The Roles of Legacy Versus Social Media Information Seeking in American and Chinese Consumers’ Hoarding During COVID-19

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Abstract
Through two studies conducted with cross-cultural samples (the United States and China), this research examines the psychological mechanism of consumer hoarding during COVID-19. Findings from Study 1 suggest that consumer hoarding is differently affected by legacy and social media information seeking, perceived scarcity, and scarcity attributions in the United States versus China. For China, while social media information seeking has a negative downstream relationship to hoarding, legacy media information seeking has a positive relationship with hoarding. In the United States, only social media information seeking has a positive relationship with hoarding. Further, these effects are significant when consumers attribute the scarcity responsibility to insufficient supply but not high demand. Study 2 shows that when the cause of scarcity is stated directly, perceived scarcity increases hoarding intention for Chinese consumers when the scarcity cause is due to supply but not demand, whereas U.S. consumers' hoarding intention does not vary with the scarcity cause. The findings underscore cross-cultural differences in how legacy and social media information seeking influence consumer hoarding and highlight implications for situations in which hoarding is likely.

Keywords
COVID-19 pandemic, consumer hoarding, perceived scarcity, social media information seeking, attribution

Online supplement: https://doi.org/10.1177/1069031X221089347

The COVID-19 pandemic has created unprecedented challenges and triggered a cascade of physiological, psychological, and economic effects across the globe on consumers, companies, and society (Campbell et al. 2020; Davvetas, Ulqinaku, and Abi 2021; Hamilton 2021; Vecchi et al. 2022). Many countries have imposed lockdowns, curfews, and travel restrictions as nonpharmaceutical interventions to curb the spread of the virus (Kumar et al. 2021), but these measures have also caused supply disruptions and product shortages (Esper 2021; Pantano et al. 2021). To cope with the uncertainties surrounding the pandemic, and in anticipation of more product shortages, consumers have resorted to hoarding, panic buying, and stockpiling (Kirk and Rifkin 2020). Social media has been a key communicator of the hoarding phenomenon, with viral images and videos of empty store shelves, long waiting lines, and shopping carts filled with toilet paper, hand sanitizer, and canned food products (Jankowicz 2020). One pressing issue pertains to the role of media in informing (or misinforming) the public about COVID-19 (Pomerance, Light, and Williams 2020). Research suggests that sources ranging from politicians to social media (e.g., Twitter, Weibo, Facebook) and legacy media (those outlets that were predominant prior to the Information Age; e.g., television, newspapers) have disseminated contradictory psychological variables (e.g., income, household size, perceived threat and severity of COVID-19) to consumer hoarding (e.g., Bentall et al. 2021; Columbus 2021; Garbe, Rau, and Toppe 2020; Laato et al. 2020). Despite these insights, more research is needed to better understand the phenomenon of consumer hoarding, especially in contexts in which crisis-related shopping behaviors tend to escalate (e.g., Campbell et al. 2020; Hamilton 2021).
information about COVID-19, at times without proper scientific evidence (Chazel and Laporte 2021). This has led to a growing number of consumers finding it difficult to disentangle truths from falsehoods (Schaeffer 2020).

Against this backdrop, what are the roles of social media and legacy media information seeking as they pertain to hoarding? Will social and legacy media have varying influences due to their inherent differences in messaging, use, audiences, and other factors? Moreover, consumers’ responses may vary by culture due to cross-cultural differences in COVID-19 mitigation measures and policies as well as in the regulation/control and public use of media. For example, whereas media is a free, independent enterprise in some countries (e.g., the United States), it is under government control in others (e.g., China).

However, research examining these variations and differences is sparse, with a few exceptions. For example, Bentall et al. (2021) found more overpurchasing with consumers in the Republic of Ireland than in the United Kingdom and more overpurchasing in urban than rural areas during the early phases of COVID-19. Ahmadi et al. (2021) used global mobility data from Google and cultural dimension theory to explain the observed heterogeneity in consumers’ stockpiling of groceries and household items across different countries (e.g., Luxemburg and Bulgaria vs. Japan and Indonesia). The authors found that, globally, consumers increased stockpiling after COVID-19 was declared a pandemic. These authors also showed that this increase in stockpiling was more pronounced for countries whose residents exhibited high uncertainty avoidance, low long-term orientation, low indulgence, and high individualism. In contrast, Islam et al. (2021) did not find such cross-cultural differences in the effects of time- and quantity-limited scarcity cues on perceived stress, impulsive buying, and obsessive-compulsive behavior among consumers from the United States, China, India, and Pakistan. These findings have offered some initial insights into cross-cultural differences on the topic, but whether and how international media differences affect consumers’ hoarding is relatively unknown. Considering the important role of media during the pandemic, this investigation aims to address four research questions:

**RQ1:** What is the role of information seeking via social and legacy media in influencing consumers’ hoarding during the COVID-19 pandemic?

**RQ2:** Are there any differences in the influences of social and legacy media information seeking on hoarding between consumers in the United States versus those in China?

**RQ3:** What is the psychological mechanism that underlies consumers’ hoarding due to social and legacy media information seeking?

**RQ4:** Are there any differences in the psychological mechanism between consumers in the United States versus those in China regarding their respective hoarding behavior?

We focus on consumer hoarding of essential products (e.g., food, water, medicine, toiletries, personal hygiene products) because of the intense media attention toward these products as well as their salience in consumers’ day-to-day lives. We draw on Stiff, Johnson, and Tourk’s (1975) theory of hoarding, Weiner’s (1995) attribution theory, and research on cultural differences between the United States and China in the role of media in communication and public relations to propose our research model (see Figure 1). We delineate a process whereby consumers’ social and legacy media information seeking leads to hoarding through perceived product scarcity and scarcity attributions when consumers are unaware of why the scarcity exists. Based on cultural/media differences between the United States and China, we make predictions of how social and legacy media information seeking may influence hoarding differently for U.S. versus Chinese consumers. Survey data from the United States and China test our model when scarcity cause is unknown, and an experiment examines the moderation of known scarcity cause on the relationship between perceived product scarcity and hoarding.

Our findings add to the nascent literature on consumers’ hoarding behavior within the context of the COVID-19 pandemic and augment the theory of hoarding (Stiff, Johnson, and Tourk 1975) by defining supply- and demand-induced scarcity attributions as mechanisms of the process rooted in attribution theory (Weiner 1995), the model of organizational responses to scarcity (Nottenburg and Fedor 1983), and the situational crisis communication theory (SCCT; Coombs 2007). In this vein, we theorize that the impact of perceived product scarcity on hoarding varies as a function of the assessment of the cause of the product scarcity. Finally, we demonstrate how cross-cultural differences between the United States and China in media’s roles in communication and public relations lead to differences in social versus legacy media information seeking’s influence on consumers’ hoarding through scarcity perceptions and attributions, extending prior knowledge on media information seeking in the United States versus China. Our findings inform marketers and policy makers in responding to the COVID-19 pandemic and other crisis situations.

**Literature Review and Research Hypotheses**

**Information Seeking and Hoarding**

Stiff, Johnson, and Tourk (1975) suggest that hoarding is a function of economic and social analyses. While economic analysis explains hoarding from the macro-level market equilibrium perspective (e.g., total product supply, income (in)elasticity, demand (in)elasticity), social analysis considers the influence of signals (e.g., media and interpersonal communication, price, visible supply, visible purchasing activities) and consumer preconditions (e.g., experienced and/or expected scarcity, consumption expectation, storage). We draw on social analysis to underpin our research hypotheses given our interest in individual consumers’ attitudinal and behavioral responses as they relate to hoarding at the micro level.
Studies of social behavior show that people respond to information and signals (e.g., Connelly et al. 2011; Spence 1973) and that uncertainty elicits extreme reactions (Stiff, Johnson, and Tourk 1975). This is because uncertainty is rooted in information insufficiency, so in times of crisis such as the COVID-19 pandemic, consumers seek information to cope (Brashers 2001). Previous studies on public health emergencies, such as the SARS, MERS, and Zika epidemics, have consistently shown that information-seeking behavior predicts risk perceptions and the adoption of preventive measures (Chan et al. 2018; Jang and Park 2018) and that people may rely on legacy and/or social media as their information sources (Dailey and Starbird 2016). During the COVID-19 pandemic, social media has not only served as a tool for users to search for COVID-19 related information and functioned as a public sphere to exchange opinions (Li and Zheng 2022) but also provided a virtual space where consumers could simply tweet to enjoy freedoms virtually and escape from being physically confined to their homes (Pantano et al. 2021).

Meanwhile, legacy media continue to play a crucial role in emergency information diffusion (Dailey and Starbird 2016). Major cable news channels in the United States, such as Fox News and CNN, as well as local television stations, have experienced a significant increase in viewers during the COVID-19 pandemic due to their active coverage of the pandemic and related mitigation measures (Porter 2020; Rizzo 2020). Indeed, social media posts about COVID-19 appear every day (Islam et al. 2021), and videos of consumers fighting for toilet paper have been viewed by millions around the world on TV and cable news (Brown 2020). These videos and discussions on social and legacy media have become a real-world log of experimental manipulations that prime scarcity salience (Pomerance, Light, and Williams 2020).

Research suggests that consumers’ increased reliance on social and legacy media has exposed them to more of these messages and subsequently intensified fear responses. For example, Naeem and Ozuem (2021) found that increased social media use during the lockdown of the COVID-19 pandemic prompted more sharing of viral videos of empty shelves, which led consumers to panic buy. Similarly, Kim and Florack (2021) revealed that at the early stage of the pandemic, frequent social interactions about COVID-19 on social networking sites were associated with more panic buying through the mediating process of a reduction in consumers’ general confidence. As for legacy media, Krawczyk et al. (2021) showed that COVID-19 coverage accounted for approximately 25.3% of all front-page online news articles collected from 172 major online news sources in 11 countries between January and October 2020. Those authors also showed that 16% of COVID-19 news articles can be classified as highly negatively polarized, citing issues such as death, fear, or crisis. Focusing on Lebanon, Melki et al.’s (2022) study reported a significantly higher fear score for those individuals who were exposed to high levels of legacy media (i.e., television) and low levels of social media as well as for those who were exposed to high levels of both legacy and social media.

Thus, as consumers rely more on social and/or legacy media for their information needs during the pandemic, they are exposed to more news stories of disease, death, and financial hardship, which magnify mortality salience and scarcity. Following this line of reasoning, we expect that consumers’ information seeking from social and legacy media will be positively and directly associated with hoarding behavior. Further, this positive association will manifest among consumers irrespective of their cultures due to the global impact of the pandemic.

**H1:** Both (a) legacy and (b) social media information seeking are positively related to hoarding behavior regardless of culture.
Serial Mediation of Perceived Product Scarcity and Scarcity Attributions

According to Stiff, Johnson, and Tourk (1975), although people respond to information (signals), signals themselves are not sufficient to induce behavior (i.e., preconditions may be necessary). Those authors posit that perceived product scarcity is a critical precondition for hoarding. Indeed, consumers’ hoarding as a response to scarcity has been observed in natural disasters and crisis situations such as after the aftermath of superstorms Sandy and Haiyan as well as the 1979 gasoline crisis in the United States. However, what is unclear is the mechanism through which perceived product scarcity influences hoarding. We draw on attribution theory (Weiner 1995), Nottenburg and Fedor’s (1983) model of organizational responses to scarcity, and Coombs’s (2007) SCCT to suggest that when the causes of product scarcity are unknown to consumers, scarcity attribution could be one such mediating process between perceived product scarcity and consumers’ hoarding.

According to attribution theory, people try to understand their environment, the behavior of others, and even their own behavior (Weiner 1995). Consequently, they seek explanations and attempt to find the probable causes of events and actions. Through this process, they strive to reduce uncertainty and fear, establish coherence, and resume control (Becker, Wagner, and Christ 2011; Van Raaij 1985). Building on attribution theory, Nottenburg and Fedor (1983) developed the Model of Organizational Responses to Scarcity to explain the processes involved in organizations’ responses to perceived or anticipated scarcity in the environment, such as slowed growth, declining profits, and a shrinking customer base. The authors suggested that in the face of scarcity, an attribution made by an organization concerning the cause of scarcity determines the organization’s response to scarcity and that identifying internal or external sources as the cause of scarcity is a crucial phase preceding the organization’s enactment of a response. This indicates that attribution mediates the impact of scarcity on organizational responses. Similarly, shifting the focus from organizations to a stakeholder or audience orientation, SCCT (Coombs 2007) posits that people’s attribution of crisis responsibility mediates the relationships between their crisis perceptions and subsequent cognitive, emotional, and behavioral responses to the crisis (e.g., Carvalho, Muralidharan, and Bapuji 2015; Kim 2014; Klein and Dawar 2004; Lei, Dawar, and Gurhan-Canli 2012; Whelan and Dawar 2016; Yin, Yu, and Poon 2016).

When a crisis worsens, people attribute more responsibility to potential crisis culprits because they believe that more severe crises require greater explanation and that assigning more responsibility to crisis culprits maintains control over the crises (Coombs 2007; Weiner 1995). Indeed, SCCT research supports the intensifying effect of crisis severity on the magnitude of crisis responsibility that people attribute to potential culprits, such as organizations or products (Claeys, Caubergh, and Vyncke 2010; Coombs 1998; Laufer et al. 2005). For example, Coombs (1998) finds that as a crisis becomes severe, people’s attribution of crisis responsibility to an organization perceived to be a culprit of the crisis increases. Laufer et al. (2005) also found that consumers who perceive a product-harm crisis as more severe tend to attribute more responsibility to the culprit organization. Applying this logic to product scarcity, we can speculate that as product shortages become more widespread and the scarcity situation deteriorates, consumers will seek more explanations to understand why this is happening and who is responsible and then attribute more responsibility to those whom they consider potential culprits for the scarcity situation. These scarcity responsibility attributions will in turn affect people’s reactions to product scarcity such as hoarding.

Because product scarcity is a negative experience, due to the defensive attribution bias (Weiner 1995), consumers will tend to make external attributions regarding scarcity sources. We consider two external sources of attributions as pertinent to product scarcity: high demand from other consumers (i.e., demand-induced attribution) and insufficient supply from suppliers (i.e., supply-induced attribution). If consumers attribute product scarcity to high demand from other consumers, they may try to rectify the situation through increasing their own personal stockpiles. This can be explained by the bandwagon effect (Corneo and Jeanne 1997; Leibenstein 1950), which occurs when consumers follow the behavior of others, resulting in a situation where demand accelerates demand (e.g., Parker and Lehmann 2011; Van Herpen, Pieters, and Zeelenberg 2009). If consumers believe that the responsibility of product scarcity lies with manufacturers and/or suppliers for not producing enough supplies, they may sense the urgency and become worried because product supplies are out of their control and potentially long-term, and they may therefore engage in hoarding. This line of reasoning is supported by documented effects of limited-quantity scarcity on consumer product preference and choice, which shows that consumers indicated greater purchase intentions for scarce products that had a limited supply (e.g., Aggarwal, Jun, and Huh 2011; Gupta 2013). We can therefore expect that in response to increased product scarcity with an unknown cause, consumers will attribute greater responsibility to insufficient supply and/or high demand, which in turn will lead to more hoarding as a justifiable coping strategy.

To summarize, perceived product scarcity and two external scarcity attributions (i.e., supply-induced and demand-induced scarcity attributions) will serially mediate the influence of information seeking on hoarding. However, we argue that the serial mediation effect will vary as a function of consumers’ social and legacy media information seeking. That is, although we expect the variables of perceived scarcity and the two external scarcity attributions to compose the overall serial mediation process to hoarding intention, that process most likely depends on cultural and individual differences in how consumers engage in social and legacy media information seeking. Thus, the serial mediation hypothesis would not be consistent across cultures. Namely, in China, a collectivist culture in which the government controls its media system, and the
United States, an individualistic culture where media is a free enterprise, the serial mediation effects should vary due to these marked differences, which would render an overall serial mediation hypothesis not particularly useful in generating insights. Thus, we discuss these cultural and consumer differences for China and the United States next, which lead to different hypotheses for each culture.

**Cultural Differences in the Role of Legacy and Social Media Between China and the United States**

Compared with the United States, a constitutional republic with an individualistic culture, China is a single-party socialist republic. China’s culture emphasizes collectivism, strict power structures, face, and risk aversion (Huang, Wu, and Cheng 2016). These cultural characteristics, coupled with the government’s priority on social harmony and political stability during national crises (Hu and Pang 2016), manifest in crisis management in China (Gao and Ting-Toomey 1998).

Another distinct feature is the pervasiveness of the Chinese government’s influence in mass communication during national crises (Chen 2008; Lyu 2012). Research shows that legacy media in China (e.g., China Central Television) are party-controlled and essentially the collective mouthpiece for the Chinese government (Donald and Keane 2002; Nip and Fu 2016), and Chinese legacy media are instrumental in setting the public agenda and guiding opinion (Zhang 2014). However, the advent of social media has gradually changed the fabric of Chinese society, where social media users have reached 930.8 million in 2021 (We Are Social 2021). Social media platforms such as Sina Microblog (Weibo), one of the most popular public discussion platforms in China and an equivalent of Twitter, provide a place for the elite and opinion leaders to communicate with and sometimes dispute the authoritative voice. However, these discussions are still monitored and sometimes censored (Feng and Yuan 2014; Nip and Fu 2016). Thus, although social media offers more freedom and greater power to word of mouth in communication and is considered market-oriented, the Chinese government has been successful in keeping social media within its “orbit” (Zhao 2000), such that it does not deviate much from the general parameters set by the government (Chen and Xu 2021).

In contrast, the United States differs markedly from China in how media function within society. The United States emphasizes individualism, uniqueness, and individual achievement, with greater acceptance of risk taking and higher levels of competitiveness (Hofstede 2001; Huynh and Grossmann 2021; Kitirattakarn, Araujo, and Neijens 2019). The free enterprise media system of the United States enables relatively unrestricted information flow among media channels, legacy and social media, and media users. In the United States, people are free (within reason) to publicly criticize the government and its policies and actions, and in fact, media hold a key role in influencing the political landscape (Olson 2018). For example, Fox News is considered by some to be a mouthpiece for conservatives, one that frequently takes aim at other outlets (e.g., The New York Times) for being too “liberal” or “elite” (Jutel 2016). Given the lack of central control over what information is shared (outside of violations of individual platform policies), information (both objectively true and false or misrepresented) has spread exponentially, giving rise to such phenomena as “fake news,” a term that rose to popularity during the 2016 U.S. presidential election cycle (Guo and Vargo 2020) to describe journalistic reporting or other kinds of information as subjectively falsified or wrong.

Differences in these governmental and societal roles between China and the United States have led to differences in their respective media environments. Research suggests that during the COVID-19 pandemic, Chinese legacy media have focused on setting positive tones to instill confidence and quell public fears, in line with the government’s priority of social harmony and political stability (Chen and Xu 2021). Although social media has some leeway in catering to the needs of its audiences, it still needs to operate within the Party’s “orbit” and present a united front with legacy media in guiding public discourse toward political stability during the pandemic. For example, through studying COVID-19-related topics on Weibo’s hot search list from December 2019 to February 2020, Zhao et al. (2020) demonstrate that public emotions shifted from negative to neutral, with negative emotions weakening and positive emotions increasing. This indicates that Chinese social media users’ narratives surrounding COVID-19 were trending positively even at early crisis stages.

However, in the United States, because the media system is relatively free from the government’s control, social and legacy media content is diverse and organic. On the one hand, social media content tends to be sensational and emotionally charged (Berger and Milkman 2012), with viral images and videos capturing the impact of the pandemic in a dramatic way that intensifies consumers’ fears and concerns (Islam et al. 2021). On the other hand, legacy media have become more polarized during the pandemic, further pushing audiences toward relying on media outlets and contents that echo their opinions and beliefs and discrediting those that differ (Hart, Chinn, and Soroka 2020). This polarization has been exacerbated by state and federal government officials’ inconsistent and sometimes contradictory messaging about issues such as mask wearing (Chan and Yuen 2020) and stockpiling (Micalizzi, Zambrotta, and Bernstein 2021), leaving the public to wonder whom they should trust.

To summarize, this discussion suggests that in China, both legacy and social media messaging have downplayed the threat of COVID-19 to conform to the government’s priority of maintaining political stability during the pandemic. However, in the United States, legacy and social media have diverged in their respective impact, such that social media content will amplify panic, while the politicization and polarization of legacy media will make their messaging ambiguous or irrelevant to those audiences who do not endorse the legacy media’s political stance.
**H2-1:** For Chinese consumers, perceived scarcity and two external scarcity attributions (i.e., [a] supply- and [b] demand-induced scarcity attributions) negatively and serially mediate the relationship between legacy media information seeking and hoarding behavior, such that legacy media information seeking is negatively related to perceived scarcity, perceived scarcity is positively related to the two external scarcity attributions, and these two attributions are positively related to hoarding behavior.

**H2-2:** For U.S. consumers, the relationship between legacy media information seeking and hoarding is not serially mediated by perceived scarcity and two external scarcity attributions (i.e., [a] supply- and [b] demand-induced scarcity attributions).

**H3-1:** For Chinese consumers, perceived scarcity and two external scarcity attributions (i.e., [a] supply- and [b] demand-induced scarcity attributions) negatively and serially mediate the relationship between social media information seeking and hoarding behavior, such that social media information seeking is negatively related to perceived scarcity, perceived scarcity is positively related to the two external scarcity attributions, and these two attributions are positively related to hoarding behavior.

**H3-2:** For U.S. consumers, perceived scarcity and two external scarcity attributions (i.e., [a] supply- and [b] demand-induced scarcity attributions) positively and serially mediate the relationship between social media information seeking and hoarding behavior, such that social media information seeking is positively related to perceived scarcity, perceived scarcity is positively related to the two external scarcity attributions, and these two attributions are positively related to hoarding behavior.

**Moderating Effect of Known Scarcity Cause**

As we have discussed, when the cause of product scarcity is unknown to consumers, they seek explanations through the process of attribution, whereby they may assign the source of the scarcity to external sources such as high demand from other consumers and/or insufficient supply from manufacturers and suppliers. Drawing on attribution theory, crisis-related research, and the Model of Organizational Responses to Scarcity (Nottenburg and Fedor 1983), we hypothesize that scarcity attributions will mediate the relationship between perceived scarcity and consumers’ hoarding behavior. As Nottenburg and Fedor (1983) explain, an organization’s enactment of a response to scarcity progresses in different phases. Upon detecting information suggestive of scarcity, or the experience of scarcity, the organization will initially engage in identifying internal and/or external causes of the scarcity and attribute scarcity responsibilities to potential culprits. Once the cause is identified, the organization will develop response strategies.

Further, the theory posits that the organization’s response to and coping strategy toward the scarcity is contingent on the cause(s) to which the organization attributes the scarcity. For example, when the organization attributes the cause of the scarcity to its external environment, it may adopt the strategy of “weathering the storm,” which involves no major strategy change or attempt to favorably manipulate the environment, such as seeking government relief. In contrast, when the cause is internal, the organization may decide to focus on efficiency by reducing slack or restructuring the organization as a proactive measure against scarcity.

Extending this line of reasoning, we argue that when consumers know the reasons for product scarcity, the relationship between scarcity and hoarding will vary as a function of the scarcity cause. In line with the controllability and stability of causality concept from SCCT (Coombs 2007), when insufficient supply is the cause, consumers will engage in more hoarding than when high demand is the cause. Namely, SCCT considers three factors (locus, controllability, and stability of causality) in explaining people’s crisis responsibility attributions. While insufficient supply and high demand both have an external locus of causality (suppliers, manufacturers, and/or other consumers are causing the scarcity), these two reasons differ in controllability and stability. This is because consumers tend to evaluate insufficient supply as having a longer-lasting effect and a more stable reason for product scarcity than high demand. Insufficient supply may also seem less controllable because consumers may think that even powerful agents such as governments, manufacturers, and suppliers seem powerless in the face of product scarcity due to global supply chain disruptions. In contrast, high consumer demand can be seen as more controllable because consumers may believe that they can accomplish a desired outcome collectively (e.g., overcoming the problem of product scarcity) through socially interdependent efforts (i.e., collective control; Bandura 2001) or that such effects are short term and easily remedied through inventory replenishment.

**H4:** When the causes of scarcity are known, the relationship between perceived scarcity and hoarding is stronger when the scarcity is supply-caused (vs. demand-caused).

**Overview of Studies**

We conducted two studies to test the hypotheses. Study 1 is survey-based and focuses on the influence of legacy and social media information seeking on hoarding and the serial mediation effect of perceived scarcity and scarcity attributions when the cause of the scarcity is unknown to consumers (H1–H3). Study 2, an experiment, extends Study 1 by investigating whether the effect of perceived scarcity on hoarding varies as a function of the scarcity cause (H4).
Study 1

We employed two online surveys—one in English and one in Chinese—to collect data in the United States and Mainland China. The survey was translated from English to Chinese and then back translated from Chinese to English. The two versions were subsequently compared to ensure accuracy (Brislin 1970). To improve sample representation, participants of both surveys were recruited in accordance with each country’s gender and age composition based on their census data.

The survey in China, administered through Credamo (a Chinese consumer panel research platform), attracted a total of 1,056 respondents. The survey in the United States, administered through Amazon Mechanical Turk, attracted 724 respondents. The respondents received compensation for their participation ($1 per U.S. participant and $1.21 per Chinese respondent). The respondents received compensation for their participation ($1 per U.S. participant and $1.21 per Chinese respondent). The survey in the United States, administered through Amazon Mechanical Turk, attracted 724 respondents. The respondents received compensation for their participation ($1 per U.S. participant and $1.21 per Chinese participant). Participants were first provided examples of essential products (food, toilet paper, water, and medicine) and then responded to a filtering question to validate their understanding of essential products. Those who correctly answered the filtering question were subsequently directed to questions about hoarding of essential products, perceived scarcity, social and legacy media information seeking related to COVID-19, and scarcity attributions. To address social desirability bias, we implied in the survey instructions that hoarding is socially acceptable by indicating that many people tried to stockpile essential products during COVID-19. Demographic information (age, gender, education, employment status, and political inclination) was collected at the end of the survey and controlled for in all subsequent analyses.

Of the Chinese sample, approximately 47% were female, and 42.7% of the participants were 30 years of age or older ($M_{age} = 29.58$ years, $SD = 7.42$ years). Of the U.S. sample, 46.8% were female, and 78.3% of the participants were 30 years of age or older ($M_{age} = 44.07$ years, $SD = 15.10$ years). In terms of ethnicity, most of the U.S. participants were Caucasian (75%), followed by African American (12%), Asian (10.2%), American Indian, Native Hawaiian, and other ethnicities (2.6%). In both samples, the majority had college-level or higher education (CN: 88%; U.S.: 84%). Approximately 80% were employed full time for the Chinese sample and 75.3% for the U.S. sample. About 66% of the U.S. participants had a household income of US$50,000 or higher, while 59% of the Chinese participants had an income of CNY150,000 or higher (approx. US$23,000). About 43% of the U.S. participants considered themselves liberal, while 28% of the Chinese participants considered themselves liberal.

Measures

Measurement items for legacy and social media information seeking concerning COVID-19, perceived scarcity of essential products, supply- and demand-induced scarcity attributions, and hoarding behavior were based on existing scales (for details, see Table 1). All items were assessed on a seven-point Likert scale (1 = “strongly disagree,” and 7 = “strongly agree”).

Results

Construct validity and measurement invariance tests. Confirmatory factor analyses using AMOS 24 were performed for each sample to ensure measurement adequacy. The results suggested an acceptable model fit for each sample, and all constructs in each sample demonstrated satisfactory convergent and discriminant validities (Hair et al. 2009; see Web Appendix 1). To secure cultural equivalence, we conducted a measurement invariance test using multi-group confirmatory factor analyses. The results suggested an appropriate model fit, indicating configural invariances across the two cultures (see Web Appendix 1). To address common method bias, we used the common latent factor (CLF) method (Podsakoff et al. 2003). Because the chi-square tests for the zero- and equal-constrains models were significant, we retained the CLF for subsequent structural equation modeling (SEM) analyses. The final measurement model with the CLF revealed a good fit for both samples (CN: $\chi^2(101) = 175.48$, $\chi^2/d.f. = 1.74$, comparative fit index [CFI] = .99, goodness-of-fit index [GFI] = .98, root mean square error of approximation [RMSEA] = .026; U.S.: $\chi^2(101) = 214.23$, $\chi^2/d.f. = 2.12$, CFI = .99, GFI = .97, RMSEA = .039). We then imputed factor scores and created composite variables that accounted for shared variances explained by the CLF for SEM analyses. SEM models with common-method-bias-corrected composite measures, controlling for demographic variables, revealed a good fit for both samples (CN: $\chi^2(3) = 8.86$, $\chi^2/d.f. = 2.95$, CFI = .99, GFI = .99, RMSEA = .04; U.S.: $\chi^2(3) = 2.83$, $\chi^2/d.f. = .94$, CFI = .99, GFI = .99, RMSEA = .01).

Hypothesis testing. SEM using AMOS 24 was utilized to test the hypotheses. Results from testing $H_{1a-b}$ indicated that both legacy media (CN: $\beta = .12$, $SE = .04$, $p < .01$; U.S.: $\beta = .06$, $SE = .03$, $p < .05$) and social media (CN: $\beta = .07$, $SE = .05$, $p < .05$; U.S.: $\beta = .24$, $SE = .03$, $p < .001$) information seeking was positively related to hoarding, supporting $H_{1b}$ for both samples (for standardized coefficients, see Figures 2 and 3).

As for $H_{2a-b}$, when supply-induced scarcity attribution was the second-stage mediator, the results showed that for Chinese consumers, the serial mediation path of legacy media information seeking → perceived scarcity → supply-induced scarcity attribution → hoarding was significant and positive, such that legacy information seeking increased perceived scarcity and perceived scarcity increased supply-induced scarcity attribution, which in turn led to more hoarding ($\beta = .008$, $p < .005$, see Table 2 for details). This was in the opposite direction of our prediction because legacy media information seeking increased rather than decreased Chinese consumers’ perceived scarcity (see Figure 2). When demand-induced scarcity attribution was the second-stage mediator, the serial mediation path of legacy media information seeking → perceived scarcity → demand-induced scarcity attribution → hoarding was not significant because demand-induced scarcity attribution did not mediate the relationship between perceived scarcity and hoarding (see Table 2).

As for U.S. consumers, consistent with our prediction, the results indicated that because legacy media information seeking did not influence perceived scarcity, neither the serial
Table 1. Measurement Items, Descriptive Statistics, and Construct Reliabilities.

| Construct | Measure Items | U.S. Sample | Chinese Sample |
|-----------|---------------|-------------|----------------|
| Legacy media ($X_1$) and social media information seeking ($X_2$) (Chen, Hung-Baesecke, and Kim 2017) | Regarding COVID-19, I have … 1. …actively searched for information on legacy media [or social media]. 2. …regularly checked to see if there is any new information on legacy media [or social media]. 3. …actively searched legacy media [or social media]. | 4.93 (1.69) .93 4.39 (1.68) .81 | 5.51 (1.36) .93 6.03 (.88) .85 |
| Perceived scarcity ($M_1$) (Verhallen and Robben 1994; Zhu and Ramer 2015) | 1. I have far fewer essential products than what I would like to have. 2. I don’t have enough essential products. 3. I need to protect the essential products I have. 4. I need to acquire more essential products. | 3.88 (1.48) .86 | 3.61 (1.37) .83 |
| Supply-induced attribution ($M_{2a}$) (Kim 2014) | A reduced supply has caused a shortage of essential products. Many essential products are out of stock because … 1. …there has been a shortage of supplies. 2. …the supply chains have been disrupted. | 4.58 (1.57) .84 | 4.75 (1.58) .92 |
| Demand-induced attribution ($M_{2b}$) (Kim 2014) | People’s increased demand has caused a shortage of essential products. Many essential products are out of stock because … 1. …people are buying more. 2. …demands are too high. | 5.50 (1.26) .84 | 5.11 (1.41) .88 |
| Hoarding Behavior ($Y$) (Ketron, Siguaw, and Sheng 2021) | 1. I have tried to store up more essential products than what I usually do. 2. I have shopped both online and in-store to buy large quantities of essential products. 3. I have stockpiled a lot of essential products. | 3.89 (1.72) .88 | 4.58 (1.52) .89 |
mediation path of legacy media information seeking → perceived scarcity → supply-induced scarcity attribution → hoarding nor the path of legacy media information seeking → perceived scarcity → demand-induced scarcity attribution → hoarding were significant (see Table 2). Moreover, while supply-induced scarcity attribution mediated the relationship between perceived scarcity and hoarding, demand-induced scarcity attribution did not (for details, see Figure 3). Summarily, H2-1a–b was rejected. As for H2-2, only the nonsignificant serial mediation effect through supply-induced scarcity attribution as a second-stage mediator was supported.

The results from testing H3-1a–b revealed that for Chinese consumers, when supply-induced scarcity attribution was the second-stage mediator, the serial mediation path of social media information seeking → perceived scarcity → supply-induced scarcity attribution → hoarding was negative and significant, such that social media information seeking decreased perceived scarcity, and perceived scarcity increased supply-induced scarcity attribution, which in turn led to more hoarding (β = −.009, p < .05; for details, see Table 2). However, the serial mediation was not significant when demand-induced scarcity attribution was the second-stage mediator (see Figure 2). As for H3-2a–b, the results showed
that for U.S. consumers, when supply-induced scarcity attribution was the second-stage mediator, the serial mediation path of social media information seeking → perceived scarcity → supply-induced scarcity attribution → hoarding was positive and significant, such that social media information seeking increased perceived scarcity, and perceived scarcity increased supply-induced attribution, which in turn increased hoarding ($\beta = .024$, $p < .001$; for details, see Table 2). However, the serial mediation effect was not significant when demand-induced scarcity attribution was the second-stage mediator (see Table 2). Therefore, $H_{1a}$ and $H_{3a}$ were both supported, whereas $H_{1b}$ and $H_{3b}$ were both rejected.

As for demographic variables, the results indicated that younger Chinese consumers scored lower on perceived scarcity ($\beta = .11$, SE = .004, $p < .001$) but higher on supply- ($\beta = -.21$, SE = .006, $p < .001$) and demand- ($\beta = -.18$, SE = .005, $p < .001$) induced attributions and hoarding ($\beta = -.11$, SE = .005, $p < .001$) than their older counterparts. For U.S. consumers, age did not affect any of these variables. Male Chinese consumers reported greater perceived scarcity than female Chinese consumers ($\beta = -.07$, SE = .06, $p < .05$), but gender did not influence perceived scarcity for U.S. consumers. These findings can be explained by differences in demographics between China and the United States. Due to more accelerated technology development and online shopping market growth in China than the United States (Shen 2020), the gap in China in online shopping experience seems to be larger than that of the United States. Thus, Chinese e-commerce customers are much younger than those in the United States (James 2021). Younger Chinese tend to have lower perceived scarcity and hoard more because they have more online shopping experience and can shop online more easily than older consumers (James 2021; Shen 2020). Further, women in China tend to shop online more than men, according to a recent survey by Rakuten Insights (James 2021). This may explain why men in China reported greater perceived scarcity than women.

**Study 1 Discussion**

Our findings provide broad support for our theorizing across two different cultural contexts (the United States and China). First, COVID-19 related information seeking was related to increased hoarding. This finding adds to research by Naeem and Ozuem (2021) and Kim and Florack (2021) in that not only social media information seeking but also legacy media information seeking is positively associated with hoarding for U.S. and Chinese consumers. This seems to indicate that consumers’ active information seeking on social and legacy media and greater exposure to media in general have likely reinforced COVID-19 narratives and prompted hoarding during the early stage of the pandemic.

Second, we uncovered interesting differences in the serial mediation effects of legacy and social media information seeking → perceived scarcity → supply-induced scarcity attribution → hoarding between the two cultures. Specifically, the nonsignificant serial mediation effect of legacy media information seeking for U.S. consumers supports the hypothesis that the increasingly politicized and polarized legacy media landscape in the United States has made legacy media a less influential information source for consumers, likely due to confusion and mistrust from contradictory information (Chan and Yuen 2020; Micalizzi, Zambrotta, and Bernstein 2021). However, the significant and positive serial mediation effect of legacy media information seeking for Chinese consumers was contrary to our prediction. One possible explanation is that messaging from legacy media to convince consumers not to panic and hoard may have led consumers to do the opposite. As Stiff, Johnson, and Tourk (1975) explained, when consumers become sensitive to scarcity, such as when stores were closed at the early stage of the COVID-19 pandemic, they may read statements differently from their interpretations during times of abundance (i.e., “There is no shortage of essential products,” is interpreted as “There must be more product shortages”).

The significant, positive serial mediation effect of social media information seeking for U.S. consumers supports prior research that suggests that because social media is unregulated and its content is emotionally charged (Allington et al. 2020; Berger and Milkman 2012), it tends to induce biased statistical inferences about crisis events. This causes people to become more susceptible to misinformation and to overestimate the negative consequences of the crisis (Ji and Kim 2020).
contrast, the significant, negative serial mediation effect of social media information seeking for Chinese consumers suggests that during national crises, Chinese media’s content and messaging align with the government’s priority of political stability through maintaining a positive and assertive tone to instill confidence and allay fears (Chen and Xu 2021; Zhao et al. 2020).

The serial mediation effects consistently showed that supply-induced scarcity attribution was a significant second-stage mediator between perceived scarcity and hoarding, while demand-induced scarcity attribution was not. This result suggests that when facing scarcity, although consumers attributed the scarcity to both demand- and supply-induced due to not knowing what caused the scarcity, demand-induced scarcity attribution was not an influential mechanism between perceived scarcity and hoarding, potentially due to a perception that higher demand is an overreaction by other consumers. However, when consumers are directly informed of the cause of the scarcity (vs. forming their own attributive guesses), will the relationship between perceived scarcity and hoarding change depending on whether the scarcity is caused by supply versus by demand? To answer this question, we conducted Study 2, in which we manipulated the known cause of product scarcity in line with H4.

**Study 2**

**Data Collection and Procedures**

We conducted a one-factor (supply- vs. demand-caused product scarcity) between-subjects online experiment and collected data in early October 2021 using consumer panel research platforms (Prolific in the United States and Credamo in China). A total of 222 U.S. consumers (M<sub>age</sub> = 29.15 years, SD = 10.57 years) and 229 Chinese consumers (M<sub>age</sub> = 30.47 years, SD = 6.74 years) participated in the study in exchange for compensation ($2.25 per U.S. participant and $1.21 per Chinese participant). Of the U.S. participants, 60.9% were female, 59.6% had a college degree or higher, 68.4% were employed, 59.6% had a household income of $50,000 or higher, and 51.6% considered themselves liberal. The majority were Caucasian (68%), followed by Hispanic (12%), African American (8%), and Asian (7.6%). Of the Chinese participants, 62% were female, 84.3% had a college degree, 92.1% were employed, 68.6% had a household income greater than 150,000 CNY (approximately US$23,500), and 68.8% considered themselves liberal. The majority (96.9%) were of Han ethnicity, followed by Zhuang (1.7%), Hui (4%), and Manchu (9%).

Participants were instructed to think back to when COVID-19 was first declared a pandemic and to write about how they felt when they went to the store during that time. They were then asked to imagine that they needed essential products such as some toiletries and personal care products during the ongoing pandemic and that when they arrived at the supermarket, they discovered that the products were not available. With this instruction, the participants then responded to measures of perceived product scarcity. Afterward, the participants were randomly assigned to one of the two scenarios through which the cause of the product scarcity was manipulated. One scenario indicated that limited supply from manufacturers caused the product shortage, while the other explained that high customer demand caused the shortage. After reading the assigned scenario, the participants then answered questions about hoarding intention; manipulation check; legacy and social media pervasiveness, tone, and political positioning; legacy and social media information seeking concerning COVID-19; and demographics.

We followed the same translation and back-translation procedure used in Study 1. Measurement items for the manipulation check; hoarding intention; and media pervasiveness, tone, and political positioning were newly developed. Perceived scarcity and information seeking were measured with a subset of items from Study 1 to reduce the survey length (see Web Appendix 2). All items were measured on a seven-point Likert scale.

**Results**

**Manipulation check.** Participants in the supply-caused scarcity condition rated limited supply as the scarcity cause higher (CN: M = 5.84 vs. M = 3.01, F(1, 228) = 326.35, p < .001; U.S.: M = 5.59 vs. M = 3.24, F(1, 221) = 121.14, p < .001) and the demand cause lower (CN: M = 5.94, F(1, 228) = 180.02, p < .001; U.S.: M = 4.48 vs. M = 6.41, F(1, 221) = 92.31, p < .001).

**Hypothesis testing.** We used Hayes’s (2018) PROCESS to test H4. Age, gender, education, income, employment status, and political leanings were included as covariates in all analyses. We first ran Model 3 to test if there was a three-way interaction effect of perceived scarcity, the manipulation (supply- vs. demand-caused scarcity condition), and country (China vs. the United States) on hoarding intention. The results showed that the three-way interaction was not significant (b = .05, SE = .17, p = .78, confidence interval [CI] = [-.28, .38]). Consequently, we pooled the data from the Chinese and the U.S. samples and ran Model 1 to test H4. The results revealed a significant main effect of perceived scarcity on hoarding intention (b = .57, SE = .14, p = .0001, CI = [.30, .85]) and a significant interaction effect between perceived scarcity and the cause on hoarding intention (b = -.18, SE = .09, p = .046, CI = [-.36, -.003]). As predicted in H4, the effect of perceived scarcity was stronger in the supply-caused scarcity condition (b = .39, SE = .06, p < .0001, CI = [.27, .52]) than that in the demand-caused scarcity condition (b = .21, SE = .06, p = .001, CI = [.09, .34]). Given that the overall interaction effect was significant, we then ran Model 1 separately to examine the effect for each sample. The results showed that while the main effect of perceived scarcity on hoarding intention was significant for both samples (CN: b = .52, SE = .14, p = .0003, CI = [.24, .80]; U.S.: b = .60, SE = .21, p = .0049, CI = [.18, 1.01]), the interaction effect was only significant for the
Chinese sample (CN: b = -.20, SE = .09, p = .03, CI = [−.38, −.02]; U.S.: b = −.17, SE = .13, p = .20, CI = [−.43, .09]). For Chinese consumers, when insufficient supply was given as the cause of the product scarcity, perceived scarcity positively affected hoarding intention (b = .32, SE = .06, p < .0001, CI = [.20, .44]). However, this effect was not significant for those consumers in the demand-caused scarcity condition (b = .12, SE = .07, p = .09, CI = [−.02, .25]). Therefore, H₄ was supported for the Chinese sample.

Additional Analysis: Media Pervasiveness and Tone in the United States Versus China

We conducted additional analysis to validate the following assumptions about the media environment as perceived by Chinese and U.S. consumers: (1) legacy and social media will be viewed as more pervasive in China than in the United States, (2) media tone about COVID-19 news and information will be perceived as more positive by Chinese than U.S. consumers, and (3) information seeking is different from media pervasiveness and tone. We first conducted a factor analysis using the principal components analysis and Varimax rotation on the measurement items for legacy/social media information seeking, pervasiveness, and tone. The results suggested that information seeking, media pervasiveness, and media tone are distinct constructs, as five distinct factors were identified (i.e., legacy media information seeking, social media information seeking, legacy media pervasiveness, social media pervasiveness, and media tone).

Results from t-tests showed that with regard to COVID-19 news and information, legacy and social media were perceived as more pervasive in China than in the United States (CN: M_legacy = 5.59, SE = .97 vs. U.S.: M_legacy = 4.43, SE = 2.04; t = 7.74, p < .001; CN: M_social = 5.90, SE = .75 vs. U.S.: M_social = 5.65, SE = 1.55; t = 2.22, p = .027). Media tone was also significantly more positive in China than in the United States (CN: M = 5.92, SE = .74 vs. U.S.: M = 3.38, SE = 1.39, t = 24.46, p < .001). Regression (legacy and social media information seeking, legacy and social media pervasiveness, and media tone as the independent variables and hoarding intention as the dependent variable in the regression model) showed that social media information seeking (CN: b = .19, p = .01; U.S.: b = .17, p = .048) and media tone (CN: b = .28, p < .0001; U.S.: b = .24, p < .0001) positively influenced hoarding intention for both Chinese and U.S. consumers. Legacy media information seeking as well as legacy and social media pervasiveness did not influence hoarding intention in either sample. In a separate model where we included perceived scarcity as the dependent variable, the results showed that while legacy media information seeking increased perceived scarcity for Chinese consumers (b = .17, p = .052), social media information seeking increased perceived scarcity for U.S. consumers (b = .20, p = .026). Media tone as well as legacy and social media pervasiveness did not influence perceived scarcity in either sample, suggesting that information seeking differs from media pervasiveness and tone in influencing U.S. and Chinese consumers’ scarcity perceptions and hoarding intentions.

Study 2 Discussion

Study 2 demonstrated (1) main effects of perceived scarcity on hoarding intention across both samples and (2) an interaction effect for the Chinese sample, whereby the positive effect of perceived scarcity on hoarding intention manifested under the supply-caused scarcity condition but not under the demand-caused scarcity condition. The positive effect of perceived scarcity on hoarding intention corroborates prior research on hoarding behavior during the COVID-19 pandemic (e.g., Islam et al. 2021). The moderating effect of scarcity cause uncovered for Chinese consumers lends credence to attribution theory, although this effect was not observed for U.S. consumers. A possible explanation is that consumers’ tendency to make dispositional attributions differs between individualistic versus collectivistic cultures, where individualistic cultures tend to make attributions relative to individual factors and collectivistic cultures tend to make attributions relative to social contexts (e.g., Chiu, Hong, and Dweck 1997; Cowley 2005; Hong and Chiu 2001; Morris and Peng 1994). This explains the result that although our manipulation of the scarcity cause was successful, U.S. participants across both experimental conditions attributed the cause of scarcity significantly more to high customer demand (M = 5.41, SD = 1.87) than Chinese participants (M = 4.70, SD = 1.85; F(1, 449) = 16.04, p < .001). Overattribution of the scarcity cause to high customer demand may have offset the effect of the manipulation for U.S. participants.

General Discussion

This investigation examined consumers’ hoarding behavior as it relates to essential products (e.g., food items, toiletries, medicine) within the COVID-19 pandemic context as a function of legacy versus social media information seeking in the United States versus China. The results indicated that (1) legacy and social media information seeking both increased hoarding for U.S. and Chinese consumers; (2) when the cause of product scarcity was unknown to consumers, supply-induced (as opposed to demand-induced) scarcity attribution functioned as a significant second-stage mediator in the serial mediation effect of perceived scarcity and scarcity attribution; (3) for U.S. consumers, while the serial mediation effect was not significant for the influence of legacy media information seeking on hoarding, it was significant and positive for social media information seeking; and (4) for Chinese consumers, the serial mediation effect was positive for the influence of legacy media information seeking on hoarding, but it was negative for social media information seeking. Further, as the second study indicates, when the cause of the scarcity was directly provided (vs. inferred, as in Study 1), Chinese consumers were significantly more likely to engage in hoarding when
The scarcity was supply-caused (vs. demand-caused), whereas U.S. consumers did not significantly differ in hoarding between supply- versus demand-caused scarcity conditions. These results contribute to theory and practice in several ways, which we discuss next.

**Theoretical Contributions**

First, we extend Stiff, Johnson, and Tourk (1975) into the cross-cultural and COVID-19 pandemic context with our finding that consumers’ perceived scarcity of essential products and information seeking via social and legacy media affected hoarding differently between the United States and China. The results empirically corroborate elements of the theory with results from both U.S. and Chinese samples to demonstrate the significance of consumer preconditions (i.e., perceived scarcity) and media consumption (i.e., social and legacy media information seeking) in affecting hoarding behavior.

Second, our results reveal that attributing the scarcity of essential products to limited supply mediated the relationship between perceived scarcity and hoarding for both media types in China and for social media in the United States. This finding augments the theory of hoarding by identifying supply-induced scarcity attribution as a psychological mechanism that explains the influence of perceived scarcity and information seeking on consumers’ hoarding. The finding also adds to the scarcity literature that documents the differential effects of scarcity manipulations (e.g., supply vs. demand related) on popularity inferences and consumer preference for scarce products, such as recipe books (Verhallen and Robben 1994), bottled wine (Van Herpen, Pieters, and Zeelenberg 2009), and conspicuous and nonconspicuous consumption goods (e.g., wristwatches and shampoo; Gierl and Huettl 2010).

Third, we demonstrate that when consumers are directly informed that scarcity is caused by limited supply (vs. high demand), Chinese consumers form stronger hoarding intentions, whereas U.S. consumers do not exhibit differences. This finding further highlights cross-cultural differences in how consumers respond to scarcity as a function of their assessment of the scarcity cause, corroborating cultural differences in consumers’ tendencies to make spontaneous dispositional attributions in the event of an unsatisfactory outcome (e.g., Cowley 2005) and cross-cultural responses to scarcity appeals and messages (e.g., Jung and Kellaris 2004; Triandis 1989).

Fourth, we observed cross-cultural differences in the serial mediation of perceived scarcity and supply-induced scarcity attribution in that this serial mediation effect was positive for the influence of social media information seeking on hoarding for U.S. consumers, but it was negative for Chinese consumers. Further, for Chinese consumers, this effect was positive for legacy media information seeking. Attribution theory (Weiner 1995) posits that when faced with the task of appraising a situation or an event, people are motivated to attribute meaningful causes to action and behavior. As such, the sequential mediation of perceived scarcity and supply-induced scarcity attribution outlines a psychological mechanism through which information seeking influences consumers’ hoarding behavior. Further, the finding that the signs were different for Chinese versus U.S. consumers (likely due to differences in the tone of media) highlights the important role that culture plays in moderating scarcity perceptions and attributions as a function of legacy and social media information seeking. In this way, we extend attribution theory by showing that cultural roles of media are important upstream influences on how attributions may influence downstream outcomes (i.e., hoarding).

Finally, our assumption checks in Study 2 regarding media pervasiveness and tone indicate that for Chinese consumers, media are both more pervasive and more positive compared with U.S. consumers’ perceptions of their media. Thus, we validate prior research on the role of Chinese media (Chen and Xu 2021; Zhang 2014; Zhao et al. 2020) as well as our own assumptions that Chinese media narratives are likely to be more positive and pervasive due to their role as the Party’s mouthpiece. While this is more of a minor contribution, the findings nevertheless indicate that consumers in China and the United States encounter differences in their respective media, which helps explain observed differences in downstream effects.

**Practical Implications**

The finding that information seeking via social and legacy media generally increased consumer hoarding of essential products (though these effects differed between China and the United States) speaks to the significance and power of both media channels in molding consumer responses to the COVID-19 pandemic crisis. By modifying perceptions and attributions of the scarcity of essential products, the amplifying effects of social and legacy media information seeking on hoarding can be altered. This suggests that marketers may be able to influence the impact of media on hoarding through providing timely information across media channels and platforms so that they can better communicate and connect with consumers. On their official websites, for example, marketers could provide regular updates about product availability as well as through social media, emails, and text alerts. In situations in which certain products are out of stock, marketers should explain why the products are unavailable so that consumers do not wrongly attribute the cause, especially if stockouts are due to surges in demand with adequate replenishment on the way. This will also help consumers set realistic expectations about whether and when the needed products will become available.

Further, the cross-cultural difference in the influence of legacy media information seeking on hoarding between China and the United States highlights a strategic difference in how likely legacy media are to affect hoarding in both cultures. For those administering news in China, the potential boomerang effect of attempting to downplay potential product shortages indicates that messaging should be moderate. For example, Chinese legacy media should not instill fear of shortages. Rather, communications should indicate that some
increases in demand/decreases in supply are expected, but if everyone buys in moderation, shortages can be controlled. Even if legacy media are downplaying scarcity, marketers should still be prepared for shortages and should enact strategies accordingly (frontloading supply, earlier ordering, transactional limits at points of purchase, etc.). Meanwhile, in the United States, legacy media do not appear to significantly influence hoarding. Aside from the issues of politicization and skepticism toward legacy media in the United States, which are beyond the scope of this work, legacy media should aim to communicate more consistent messaging, which would lead to a stronger link between legacy media and hoarding that could then be managed.

Finally, the finding that for U.S. consumers, perceived scarcity increased hoarding intention regardless of the cause of the scarcity (i.e., limited supply vs. high demand) suggests that although it is common and almost expected that marketers keep consumers informed as to why certain products are out of stock, informing consumers alone does not dampen the scarcity effect. Therefore, modifying scarcity perceptions will likely be a more direct approach to reducing hoarding intention for U.S. consumers. For Chinese consumers, the positive effect of perceived scarcity on hoarding intention was exacerbated when consumers were informed that limited supply caused scarcity. This suggests that to counter the detrimental effect of supply-caused scarcity, marketers should provide additional information such as when product supply will resume and how long it will take to restock so that Chinese consumers will be less likely to view the scarcity situation as long term and therefore will be less likely to hoard.

As a caveat, the aforementioned implications depend on generalizations of the believability or credibility of the media in each culture. Individual differences in perceived media believability/credibility could lead to different responses within each culture. Thus, we pose these implications based on overall cultural characteristics and encourage scholars to tease out cultural nuances or shifts that could alter the results.

**Limitations and Future Research**

In the first study, we collected a single wave of survey data during an early peak of the pandemic. Changes may have occurred in the influences of information seeking, scarcity perceptions, and scarcity attributions on hoarding over time. Another limitation is that we recruited study participants using online platforms (Mechanical Turk and Prolific for U.S. participants and Credamo for Chinese participants). Thus, our participants may be more skilled with the internet than the general population and may not be completely accurate in self-reported demographics. As such, a different sample, such as the elderly or consumers with no access to the internet, could validate the research model because these consumers may be more susceptible to scarcity and its influence on hoarding. In addition, our samples are not fully representative, although we tried to recruit participants based on each country’s census data (age and gender distributions for both countries and ethnicitiy for the United States). Thus, there could be subcultural/regional variations in responses that we were unable to capture, which future research could explore.

Although the research hypotheses proposed in our model are contextualized within the COVID-19 pandemic, they may hold in other crisis situations, such as natural disasters and terrorist attacks, which points to another future research direction. Future research could also study other potential moderators, such as perceived control and uncertainty avoidance, to identify boundary conditions of the observed scarcity effects. Further, we examined consumers’ self-reported information-seeking behavior on social and legacy media, but the content of the information was unknown to us, and we therefore drew inferences based on prior research regarding the nature and role of media in both cultures. Future research could investigate whether and how news content influences consumers’ scarcity perceptions, attributions, and hoarding behavior, perhaps through manipulations of specific news stories, images, or other content. Such a study could also investigate specific cross-cultural factors that moderate the results between the United States and China. In this vein, changes to the predominant tone of media (from more negative to more positive narratives, and vice versa) could also be investigated.

We also did not consider the roles of family and friends as sources of information when considering hoarding; given that family influences differ markedly between individualistic and collectivistic cultures, future research should explore this source of information alongside media sources to determine its relative influence. In addition, future research should examine potential influences of the sources of demand-induced scarcity attribution (e.g., consumers themselves vs. other consumers), which might lead to different effects on hoarding than the nonsignificant effects observed in this investigation. Lastly, although we find media information seeking empirically different from media content, pervasiveness, and tone through the additional analyses of Study 2, future research should further examine whether and how the effects of information seeking on hoarding may differ from the effects of media content and tone on the behavior. Consumers’ media-information-seeking behavior cannot be simply isolated from what consumers see during their media information seeking (such as media content and tone), as the two are highly related. Because our study investigated only media-information-seeking behavior and its relationship with perceived scarcity, attributions, and hoarding, future research should investigate how the two aspects—degree of information seeking across media versus the content and tone of media—are related to or different from each other in driving consumer hoarding. Such an endeavor will provide more detailed insights into the hoarding mechanism. Similarly, given that believability and credibility of media differ cross-culturally due to a variety of factors, future research could examine the role that public perceptions of media play across cultures.
Associate Editor
Amir Grinstein

Contribution Note
The first two authors contributed equally and share first authorship.

Declaration of Conflicting Interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The author(s) received no financial support for the research, authorship, and/or publication of this article.

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