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Online information literacies of Chinese international students in the United States during the COVID-19 pandemic

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Abstract

Using a transnational lens, this narrative study examines the online information literacies of six Chinese international graduate students in the United States during the COVID-19 pandemic. The data of the study were collected from phenomenological interviewing, weekly information-seeking dairies, and focus group discussions. This study illuminates Chinese international students' transnational information literacies in navigating the pandemic online information environment. These students stayed attuned with the pandemic conditions and relevant regulations in order to inform their important decision-making concerning health, safety, visa issues, and international travel. The study also highlights participants' cultural ways of information seeking and pragmatic approaches to information credibility assessment. Results from the study show the importance of understanding and empowering the information literacy of international students, especially during a global health emergency.

Keywords

China; COVID-19 pandemic; information literacy; international students; online information literacies; US

1. Introduction

Declared a global pandemic by the World Health Organization (WHO) in March 2020, the COVID-19 pandemic created upheaval worldwide (Cucinotta & Vanelli, 2020). The health crisis came when people were already grappling with online information overload and the most complex information environment in human history. The pandemic information environment was described as an "infodemic" by WHO (2021), indicating the widespread sharing of disinformation and misinformation about the coronavirus. Simultaneously, the pandemic forced people worldwide to rely even more on online information to navigate all aspects of their lives and safeguard against the impact of health, economic, and social risks.

International students face significant challenges within this information environment. Before the pandemic, international students had difficulties finding credible information due to their highly disrupted online information ecology and multiple context changes (Chang & Gomes, 2020). Seeking information across multiple digital information ecologies may lead them to interact with misinformation more frequently than domestic students (Bahl et al., 2021). After the onset of the pandemic, international students' online information literacy (IL) challenges were amplified (UNESCO, 2020) as they had to navigate the changing pandemic information environment to

find information that involves complex intersections between health, safety, visa issues, stability, and travel restrictions between the host and home country (Mbous et al., 2022).

While research has investigated international students' experience during the COVID-19 pandemic focusing on various aspects of their lives (e.g., Calvo et al., 2021; Firang, 2020), little empirical study exists exploring their information-seeking experiences in the newly created pandemic information environment. Thus, this study aims to provide initial evidence about how international students enact online information literacies - the way they seek, evaluate, and use online information - to make decisions informing their different stages of studying abroad during a global health crisis.

This article focuses on Chinese international students in the United States. For multiple reasons, Chinese students' information practices during the pandemic warrant closer examination. First, China has been the top country of origin for international students in the United States (U.S.) over the past decade, with Chinese students representing 35 percent of the international students in U.S. higher education institutions (IIE, 2021). Second, Chinese students studying in the United States experience a digital transition as they come from one of the world's most restrictive internet environments to the open internet of the United States (Freedom House, 2022). Furthermore, throughout the COVID-19 pandemic, China and the United States took distinctively different prevention and control measures. Chinese students' visa issuance and travel plans were complicated by travel restrictions, personal safety considerations, and the closures of U.S. embassy and consulates (IIE, 2020).

The present study aims to explore the online information-seeking experiences of Chinese international students as they navigated the pandemic information environment, with particular attention to their information credibility evaluation in the context of risks and uncertainties produced through the pandemic. The following research questions guided the study:

1. How did participants interact with online information to inform their study abroad decision-making during the COVID-19 pandemic?
2. How did participants make sense of their online information-seeking experiences during the COVID-19 pandemic?

2. Relevant literature

This study was informed by two bodies of literature: research on information practices during times of risk and crisis, and research on IL in multicultural settings. This study broadly takes the sociocultural perspective on IL (Hicks & Lloyd, 2016; Lloyd, 2012). Rather than viewing IL as a universal, reified, and decontextualised set of skills, the sociocultural perspective focuses on how people engage with information within a specific context.

2.1 Information practice in the context of risk and crisis

The COVID-19 pandemic is a global crisis requiring individuals to evaluate their health risks based on ever-changing, often incomplete information. The role that information plays in the context of crisis has been explored in the field of Crisis Informatics, broadly defined as the "interconnectedness of people, organizations, information and technology during crises" (Hagar, 2010, p. 10). With a focus on exploring information behavior in natural and human-made emergencies, studies in this field revealed that the information environment during a public health crisis was complex (e.g., Hagar, 2010; Starbird et al., 2020), and having information, regardless of credibility, can help soothe anxiety, fear, and uncertainty, especially when information is scarce or when official measures are constantly being adjusted (Hagar, 2010).

Other studies have examined how people establish the trustworthiness of information during a crisis (e.g., Cole & Watkins, 2015; Hagar, 2010; Taylor et al., 2009). These studies showed that information overload increases uncertainty and difficulty in determining information trustworthiness. Indeed, misinformation and disinformation about diseases and public health have been common problems in diverse societies around the globe (Starbird et al., 2020). During a crisis, people often turn to the internet and social media to fill information gaps and track the flow of information (e.g., Jang & Baek, 2019; Starbird et al., 2020), yet online communities have been shown to create rumors to resolve uncertainty (Oh et al., 2013). This was true during the COVID-19 pandemic as multiple online conspiracy theories claimed the coronavirus to be a “planned event” (Neuman, 2020), or 5G technology as the real cause of novel coronavirus symptoms (Travis, 2020). Nonetheless, social media can serve as a source of altruistic social support or expedited information sharing during a crisis (Huang et al., 2015; Lopatovska & Smiley, 2013).

Research has also examined the relationship between risk and IL. For example, Nara (2007) demonstrated the importance of IL in perceiving and coping with risks. More recently, Lloyd and Hicks (2021) showed that IL was a safeguard as participants mitigated health, legal, financial, and well-being risks during the COVID-19 pandemic in 2020.

Although the reviewed studies shed light on people’s information practices and the vital role information played during various risky situations and crisis contexts, few studies have explored IL of the transnational population by exclusively focusing on the online setting during a global health emergency. Further, researchers primarily examine information practices during crises from a Library and Information Science (LIS) or Crisis Informatics perspective but less commonly from IL (Lloyd & Hicks, 2021). Therefore, we examine how international students engage with various digital information sources and how their identities as transient migrants impact their IL.

2.2 Multicultural information practice

Another strand of relevant literature that informs this study is information research in multicultural settings in Library and Information Studies (LIS). Multicultural information practices are highly complex, multi-faceted, and sophisticated rather than homogenous (Hicks, 2014). Culture influences “how information is created in families and communities and handed down, who has created it, and the context in which information is created and used” and how people relate to or make meaning from this information (Montiel-Overall, 2007, p. 55).

A handful of studies have investigated the information practice of international students who temporarily operate in another cultural context (e.g., Cooper & Hughes, 2017; Reyes et al., 2018; Zhao & Mawhinney, 2015). Some studies focused on international students' barriers, such as their different conceptions of research resources or challenges in developing IL skills due to cultural and linguistic differences (Ishimura & Bartlett, 2013; Zhao & Mawhinney, 2015). Other studies adopted an asset-based perspective that “honor[s] the values and experiences students bring with them” (Martin et al., 2018, p. 87), recognising that international students’ multiculturalism and multilingualism enabled them to engage in nuanced, sophisticated, and flexible IL practices (Hughes, 2013; Reyes et al., 2018).

Given that moving to a new country disrupts students’ information-seeking behaviors, social networks, and understanding of information sources, international students’ information credibility assessment in a highly disrupted information ecology is fraught with the risk of misinformation on multiple levels (Click et al., 2017; Hicks, 2019). Credibility assessment is constructed, negotiated, and mediated within social settings and contexts because each social setting has its own unique cultural, institutional, and historical context that shapes how people make credibility judgments (Limberg et al., 2012; Mansour & Francke, 2017). Studies have confirmed that cultural understandings of information authority and previous cultural and

educational experiences can influence international students' information credibility assessment. For example, Chinese international students regard the reputation and rankings of an institution (Rodríguez, 2014) or teachers (Crist & Popa, 2020) as the authority.

Most of this international student IL research has focused on academic information. However, everyday information-seeking that supports daily activities is also complex and demanding for international students (Hertzum & Hyldegård, 2019; Sin & Kim, 2018) and can be more difficult to find than academic information (Sin, 2015). Simultaneously, international students rely heavily on digital information to navigate their overseas lives (Catalano, 2013; Sin et al., 2011). Therefore, this study focuses on how international students use online information to navigate their lives in a multicultural context during a global crisis.

3. Theoretical framework: transnationalism and digital literacies

This study adopted a transnationalism framework that contests the home/host country binary and argues that migrant lives encompass multiple cultures and countries and involve hybrid and dialogic cultural and geographic boundaries (Lam & Warriner, 2012). Transnational individuals maintain multiple social networks and links to their home and host communities (Levitt & Schiller, 2004). Over the past two decades, literacy scholars employed a transnational lens in examining how transnational students use, develop, and transform their language, literacy, and cultural practices to effectively navigate and optimise transnational life (e.g., Kwon, 2021; Lam, 2009; Skerrett, 2015). Thus, "transnational literacies" has been widely used to describe the agentive practices in transnational life (e.g., Jimenez et al., 2009; Warriner, 2007). Furthermore, the widespread use of digital technology urges researchers to increase attention to transnational literacies in digital spaces (Lee, 2018; Stewart, 2014).

With the transnational framework, we perceive that international students engage in constant, fluid, and dynamic information practices with the internet resources of the home and host country. Furthermore, the key analytical concept of "bifocality," which refers to how "transnational forms of exchanges, communication and activities impact upon the cognitive, social and cultural orientation of migrants" (Vertovec, 2004, p. 974), helps us understand how international students compare "life experiences, events, and situations from the dual points of view" of their native society and their adopted society (Guarnizo, 1997, p. 311).

Taken together, international students are an important subgroup of transnational students who are transient migrants. Their broad, multiple, and varied social networks, both online and offline, are linked to multiple national home-based identities (Chang et al., 2020). Nevertheless, few studies used a transnational lens to explore international students' online IL practices, especially under a particular context. Therefore, this study aims to explore the complexities of how cross-border mobility, transnational attachment, and sense of belonging impact international students' IL as they strive to stay informed and ensure health, travel safety, and continuity of their study in the COVID-19 pandemic.

4. Methodology

This study is drawn from a larger research project exploring how Chinese international students navigate online information, particularly concerning their literacy practices in seeking and evaluating information credibility. As this project was conducted between November 2021 and March 2022 when the COVID-19 pandemic was at its height, all participants brought up pandemic information-seeking experiences without being explicitly asked. Hence, the range of data and extensive narratives offered by participants allowed us to develop this in-depth analysis to understand how participants navigated the pandemic information environment to inform their study-abroad lives.

Narrative inquiry is the most suitable methodology for this study because it can deeply uncover and understand international students' complex and multi-layered online information-seeking experience during the pandemic. We drew on Clandinin and Connelly's (2000, 2006) approach to narrative inquiry. They first outlined possibilities for narrative inquiry within educational studies and held a Deweyan view of experience as the philosophical basis of narrative inquiry (Connelly & Clandinin, 1990). In other words, narrative inquiry adopts "a view of experience as phenomenon under study" (Connelly & Clandinin, 2006, p. 479), focusing on understanding "how the personal and social are entwined over time in [participants'] lives" (Clandinin, 2006, p. 51). Thus, the narrative approach helped us understand and capture how participants' IL was shaped by the larger social, cultural, and institutional narratives within which they live and have lived. Furthermore, narratives are knowledge-producing devices since they make sense of personal experiences and share that sense-giving with others (Clandinin & Connelly, 2000; Connelly & Clandinin, 2006). Therefore, we took a subjective position to connect relationally to the participants and attend to the phenomenon of their 'storied' experience of seeking online information during the global crisis, thereby achieving story co-creation and providing a deep understanding of their unique stories.

4.1 Participants

Purposeful sampling was used to recruit six participants who constituted information-rich cases in a large U.S. public university (Merriam & Tisdell, 2016). Selection criteria included: (1) born in mainland China, with all K-16 education completed in mainland China; (2) current graduate Education students; and (3) able to participate in a series of three in-depth interviews, four weekly information-seeking diaries, and one focus group during 2021-2022 academic year.

Because all participants were raised in mainland China, they were primarily exposed to the internet environment of mainland China before their graduate study. This was important because of our interest in understanding the experiences of individuals who moved from one information environment to another. We selected Chinese graduate students (not undergraduates) as they may be expected to have more established Chinese worldviews, values, and habits of mind than Chinese undergraduate students (Wang & Freed, 2021). Finally, we narrowed our focus to only Education students. Understandings of IL and credibility can vary by discipline (ACRL, 2015), a complication we wished to minimise in our study. We also hoped that participants from an Education major would benefit from participating in the study because an enhanced awareness of IL might be advantageous to their future careers. We also had more access to Education students as members of the college ourselves.

Participants were recruited by snowball sampling (Merriam & Tisdell, 2016). Of those who met the selection criteria, we invited participants who represented a variety of hometowns in China, family backgrounds, gender, degree program, and year levels. All participants came or returned to the U.S. campus in August 2021 during the COVID-19 pandemic. Table 1 presents detailed demographic information of six participants.

Table 1. Participant's demographic

Pseudonym	Gender	Age	Degree Program	Year level ^a	Total years of studying in the United States at the time of the first interview
Yan	Female	22	Master's	1st year	3 months
Xinxin	Female	23	Master's	2nd year	1 year and 3 months
Haiyang	Female	25	Master's	2nd year	1 year and 3 months
Cheng	Female	24	Ph.D.	1st year	1 year and 3 months ^b
Ling	Female	29	Ph.D.	1st year	2 years and 3 months ^b
Zhan	Male	29	Ph.D.	1st year	1 year and 3 months ^b

^a The year level as reported by participants at the time of the first interview.

^b Total time includes the time spent on their master's degree at a U.S. institution.

4.2 Data collection

Data collection for the larger project occurred between November 2021 and March 2022. Data included three rounds of semi-structured phenomenological interviewing (Seidman, 2006), weekly information-seeking diaries, and focus group discussions. Because IL can be conceptualised as a phenomenon that has different characteristics in different contexts and will be played out in culturally different ways (Hicks & Lloyd, 2016; Lloyd & Williamson, 2008), Seidman's phenomenological interviewing is a logical method to understand a phenomenon from the participants' perspective and was thus chosen for this study. At the root of in-depth phenomenological interviewing is an interest in understanding the lived experience of people and the meaning they make of that experience (Seidman, 2006).

Three in-depth semi-structured interviews focused on participants' online information-seeking experiences in China (interview 1), the United States (interview 2), and how they reflected on the meaning of their information seeking (interview 3). On average, each interview lasted for 97 minutes. All interviews were conducted online to avoid face-to-face meetings during the pandemic. Furthermore, when participants completed their second interview, they began recording diaries in which they described one information-seeking incident from the past week, one entry a week, for four consecutive weeks. For their convenience, the diary was designed as a brief online questionnaire sent to them each Friday. We also conducted one 95-minute focus group discussion to uncover ideas and issues that initially may not have been raised in the one-on-one interview (Krueger, 2014). Moreover, since the three master's degree students will finish their program and return to China in the summer of 2022, we conducted informal follow-up interviews to learn how they collected online information to plan their trip back, with an average length of 50 minutes.

Although we allowed participants to use English, Mandarin Chinese, or mixed languages to ensure their ease in expressing themselves, they preferred to respond to the interview in Mandarin Chinese as they felt more comfortable narrating their stories in their native language, especially when the interviewer (first author) shared the same native language with them. Therefore, all the interviews were conducted in Mandarin Chinese.

4.3 Data analysis

Data analysis began with the first author transcribing all interview data and excerpting any data pertaining to how participants sought and evaluated online information to guide their actions during the COVID-19 crisis. Next, the first author, whose native language is Mandarin Chinese, translated all identified excerpts. Data analysis was carried out following a narrative analysis framework developed by Fraser (2004). Specifically, we first interpreted individual transcripts and then looked across participants to organise their narratives based on their information-seeking purposes (Merriam & Tisdell, 2016). During cross-participant analysis, we generated

themes by comparing participants' (Merriam & Tisdell, 2016) stories and recognising recurring patterns that ran through the stories. Finally, diary and focus group data corroborated, extended, or problematised the emerging findings. We maintained contact with participants. Participants approved all translations and provided critique and feedback on our analysis.

4.4 Researcher positionality

Huan Gao, a Chinese international student in the United States, possesses an intimate understanding of participants' sociocultural, linguistic, and digital backgrounds. She has also been navigating the COVID-19 pandemic information environment during the later stage of her doctoral study, which facilitated her understanding of the research context and helped establish an easy rapport with participants. Thus, she perceived herself as an "insider" in conducting this study.

Angela Kohnen, a white U.S. national, is an associate professor of literacy education. She has years of experience working with Chinese international students at the master's and doctoral level, but primarily brought an "outsider" perspective to this study.

4.5 Ethical considerations

Once data collection was complete, we maintained contact with participants to ensure the quality of the study (Tracy, 2010). After Gao translated interview transcripts, participants reviewed the translations and provided feedback or corrections; all data used in this paper have been approved by participants. Because of the sensitive nature of some of the topics discussed, we took steps to ensure participant confidentiality, including using pseudonyms for personal and place names. Participants also provided critique and feedback on our analysis, which we incorporated into our final draft.

5. Findings

In this section, we share the stories of participants using online information to navigate their study-abroad life during COVID-19. Students leveraged transnational information literacies to gather and corroborate online information across digital boundaries to keep abreast of the pandemic conditions and relevant regulations before coming to the United States, navigate visa applications and international travel, and keep informed about health and safety issues in the United States. They enacted cultural ways of seeking information and adopted pragmatic approaches to information credibility assessment.

5.1 Staying tuned with the pandemic conditions

Both Ling and Haiyang discussed the differences between Chinese and U.S. media coverage of the pandemic. The two countries took vastly different approaches to COVID-19, and separating fact from hype was difficult online.

Ling: "I am more aware of the credibility of news reports."

Ling was already a second-year doctoral student when she set foot on her U.S. university campus because she had completed one year of online classes in China due to the COVID-19 pandemic. Before her doctoral studies, Ling obtained a master's degree from a U.S. institution and then worked as a university English language instructor in China for five years.

While taking online courses, Ling looked closely at the U.S. pandemic development, expecting to study on campus as soon as possible. She collected online information from Chinese and U.S. sources to attain a comprehensive picture. She described:

Initially, I primarily learned about both countries' pandemic situations from Chinese social media. When the pandemic just unfolded in Wuhan, both official and unofficial media outlets on Weibo¹ reported that the disease was controllable and not contagious, which was inconsistent with western mainstream media. Later, I also looked at western media and regularly checked the U.S. pandemic updates released by Johns Hopkins University. I found western media coverage proved to be more credible.

The pandemic offered Ling a chance to compare how pandemic news is reported by news media based in different countries. As a result, she became more aware of information credibility than ever before. Ling's emerging IL awareness and deeper understanding of online information were demonstrated by her attention to news outlets' purpose and ways of expression:

I am more aware of the credibility of news reports than before the pandemic. For example, an official news outlet on Weibo reported that 1 in 7 people in the United States contracted COVID-19. Chinese media did not have to fabricate data, but their use of devices like tones and choice of words made the U.S. pandemic sound severe. Similarly, the United States reported the pandemic situation in China using sensational or exaggerated headlines, like, "中国迎来了第三波疫情, 政府加强管控" (China has ushered its third wave of the pandemic and the government strengthened its control). In fact, only dozens of cases appeared in several provinces in China.

Ling's words demonstrate her understanding of the constructed and meaning-embedded nature of news messages. She recognised that news reports are a specific category of information that has been processed and shaped by human forces. She also exhibited awareness of the strategies and techniques used by news media to persuade their audiences and shape public opinions.

Haiyang: "Media is a means of politics."

After finishing her first-year master's degree study in the United States, Haiyang returned to China in December 2019 for her winter break. Though she intended to return immediately, the pandemic caused her to stay in China for 1.5 years. She could have chosen online courses, but she deferred her study as she did not want her study-abroad experience to occur virtually.

During her stay in China, she followed the news "*consistently and conscientiously*" to inform her when to return to the U.S. campus:

Weibo reported the pandemic news with a horrible tone. It sounded like the United States was experiencing a deadly disaster. The in-depth analysis of Zhihu² interrogated the irresponsibility of capitalist countries in treating the pandemic. These all told me that going back to the United States at that time meant merely seeking my doom.

It was not until August 2020 that Haiyang seriously considered returning to the campus because of two videos she watched. She was assured that the U.S. pandemic was not as terrifying as she had imagined. As she described:

¹ Weibo, officially called Sina Weibo (Chinese: 新浪微博), is a Chinese microblogging website. It is one of the biggest social media platforms in China.

² Zhihu (Chinese: 知乎) is a Chinese question-and-answer website where questions are created, answered, edited, and organised by the community of its users.

I followed a Douyin³ vlogger, a Chinese doctor at a U.S. hospital. He said U.S. pandemic was not as terrible as people imagined, and severe cases would decrease with more people receiving the vaccine. I was convinced since he was a doctor and interpreted the data insightfully while presenting data. The other vlogger was an American-born Chinese. His video showed that people's life and work were normal in the United States. He believed that as long as adopting proper preventive measures, it would be safe for international students to study in the United States.

While informing Haiyang's decision-making, two videos also made her sceptical about the U.S. pandemic news she consumed earlier in the Chinese media coverage. She could tell the vloggers' struggle under a strict internet climate. As she realised, "*The second vlogger added a premise before his statement to avoid being scolded by Chinese netizens and his account being revoked by the platform.*" In this sense, information seeking in a pandemic environment presented as a challenge but also an opportunity for Haiyang to become more information literate:

The pandemic changed my view of media; media is a means of politics. It seems that an invisible power has shaped, controlled, and impacted Chinese public opinions in the mainstream media.

Haiyang learned that the dominant Chinese media rhetoric (for example, China is the safest place in the world) might be influenced by nationalistic sentiments. As Jaworsky and Qiaoan (2021) found, a surge of nationalism has emerged throughout the global media during the COVID-19 pandemic, which escalated a "narrative battle" over COVID-19 between two major competing powers—China and the United States.

5.2 Navigating visa application and international travel

During the pandemic, visa applications and international travel were complicated. Participants used their online information-seeking skills to access and evaluate information necessary to navigate these complexities.

Ling: "Information for a life-and-death matter must be 100% correct."

Regardless of the U.S. pandemic conditions, Ling had to embark on her journey to the United States to avoid the termination of her fellowship. Ling exercised extra caution to purchasing her airline ticket to mitigate any risks as a result :

I bought a KLM Royal Dutch Airlines ticket on its official website. Since international travel during the pandemic was a life-and-death matter, I trusted only the official website's information. I must ensure the information, such as COVID-19 testing or vaccination proof requirements, is 100% correct to avoid getting in trouble for falsifying information and having to be forcibly repatriated.

Considering the possibility of being deported as a "life-and-death matter" signalled not only the complexities of international travel during the global crisis but also Ling's high demand for credible information. Despite her absolute trust in the official information source, Ling turned to unofficial sources to inform her visa application during the U.S. embassy's closure since "the embassy's official website will not tell me alternative ways of applying for a visa." She said:

³ Douyin (Chinese: 抖音) is a short video media app that allows users to create, edit, and share short videos and live streams, often featuring music in the background. Douyin's international name is TikTok.

*一亩三分地*⁴ is rich in content about how other Chinese students got their U.S. visas from the U.S. embassy in Singapore. I trusted this forum, as sharing a made-up story would not do anyone good. I transferred my visa application case to Singapore, although I quickly transferred it back as the Chinese side resumed working right after my transfer. It was also from this forum that I learned about reopening the U.S. embassy in China.

Ling's mix of official and unofficial sources indicated her flexibility in information selection and use, which arose from her information literacies—knowing where to find relevant information to meet her particular needs. Furthermore, her criterion of information credibility was not fixed—unofficial sources of information can also be reliable under certain circumstances.

Yan: "All was from social media."

Yan enrolled in her master's program in Fall 2020 and completed her first-year online courses in China. She almost abandoned the hope of studying on the U.S. campus someday. Therefore, when the U.S. embassy resumed visa appointments for students in May 2021, Yan felt delighted. But simultaneously, she was anxious as her first time abroad met the pandemic. As she said, "there was so much to do, so I searched online to solve each":

I got almost all the information from social media, like, I learned about the reopening of the U.S. embassy from a WeChat⁵ public account. I did not doubt it since the account was associated with a famous English training institution. Also, when I was unsure where to do the nucleic acid test within 24 hours before flight departure in Shanghai, I asked a WeChat group formed by newly enrolled Chinese students at my U.S. university.

Despite the importance of information, Yan showed complete confidence in social media information regardless of the nature of the information. She did not corroborate the information she found on social media by checking any official website. Yan was less demanding than Ling in determining the information's credibility.

Zhan: "They were in the same situation as mine."

Zhan is a first-year doctoral student. Before his doctoral studies, he pursued a master's degree in a U.S. institution and taught English test preparation at a training institution in China for a few years. After three months of staying on the U.S. campus, Zhan had to return to China for an important personal issue. He was initially in a panic due to the imagined complexities involved in his journey back. Zhan detailed his searches for planning his return trip:

I felt more comfortable and convenient seeking information from my community. I searched Xiaohongshu⁶ for first-hand experiences of those who recently went back to China. I could find everything: testing appointments, airline regulations, quarantine requirements, customs codes, health code applications, quarantine hotels, etc. I found this information helpful and trustworthy because these people were in the same situation as mine. I judged the posts' credibility by their comments and likes.

⁴ 一亩三分地 is an online forum that features Chinese students' study-abroad information.

⁵ WeChat (Chinese: 微信) is a Chinese instant messaging, social media, and mobile payment app. WeChat has been described as China's "app for everything" and a "super app" because of its wide range of functions.

⁶ Xiaohongshu (Chinese: 小红书) is a social media platform. It has been described as "China's answer to Instagram."

Zhan's IL was demonstrated by his flexible shuffling across cultures and digital ecosystems and the negotiation of information credibility based on the significance of the information. Moreover, his way of information evaluation was pragmatic—using common heuristics such as the popularity of a post that may not always work but worked for him in these situations.

Xinxin, Haiyang, and Yan: “Ticket agency added another layer of protection.”

Xinxin and Haiyang were friends and studied in the same master's program. They deferred their master's degree studies for 1.5 years before returning to the U.S. campus. Since they did not want to delay their study, they cautiously searched online for international airline ticket information for two days to ensure a safe departure to the United States. Because they wanted to avoid buying any tickets by themselves due to the uncertainty of flight cancellation, they decided to seek help from the ticket agency. As Haiyang shared:

I first paid for consulting an airline ticket agency on Zhihu for flight information. Of course, I had no way of knowing if they were reliable, but how they talked sounded honest and sincere. Later we decided to commission the agency to buy the ticket for us. At least they were better than us at buying the ticket ourselves. So we finally purchased Korean airline tickets from them.

Xinxin, Haiyang, and Yan will soon finish their master's degree studies in the summer of 2022. Their journey back to China will be even more challenging than when they came to the United States. Yan remarked, “China has been launching mass testing to maintain its zero-COVID strategy. International students coming home are key screening targets, so it is not too early to plan everything six months ahead.” As any carelessness would cause them trouble, they all had been earnest in information searches to plan their journey back home. Similar to their trip to the United States, they all bought an airline ticket from a ticket agency on social media to mitigate the risk of their journey back. As Yan shared:

It was stressful even thinking of my trip back. I do not dare buy airline tickets online by myself due to millions of temporary cancellations. So instead, I bought one from a ticket agency on Weibo. I trusted the agency because of its tons of followers. Although it charged a handling fee and couldn't ensure everything, it added another layer of protection for me.

Xinxin also shared how she bought the airline ticket and stayed updated with travel information:

I didn't want to take the risk by myself, so I bought my ticket from an agency associated with a Weibo account called 北美票帝 (North American Ticket). This account is an important source because it synthesizes all timely travel information and simplifies official information regarding travel restrictions released by the Chinese embassy. The account is also like a community where people share critical information, like, nucleic acid tests, testing agency, legitimate departure city, health certificates, etc. I also joined two WeChat groups, “回国群” (Journey back to the country) and “达拉斯转机群” (Layover in Dallas), to follow the latest information, which allowed me to feel safe. I also found first-hand experiences shared on Xiaohongshu very helpful. I just learned from there that I would need to do a nucleic acid test four times!

Notably, they all relied on social media information to address important issues such as international travel planning. Scholars have pointed out the limits of using heuristics like popularity or site appearance to make credibility judgments (Sundar, 2008), yet in a time of information uncertainty, with limited options, participants needed to trust something. Their reliance on these sites proved successful.

5.3 Keeping informed about health and safety issues

Several participants discussed how they monitored health and safety issues using online resources. Participants drew upon information in English and Chinese and relied upon many strategies for evaluating credibility, even those not always deemed reliable by IL scholars. Yet participants were able to maintain an understanding of their health and safety risks by moving across sources and information ecosystems.

Cheng: “University and .org must be credible.”

Cheng is a first-year doctoral student who just got her master’s degree from the same U.S. university. Out of concern for her safety, Cheng’s parents always forwarded her the U.S. pandemic-related news or videos they saw in Chinese news outlets. For example, her dad interrogated if Asians were being discriminated against. Likewise, her mom was worried if Cheng was short of materials such as mineral water and toilet paper and if people even grabbed things from others on the street. Here is how Cheng alleviated her parents’ anxiety:

I first asked my mom where she saw this news, the place, and the date of the reported event because my parents usually ignore the year of the news. Some news they read may have been published many years ago. Then, I searched for authentic information about materials shortages related to the pandemic and shared it with them.

How Cheng addressed her parents' concerns illuminated her IL. She was aware of the importance of elements such as source and date to news credibility. Nevertheless, her challenges were revealed as she sought information in the U.S. online context. For instance, Cheng's parents were also apprehensive about U.S. pandemic control measures, such as the requirement for the nucleic acid test, quarantine, and face masks in public places. Cheng assured her parents about her safety:

I googled relevant COVID-19 policies in my city. The top-ranked Google results and websites ending in .org must be credible. I also translated and sent my parents the official university email concerning COVID-19. University’s notice must be absolutely reliable.

Since Cheng "never looked at the domain name in China," her effort in consciously evaluating information credibility in the U.S. online context showed her awareness of doing so. However, she did not know that domain names like .org should not be considered an authority indicator in the U.S. online ecosystem. Likewise, whereas institutions like universities can be widely regarded as the authority in China, university notices were often questioned by faculty members and students in the politically-fraught U.S. COVID-19 context. Furthermore, top-ranked Google results can also be sponsored content.

Zhan: “First several Google results should be good.”

When Zhan just arrived at the U.S. university in Fall 2021, he was eager to follow the daily updates on U.S. pandemic development to stay safe and healthy. However, he could only turn to known sources such as the New York Times and Washington Post to keep updated with the latest pandemic development. Tired of reading long articles, he figured out his way to learn about the brief daily updates. He elaborated:

I read official university emails regarding pandemic warnings and regulations, which must be authentic. I also search for COVID-19 stats on Google, which returns me statistics. Like the red or blue color on the U.S. map showing each state's voting situation during the U.S. presidential election, my search also produces a map with different colors representing each state's COVID-19 conditions. I can also see the trend

of new cases in a line graph by choosing a date. I don't doubt these results. I trust Google much more than Baidu. Baidu killed its brand by itself these years.

Similar to Cheng, Zhan also considered the university as a credibility marker. Furthermore, Zhan trusted the statistics without looking at their source since the "*first several Google results should be good.*" Similarly, Zhan regularly checked the vaccine injection rate expecting a 70% injection rate when herd immunity can be achieved. However, this time, his credibility assessment was context-dependent. As he said, "*this kind of background information does not have to be 100% accurate to trust it*".

Xinxin: "Chinese online information is my resource."

Although Xinxin had taken the Chinese COVID-19 vaccine before coming to the United States, she was considering getting the Pfizer vaccine, which she believed to be more effective. To make an informed decision to ensure health, she did some research on "mixed injection" by relying on Chinese information:

I visited Bilibili⁷ videos and Weibo articles to see how scholars and doctors interpreted different countries' vaccines to non-specialists. I trusted these experts in general, but not those with a radical tone. I also consulted "2020s 艰难留学组" (2020s tough study-abroad group), one Douban⁸ group constituted of Chinese students who were studying abroad in the 2020s. The way they shared their reactions after injecting mixed vaccines was dependable because those were their own experience.

Xinxin's credibility assessment criterion was not fixed. In addition to traditional authoritative professions like doctors and scholars, community experiences shared on social media also won her trust. Notably, although physically studying overseas, Xinxin got everything done using Chinese language information, particularly from Chinese social media. As she justified:

I am always Chinese. My native language is always Chinese. I will inevitably use my native language to help me do everything. Chinese language and even Chinese online information are all my resources. My American classmates would not search for anything in Chinese. I have these online resources; why not use them?

Xinxin was one of the participants who had no confidence in their English proficiency while studying at a U.S. university. However, rather than feeling inferior, Xinxin took pride in using her Chinese online resources to address problems, indicating the impact of a reinforced cultural, linguistic, and digital identity on her IL practices.

6. Discussion

The foundation of this study is the lived experiences and stories of participants' online information seeking during the COVID-19 pandemic. We did not aim to compare their stories, but we did examine themes that ran through all their stories. This section discusses three themes that appeared in all six stories.

⁷ Bilibili (Chinese: B 站) is a Chinese video-sharing website themed around animation, comics, and games, where users can submit, view, and add overlaid commentary on videos.

⁸ Douban (Chinese: 豆瓣) is a Chinese social networking website that allows registered users to record information and create content related to films, books, music, recent events, and activities in Chinese cities. Douban is at times regarded as functionally similar to Reddit.

6.1 Transnational information literacies

This study found that participants' bilingual information environment is a defining feature of Chinese international students' information-seeking experiences during the COVID-19 crisis. Through harnessing their multilingual, sociocultural, educational, and border-crossing resources, students engaged with the complex, dynamic, and flexible process of gathering information across digital and cultural boundaries. To locate the most reliable information sources that ensure their health, safety, and international travel, participants constantly juxtaposed, compared, contrasted, and corroborated a rich array of information sources based on home and host country or a global scale.

Through leveraging continuously unfolding transnational literacies to connect them to various online sources, participants enacted socioculturally and temporally mediated information practices and built a situated and tacit understanding of the pandemic information landscape. Echoing previous studies that demonstrated international students' complex ways of scaling up and adjusting their information activities (e.g., Hughes, 2013; Reyes et al., 2018), this study uniquely testified to participants' situated adaptive information-seeking strategies and constantly adjusted practices in addressing their important information needs. For example, Haiyang and Ling checked out the English information on U.S. pandemic conditions to complement the Chinese information they felt sceptical about. Furthermore, participants brought together the formal and informal information channels to develop a broad understanding of an inquiry.

Students also displayed their transnational literacies by noticing how news outlets based in two countries can cover pandemic situations and events differently. Their constant comparison of pandemic information in multiple contexts manifested the concept of "bifocality" (Vertovec, 2004, p. 974) in transnationalism. Information seeking at a global scale enabled participants to discern and corroborate the information's credibility when confronted with contradictory claims and evidence. For instance, Haiyang deepened her understanding of the media's role in shaping people's beliefs and how politics can impact media discourses. Ling learned that media utilised linguistic devices to create bias and thus influence information consumers.

Indeed, information overload may make international students vulnerable to misinformation (Bahl et al., 2021). Yet, the exposure to diverse attitudes, perceptions, and stances by regularly consuming online information across continents, cultures, and languages—the sociocultural context expanded and influenced by the internet (Coiro, 2021)—affords international students an opportunity to become transnationally information literate individuals characterised by an open, tolerant, and global perspective. Transnational information seeking also creates a space to cultivate a cosmopolitan citizenry, where international students learn to be “globally alert, linguistically versatile, ethically tuned, and geographically nimble” (p. 40) while engaging in critical literacies globally in addition to locally (Hull & Stornaiuolo, 2014).

6.2 Cultural ways of information seeking

While displaying transnationalism by drawing upon their complete information resources that traverse borders, participants also exhibited their cultural ways of information seeking. Our study found that participants frequently used Chinese online resources, particularly Chinese social media, to track the flow of information in order to make informed decisions. For example, Haiyang, Xinxin, and Yan entrusted a ticket agency identified on Weibo or Zhihu to buy their international airline ticket. Likewise, Xinxin turned to Bilibili and Douban to confirm if a mixed injection of the COVID-19 vaccine was safe. This finding differs from previous literature that found international students' substantial usage of social media based in the host country for information (Hamid et al., 2016; Sin & Kim, 2013).

Participants also sought most information from Chinese online communities and social media groups because of shared identities and experiences. This finding echoes Lloyd's (2017)

contention that information practice references values, knowledge, and ways of knowing inherent within a social setting and affords opportunities for alignment and membership in a community. For example, Ling learned a visa application strategy from an online platform rich in study-abroad information shared by other Chinese students. Zhan and Xinxin navigated their international travel using the experiences of those recent returnees shared on Xiaohongshu and Wechat groups. Similarly, the mixed vaccine injection incidents of other Chinese students studying abroad confirmed Xinxin's decision to inject Pfizer.

This finding echoes previous research that illustrated the culturally-specific nature of digital space and international students' enactment of IL (Binsahl et al., 2020; Chang & Gomes, 2020). In this study, Chinese international students did not make the "digital shift" as they physically transitioned overseas. Indeed, as transient migrants who are young adults pursuing higher education in the host country, international students have more sociocultural and emotional attachments with their home country than other subgroups of transnational students, such as permanently immigrated students.

Participants' ways of information seeking illustrated their relations, understanding, and degree of familiarity with different information ecosystems available to them as transnational students. Their exclusive use of Google as a starting point for most online information seeking in the U.S. information environment can be attributed to their unfamiliarity with the U.S. information context. Indeed, although accessing the global internet with a VPN⁹ authorised by the government is not illegal in China, the cost of the VPN, network speed, and inconvenience usually discourage people from seeking information outside China's digital domain. Thus, the lack of knowledge of U.S. information terrain can explain why several participants simply relied on "the first several search results on Google and official university email" to track the U.S. pandemic control and regulation, and they did not know where to locate easy-to-read pandemic updates.

By contrast, participants' flexible information practice in the Chinese online information domain demonstrated their refined understanding of China's information ecosystem and effective control of Chinese online resources. Students' rich knowledge and experience with China's internet boosted their confidence in their information seeking during a global health emergency when the accuracy of information was in demand. Furthermore, China's internet landscape, characterised by entirely different sets of home-grown internet services, especially an extensive array of social media sites (China Internet Watch, 2018), can meet participants' various information needs. Although participants indicated their distrust of Baidu as a search engine, they all unanimously reached out to Chinese social media, knowing which social media to turn to for what kind of information. They also privileged crowd-sourced information in the Chinese ecosystem, relying on variables such as the number of followers to indicate credibility.

6.3 Pragmatic approaches to information assessment

As the third important finding, this study also revealed participants' unique information credibility assessment practices, drawing upon all available resources. Participants were critical consumers of information, as evidenced by how Cheng cautioned her mom to judge the purpose of the information producer as well as the year and place of the news, or how Haiyang sensed the impact of politics on media. Such literacies were gained through their years of interaction with online information and educational achievement since they had never received any formal IL education. As Ling frankly stated, "I just learned the term of information literacy after participating in this study." Furthermore, our study illustrated that participants constructed, negotiated, and contextualised credibility in accordance with the extent of the information's significance rather than employing any universal, decontextualised criteria. This finding echoes Rieh and Hilligoss (2008) who found that credibility is not always viewed as absolute but rather seen as relative in regard to the social context in which information seeking is pursued and

⁹ In mainland China, using a VPN is important if you want to access blocked websites.

credibility judgments are made. In this study, participants' credibility assessments differed as they sought news, travel, and health information. For instance, when any wrong flight information might cause her repatriation, Ling demanded definite information credibility from the official website. By contrast, when the details of U.S. pandemic statistics were less consequential, Zhan did not exercise the same caution as he did with planning his trip back to China.

Participants' unique information assessment practice also relied on informal sources for critical decision-making. Like Catellier and Yang (2012), who found that trust in government agencies, doctors, scientists, and public health bodies plays a vital role in seeking information during risk, we found evidence that participants trusted sources released from authentic figures and official agencies. For instance, Haiyang trusted vloggers who were doctors commenting on U.S. pandemic situations. Xinxin depended on vaccine analysis by scholars without a radical tone. Ling dared to buy airline tickets only on the official website. But simultaneously, our study extends Catellier and Yang's (2012) work by showing that participants trusted unofficial sources such as online communities and social media groups. This finding suggests that when searching across geopolitical contexts in which the two countries in question appear to be deliberately misrepresenting the situation in the other country, unofficial sources may be necessary.

Furthermore, this study also juxtaposes students' pragmatic ways of judging information credibility with best practices in IL from the research literature. For example, scholars warn about the prevalence of health misinformation on social media (Cinelli et al. (2020), including Chinese social media (Zhang et al., 2021). Other scholars caution against using metrics like the number of followers, as these "can be manipulated" (Lewandowsky et al., 2017) and warn that the .org domain name is meaningless (Wineburg & McGrew, 2019). In addition, participants' approaches to credibility assessment in U.S. digital terrain can also be ascribed to culturally different notions of authority. For example, Cheng and Zhan's absolute trust in pandemic regulation information sent by official university email can be primarily due to institutions like universities being commonly considered the authority in China (Rodriguez, 2014). However, they did not know that in the U.S. context, the official university information was often mired in political controversy because they were studying in a state where the governor had decided to regulate local approaches to the pandemic. In other words, they were unaware of the different kinds of "official" information. Also, even if Google as a search engine might function better than Baidu, it is important for Chinese students to realise that Google's search cannot be trusted easily and unconditionally. These findings are consistent with what Hicks (2022) argues: overseas students cannot automatically and quickly transfer IL competencies from one cultural context and situation to another. Nonetheless, students in our study were generally successful in their information seeking and credibility evaluation—they found the information they needed to live their lives and understand their risks, despite the enormous challenges they faced.

7. Conclusion and Implications

Adopting a transnational approach, this narrative study paints a rich picture of how Chinese international students interacted with online information to inform their studying abroad decision-making during the COVID-19 pandemic when uncertainty and time constraints create significant pressure. This study illustrates that participants develop transnational information literacies to stay tuned with the latest pandemic conditions and relevant regulations. The study also finds that students heavily relied on Chinese social media to collect important information and exhibited pragmatic approaches to information credibility assessment.

This study increases our understanding of Chinese international students' complex information needs in emergencies and how they address their information needs effectively as a crisis response. The research also adds to the literature that explores cultural ways of knowing,

negotiating, and using information, thereby contributing to a broader recognition of multicultural information practices in increasingly intercultural societies. Moreover, our research extends transnational literacies studies by enriching an understanding of online information literacies of the international student population.

Our study has implications for librarians, educators, and researchers who work with bilingual and international students in U.S. higher education institutions. Participants in this study demonstrated nuanced and flexible practices when accessing and evaluating information, practices that were sometimes contrary to prevailing notions of “correct” credibility assessment. Librarians and educators who work with international students might benefit from learning more about their students’ existing IL practices, including the kinds of sources students rely on, for what, and why. Furthermore, while prevailing wisdom is that popularity cannot be used as a proxy for credibility, IL researchers may want to explore whether this holds true in a restrictive information ecosystem like China’s. The past decade has shown us the possibilities of social media for information sharing in contexts when information from “authorities” is not always reliable. Research into the complexities of crowd-sourced information in all internet environments would be valuable.

Finally, this study has implications for IL scholars and educators of all students, including monolingual American students. The United States is home to a diversity of all kinds, and cultural ways of knowing, searching, and assessing information are not unique to international students. More research into how students from various cultural, religious, political, and socioeconomic backgrounds navigate information around fast-changing, polarising topics is needed if we are to understand the culturally diverse ways of information seeking during crises.

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