Retrospecting Digital Media Use, Negative Emotions, and Trust Gaps during the COVID-19 Pandemic in China: Cross-Sectional Web-Based Survey

Lu Wei, Qing Huang

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Abstract

Background: In the post-pandemic era, retrospecting trust-related issues offers valuable insights into the effective prevention and control of infectious diseases. The COVID-19 pandemic caused a damage on people's trust in others, including strangers and acquaintances, while one's trust in family members remained unchanged. This resulted in two trust gaps, namely, the gap between trust in family members and in strangers (family members-strangers trust gap) and the gap between trust in family members and in acquaintances (family members-acquaintances trust gap). Widening trust gaps hinder social integration and undermine the effective management of public health crises. Digital media use tends to shape people's perceptions and attitudes toward others. However, little is known about how digital media use influences trust gaps during a pandemic.

Objective: This study aims to investigate the relationships between digital media use, negative emotions, family members-strangers trust gap, and family members-acquaintances trust gap during the COVID-19 pandemic in China. We test the mediating role of negative emotions between digital media use and the two trust gaps, and compare the indirect effect of digital media use on the two trust gaps via negative emotions.

Methods: A cross-sectional web-based survey was conducted in China between 31 January to 9 February 2020. A total of 1,568 adults participated in the survey. Questions related to digital media use, negative emotions, trust in family members, trust in acquaintances, and trust in strangers during the pandemic were asked. Regression analyses were performed to test the associations between the examined variables. We used a 95% bootstrap confidence interval approach to estimate the mediation effects.

Results: Digital media use was positively associated with negative emotions (B = 0.17, SE = 0.03, P < .001), which in turn were positively associated with the family members-strangers trust gap (B = 0.15, SE = 0.03, P < .001). Likewise, digital media use was positively associated with negative emotions (B = 0.17, SE = 0.03, P < .001), while negative emotions were positively associated with the family members-acquaintances trust gap (B = 0.08, SE = 0.03, P = .01). Moreover, the indirect effect of digital media use on the family members-strangers trust gap (B = 0.03, SE = 0.01, CI [.01, .04]) was stronger than that on the family members-acquaintances trust gap (B = 0.01, SE = 0.01, CI [.003, .027]).

Conclusions: The results demonstrate that negative emotions resulting from the frequent use of digital media are a major cause of the widening trust gaps. Considering our increasing reliance on digital media, the findings denote that the appropriate use of digital media helps avoid the overamplification of negative emotions and curb the enlargement of trust gaps, thereby contributing to the effective management of public health crises in the post-pandemic era.

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Retrospecting Digital Media Use, Negative Emotions, and Trust Gaps during the COVID-19 Pandemic in China: Cross-Sectional Web-Based Survey

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Abstract

Background: Retrospecting the trust gaps and their dynamics during the pandemic is crucial for understanding the root causes of post-pandemic challenges and offers valuable insights into preparing for future public health emergencies. The COVID-19 pandemic eroded people's trust in strangers and acquaintances, while their trust in family members remained relatively stable. This resulted in two trust gaps, namely, the family members-strangers trust gap and the family members-acquaintances trust gap. Widening trust gaps impede social integration and undermine the effective management of public health crises. However, little is known about how digital media use shaped trust gaps during a pandemic.

Objective: This study aims to investigate the relationships between digital media use, negative emotions, the family members-strangers trust gap, and the family members-acquaintances trust gap during the COVID-19 pandemic in China. We test the mediating role of negative emotions between digital media use and two trust gaps and compare the indirect effect of digital media use on two trust gaps through negative emotions.

Methods: A cross-sectional web-based survey was conducted in China between 31 January to 9 February 2020. A total of 1,568 adults participated in the survey. Questions related to digital media use, negative emotions, trust in family members, trust in acquaintances, and trust in strangers during the pandemic were asked. Regression analyses were performed to test the associations between the examined variables. We used a 95% bootstrap confidence interval approach to estimate the mediation effects.

Results: Digital media use was positively associated with negative emotions ($B = 0.17$, $SE = 0.03$, $P < .001$), which in turn were positively associated with the family members-strangers trust gap ($B = 0.15$, $SE = 0.03$, $P < .001$). Likewise, digital media use was positively associated with negative emotions ($B = 0.17$, $SE = 0.03$, $P < .001$), while negative emotions were positively associated with the family members-acquaintances trust gap ($B = 0.08$, $SE = 0.03$, $P = .01$). Moreover, the indirect effect of digital media use on the family members-strangers trust gap ($B = 0.03$, $SE = 0.01$, CI [.01, .04]) was stronger than that on the family members-acquaintances trust gap ($B = 0.01$, $SE = 0.01$, CI [.003, .027]).

Conclusions: The results demonstrate that negative emotions resulting from the frequent use of

digital media are a key factor that accounts for the widening trust gaps. Considering the increasing reliance on digital media, the findings indicate that the appropriate use of digital media can prevent the overamplification of negative emotions and curb the enlargement of trust gaps. This may help restore social trust and prepare for future public health crises in the post-pandemic era.

Keywords: digital media use; negative emotions; family members-strangers trust gap; family members-acquaintances trust gap; mediation model; COVID-19

Introduction

Background

During the period from early 2020 to May 5, 2023, marked by the World Health Organization's declaration of the end of the COVID-19 global health emergency [1], the pandemic caused increased societal division and declined social trust across many countries [2]. The erosion of social trust during a crisis tends to engender enduring repercussions, such as individuals' psychological distress, public dissent, and a decrease in community resilience [3,4]. This, in turn, impedes the processes of social cohesion and the maintenance of a robust society. Moreover, against the backdrop of a high-risk environment [5], large-scale infectious diseases might break out in the future. Therefore, retrospecting social trust dynamics and examining the influence of various factors on trust-related outcomes during the pandemic has dual implications: (1) to understand the root causes of post-pandemic trust-related issues; and (2) to prepare for future public health emergencies, given that trust serves as the bedrock of effective crisis management [6,7].

We employ the individual-level approach to understand social trust [8–10] and define it as an individual's trust in others, including family members, acquaintances (e.g., co-workers, classmates, casual friends), and strangers. Noticeably, the differential mode of association (*chaxugeju*) in Chinese culture indicates that as social distance between individuals increases, trust decreases [11,12]. Accordingly, trust is highest and most stable in family members, followed by acquaintances, while trust in strangers is relatively low and more susceptible to change. This phenomenon suggests two trust gaps: the family members-strangers trust gap and the family members-acquaintances trust gap. Moreover, evidence suggests that these gaps existed during the COVID-19 pandemic [13,14]. Given that increasing trust gaps are linked to social estrangement and other challenges [15], it is essential to examine how the trust gaps widened during the pandemic.

Information that circulates on digital media platforms is a major source that influences trust gaps. At the early stage of the pandemic, online information involved a considerable amount of uncivil comments about general others [16–18]. Thus, an individual's exposure to such online information might erode his or her trust in strangers and in acquaintances, whereas their trust in family members was less likely to be affected. This enlarged the family members-strangers trust gap and the family members-acquaintances trust gap. Besides, an individual's exposure to online information that highlighted the susceptibility and severity of the coronavirus and the social consequences of the pandemic provoked his or her negative emotions, such as fear, anxiety, sadness, anger, and hostility [19,20], which in turn weakened their trust in others [21,22], including trust in strangers and acquaintances. Therefore, digital media use is a major informational source that influences the two trust gaps, while negative emotions are a psychological response that may increase these gaps.

This study aims to unravel the relationship between digital media use, negative emotions, the family members-strangers trust gap, and the family members-acquaintances trust gap during the pandemic. Despite the extensive body of studies that examined media use and its associated outcomes during

the COVID-19 pandemic [23–25], the current study is, to our knowledge, the first to propose the concept of *trust gap* and explore the mechanisms that contribute to the increasing gaps. Moreover, our study is an empirically grounded theoretical exploration of the trust gaps and its associated dynamics, rather than policy research. Therefore, although the pandemic has ended, our findings and conclusions may advance the understanding of the effect of media use on trust-related challenges in other health and risk situations beyond the COVID-19 pandemic.

Negative Emotions Mediate between Digital Media Use and Two Trust Gaps

Digital media refer to a wide range of computer-mediated and mobile technology-based applications. These encompass websites, search engines, Internet forums, wikis, blogs, social networking sites, news feeds, video sharing sites, etc. [26,27]. People use digital media to satisfy certain needs, such as cognition, entertainment, interactivity, and agency [28–30]. Among various purposes of digital media use, information seeking serves as the basic motive to meet people's cognitive need [31–33]. In particular, acquiring mediated information and staying informed of the latest updates is of great significance during a public health emergency [34,35]. Drawing upon previous conceptions of media use for information seeking [36,37], we define digital media use as the frequency that people use different digital media tools to acquire information related to the coronavirus. This information mainly involves the health risks of the virus and the socio-economic consequences of the pandemic.

Despite the existence of positive emotions, people tend to feel negative emotions more commonly when a contagious disease breaks out. For instance, people experienced worry, anxiety, fear, distress, anger, and sadness at the early stage of the Middle East Respiratory Syndrome (MERS), H1N1 influenza, and H7N9 influenza [35,38,39]. Given that the coronavirus is characterized by high infection rate and severe consequences, people tended to feel fear, anxiety, and sadness during early phase of the pandemic. Moreover, the unsettled disputes over the origin of the pandemic and the widespread use of controversial, xenophobia, and stigmatized terms associated with the coronavirus incited people's anger and hostility [16–18]. Thus, we define negative emotions as people's undesirable feelings toward the coronavirus outbreak and its consequences, such as fear, anxiety, sadness, anger, and hostility.

A considerable amount of literature has discussed the association between people's digital media use and their negative emotions amid public health emergencies. For example, studies demonstrated that the more frequently individuals exposed themselves to social media information, the stronger their negative emotions were, either in the MERS outbreak in South Korea [38] or during the H7N9 influenza in China [39]. Moreover, research demonstrated that Chinese netizens' frequent digital media use significantly amplified their negative emotions at the early stage of the COVID-19 outbreak, especially their anxiety, depression, and stress [19,20]. When the coronavirus first broke out in China, information about increasing number of confirmed cases, threat to public health, disruption to daily routines, and economic downturn circulated widely across a variety of digital media [40]. Through exposure to information about the coronavirus's unpredictable health threat, people felt anxiety, fear, and sadness. Similarly, consuming information that emphasized the socio-economic consequences of the pandemic was likely to trigger people's anger and hostility toward those who were attributed with the responsibility of accelerating the spread of the virus. Accordingly, the more frequently people used digital media to acquire information, the stronger their negative emotions were.

When individuals are exposed to a crisis, their negative emotions motivate them to attribute the causality to certain actors [22]. In circumstances where the cause of an event remains unclear, an individual's attribution-dependent negative emotions are more likely to encourage him or her to attribute the responsibility to socially distant ones [41]. Given that the disputes over the origin and

cause of the coronavirus have remained unsettled so far [42], the pandemic can be seen as a health crisis without an explicit or agreed-upon cause. Thus, people's negative emotions about the pandemic tend to motivate them to attribute part of the responsibility to socially distant others. According to the attribution theory, people who are attributed to responsibility are considered distrustful [21]. Moreover, evidence showed that negative emotions provoked by contagious diseases led people to be distrustful of out-group members [43–45]. Because strangers and acquaintances were regarded as socially distant others or out-group members during the pandemic, the negative emotions tended to decrease one's trust in them, thereby enlarging the family members-strangers trust gap and the family members-acquaintances trust gap.

Taken together, the literature reviewed above indicates the mediating role of negative emotions between digital media use and the two trust gaps. Thus, we posit the following hypotheses:

H1: Negative emotions mediate the association between digital media use and the family members-strangers trust gap.

H2: Negative emotions mediate the association between digital media use and the family members-acquaintances trust gap.

Moreover, because strangers were viewed as more socially distant others than acquaintances [12], it was likely that individuals attributed more responsibility to strangers than to acquaintances when experiencing negative emotions elicited by digital media use, thus leading to varying degrees of increase in the two trust gaps. Hence, we put forward the following hypothesis:

H3: The mediation effect of negative emotions between digital media use and the family members-strangers trust gap is stronger than the mediation effect of negative emotions between digital media use and the family members-acquaintances trust gap.

Figure 1 depicts the conceptual model.

Figure 1. The conceptual model.
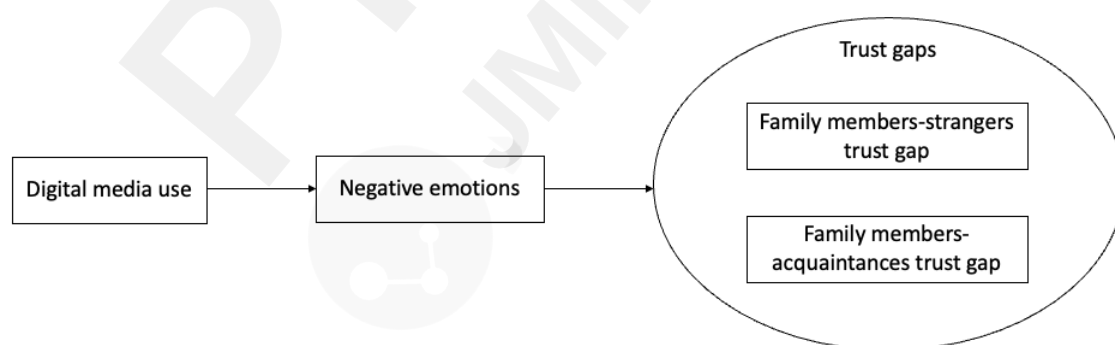
Methods

Participants and Procedures

A cross-sectional online survey was conducted from 31 January to 9 February 2020, an early phase of the COVID-19 outbreak in China. We chose this time span for several reasons. First, a considerable amount of information related to COVID-19 was circulating on a variety of digital media platforms during this period of time, which guaranteed that respondents had adequate informational resources to consume. Second, given the important role of negative emotions in the

conceptual model, we tried to capture people's negative emotions at an early stage to avoid the emotional burnout that might occur at a later stage of the pandemic. Third, public understanding of the coronavirus was very limited at the very beginning of the outbreak. Insufficient knowledge led the public to experience a high degree of uncertainty and a strong sense of insecurity, which potentially impacted their social trust [46,47]. This warranted the investigation into the relationship between digital media use and trust gaps at the very early phase compared with other phases of the health crisis.

We commissioned Sojump, a professional online survey company in China, to collect survey data. The company provides a sampling service of 6.2 million registered respondents distributed throughout China. We employed a random sampling strategy within the survey pool. Given the emergency nature of the COVID-19 outbreak, this sampling strategy was an efficient and timely manner to explore initial public reactions and attitudes toward the pandemic. Moreover, previous studies have used this sampling strategy to examine major health risk issues in China [48–50].

In terms of the sampling procedure, Sojump first randomly selected 2,840 users from the 6.2 million-user survey pool and asked them to participate in the online survey through an email invitation. A total of 1,656 respondents finished the questionnaire, with a response rate of 58.3%. After deleting the cases with missing values or those that did not pass the attention checks, we obtained a sample of 1,568 valid cases for data analysis.

The sample covered 31 provinces, municipalities, and autonomous regions across the Chinese mainland. Because we focused on people's digital media use and the associated effects, Chinese netizens were regarded as the population [51]. Our sample was representative of the population on gender (49.7% were females), and fairly representative on age (47.1% was below 30 years old) and income (37.0% with an income of 3,000-8,000 CNY). However, due to that college students and graduates constituted a major part of the survey pool, we oversampled those with greater education attainment (78.9% were college students/graduates or above). Table 1 compares the demographic features of our sample with those of the population.

Table 1. Sample demographics compared with the demographic features of Chinese netizens.

Variables	Sample percentage (n)	Population percentage
Gender (Female)	49.7% (779)	48.1%
Age		
< 30	47.1% (739)	44.7%
30-49	48.1% (754)	38.4%
> 50	4.8% (75)	16.9%
Income		
≤1,000 CNY	8.2% (128)	27.9%
1,001-3,000 CNY	41.0% (644)	23.1%
3,001-5,000 CNY	21.2% (332)	21.5%
5,001-8,000 CNY	15.8% (247)	14.3%
> 8,000 CNY	13.9% (217)	13.3%
Education		
Middle school or below	3.4% (54)	58.3%
High school/technical school	17.7% (277)	22.2%
College or above	78.9% (1237)	19.5%

[a] The demographic features of Chinese netizens were retrieved from *the 45th Statistical Report on China's Internet Development* issued in April 2020.

Ethical Considerations

The institutional review board of the authors' affiliated university approved the data collection protocol. Voluntary informed consent was obtained from the participants before the online survey. Each participant received a reward of RMB 12 (1.6 US dollars). The final data set was anonymized. We ensured that no identifiable private information was linked to the participants.

Measures

Trust Gaps

Trust gaps included the family members-strangers trust gap and the family members-acquaintances trust gap. First, we separately measured respondents' trust in their family members, acquaintances, and strangers. Drawing upon the extant measurement [52], trust in family members (mean 4.53, SD 0.71), trust in acquaintances (mean 3.85, SD 0.75), and trust in strangers (mean 2.35, SD 0.81) were measured with a single-item asking respondents the degree to which they trusted their family members, acquaintances, and strangers during the COVID-19 outbreak, respectively. A 5-point scale that ranged from 1 (totally distrust) to 5 (totally trust) was used. Then, the family members-strangers trust gap was measured by subtracting trust in strangers from trust in family members (mean 2.18, SD 1.02), and the family members-acquaintances trust gap was measured by subtracting trust in acquaintances from trust in family members (mean 0.68, SD 0.93).

Digital Media Use

Drawing upon the measurement of online media use for informational purpose [37], we measured digital media use as the frequency of people's exposure to COVID-19 information through a wide range of digital media tools. Based on people's habits of digital media use during the pandemic [40], we asked respondents how frequently they exposed themselves to information about COVID-19 via the nine digital media tools, on a 5-point scale ranging from 1 (never) to 5 (very frequently): (1) portal websites, (2) social networking sites, (3) news Apps, (4) video Apps, (5) online question-and-answer communities, (6) search engines, (7) government news Apps, (8) medical Apps, and (9) netizens-run online media. Nine items were averaged to form a composite index of digital media use (mean 3.35, SD 0.63, Cronbach's α = .70).

Negative Emotions

According to the commonly experienced negative emotions during public health emergencies [38,53], this study measured negative emotions by asking respondents to indicate the degree to which they felt, on a 5-point scale ranging from 1 (not at all) to 5 (very strongly), the following five emotions toward the COVID-19 outbreak: (1) fear, (2) anxiety, (3) sadness, (4) anger, and (5) hostility. The five items were averaged to create an additive index (mean 2.43, SD 0.81, Cronbach's α = .79).

Control Variables

Respondents' demographic characteristics, such as age, gender, income, and education were included as control variables. Additionally, because risk perception, knowledge about COVID-19, and institutional trust tended to influence people's negative emotions [54,55] and thereby affected trust gaps, they were also entered as covariates. Risk perception involves the judgement of the likelihood of being infected by the coronavirus and the assessment of the severity of an infection [56]. Knowledge is defined in two ways: (1) objective knowledge, which reflects the actual amount of information an individual has about a topic; and (2) subjective knowledge, which shows an individual's self-evaluation of the acquired knowledge [57]. Given that respondents might

overestimate their subjective knowledge of the coronavirus [58], this study focused on one's objective knowledge about COVID-19. Institutional trust refers to people's positive judgment of the trustworthiness of institutionalized organizations [59]. In public health emergencies, key institutional actors include government agencies, medical systems, and scientists. Thus, institutional trust in this study consists of people's trust in governments, medical systems, and scientists.

Consistent with the established measurement of risk perception [53], risk perception of COVID-19 was calculated by multiplying perceived susceptibility by perceived severity (mean 7.22, SD 4.11). These two items were measured on a 5-point scale: (1) perceived susceptibility: the likelihood of getting infected by COVID-19 between now and the near future (1 = very unlikely, 5 = very likely), and (2) perceived severity: the threat of COVID-19 infection to one's health and life (1 = not at all serious, 5 = very serious). Referring to the measurement of MERS knowledge [38], knowledge about COVID-19 was measured by five quiz-type questions, such as "COVID-19 patients all have symptoms such as fever and cough" (wrong), and "patients who have underlying health conditions are more likely to suffer from severe COVID-19" (right). Correct answers were coded as 1, and incorrect answers were coded as 0 for each question. The answers to five questions were added to create the COVID-19 knowledge index (mean 4.57, SD 0.63).

Five-point scales ranging from 1 (strongly disagree) to 5 (strongly agree) were used to measure three types of institutional trust. Based on the previous measurement [59], trust in government was measured by six items regarding the central and local governments, such as "What the central government has done so far in containing the coronavirus is trustworthy", "I trust the local government's capability to cope with the coronavirus". Six items were averaged to create a composite index (mean 3.98, SD 0.66, Cronbach's α = .85). Five items were averaged to develop the index of trust in medical systems (mean 3.51, SD 0.75, Cronbach's α = .76). Example items included medical professionals "have high rates of correct diagnosis", and "provide effective health care for patients" [60]. Trust in scientists was measured by respondents' evaluation of scientists in terms of their trustworthiness, competence, benevolence, and general credibility [61] (mean 4.35, SD 0.56, Cronbach's α = .80).

Statistical Analyses

We used PROCESS, an SPSS macro developed by Andrew F. Hayes [62], to test the hypotheses. One of the advantages of PROCESS is that it implements the recommended asymptotic and bootstrapping method to test hypotheses involving mediation effects that have few requirements for model assumption [63]. The research hypotheses constitute two mediation effects, in which negative emotions mediate the association between digital media use and the two trust gaps, respectively. Consequently, we chose Model 4 in the PROCESS templates.

We separately ran two mediation tests. In the first mediation test, family members-strangers trust gap was entered as the dependent variable, digital media use as the independent variable, and negative emotions as the mediator variable. Age, gender, income, education, risk perception, COVID-19 knowledge, trust in government, trust in medical systems, and trust in scientists were entered as covariates. In the second mediation test, the family members-acquaintances trust gap was entered as the dependent variable, while other variables remained the same as the first test.

Results

Preliminary Analysis

Digital media use, negative emotions, and the control variables explained 2.5% of the variance in the

family members-strangers trust gap (F (11, 1556) = 3.67, P < .001, R^2 = .025) and 4.6% of the variance in the family members-acquaintances trust gap (F (11, 1556) = 6.86, P < .001, R^2 = .046). Among the control variables, trust in scientists was positively associated with the family members-strangers trust gap (B = 0.15, SE = 0.05, P = .004), indicating that a higher level of trust in scientists during the pandemic tended to increase the gap between one's trust in family members and in strangers. At the early stage of the outbreak, scientists advised people to practice social distancing to prevent the rapid spread of the coronavirus. By believing in scientists' advice and frequently practicing social distancing, people's trust in strangers decreased, and thereby enlarged the family members-strangers trust gap. Besides, age (B = 0.02, SE = 0.003, P < .001), education (B = –0.07, SE = 0.03, P = .01), and COVID-19 knowledge (B = –0.08, SE = 0.04, P = .02) were significantly associated with the family members-acquaintances trust gap. In other words, older people tended to be more skeptical about acquaintances than their younger counterparts did. Besides, people who had greater education attainment and more COVID-19 knowledge might use a more rational approach to view the coronavirus than those with less education attainment or COVID-19 knowledge did, which lowered the former group's distrust or skepticism in acquaintances.

Testing Mediation Effects

After controlling for the effects of the control variables, digital media use was positively associated with negative emotions (B = 0.17, SE = 0.03, P < .001), and negative emotions were positively associated with the family members-strangers trust gap (B = 0.15, SE = 0.03, P < .001). According to the results of the bootstrap method at a 95% confidence interval (CI), the indirect effect of digital media use on the family members-strangers trust gap via negative emotions was significant (B = 0.03, SE = 0.01, CI [.01, .04]), which supported *H1*. However, the direct effect of digital media use on the family members-strangers trust gap was not significant (B = –0.03, SE = 0.04, CI [–.11, .05]).

In terms of the second hypothesis, digital media use was positively associated with negative emotions (B = 0.17, SE = 0.03, P < .001), while negative emotions were positively associated with the family members-acquaintances trust gap (B = 0.08, SE = 0.03, P = .01). The indirect effect of digital media use on the family members-acquaintances trust gap through negative emotions was significant (B = 0.01, SE = 0.01, CI [.003, .027]). Thus, *H2* was supported. Nevertheless, we did not observe a significant direct effect of digital media use on the family members-acquaintances trust gap (B = –0.04, SE = 0.04, CI [–.12, .03]).

These results revealed that negative emotions fully mediated the association between digital media use and the two trust gaps. Moreover, the mediation tests also demonstrated that the mediation effect of negative emotions on the family members-strangers trust gap was stronger than that on the family members-acquaintances trust gap, showing support for *H3*.

Table 2⦚Table 3 and Figure 2 demonstrate the statistical results and the final model, respectively.

Table 2. Regressing family members-strangers trust gap on antecedents.

	Negative emotions		Family members-strangers trust gap	
	B (SE)	*P* value	*B (SE)*	*P* value
Control variables				
Age	–0.003 (0.002)	-.07	0.004 (0.003)	.22
Gender	–0.14 (0.04)	<.001	0.02 (0.05)	.68
Income	–0.003 (0.01)	.76	–0.004 (0.01)	.80
Education	0.06 (0.02)	.009	–0.05 (0.03)	.09
Risk perception	0.04 (0.005)	<.001	–0.01 (0.01)	.32
COVID-19 knowledge	0.06 (0.03)	.05	–0.03 (0.04)	.40
Trust in government	–0.20 (0.03)	<.001	0.07 (0.05)	.11
Trust in medical systems	–0.18 (0.03)	<.001	0.02 (0.04)	.67
Trust in scientists	0.04 (0.04)	.29	0.15 (0.05)	.003
Antecedents				
Digital media use	0.17 (0.03)	<.001	–0.03 (0.04)	.51
Negative emotions	—		0.15 (0.03)	<.001
	$R^2 = 16.6\%$	<.001	$R^2 = 2.5\%$	
	$F (10, 1557) = 30.98$		$F (11, 1556) = 3.67$	

	Boot effect	95%CI
Indirect effect	0.03 (0.01)	[.01, .04]
Direct effect	–0.03 (0.04)	[–.11, .05]

[a] Unstandardized regression coefficients were reported.

[b] Standard errors were in parentheses; Bootstrap sample size = 10,000; CI = confidence interval.

[c] Gender :0=female, 1=male.

Table 3. Regressing family members-acquaintances trust gap on antecedents.

	Negative emotions		Family members-acquaintances trust gap	
	B (SE)	P value	B (SE)	P value
Control variables				
Age	–0.003 (0.002)	.26	0.02 (0.003)	<.001
Gender	–0.14 (0.04)	<.001	0.08 (0.05)	.08
Income	–0.003 (0.01)	.76	0.005 (0.01)	.72
Education	0.06 (0.02)	.009	–0.07 (0.03)	.01
Risk perception	0.04 (0.005)	<.001	–0.006 (0.01)	.29
COVID-19 knowledge	0.06 (0.03)	.05	–0.08 (0.04)	.02
Trust in government	–0.20 (0.03)	<.001	0.06 (0.04)	.15
Trust in medical systems	–0.18 (0.03)	<.001	0.05 (0.04)	.18
Trust in scientists	0.04 (0.04)	.29	–0.03 (0.05)	.56
Antecedents				
Digital media use	0.17 (0.03)	<.001	–0.04 (0.04)	.29
Negative emotions	–		0.08 (0.03)	.01
	R^2 = 16.6%	<.001	R^2 = 4.6%	<.001
	F (10, 1557) = 30.98		F (11, 1556) = 6.86	

		Boot effect	95%CI
Indirect effect		0.01 (0.01)	[.003, .027]
Direct effect		–0.04 (0.04)	[–.12, .03]

[a] Unstandardized regression coefficients were reported.

[b] Standard errors were in parentheses; Bootstrap sample size = 10,000; CI = confidence interval.

[c] Gender :0=female, 1=male.

Figure 2. Diagrams of mediation effects.

Indirect effect = .03, SE = .01, CI [.01, .04]

Indirect effect = .01, SE = .01, CI [.003, .027]
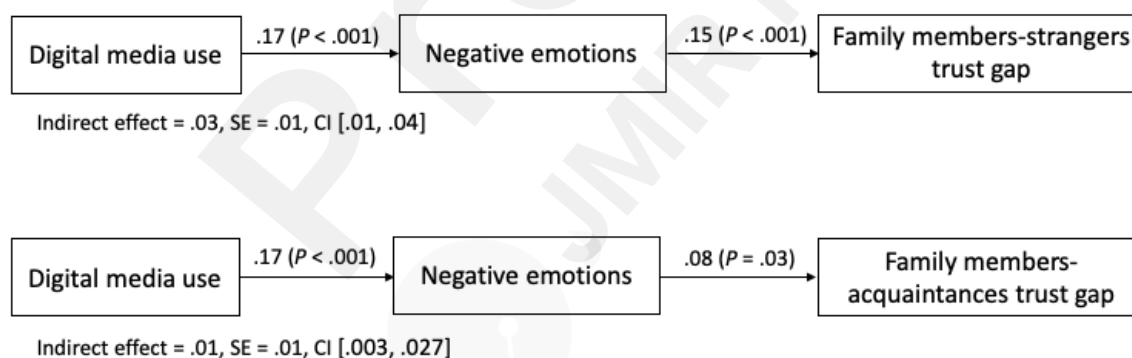
[a] Unstandardized regression coefficients were reported.

Discussion

Principle Findings

This study assessed the relationship between digital media use, negative emotions, the family members-strangers trust gap, and the family members-acquaintances trust gap during the COVID-19 pandemic in China. A majority of prior research used macro-level perspectives to explain trust gaps. For instance, the differential mode of association (*chaxugeju*) emphasized that the kinship-based Chinese culture was the major cause of trust gaps, in which people trusted their family members

more than others [11]. Besides, the rapid marketization and increasing mobility in China over the past few decades has enlarged the social distance between strangers and unfamiliar ones [64–66], thereby increasing trust gaps. Compared with this line of research, the current study employed a micro-level perspective and showed that individuals' digital media use was an important predictor of trust gaps. Notably, the Chinese character *trust* (囗) is composed of *people* (囗) and *words* (囗), which indicates that what people say makes a difference to trust [67]. Moreover, due to the highly contagious nature of the coronavirus, people relied on digital media to acquire information and post comments during the pandemic. These findings indicate that what people said on digital media contributed to the change in their trust in others. Hence, in the digital society, digital media use serves as a valid approach to explicate trust gaps during public health emergencies.

The results demonstrated the mediating role of negative emotions in the associations between digital media use and two trust gaps. On the one hand, the positive association between digital media use and negative emotions was consistent with previous studies that focused on public health emergencies [19,20,38,39]. These studies showed that the wide use of digital media facilitated the spread of the virus-related information, which not only amplified people's negative emotions but also resulted in emotion contagion among the population [68,69]. On the other hand, the positive associations between negative emotions and two trust gaps highlighted the role of negative emotions in motivating an individual to attribute the responsibility of a crisis to socially distant ones [41]. Negative emotions such as anxiety, anger, and hostility tend to create a sentiment of distrust in others, including strangers and acquaintances, thereby increasing the trust gaps. Prior research mainly focused on the impact of emotion contagion in social media on individual behaviors during public health crises [69,70]. In comparison, by examining the impact of negative emotions on two trust gaps, our study adds some insights into understanding how emotion contagion influences interpersonal ties in the digital environment.

By comparing the indirect effect of digital media use on two trust gaps via negative emotions, we found that negative emotions tended to enlarge the family members-strangers trust gap to a larger extent than the family members-acquaintances trust gap. These findings not only echo that strong aversive emotions result in individuals' distrust in strangers or loosely-connected ones [43–45], but also indicate that people tend to attribute more responsibility to socially distant others, thereby leading to more distrust in strangers than in acquaintances. In recent years, strangers have been increasingly distanced as untrustworthy others, which suggests a decrease in social trust [66,71]. These findings remind us to stay alert to the widening family members-strangers trust gap caused by frequent digital media use and associated negative emotions.

In the past few years, the COVID-19 pandemic has exerted a profound influence on the ways people think, behave, and interact with others. Although the World Health Organization ended global health emergency declaration for the COVID-19 pandemic on May 5, 2023 [1], large-scale infectious diseases might break out in the future [5]. Moreover, the post-pandemic era is increasingly shaped by the use of various digital tools [72]. As long as biased and uncivil comments about out-group members circulate on digital media, people's exposure to this information tends to amplify their negative emotions, which in turn enlarges two trust gaps. Thus, the findings of the current study have implications for curbing the enlargement of trust gaps in the post-pandemic era.

We suggest policy makers to take measures to pursue an emotionally balanced digital media environment with less uncivil, hostile, or sensational messages about out-group members when an infectious disease breaks out. For instance, the emotionally laden online misinformation and disinformation should be identified and labelled to remind users to keep alert of these contents. Besides, algorithms that push diverse viewpoints to users can be used to avoid emotional

polarization. These efforts may ease people's negative emotions during their digital media use, thereby curbing the enlargement of trust gaps. Meanwhile, we advise digital media users to improve their verification skills. When encountering a piece of online news, users should first verify the credentials of the authors, such as whether the authors are specialized in the field covered by the news. Then, users should check the source by asking these questions: Are there any cited sources in the article? How many sources are cited? How credible are the sources? Finally, users should examine whether the news article includes biased or sensational contents. The three-step verification behavior helps users avoid the overamplification of negative emotions and prevent the enlargement of trust gaps, even if they encounter fake news online.

Limitations and Future Directions

This study has several limitations. First, the measurement of digital media use might be too general to capture its precise impact on negative emotions and trust gaps. Although frequency of exposure to information may provide much information about the influence of digital media use on users' perceptions [73], researchers could analyze the content related to negative emotions and distrust in others on digital media to replicate this study. Additionally, although prior studies have demonstrated that people primarily experience negative emotions at the early stage of a public health emergency [35,38,39], they may also feel positive emotions, such as hope, to navigate them through uncertainties [74,75]. Accordingly, future research could incorporate positive emotions into the model to get a more nuanced and comprehensive understanding of how digital media use influences social trust-related outcomes through negative and positive emotions. Besides, although the single-item measurement of trust in certain groups has been frequently employed [76,77], multiple items should be used to measure one's trust in family members, acquaintances, and strangers in the future to improve the construct reliability.

Second, in terms of data collection, the cross-sectional online survey provided empirical evidence for testing the associations between the examined variables. However, we cannot claim causality in the proposed model. It is possible that participants who experienced negative emotions and distrusted strangers and acquaintances selected to expose themselves to biased and uncivil contents to confirm their existing perceptions. Moreover, given that negative emotions were highly volatile over the course of the pandemic [78], researchers are advised to use multiple waves of survey that focus on different stages of a public health crisis in the future. This longitudinal design not only enables a researcher to trace the evolvement of negative emotions, but also warrants the examination of the causal relationships between digital media use, negative emotions, and trust gaps.

Lastly, our survey was conducted at the onset of the pandemic. The early stage of a pandemic was characterized by high public demand for information [79], strong negative emotions [80], and a fragile state of social trust [81]. Conducting the survey at the middle or late stages of the pandemic might have yielded different results. Therefore, the findings should be interpreted as specific to the initial stage of a public health emergency, instead of being generalized to other phases. However, as an exploratory study, the current model may serve as a link between the early-stage trust dynamics and their long-term impacts in the post-pandemic era. Researchers can use our findings to explicate trust-related outcomes in the present days.

Conclusions

The widening trust gaps amid public health emergencies not only undermine social integration but also hinder post-pandemic recovery. This study examines trust gaps in the early phase of the COVID-19 pandemic in China and demonstrates that frequent digital media use was positively associated with negative emotions. These emotions, in turn, were positively associated with two trust

gaps: the family members-strangers trust gap and the family members-acquaintances trust gap. Moreover, the mediation effect of negative emotions between digital media use and the family members-strangers trust gap was stronger than that between digital media use and the family members-acquaintances trust gap. Compared with previous macro-level studies that focused on factors such as culture and modernity to explain the decline in social trust [11,82], our study contributes in two ways: (1) delineating the structure of decreasing social trust into two distinct trust gaps; and (2) using a media effect approach to unveiling the individual-level mechanism that contributes to the widening trust gaps. Against the backdrop of the mediatized era and global risk society, the findings underscore the importance of the appropriate use of digital media and the strategic management of public emotions to curb the widening trust gaps. This, in turn, can facilitate effective public health crisis intervention in the post-pandemic era.

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Authors' Contributions

LW acquired the funding, designed the study, wrote the main body of the manuscript, and edited the manuscript. QH participated in the study design, analyzed the data, wrote the draft of the manuscript.

Conflicts of Interest

None declared.

References

1. World Health Organization. WHO Director-General's opening remarks at the media briefing. 2023. Available from: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing---5-may-2023 [accessed May 26, 2023]

2. Silver L, Connaughton A. Partisanship Colors Views of COVID-19 Handling Across Advanced Economies. Pew Res Cent. 2022. Available from: https://www.pewresearch.org/global/2022/08/11/partisanship-colors-views-of-covid-19-handling-across-advanced-economies/ [accessed May 15, 2024]

3. Shahbazi M, Bunker D. Social media trust: Fighting misinformation in the time of crisis. Int J Inf Manag 2024 Aug 1;77:102780. doi: 10.1016/j.ijinfomgt.2024.102780

4. Li Y, Li H, Ruan J. Do Long-Term Natural Disasters Influence Social Trust? Empirical Evidence from China. Int J Environ Res Public Health 2021 Jul 7;18(14):7280. PMID:34299730

5. Sozinova AA, Popkova EG. Dataset Analysis of Pandemic Risks and Risk Management Prospects Based on Management and Marketing in Conditions of COVID-19 Recession. Risks Multidisciplinary Digital Publishing Institute; 2023 Feb;11(2):37. doi: 10.3390/risks11020037

6. Pitas N, Ehmer C. Social Capital in the Response to COVID-19. Am J Health Promot SAGE Publications Inc; 2020 Nov 1;34(8):942–944. doi: 10.1177/0890117120924531

7. Yuan H, Long Q, Huang G, Huang L, Luo S. Different roles of interpersonal trust and institutional trust in COVID-19 pandemic control. Soc Sci Med 2022 Jan 1;293:114677. doi:

10.1016/j.socscimed.2021.114677

8. Bäck M, Christensen HS. When trust matters—a multilevel analysis of the effect of generalized trust on political participation in 25 European democracies. J Civ Soc Routledge; 2016 Apr 2;12(2):178–197. doi: 10.1080/17448689.2016.1176730

9. Putnam RD. Bowling Alone: America's Declining Social Capital. In: Crothers L, Lockhart C, editors. Cult Polit Read New York: Palgrave Macmillan US; 2000. p. 223–234. doi: 10.1007/978-1-349-62397-6_12

10. Beaudoin CE, Thorson E. Social Capital in Rural and Urban Communities: Testing Differences in Media Effects and Models. Journal Mass Commun Q SAGE Publications Inc; 2004 Jun 1;81(2):378–399. doi: 10.1177/107769900408100210

11. Fei X. From the soil. University of California Press; 1992. Available from: https://www.degruyter.com/document/doi/10.1525/9780520912489/html [accessed Aug 19, 2021]ISBN:978-0-520-91248-9

12. Song F, Cadsby CB, Bi Y. Trust, Reciprocity, and Guanxi in China: An Experimental Investigation. Manag Organ Rev Cambridge University Press; 2012 Jul;8(2):397–421. doi: 10.1111/j.1740-8784.2011.00272.x

13. Fell L. Trust and COVID-19: Implications for Interpersonal, Workplace, Institutional, and Information-Based Trust. Digit Gov Res Pract 2020;2(1):1–5. doi: 10.1145/3428472

14. Wei Q. Stay vigilant of the panic and other negative impacts of the COVID-19 outbreak. 2020. Available from: http://finance.sina.com.cn/zl/china/2020-02-27/zl-iimxxstf4772092.shtml [accessed Aug 19, 2021]

15. Bierman A, Schieman S. Social Estrangement and Psychological Distress before and during the COVID-19 Pandemic: Patterns of Change in Canadian Workers. J Health Soc Behav SAGE Publications Inc; 2020 Dec 1;61(4):398–417. doi: 10.1177/0022146520970190

16. Karmakar S, Das S. Evaluating the Impact of COVID-19 on Cyberbullying through Bayesian Trend Analysis. Proc Eur Interdiscip Cybersecurity Conf New York, NY, USA: Association for Computing Machinery; 2020. p. 1–6. doi: 10.1145/3424954.3424960

17. Kim B. Effects of Social Grooming on Incivility in COVID-19. Cyberpsychology Behav Soc Netw Mary Ann Liebert, Inc., publishers; 2020 Aug 1;23(8):519–525. doi: 10.1089/cyber.2020.0201

18. Xu J, Sun G, Cao W, Fan W, Pan Z, Yao Z, Li H. Stigma, Discrimination, and Hate Crimes in Chinese-Speaking World amid Covid-19 Pandemic. Asian J Criminol 2021 Mar 1;16(1):51–74. doi: 10.1007/s11417-020-09339-8

19. Chao M, Xue D, Liu T, Yang H, Hall BJ. Media use and acute psychological outcomes during COVID-19 outbreak in China. J Anxiety Disord 2020 Aug 1;74:102248. doi: 10.1016/j.janxdis.2020.102248

20. Gao J, Zheng P, Jia Y, Chen H, Mao Y, Chen S, Wang Y, Fu H, Dai J. Mental health problems and social media exposure during COVID-19 outbreak. PLOS ONE Public Library of Science;

2020 Apr 16;15(4):e0231924. doi: 10.1371/journal.pone.0231924

21. Fischer AH, Manstead AS. Social functions of emotion and emotion regulation. Handb Emot 4th edition. New York: Guilford Press; 2016. p. 424–439.

22. Jin Y, Liu BF, Anagondahalli D, Austin L. Scale development for measuring publics' emotions in organizational crises. Public Relat Rev 2014 Sep 1;40(3):509–518. doi: 10.1016/j.pubrev.2014.04.007

23. Liu PL. COVID-19 Information Seeking on Digital Media and Preventive Behaviors: The Mediation Role of Worry. Cyberpsychology Behav Soc Netw Mary Ann Liebert, Inc., publishers; 2020 Oct;23(10):677–682. doi: 10.1089/cyber.2020.0250

24. Melki J, Tamim H, Hadid D, Farhat S, Makki M, Ghandour L, Hitti E. Media Exposure and Health Behavior during Pandemics: The Mediating Effect of Perceived Knowledge and Fear on Compliance with COVID-19 Prevention Measures. Health Commun Routledge; 2022 Apr 16;37(5):586–596. PMID:33327785

25. Ren W, Zhu X, Hu Y. Differential effects of traditional and social media use on COVID-19 preventive behaviors: The mediating role of risk and efficacy perceptions. J Health Psychol SAGE Publications Ltd; 2022 Jul 1;27(8):1861–1874. doi: 10.1177/13591053211003125

26. Huang Y-HC, Wu F, Huang Q. Does research on digital public relations indicate a paradigm shift? An analysis and critique of recent trends. Telemat Inform 2017 Nov 1;34(7):1364–1376. doi: 10.1016/j.tele.2016.08.012

27. Mou Y, Atkin D, Fu H, Lin CA, Lau TY. The influence of online forum and SNS use on online political discussion in China: Assessing "Spirals of Trust." Telemat Inform 2013 Nov 1;30(4):359–369. doi: 10.1016/j.tele.2013.04.002

28. Leung L. Generational differences in content generation in social media: The roles of the gratifications sought and of narcissism. Comput Hum Behav 2013 May 1;29(3):997–1006. doi: 10.1016/j.chb.2012.12.028

29. Leung L, Wei R. More Than Just Talk on the Move: Uses and Gratifications of the Cellular Phone. Journal Mass Commun Q SAGE Publications Inc; 2000 Jun 1;77(2):308–320. doi: 10.1177/107769900007700206

30. Wang R, Yang F, Zheng S, Sundar SS. Why Do We Pin? New Gratifications Explain Unique Activities in Pinterest. Soc Media Soc SAGE Publications Ltd; 2016;2(3):2056305116662173. doi: 10.1177/2056305116662173

31. Islm T, Meng H, Pitafi AH, Ullah Zafar A, Sheikh Z, Shujaat Mubarik M, Liang X. Why DO citizens engage in government social media accounts during COVID-19 pandemic? A comparative study. Telemat Inform 2021 Sep 1;62:101619. doi: 10.1016/j.tele.2021.101619

32. Shim H, You KH, Lee JK, Go E. Why do people access news with mobile devices? Exploring the role of suitability perception and motives on mobile news use. Telemat Inform 2015 Feb 1;32(1):108–117. doi: 10.1016/j.tele.2014.05.002

33. Yamamoto M, Morey AC. Incidental News Exposure on Social Media: A Campaign

Communication Mediation Approach. Soc Media Soc SAGE Publications Ltd; 2019;5(2):2056305119843619. doi: 10.1177/2056305119843619

34. Hu B, Zhang D. Channel selection and knowledge acquisition during the 2009 Beijing H1N1 flu crisis: a media system dependency theory perspective. Chin J Commun Routledge; 2014 Jul 3;7(3):299–318. doi: 10.1080/17544750.2014.926951

35. Yang ZJ. Too scared or too capable? Why do college students stay away from the H1N1 vaccine? Risk Anal 2012;32(10):1703–1716. doi: 10.1111/j.1539-6924.2012.01799.x

36. Fletcher R, Nielsen RK. Are people incidentally exposed to news on social media? A comparative analysis. New Media Soc SAGE Publications; 2018 Jul 1;20(7):2450–2468. doi: 10.1177/1461444817724170

37. Kim Y, Chen H-T, Gil de Zúñiga H. Stumbling upon news on the Internet: Effects of incidental news exposure and relative entertainment use on political engagement. Comput Hum Behav 2013 Nov 1;29(6):2607–2614. doi: 10.1016/j.chb.2013.06.005

38. Seo M. Amplifying panic and facilitating prevention: Multifaceted effects of traditional and social media use during the 2015 MERS crisis in South Korea. Journal Mass Commun Q SAGE Publications Inc; 2021 Mar 1;98(1):221–240. doi: 10.1177/1077699019857693

39. Qiu J, Xu L, Wang J, Gu W. Mutual influences between message volume and emotion intensity on emerging infectious diseases: An investigation with microblog data. Inf Manage 2020 Jun 1;57(4):103217. doi: 10.1016/j.im.2019.103217

40. National Information Center & Nanjing University. A report on public attitudes toward COVID-19 and circulation of associated information. 2020. Available from: http://www.sic.gov.cn/News/79/10414.htm [accessed Aug 20, 2021]

41. Dunn JR, Schweitzer ME. Feeling and Believing: The Influence of Emotion on Trust. J Pers Soc Psychol 2005;88(5):736–748.

42. Bloom JD, Chan YA, Baric RS, Bjorkman PJ, Cobey S, Deverman BE, Fisman DN, Gupta R, Iwasaki A, Lipsitch M, Medzhitov R, Neher RA, Nielsen R, Patterson N, Stearns T, Nimwegen E van, Worobey M, Relman DA. Investigate the origins of COVID-19. Science American Association for the Advancement of Science; 2021 May 14;372(6543):694–694. PMID:33986172

43. Huang JY, Sedlovskaya A, Ackerman JM, Bargh JA. Immunizing Against Prejudice: Effects of Disease Protection on Attitudes Toward Out-Groups. Psychol Sci SAGE Publications Inc; 2011 Dec 1;22(12):1550–1556. doi: 10.1177/0956797611417261

44. Prati G, Pietrantoni L. Knowledge, Risk Perceptions, and Xenophobic Attitudes: Evidence from Italy During the Ebola Outbreak. Risk Anal 2016;36(10):2000–2010. doi: 10.1111/risa.12537

45. Tsai J-Y, Phua J, Pan S, Yang C-C. Intergroup Contact, COVID-19 News Consumption, and the Moderating Role of Digital Media Trust on Prejudice Toward Asians in the United States: Cross-Sectional Study. J Med Internet Res 2020 Sep 25;22(9):e22767. doi: 10.2196/22767

46. Bavel JJV, Baicker K, Boggio PS, Capraro V, Cichocka A, Cikara M, Crockett MJ, Crum AJ,

Douglas KM, Druckman JN, Drury J, Dube O, Ellemers N, Finkel EJ, Fowler JH, Gelfand M, Han S, Haslam SA, Jetten J, Kitayama S, Mobbs D, Napper LE, Packer DJ, Pennycook G, Peters E, Petty RE, Rand DG, Reicher SD, Schnall S, Shariff A, Skitka LJ, Smith SS, Sunstein CR, Tabri N, Tucker JA, Linden S van der, Lange P van, Weeden KA, Wohl MJA, Zaki J, Zion SR, Willer R. Using social and behavioural science to support COVID-19 pandemic response. Nat Hum Behav Nature Publishing Group; 2020 May;4(5):460–471. doi: 10.1038/s41562-020-0884-z

47. Au AKY, Ng JCK, Wu WCH, Chen SX. Who do we trust and how do we cope with COVID-19? A mixed-methods sequential exploratory approach to understanding supportive messages across 35 cultures. Humanit Soc Sci Commun Palgrave; 2023 May 30;10(1):1–14. doi: 10.1057/s41599-023-01747-2

48. Chen X, Chen H. Differences in Preventive Behaviors of COVID-19 between Urban and Rural Residents: Lessons Learned from A Cross-Sectional Study in China. Int J Environ Res Public Health 2020 Jan;17(12):4437. doi: 10.3390/ijerph17124437

49. Huang Q. How does news media exposure amplify publics' perceived health risks about air pollution in China? A conditional media effect approach. Int J Commun 2020 Feb 27;14(0):1705–1724.

50. Wang K, Li S. Who Is Willing to Engage in Social Gatherings During the Coronavirus Disease 2019 Lockdown? A Curvilinear Relationship Between Age and Heuristic Processing. Front Psychol Frontiers; 2020;11. doi: 10.3389/fpsyg.2020.586408

51. China Internet Network Information Center. The 45th China Statistical Report on Internet Development. 2020. Available from: http://www.cnnic.net.cn/hlwfzyj/hlwxzbg/ [accessed Dec 4, 2020]

52. Näsi M, Räsänen P, Hawdon J, Holkeri E, Oksanen A. Exposure to online hate material and social trust among Finnish youth. Inf Technol People Emerald Group Publishing Limited; 2015 Jan 1;28(3):607–622. doi: 10.1108/ITP-09-2014-0198

53. Kim HK, Niederdeppe J. The role of emotional response during an H1N1 influenza pandemic on a college campus. J Public Relat Res 2013 Jan 1;25(1):30–50. doi: 10.1080/1062726X.2013.739100

54. Cheung C, Tse JW. Institutional Trust As a Determinant of Anxiety During the SARS Crisis in Hong Kong. Soc Work Public Health Routledge; 2008 Jun 11;23(5):41–54. PMID:19301537

55. Mou Y, Lin CA. Communicating Food Safety via the Social Media: The Role of Knowledge and Emotions on Risk Perception and Prevention. Sci Commun SAGE Publications Inc; 2014 Oct 1;36(5):593–616. doi: 10.1177/1075547014549480

56. Yue RPH, Lau BHP, Chan CLW, Ng S-M. Risk perception as a double-edged sword in policy compliance in COVID-19 pandemic? A two-phase evaluation from Hong Kong. J Risk Res Routledge; 2022 Oct 5;25(9):1131–1145. doi: 10.1080/13669877.2021.1936612

57. Hou S-I. Objective and Subjective Knowledge and HIV Testing among College Students. Am J Health Educ Routledge; 2004 Dec 1;35(6):328–337. doi: 10.1080/19325037.2004.10604772

58. Berhe NM, Van de Velde S, Rabiee-Khan F, van der Heijde C, Vonk P, Buffel V, Wouters E, Van Hal G. Knowledge deficit and fear of COVID-19 among higher education students during the first wave of the pandemic and implications for public health: a multi-country cross-sectional survey. BMC Public Health 2022 Jun 7;22(1):1144. doi: 10.1186/s12889-022-13511-3

59. Huang Q. Public trust in local governments and environmental risks in China: the effects of media use, perceived dread, and perceived inequality. Chin J Commun 2018 Jan 2;11(1):88–104. doi: 10.1080/17544750.2017.1328452

60. Shea JA, Micco E, Dean LT, McMurphy S, Schwartz JS, Armstrong K. Development of a Revised Health Care System Distrust Scale. J Gen Intern Med 2008 Jun 1;23(6):727–732. doi: 10.1007/s11606-008-0575-3

61. Hmielowski JD, Feldman L, Myers TA, Leiserowitz A, Maibach E. An attack on science? Media use, trust in scientists, and perceptions of global warming. Public Underst Sci SAGE Publications Ltd; 2014 Oct 1;23(7):866–883. doi: 10.1177/0963662513480091

62. Hayes AF. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Second edition. Guilford Publications; 2013. ISBN:978-1-4625-3465-4

63. Preacher KJ, Rucker DD, Hayes AF. Addressing Moderated Mediation Hypotheses: Theory, Methods, and Prescriptions. Multivar Behav Res Routledge; 2007 Jun 29;42(1):185–227. PMID:26821081

64. Jiang F. Space-time Changes of Hierarchical Trust and Its Typology (In Chinese). Zhejiang Soc Sci 2017;(10):66–73.

65. Xin Z, Xin S. Marketization process predicts trust decline in China. J Econ Psychol 2017 Oct 1;62:120–129. doi: 10.1016/j.joep.2017.07.001

66. Yang Z, Xin Z. Income inequality and interpersonal trust in China. Asian J Soc Psychol 2020;23(3):253–263. doi: 10.1111/ajsp.12399

67. Zhai X. Social Trust among Chinese People: A Relational Approach (In Chinese). Beijing: The Commercial Press; 2022.

68. Goldenberg A, Gross JJ. Digital Emotion Contagion. Trends Cogn Sci 2020 Apr 1;24(4):316–328. doi: 10.1016/j.tics.2020.01.009

69. Wheaton MG, Prikhidko A, Messner GR. Is Fear of COVID-19 Contagious? The Effects of Emotion Contagion and Social Media Use on Anxiety in Response to the Coronavirus Pandemic. Front Psychol 2021;11. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2020.567379 [accessed Jan 17, 2023]

70. Shao R, Shi Z, Zhang D. Social Media and Emotional Burnout Regulation During the COVID-19 Pandemic: Multilevel Approach. J Med Internet Res 2021 Mar 16;23(3):e27015. doi: 10.2196/27015

71. Wang Y, Zhou X. A hierarchy of social trust in urban China (In Chinese). New Horiz Tianfu 2009;(2):108–111.
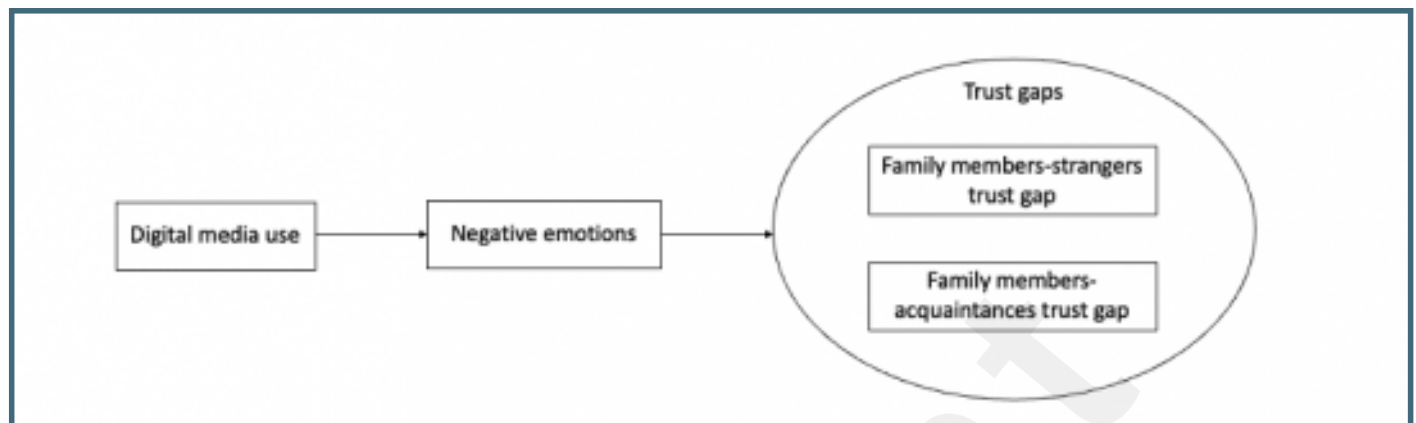
72. Jiang H, Zhang Y, Guo W, Cheng W, Peng J. Online Collaborative Documents as Media Logic: The Mediatization of Risk Response in the Post-pandemic Era. Front Psychol 2022;13. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2022.892569 [accessed May 26, 2023]

73. Wong FHC, Liu T, Leung DKY, Zhang AY, Au WSH, Kwok WW, Shum AKY, Wong GHY, Lum TY-S. Consuming Information Related to COVID-19 on Social Media Among Older Adults and Its Association With Anxiety, Social Trust in Information, and COVID-Safe Behaviors: Cross-sectional Telephone Survey. J Med Internet Res 2021 Feb 11;23(2):e26570. doi: 10.2196/26570

74. Russell PS, Frackowiak M, Cohen-Chen S, Rusconi P, Fasoli F. Induced gratitude and hope, and experienced fear, but not experienced disgust, facilitate COVID-19 prevention. Cogn Emot Routledge; 2023 Feb 17;37(2):196–219. PMID:36628460

75. Leslie-Miller CJ, Waugh CE, Cole VT. Coping With COVID-19: The Benefits of Anticipating Future Positive Events and Maintaining Optimism. Front Psychol 2021;12. Available from: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.646047 [accessed Jan 31, 2024]

76. Su Z, Ye Y, He J, Huang W. Constructed Hierarchical Government Trust in China: Formation Mechanism and Political Effects. Pac Aff 2016 Dec 1;89(4):771–794. doi: 10.5509/2016894771

77. Zhang W, Chia SC. The Effects of Mass Media Use and Social Capital on Civic and Political Participation. Commun Stud Routledge; 2006 Sep 1;57(3):277–297. doi: 10.1080/10510970600666974

78. Hagen D, Lai AY, Goldmann E. Trends in negative emotions throughout the COVID-19 pandemic in the United States. Public Health 2022 Nov;212:4–6. PMID:36162396

79. Tang S, Wu X, Chen J, Lu F, Zhang Z, Xu Y, Zhang J. Release and Demand of Public Health Information in Social Media During the Outbreak of COVID-19 in China. Front Public Health 2022;9. Available from: https://www.frontiersin.org/articles/10.3389/fpubh.2021.829589 [accessed Jan 30, 2024]

80. Meng G, Li Q, Yuan X, Zheng Y, Hu K, Dai B, Liu X. The roles of risk perception, negative emotions and perceived efficacy in the association between COVID-19 infection cues and preventive behaviors: a moderated mediation model. BMC Public Health 2023 Jan 16;23(1):109. doi: 10.1186/s12889-022-14870-7

81. Abdalla SM, Koya SF, Jamieson M, Verma M, Haldane V, Jung A-S, Singh S, Nordström A, Obaid T, Legido-Quigley H, McNab C. Investing in trust and community resilience: lessons from the early months of the first digital pandemic. BMJ British Medical Journal Publishing Group; 2021 Nov 29;375:e067487. PMID:34840130

82. Anthony G. The Consequences of Modernity. CA: Stanford University Press; 1991.

Supplementary Files

Figures

The conceptual model.

Diagrams of mediation effects.