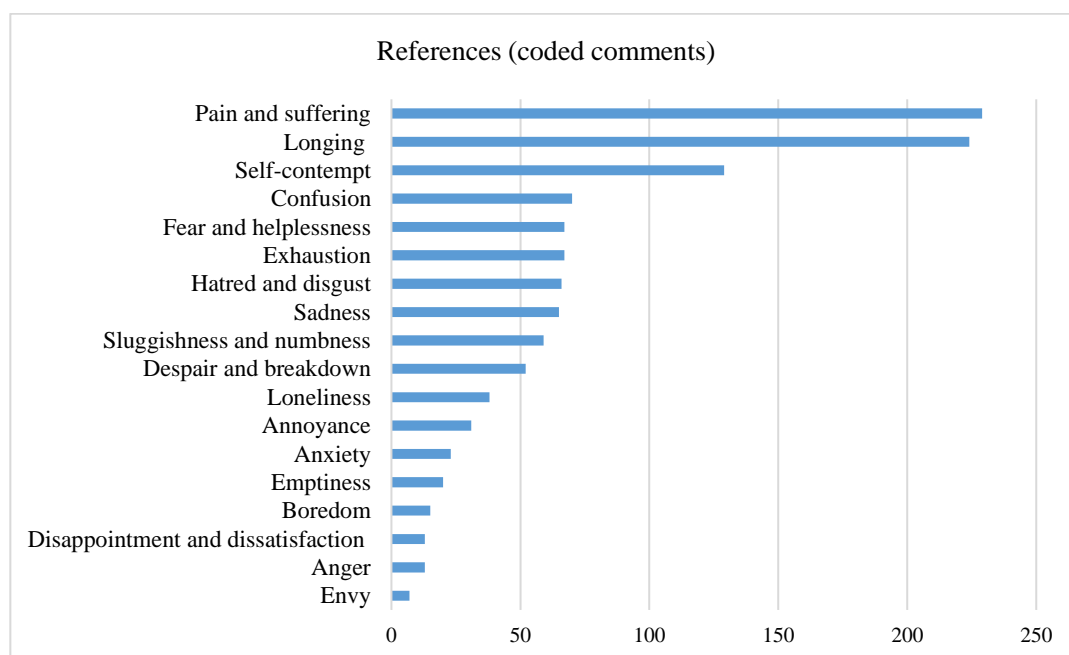
Search Project

Name	Files	References	Created On	Created By	
Topic		20	2834	2021/5/18 15:00	C
Life and death		20	245	2021/5/19 20:26	C
Depression		17	135	2021/5/19 20:36	C
Time		14	58	2021/5/19 21:14	C
Sleep or rest		15	91	2021/5/20 20:32	C
Schooling		11	28	2021/5/20 20:55	C
Dream or daydream		9	16	2021/5/20 21:02	C
Relationship		18	174	2021/5/20 22:37	C
Fate and destiny		10	23	2021/5/20 22:38	C
Covid 19		5	11	2021/5/20 22:42	C
Work		13	84	2021/5/20 22:44	C
Food and drink		10	28	2021/5/20 22:49	C
Emotion and mood		20	1509	2021/5/22 17:05	C
Seek help		5	7	2021/5/22 23:06	C
Game		1	1	2021/5/23 20:41	C
Age		8	11	2021/5/23 23:08	C
Smoking		3	9	2021/5/24 16:42	C
Suffering and trauma		10	28	2021/5/24 16:54	C
Society or social issues		8	25	2021/5/24 21:59	C
Leisure and activity		9	17	2021/5/26 20:50	C
Philosophy		13	33	2021/6/9 22:18	C
Privacy		3	11	2021/6/9 22:52	C

**Figure 3: The Node of ‘Topic’ (The 2,000-piece Core Members’ Dataset)**

The overwhelming sharing of emotions resonated with prior research suggesting that the online environment, with its affordance of anonymity and virtual identities, lures people to speak their minds and promotes emotional profusion or overt displays of emotion (De Fina, 2016; Miller, 2008). It also reflects the narrative quality of emotion processes, especially the sharing of emotional experience (Habermas, 2019).

To further unpack the nature of the shared emotions and moods, the comments under this children node of 'Topic' were further classified into were classified into 3 categories based on recognizing orientations or generally constructed notions – positive, negative, and mixed. The calculation indicates that negative emotions took up a dominant percentage of about 78% of all the emotions coded, which contrasts with prior findings that indicated a generally positive tone in the comments within the 'Zoufan' community (e.g., Meng & Sun, 2019). The negative emotions are further divided into 18 sub-types (see Figure 4). Many of these subtypes overlap with the findings of previous studies on the top negative emotional words extracted from 'Zoufan' (e.g., Tang et al., 2021). The most expressed negative emotion was 'Pain and suffering' (15%), and the least was 'Envy' (0.46%).



**Figure 4: The Children Node 'Negative Emotion' of the Top 20 Users' Dataset**

The negative emotions reveal that the main tone of the comments is gloomy and pessimistic. Evidently, these emotions are indicative of depression symptoms and conditions. Further examinations uncovered that the negative emotions expressed in the comments were predominantly directed towards the commenters themselves, aligning with the prior findings that high self-attentional focus is a salient attribute of highly negative emotional states such as depression (Chung & Pennebaker, 2007; Rude, Gortner, & Pennebaker, 2004). In other words, when the users shared their own experiences, their comments largely centered on their negative moods and mental states. This focus on personal negative emotions, potentially indicative of a heightened sensitivity to their own feelings, coupled with a noticeable disengagement from their environment, emerges as both a potential cause and effect of depression.

It is intriguing to investigate the correlation between emotions and other topics. As a result, the 'Emotion and mood' node was cross-referenced with other dominant topic nodes like 'Work' and 'Relationship' to uncover underlying associations. The results revealed that only a minor fraction of these negative emotions originated from work-related issues, suggesting that occupational stress is not the primary contributor to adverse mood states. On the other hand, 'Relationship', including 'Friendship', 'Familial relationship', 'Love Relationship' emerged as

a significant factor influencing these emotions, particularly 'longing' (top 2 negative emotion), 'self-contempt' (top 3 negative emotion) and 'loneliness' (top 11 negative emotion). Some users felt isolated, highlighting that they lacked friendships and listeners. Additionally, others report feeling unloved or neglected by their parents. These sentiments of social and familial disconnection contribute to the broader landscape of emotional distress shared among users, underlining that unsuccessful or unsatisfactory interpersonal relationships in daily life are the leading cause of depression. Just like previous studies pointed out, relationships or the social isolation caused by their absence contribute significantly to the development of depression (Choudhury & De, 2014; Feldhege et al., 2020).

### ***Linguistic Features***

Regarding the words, negation is prevalent among the comments, which express the users' negative self-perceptions. The analysis of negation within the discourse has uncovered three distinct themes, the first of which centers on the core members' perceptions of their mental conditions and life states. Through the lens of negation, these perceptions often highlight feelings of despair, a lack of control, or dissatisfaction with their current circumstances, providing deep insights into the subjective experiences of those grappling with mental health challenges. For instance, some users harbor a belief that their depression is irreversible, and they view their lives through a lens of hopelessness. This perception underscores a profound sense of despair and resignation, suggesting that these individuals feel trapped in their current state, with no visible path toward recovery or improvement.

Second reveals a profound self-contempt among users, who often label themselves with derogatory terms such as 'abnormal and useless person', 'rubbish', and 'loser'. These harsh self-assessments frequently stem from negative comparisons with others, indicating a deep-seated sense of inadequacy and alienation. Moreover, many users tend to attribute depression to fate, a punishment given by heaven or a kind of Karma that cannot be avoided, which is further implicated with delusional thinking about the future and death (Fear, Sharp, & Healy, 1996; Hsiao, Liu, Yang, & Yeh, 1999). This point could be extended to the discussion of realis and irrealis units. Irrealis languages talk about negation and wishes and are concerned about the future, possibilities, imperatives, and counterfactuals, while realis stories are specific and generic events that happened in the past or present (Elliott, 2000). A pronounced kind of irrealis language is expressing desire or wish to die. About 106 irrealis comments were identified, accounting for more than 10% of the top 20 users' dataset, and among them, 52 pieces expressed the core members' desire to die.

The third was confusion or puzzlement, frequently encapsulated by expressions of uncertainty such as 'do not know' and the use of the negative modal 'cannot', which signifies individuals' perceived inability to navigate their current life circumstances and depressive conditions effectively. This linguistic pattern points to a cognitive and emotional struggle, where the lack of clarity and perceived incapacity to cope with their situation exacerbates the challenges faced by individuals experiencing depression.

Accompanying the negation, the use of inhibition words like 'deny', 'escape', and 'avoid' plays a significant role in conveying feelings of fear, embarrassment, uneasiness, and a state deeper of being restrained from expressing and behaving freely and naturally. A salient aspect is the sharing of disguise in front of families and friends in offline lives and an inclination to withdraw from reality and social interaction. Via phrases like 'forcing a smile/forced smile/fake smile',

the atypical disorder ‘smiling depression’ is observed, which describes that one masks their inner emotional pain behind a facade of happiness or normalcy (Davis, 2020; Gunnerson, 2020). The reason that smiling depression causes exhaustion, if drawing on Rogers (1959)’s concept of ‘congruence’, may be the continuous effort to maintain consistency with the self and self-image. However, when the inner turmoil is difficult to disguise or overcome, i.e., a “threat” state that incongruency with the self happens, an individual will resort to a “defense” state to maintain the self (Rogers, 1959, p. 205). For example, the users’ reluctance to engage with people and awkwardness to get along with friends reveal an incapacity to maintain the smiling/positive self, thus displaying the ‘escape’ mentality and a tendency of self-isolation.

Regarding sentence grammar, it was found that missing or omitting subjects is very common in this dataset. At least 151 comments were identified under the node ‘subjective missing’. This is largely because, in Chinese, the grammatical structure, especially the relationship between the subject and the predicate verb, is characterized by a degree of flexibility. Also, Chinese philosophical thinking, deeply rooted in humanism, places a significant emphasis on contemplation about human life, existence, meaning, and value (Liu, 2012). Hence, the perspective of many comments is from one’s own point of view. The self-focus is consistent with prior studies indicating that high self-attentional focus is a salient attribute of highly negative emotional states such as depression (Chung & Pennebaker, 2007; Rude et al., 2004), and sharing one’s experiences and life is very common for people with mental health illness (Choudhury & De, 2014). However, the omission of the subject, often implied to be ‘I’, in the comments complicates the use of first-person singular pronouns as a reliable indicator of depression narratives within Chinese texts. It challenges the assumption prevalent in many studies that a high frequency of first-person singular pronoun use is a significant marker of depression.

Besides, most comments feature decontextualized, disorganized, incoherent and fragmented expressions, which aligns with the previous study’s findings (Gao & Meng, 2019). A significant portion of the narratives does not meet the conventional definitional criteria of stories, such as temporal ordering, and therefore, cannot even be considered as stories in the traditional sense. These narratives often lack a structured progression of events or a coherent sequence, deviating from the classical storytelling framework that typically includes a beginning, middle, and end. This deviation suggests that the nature of expression on these platforms can be more akin to fragmented reflections or snapshots of experience, rather than fully developed narratives.

## Discussion and Conclusion

This study addresses the gap in existing research concerning the discourse on depression within Chinese-based social media platforms, thereby broadening the conversation around ‘tree holes’ within the context of China. While some findings align with prior research on English-based social media and online mental health discussions, distinct differences also emerge:

Regarding participation patterns, the most vocal and content-rich contributors within the ‘Zoufan’ community are those who share their depression experiences extensively yet engage minimally in interactions with others. This pattern highlights a unique dynamic within the community, where the act of sharing takes precedence over dialogic exchange. Regarding dominant topics, the prevalent sharing of negative emotions among users suggests a potential exacerbation of mental health issues, underscoring the complex role these platforms play in

individuals' emotional lives. Additionally, the frequent discussions on unsuccessful interpersonal relationships indicate a significant area of concern for users, pointing to the interplay between social dynamics and mental health. Regarding linguistic features, observations reveal a high self-attentional focus, extensive use of irrealis mood (expressing wishes, hypothetical situations, or things that are not yet reality), and a tendency towards fragmented speech. Contrary to findings in English-language research, the study argues that the use of first-person singular pronouns is not a reliable indicator of depression narratives in the Chinese context. This suggests that linguistic and cultural differences significantly influence how depression is expressed and perceived.

Moreover, the study sheds light on the underlying emotional and psychological states driving these linguistic choices: emotional suffering, mental struggle, feelings of isolation or withdrawal, and self-denial or self-contempt. These insights reveal the depth of the users' experiences with depression, highlighting the need for a nuanced understanding of the language of depression and its manifestations in different cultural contexts. This research not only fills a critical gap in the literature but also provides valuable implications for mental health interventions tailored to the unique needs and cultural nuances of Chinese-speaking communities.

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