

## **The Role of News Sharing in Curbing the Negative Impact of Misperceptions on Prosocial Behavior During the COVID-19 Pandemic**

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Although a growing body of literature has warned about the harmful effects of misperceptions in public health crises like the COVID-19 pandemic, little is known about whether misperceptions discourage citizens' engagement in prosocial behavior during the pandemic. Investigating this relationship, we focused on the role of news sharing on social media to determine whether this factor mitigates the potentially negative effects of misperceptions on prosocial behavior. The results show that individuals with more misperceptions are less likely to engage in prosocial behavior. However, active sharing of news about COVID-19 on social media mitigates such effects. News sharing has more pronounced positive effects on prosocial behavior when individuals share news with fellow citizens who have greater expertise about COVID-19-related information. Our findings highlight the importance of encouraging active news sharing and interacting with quality networks in digital environments to reduce the negative impact of misperceptions during a pandemic.

*Keywords: COVID-19, misperceptions, news sharing, prosocial behavior, social media*

Citizens' prosocial behavior, which aims to benefit others while sacrificing self-interests (Batson & Powell, 2003; Jin et al., 2021), was highly important during the COVID-19 pandemic. Due to the very transmissible nature of COVID-19, the termination of the pandemic required not only efforts by individual citizens to ensure their health but also cooperative efforts to ensure the safety of the community to which

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they belonged (Jin et al., 2021; Korn, Böhm, Meier, & Betsch, 2020). Prosocial behavior is vital because it not only results in desirable public health outcomes but also addresses much broader societal, economic, and psychological issues stemming from the pandemic situation (Hellmann, Dorrough, & Glöckner, 2021). Given the pandemic's disproportionately negative impact on the most vulnerable members of the community, global leaders frequently emphasized the importance of solidarity and shared responsibility (e.g., United Nations, 2020).

Nonetheless, researchers have paid little attention to prosocial behavior, which is in contrast with the extensive research on individuals' self-preventive behaviors, support of government regulations, or vaccination status (e.g., Allington, Duffy, Wessely, Dhavan, & Rubin, 2020; Banai, Banai, & Mikloušić, 2021; Bertin, Nera, & Delouvé, 2020; Erceg, Ružojčić, & Galić, 2022; Teovanović et al., 2020). Even when considering prosocial behavior, research has examined only individuals' innate traits as predictors (e.g., Jin et al., 2021). However, individual traits are not sufficient to explain prosocial behavior, given that individuals are influenced by their networks in understanding crises and determining appropriate actions (Abel & Brown, 2020; Rudert & Janke, 2021).

Given the very social nature of prosocial behaviors, we shed light on COVID-19-related news sharing and the quality of one's online social networks as key factors that have positive effects on prosocial behavior. We also examine the importance of news sharing in attenuating the possibly harmful impacts of misperceptions on prosocial behavior. Based on the data collected in the early stage of the pandemic, we specifically investigated whether (a) misperceptions about COVID-19 decreased individuals' prosocial behavior, (b) sharing news about COVID-19 was positively associated with prosocial behavior and reduced the potentially negative effects of misperceptions on prosocial behaviors, and (c) the expertise of individuals with whom one interacted on social media strengthened the effects of news sharing on prosocial behavior. In doing so, this study offers valuable insights into how to encourage prosocial behavior by curbing the deleterious impacts of misperceptions through news-sharing activities and high-quality online networks.

## **Literature Review**

### ***Prosocial Behavior During the Pandemic***

Prosocial behavior, typically associated with charitable actions such as lending a hand, making gifts, and consoling others (Eisenberg, Van Schyndel, & Spinrad, 2016), played a pivotal role in citizens' response to the challenges posed by COVID-19 in their daily lives. In the context of the pandemic, actions such as wearing masks were not solely driven by individuals' self-preservation instincts but also by a sense of communal responsibility to safeguard others (Wider, Lim, Wong, Chan, & Maidin, 2022). Guidelines established by reputable health organizations, such as the Centers for Disease Control and Prevention (CDC) and the World Health Organization, stressed that measures like maintaining social distancing and wearing masks correctly were to be implemented not only for individual protection but also for the well-being of the broader community.

In essence, what was traditionally viewed as personal health-preventive conduct, aimed at safeguarding one's own well-being, had evolved into a form of prosocial behavior benefiting the wider community in the face of a highly contagious disease like COVID-19. The adoption of preventive health behaviors during the pandemic was influenced by individuals' perceptions of the risks associated with COVID-19 for themselves and their communities (Lee, Kim, & Chock, 2020; Su & Shi, 2023). Individuals were likely to follow actions like wearing facial masks and adhering to government health guidelines when seeking to protect those with whom they shared a sense of solidarity (Cheng, Lam, & Leung, 2020; Liekefett & Becker, 2021). Studies have also shown that, during the pandemic, people were more likely to behave prosocially when they noticed that their close others were actively engaging in prosocial behaviors (Rudert & Janke, 2021) or when they had empathetic feelings toward COVID-19-vulnerable individuals (Pfattheicher, Nockur, Böhm, Sassenrath, & Petersen, 2020). This is further supported by the recent finding that attachment security is a crucial factor in fostering prosocial behaviors among adolescents (Coulombe & Yates, 2021).

Building on these findings, it becomes evident that prosociality as an individual trait significantly contributes to fostering adherence to public health recommendations (Andersson, Campos-Mercade, Meier, & Wengström, 2021). This connection becomes even more pronounced when considering the broader context of the pandemic, where prosocial behavior was intimately intertwined with social solidarity (Cheng et al., 2020; Igwe et al., 2020; West-Oram, 2020). Given the significance of shared social values during the pandemic, health-protective behaviors can contribute to the betterment of the community (Hellmann et al., 2021; Jin et al., 2021).

However, not all citizens engaged in prosocial behavior during the pandemic due to a conflict of interest between promoting individual safety and pursuing the collective good (Dawes, 1980; Spadaro et al., 2020). When confronted with such a social dilemma, it is difficult to prioritize the public interest over the interests of individuals, particularly when the cost to be invested in prosocial behavior is high. During the COVID-19 pandemic, when social isolation was preferred for protecting one's own safety, the cost of prosocial behavior was much higher (Johnson, Dawes, Fowler, & Smirnov, 2020). Indeed, those who perceived higher personal costs associated with contracting the virus and experiencing more disturbances in daily life resulting from the pandemic (e.g., negative economic impact, plan cancellations, and changes in life routines) were less likely to engage in prosocial behavior (Jin et al., 2021). This study posits that these tendencies may be influenced by misperceptions, often shaped by misinformation during health crises.

### ***Misperceptions and Prosocial Behavior***

Misperceptions, often fueled by the circulation of misinformation, can deviate individuals from an accurate understanding of the crisis. Extensive empirical research highlights that misperceptions significantly curb people's inclination to adopt health behaviors that could be beneficial for the collective good. For example, among human immunodeficiency virus (HIV) patients, belief in false information has been linked to lower vaccination rates (Jolley & Douglas, 2014; Oliver & Wood, 2014) and diminished intentions to initiate antiretroviral treatment (Bogart, Wagner, Galvan, & Banks, 2010). In the context of COVID-19, more specifically, recent studies have revealed a pervasive impact of misperceptions on lowering

people's compliance with various health-protective behaviors (Allington et al., 2020; Banai et al., 2021; Bertin et al., 2020; Erceg et al., 2022; Teovanović et al., 2020). Notably, individuals who believed false information tended to exhibit weaker intentions for COVID-19 vaccination and mask-wearing (Baum et al., 2021) as well as practicing social distancing (Bierwiazzonek, Kunst, & Pich, 2020; Pummerer et al., 2021). Research has explained the negative relationship between misperceptions and prosocial healthy behaviors in terms of reduced health literacy (Krishna & Thompson, 2019) and perceived risks (Erceg et al., 2022; Oh, Lee, & Han, 2020)—crucial factors for making informed health-related decisions that actively promote engagement in healthy behaviors.

The intricate interplay between misperceptions and prosocial behaviors during health crises can be elucidated through the lens of (mis)perceived social norms, defined as the expected standards of behavior for people within specific social groups (Hefler, Kerrigan, Henryks, Freeman, & Thomas, 2019). Social norms theory demonstrates that behaviors can be influenced by inaccurate perceptions of what actions are considered typical within one's social circles, referred to as descriptive norms (Cialdini, Reno, & Kallgren, 1990). Given that people often shape their behavior in specific situations based on the actions of other members of their social groups (e.g., Campo et al., 2003; Geber, Baumann, & Klimmt, 2019), those with high misperceptions are likely to hold incorrect normative perceptions, presuming that prosocial behaviors aimed at protecting others from health risks are unnecessary. In other words, pluralistic ignorance (or false consensus) among individuals with high misperceptions can lead to an underestimation of the risks associated with health crises, potentially resulting in a reduction of prosocial behaviors. Those individuals may deviate from recommended health practices that contribute to the collective well-being, believing that their behaviors align with the perceived norms. These reasonings lead to the following hypothesis:

*H1: The extent of the COVID-19-related misperceptions was negatively associated with engagement in prosocial behavior.*

### ***Beneficial Roles of COVID-19-Related News Sharing and Network Expertise***

To mitigate the potential negative effects of misperceptions on prosocial behaviors, we emphasize the importance of sharing COVID-19-related news on social media. Misperceptions can lead to increased news consumption because individuals exposed to a significant amount of misinformation are inclined to actively seek out more credible and higher-quality information about the subject to alleviate confusion or to support their existing knowledge. This effort to seek out additional information can happen, particularly during the early stages of a pandemic when health authorities and experts are uncertain about the cause, countermeasures, and repercussions (Yong, 2020).

Assuming that misperceptions are primarily formed through exposure to misinformation (Pennycook, Cannon, & Rand, 2018), existing research indicating that people seek expert advice when they encounter health-related misinformation can provide a supportive argument to explain the relationship. Exposure to misinformation, for example, encourages people to actively seek out varied sources of information for authentication and cross-checking (Tandoc et al., 2018). In a study on human papillomavirus vaccination, people who encountered a significant amount of misinformation about the vaccine were more

likely to seek additional expert information by visiting professional health websites (Kim, Hong, Abrar, & FitzGerald, 2023). Similarly, Hameleers, van der Meer, and Brosius (2020) discovered that individuals who believed that COVID-19-related misinformation was widespread sought official information.

For the pursuit of authoritative sources, news stands out as an excellent resource. This is because news organizations seek to provide verifiable information by frequently quoting official sources. During COVID-19, compared with earlier pandemics, individuals with high scientific expertise were more highly valued as news sources in legacy news media (Leidecker-Sandmann, Attar, Schütz, & Lehmkuhl, 2022). The significant increase in news consumption during the pandemic (Mitchell & Liedke, 2021) demonstrates a heightened demand for expert information.

In the wake of COVID-19, social media emerged as one of the preferred methods of news consumption. On these platforms, individuals not only receive news but also share news links and post thoughts/comments, which can be referred to as news sharing. While social media are notorious for spreading false information (Baum et al., 2021; Lee, Choi, & Britt, 2023), they also incidentally expose people to verified and comparatively high-quality information, simultaneously allowing people to discuss the subject through the sharing of such news disseminated by legacy news outlets.

COVID-19-related news sharing on social media was likely to encourage more prosocial behavior for several reasons. First, people were naturally exposed to the official messages of health authorities and experts, emphasizing appropriate responses and community solidarity. An analysis of more than 940,000 social media posts of legacy news outlets in eight countries shows that health and political sources were most prominent in the news posted on social media (Mellado et al., 2021), allowing individuals to adopt more socially desirable behaviors.

Second, news sharing may encourage prosocial behavior because it facilitates the development of a community, thereby providing individuals with valuable resources to engage in prosocial behavior, namely social capital. When sharing news, each post opens a venue for citizens' interaction via comment sections, allowing users to easily navigate such spaces and be exposed to diverse information including incongruent opinions (Brundidge, 2010; Choi, 2016b). Consequently, news consumption and community development occur concurrently. As social capital consists of "resources that can be accessed or mobilized through ties in the network" (Lin, 2008, p. 51), it cannot be obtained without such a community (Hefler et al., 2019; Pilkington, 2002; Putnam, 1995). As demonstrated by Gil de Zúñiga, Jung, and Valenzuela (2012), social capital increases when users consume news within their online social networks. Given that social capital is related to the extent to which individuals pursue shared values, it is natural to expect that social capital earned through news sharing will promote further engagement in prosocial behavior.

In the sense that news sharing helps cultivate social capital and thereby promotes the dissemination of community values among individuals, it can be expected that sharing news can foster greater community participation. In alignment with this idea, previous research has suggested a positive relationship between community involvement and healthy behaviors, indicating that a strong feeling of social commitment is a driver of positive health outcomes (Basu & Dutta, 2008). Health experts consider

community engagement as a crucial factor in promoting health behaviors and effective health campaigns (Kennedy, 2001; Person & Cotton, 1996).

Given the preceding discourse, it is justifiable to hypothesize that news sharing exerts a positive impact on prosocial participatory conduct. Furthermore, given the prevalence of misperceptions during the early phases of the pandemic and the increased demand for high-quality information (e.g., news), it is anticipated that such misperceptions would have stimulated more news sharing on social media platforms, thereby promoting prosocial behavior once more. Consequently, it is expected that the negative consequences of misperceptions on prosocial behavior would be mitigated so long as individuals engaged in news sharing via social media. Thus, the following hypotheses are proposed.

*H2: COVID-19-related news sharing was positively associated with prosocial behavior.*

*H3: Sharing COVID-19-related news on social media positively mediated the relationship between misperceptions and prosocial behavior.*

However, the extent of the prosocial effect of news sharing is likely to be dependent on the type of networks that a user forms on social media. If a user shared COVID-19-related news within networks where other users exchanged high-quality information and rational opinions, then sharing news within such networks would strengthen prosocial behavior. There is also a possibility that their misperceptions, which discouraged prosocial behavior, could be easily corrected by other users (Chadwick & Vaccari, 2019) because they were naturally exposed to more diverse and valuable information/opinions when consuming news via sharing (Lee, Choi, Kim, & Kim, 2014). On the other hand, if misinformation, conspiracy theories, or other low-quality information were prevalent within the networks, then the pro-societal function of news sharing may not be prominent. Previous research has revealed that expertise, knowledgeability, and rationality of people in one's networks influence how people process information and subsequently behave. However, the effects have been discussed mostly in the context of political communication (La Due Lake & Huckfeldt, 1998). For example, Choi and Lee (2022) found that people tend to be less confused about false political information to which they have frequently been exposed when the level of political expertise in their online networks is high. Another study found that people tend to engage in participatory activities when they share political news within online networks in which many political experts exist (Choi, 2016a).

In the context of COVID-19, the level of network expertise about COVID-19 (i.e., the extent to which knowledgeable network members exchanged high-quality information and opinions about COVID-19) may have also had positive effects on prosocial behavior. The fact that users of specific types of social media, most notably mobile instant messaging apps such as WhatsApp and Facebook Messenger, exhibited higher levels of misperceptions and lower engagement in various health-preventive and prosocial behaviors amid the pandemic shows that the type of networks that people have on social media matters (Baum et al., 2021). Summing up the above discussion, we predict that the indirect effects spanning from misperceptions to news sharing, and again to prosocial behavior was stronger when the level of network expertise was high.

*H4: The indirect relationship between misperceptions and prosocial behavior via news sharing was stronger among people with high network expertise about COVID-19.*

## **Method**

### **Data**

To test the abovementioned hypotheses, we conducted a two-wave nationally representative survey of U.S. adults (more than 18 years of age). The professional polling company Dynata, which has more than 60 million online panelists, recruited participants by distributing a link to its panel members. We employed a quota-sampling technique, based on the gender and age distribution of the 2019 U.S. Census data, to enhance the final sample's representativeness following the steps outlined in previous studies (e.g., Gil de Zúñiga, Garcia-Perdomo, & McGregor, 2015). The Wave 1 (T1) survey was conducted between May 19 and 21, 2020, and the Wave 2 (T2) survey was conducted among the respondents to the T1 survey between June 1 and 10, 2020. For the T1 survey, 1,309 panel members clicked the online survey link, and a total of 911 panel members completed the survey, yielding a completion rate of 69.60%. We did not calculate the response rate because the total number of invitations sent by Dynata was unknown. An invitation to the T2 survey was sent to the respondents of the T1 survey, and a total of 679 respondents ultimately completed the T2 survey, resulting in a 74.5% retention rate.

### **Measurement**

#### *Prosocial Behavior*

Eight questions were asked regarding the extent of engagement in various prosocial behaviors at both T1 ( $M = 21.61$ ,  $SD = 6.18$ ,  $Min = 8$ ,  $Max = 40$ , Cronbach's  $\alpha = .76$ ) and T2 ( $M = 21.62$ ,  $SD = 6.22$ ,  $Min = 8$ ,  $Max = 40$ , Cronbach's  $\alpha = .77$ ) on a 5-point scale (1 = *never*, 5 = *very often*): (a) offering assistance to neighbors who were at risk due to the pandemic, (b) reaching out to family and friends who were negatively affected by COVID-19, (c) sending messages to medical workers, (d) donating to social service organizations to help those facing hardship due to the pandemic, (e) volunteering for those negatively impacted by COVID-19, (f) donating blood to help maintain an adequate blood supply amid the pandemic, (g) following social distancing measures, and (h) refraining from panic shopping to relieve the social shortage of supplies.

#### *Misperceptions*

To assess misperceptions about COVID-19, respondents indicated whether they believed or not the following inaccurate statements in the T1 survey: (a) Someone who completed quarantine or was released from isolation did not pose a risk of infection to other people; (b) There was a vaccine or cure for coronavirus that the government would not release; (c) 5G cell phone was linked to the cause of coronavirus; (d) Hand dryers were effective at killing coronavirus; (e) Coronavirus was a bioweapon engineered by the Chinese government; (f) If you could not hold your breath for 10 seconds without coughing, then you had coronavirus; (g) Vitamin C could help you ward off coronavirus; and (h) the U.S. House speaker Nancy

Pelosi held up a coronavirus funding package so that Democrats could run negative ads about Republicans that made the latter look bad. We selected this inaccurate information from the list of fact-checked misinformation released by the CDC, Snopes, and the U.S. elite media. We calculated an accumulative index of misperceptions by summing the number of statements in which respondents reported believing ( $M = 1.72$ ,  $SD = 2.07$ ,  $Min = 0$ ,  $Max = 8$ ).

#### *COVID-19-Related News Sharing*

The extent of news sharing related to COVID-19 ( $M = 15.69$ ,  $SD = 8.44$ , Cronbach's  $\alpha = .96$ ) was measured at T2 by asking respondents about their participation in various news-sharing activities on social media (on a 5-point scale; 1 = *never*, 5 = *very often*), with items including the following: (a) tagging friends in news posts about COVID-19, (b) sharing COVID-19-related news links from other online sources, (c) writing and posting summaries of news about COVID-19 for others to read, (d) contributing their own news articles and images related to COVID-19, (e) posting or reposting news links about COVID-19 together with their thoughts or comments, (f) posting their thoughts on COVID-19-related news to initiate a discussion with others, (g) posting comments in response to COVID-19-related news stories, and (h) responding to comments about COVID-19-related news that other people have posted. We adapted these items from previous studies on news sharing (e.g., Choi, 2016b).

#### *Network Expertise About COVID-19*

We assessed the level of expertise of people within respondents' online networks on a 5-point scale (1 = *never*, 5 = *very often*;  $M = 6.92$ ,  $SD = 2.89$ , Cronbach's  $\alpha = .84$ )<sup>2</sup> in the T2 survey by asking how often respondents (a) encountered people who were very knowledgeable about COVID-19, (b) talked about COVID-19 with people who backed up their argument with facts and evidence, and (c) talked about COVID-19 on social media with people who proposed ideas for solving COVID-19-related problems faced by the nation. We adapted these items from studies assessing the political expertise of the network (Choi, 2016a; La Due Lake & Huckfeldt, 1998).

#### *Control Variables*

We included key demographic and media use variables at T1 as control variables: Age ( $M = 51.40$  years,  $SD = 17.55$ ), gender (51.3% female), education level ( $M = 5.31$ ,  $SD = 1.43$ ,  $Min = 1$ ,  $Max = 7$ , 5 = some college, 6 = college graduate), income ( $M = 5.72$ ,  $SD = 2.39$ ,  $Min = 1$ ,  $Max = 9$ , 5 = \$40,000 to under \$50,000, 6 = \$50,000 to under \$60,000), newspaper reading ( $M = 2.44$ ,  $SD = 1.68$ ,  $Min = 1$ ,  $Max = 6$ ),

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<sup>2</sup> As for news sharing and network expertise, each item had factor loadings higher than 0.50, and the average variance extracted (AVE) value surpassed the 0.50 threshold, suggesting acceptable convergent validity (AVE for news sharing: 0.75, AVE for network expertise: 0.64). In terms of discriminant validity, which elucidates the distinctiveness of each construct, this study confirmed that the square root of a construct's AVE was greater than the absolute value of its standardized correlation with other variables (Fornell & Larcker, 1981). Specifically, the square root values of the AVE of news sharing (0.87) and network expertise (0.80) were greater than the correlation value with each other ( $r = .71$ ,  $p < .001$ ).

network TV watching ( $M = 3.42$ ,  $SD = 1.75$ ,  $Min = 1$ ,  $Max = 6$ ), social media use ( $M = 2.98$ ,  $SD = 1.77$ ,  $Min = 1$ ,  $Max = 6$ ), and online news reading ( $M = 3.08$ ,  $SD = 1.77$ ,  $Min = 1$ ,  $Max = 6$ ). Media use variables were included because media use and information-seeking behavior are important determinants of people's health-related behaviors (e.g., Hong & Kim, 2020; Li & Liu, 2020).<sup>3</sup>

### Findings

To test H1 (the effects of COVID-19-related misperceptions on prosocial behavior), H2 (the effects of news sharing on prosocial behavior), H3 (the indirect effects of COVID-19-related misperceptions on prosocial behavior via COVID-19-related news sharing), and H4 (the indirect effects moderated by network expertise), we conducted a stepwise regression analysis and bootstrapping analyses using the PROCESS macro for SPSS (Models 4 and 14). Researchers choose the bootstrapping methodology via PROCESS macro over other approaches, such as structural equation modeling (SEM), because it minimizes error variance due to its use of random sampling with replacement and empirical estimation of distribution (Hayes, 2013). When the moderator is a continuous variable, PROCESS macro is also helpful in testing the moderated mediation relationship between the variables. For the analyses, we included lagged values of the dependent variable (the extent of prosocial behavior at T1) in the model as a predictor to understand the temporal order of independent and dependent variables more clearly. Key control variables (demographics and media use variables) were included in the model. Among these control variables, social media use was positively associated with prosocial behavior ( $\beta = .12$ ,  $p < .01$ ; see Model 1 in Table 1). Other demographic and media use variables were not significantly associated with prosocial behavior, which demonstrated the key variables' strong predictive power. In the bootstrapping models, the control variables were included as covariates.

The findings (Model 1 in Table 1) show that a high level of misperceptions (T1) was negatively associated with prosocial behavior at T2 ( $\beta = -.07$ ,  $p < .05$ ), thus supporting H1. News sharing at T2 was positively associated with prosocial behavior at T2 ( $\beta = .38$ ,  $p < .001$ ), showing support for H2 (Model 2 in Table 1). The results of the indirect effect test (see Table 2) show that misperceptions were positively associated with prosocial behavior via COVID-19-related news sharing ( $B = .13$ , 95% confidence interval [CI] = [.0516, .2176]), while the direct effects of misperceptions on prosocial behavior were negative ( $B = -.20$ , 95% CI = [-.3785, -.0118]). Thus, the results indicate that the negative effects of misperceptions on prosocial behavior can be mitigated by news sharing.

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<sup>3</sup> Newspaper reading, network TV watching, social media use, and online news reading were measured by asking how many times respondents had seen COVID-19-related information from each source on a 6-point scale (never, 1–5 times, 6–10 times, 11–15 times, 16–20 times, and more than 21 times).

**Table 1. Regression Analysis of Prosocial Behavior (Betas; N = 679, Listwise).**

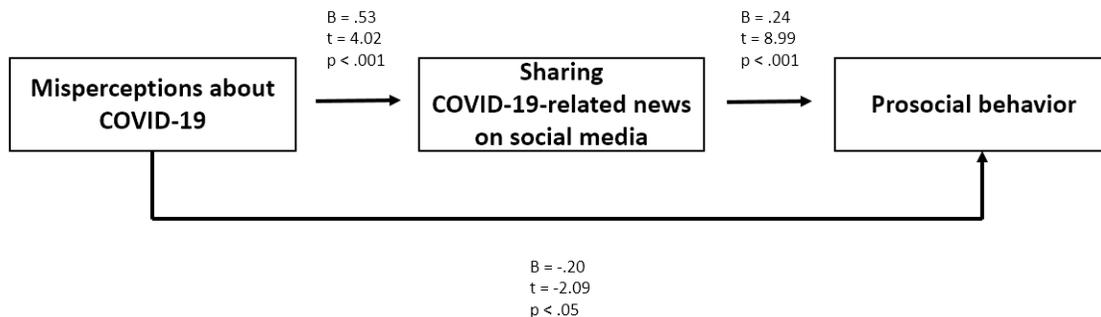
	Prosocial Behavior (T2)	
	Model 1	Model 2
Age	-.01	.02
Gender (female)	.02	.02
Education	.03	.03
Income	.05	.06 <sup>†</sup>
Newspaper reading	.00	-.01
Network TV watching	.02	.03
Online news reading	-.01	-.02
Social media use	.12**	.07
Prosocial behavior (T1)	.52***	.51***
News sharing (T1)	.19***	-.08
Misperceptions (T1)	-.07*	-.06 <sup>†</sup>
R <sup>2</sup>	.45***	
News sharing (T2)		.38***
Total R <sup>2</sup>	.49***	

Note. <sup>†</sup>p < .10; \*p < .05; \*\*p < .01; \*\*\*p < .001

**Table 2. Mediated Relationship Between Misperceptions and Prosocial Behavior Through News Sharing (N = 679, Listwise).**

		B	SE	Bias-Corrected Bootstrap	
				LLCI	ULCI
Direct	Misperceptions (T1) → Prosocial behavior (T2)	-.20	.09	-.3785	-.0118
Indirect	Misperceptions (T1) → News sharing (T2) → Prosocial behavior (T2)	.13	.04	.0516	.2176

Note. LLCI: Lower level confidence interval; ULCI: Upper level confidence interval.



**Figure 1. Indirect effects of misperceptions on prosocial behavior.**

Figure 1 clearly illustrates the mediated relationships. Misperceptions about COVID-19 are positively associated with sharing COVID-19-related news on social media ( $B = .53, p < .001$ ), and in turn news sharing is positively associated with prosocial behavior ( $B = .24, p < .001$ ), demonstrating positive indirect effects.

Hypothesis 4 posited moderated mediation relationships among the variables of misperceptions, news sharing, network expertise about COVID-19, and prosocial behavior. We conducted bootstrapping analyses using PROCESS macro (model 14). The index of moderated mediation ( $B = .02, 95\% \text{ CI} = [.0051, .0283]$ ) was statistically significant. Table 3 shows that the indirect effect of misperceptions on prosocial behavior via news sharing is stronger at high levels of network expertise about COVID-19 ( $B = .12, 95\% \text{ CI} = [.0457, .2139]$ ) compared with medium levels of network expertise ( $B = .07, 95\% \text{ CI} = [.0194, .1492]$ ), demonstrating a significant moderating effect of network expertise about COVID-19. Thus, H4 was supported.

**Table 3. Conditional Indirect Relationship of Misperceptions With Prosocial Behavior via News Sharing Depending on the Degree of Network Expertise About COVID-19 (N = 679, Listwise).**

	Mediator (News Sharing)	Moderator (Network Expertise About COVID-19)	Bias-Corrected Bootstrap			
			<i>B</i>	<i>SE</i>	<i>LLCI</i>	<i>ULCI</i>
Direct			-.28	.09	-.4586	-.0920
Conditional indirect	News sharing	Low (4)	.03	.03	-.0299	.0992
		Medium (7)	.07	.03	.0194	.1492
		High (10)	.12	.04	.0457	.2139

### Conclusions and Discussion

The present study shows that those with misperceptions about COVID-19 were less likely to engage in prosocial behavior. However, when people were involved in sharing news about COVID-19 on social media, the negative effects of misperceptions on prosocial behavior could be attenuated. Such effects were more pronounced when people shared news with fellow citizens who had higher levels of expertise about COVID-19.

The findings suggest that a more sophisticated and thorough investigation into the role of social media in health crises is needed. The consequences of social media use are complex and sometimes contradictory; as noted in previous studies, social media are a major source of false information (Baum et al., 2021; Naeem, Bhatti, & Khan, 2020), and frequent interactions with fellow citizens on social media increase individuals' vulnerability to such false information (Lee et al., 2023). However, the findings of the study suggest that it may be difficult to determine whether social media function positively or negatively in a pandemic situation. While social media may be a source of misinformation that prevents effective crisis management, they can also counteract such negative consequences. Thus, our findings emphasize the necessity to identify the mechanisms by which social media exert their influence during significant health crises.

The role of news sharing in suppressing the negative effects of misperceptions is particularly noteworthy. The findings provide important insights into managing prevalent misperceptions and potentially negative societal consequences deriving from them. Previous studies have extensively discussed how people develop misperceptions (e.g., Pennycook et al., 2018) and how difficult it is to correct such misperceptions (e.g., Nyhan & Reifler, 2010). In examining these issues, research has focused heavily on individual-level cognitive mechanisms such as biased information processing (Schaffner & Roche, 2016). Such approaches are useful in our understanding of how we process false information but lead us to blame individuals for being exposed to false information, processing the information in a biased way, and thus functioning in society undesirably. Additionally, such approaches can create hopelessness about coping with the negative consequences of misperceptions. However, our findings show that, at the network level, misperceptions may function differently, and people may react differently as a result. As this study has demonstrated, people behave in a more socially desirable way when they actively share news with other citizens even if they hold misperceptions initially.

Relatedly, we must rethink how we understand misperceptions. While many researchers are concerned about misperceptions and aim to find ways to prevent them, there is not sufficient research on effective methods of addressing already-formed misperceptions. We must remember that many people are unintentionally exposed to false information in the current information environment and thus develop misperceptions (Apuke & Omar, 2021); not all of them are devoted believers of false information who resist further information seeking. As the findings show, people with misperceptions are actively involved in information-related activities, most notably news sharing, which have largely positive effects.

Another noteworthy point is the importance of networks' quality. Our results show that the mitigatory effects of news sharing are stronger when citizens share news with those in their communication networks who have higher levels of information expertise. Research has noted that the type of people with whom we interact significantly influences the type of information that we encounter and our subsequent behaviors in the context of politics (e.g., Choi, 2016a). If someone discusses an issue with others who have inaccurate and low-quality information, then the person and the others with whom they interact all will fall into a vicious cycle of missing opportunities to be exposed to higher-quality information and to behave appropriately.

Relatedly, the findings of this study provide practical lessons that can be used to develop applicable policy. We must devise adequate measures to assist and encourage citizens in establishing a communication environment in which they can interact with others based on high-quality information. During the pandemic, public health authorities in a number of countries attempted to reach out to citizens particularly via social media, by disseminating quality information about prevention, safety measures, and updates (Raamkumar, Tan, & Wee, 2020). Nonetheless, it should be acknowledged that some individuals are less likely to be exposed to such high-quality information. Increased community engagement with expert communications through additional outreach initiatives may result in higher levels of citizen network expertise. There have been concerns regarding disparities in health information because of the process of the filter bubble or knowledge gap (Gerosa, Gui, Hargittai, & Nguyen, 2021). The findings of this study, which highlight the significance of the availability of quality information, indicate the necessity of concentrating on populations with noticeably low levels of health literacy and considering more complex campaigns to reach such vulnerable populations so that they can access high-quality information.

These insights may be further developed with more sophisticated future research. This study's findings are meaningful in that we focused on citizens' prosocial behavior, which is essential for managing public health crises. However, research has noted that there are different dimensions of prosocial behavior—for example, high-cost and low-cost behaviors (Eisenberg & Spinrad, 2014) or prosocial behavior toward strangers versus friends or family members (Padilla-Walker & Christensen, 2011). Thus, a more detailed examination of people's prosocial behavior is necessary in future research.

News sharing's contribution to prosocial behavior in the context of a public health crisis is another worthwhile topic of discussion. While the role of news sharing in encouraging more participatory behaviors in the context of politics has frequently been reported (e.g., Choi, 2016a), news sharing's positive contribution to prosocial behavior in the context of a public health crisis is a novel finding. We proposed the concept of social capital as the mechanism underlying this effect; people can build an online community by participating in news sharing, wherein they obtain the necessary social capital for prosocial behavior. However, we did not specifically examine social capital in this study, calling for a more thorough examination in future research.

Despite the abovementioned limitations, the present study is meaningful in that it adds further knowledge to the academic discussion of the function of social media use in the context of a pandemic. In particular, this study aids theoretical progress in the field of health communication by redefining prosocial conduct in the context of health and investigating elements that influence citizens' prosocial behavior. It also contributes to the enrichment of related theoretical discussions by investigating the role of news sharing in the health setting. Much research has been done in health communication on the importance of health information seeking, but very little emphasis has been dedicated to the function of news sharing. Importantly, our findings underscore that while the dangers of misinformation cannot be entirely avoided, news sharing emerges as a potent strategy to reduce its negative impact. Practically, the findings offer valuable insights into how we can cultivate a more effective information environment, enabling a larger number of individuals to act as responsible citizens and collectively address the challenges posed by pandemics such as COVID-19. Social media platforms, along with health-care professionals, should make efforts to not only prioritize high-quality information for users to encounter on social media but also encourage active engagement with such information for the collective good.

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