



# How Stay-at-Home Orders Interact with COVID-19 Misperceptions and Individuals' Social Distancing Intentions

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## Abstract

The COVID-19 pandemic is a health emergency in which public health policy, such as state-mandated stay-at-home orders, has the potential to reduce the speed of disease transmission and prevent the overwhelming of hospital infrastructure and unnecessary deaths. Using the Ideological Health Spirals Model (IHSM), this analysis examines how state-mandated stay-at-home orders affect the relationships among individuals' overall COVID-19 knowledge and beliefs in misinformation, as well as their attitudes, norms, and self-efficacy regarding social distancing and stay-at-home behaviors. Data were collected from a sample of 1000 adults living in the U.S. in Spring 2020. Path analyses showed that the stay-at-home orders moderated the relationship between knowledge and self-efficacy in the context of performing social distancing behaviors. Results also indicate that intention to socially distance was associated with attitudes, norms, and self-efficacy. These results demonstrate that stay-at-home orders have the capacity to bolster the effect of knowledge and beliefs on key determinants of intention.

**Keywords** Stay-at-home orders · Misinformation · COVID-19 prevention behaviors · Ideological Health Spirals Model · Path analysis

## Introduction

On January 20, 2020, the United States (U.S.) announced its first confirmed case of novel coronavirus disease (COVID-19; Centers for Disease Control and Prevention, CDC, 2020a). The emergence of COVID-19 in the U.S. led to a widespread health crisis as it infected over a million Americans by May 2020 (CDC, 2022). The

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virus presented unforeseen challenges as people known as “superspreaders” exhibited no symptoms and infected many others with the virus (Meyerowitz et al., 2020). Healthcare systems and hospitals were overwhelmed, often running out of supplies, staff, and ventilators (Ranney et al., 2020).

Under these circumstances, state officials and experts in public health grappled with ways to contain virus and develop models to forecast deaths, spread, and case-rate scenarios (CDC, 2020b). Initial recommendations from public health experts at the CDC focused on the maintenance of physical distance between individuals and staying home if not feeling well (CDC, 2020b). However, data indicated variance in the extent to which people were performing these behaviors (Painter & Qiu, 2020; van Rooij et al., 2020).

According to Young and Bleakley’s (2020) Ideological Health Spirals Model (IHSM), reasons for disparate performances of COVID-19 preventive behaviors may stem from discrepancies in the types of messages that people received from experts and relevant others about what behaviors to perform and/or the effectiveness of the behaviors. During the COVID-19 outbreak in the U.S., due to social identity motivations, or motivations based on perceived or self-categorized social group memberships (Tajfel & Turner, 1979, 1986), many sought out media and interpersonal contexts that then exposed them to messages containing COVID-19 misinformation (Lee et al., 2020). Such COVID-19 misperceptions pose a serious public health threat, as they may hinder efforts to slow the spread of the virus (Lee et al., 2020). According to the IHSM (Young & Bleakley, 2020) expert-informed policy has the power to disrupt and even correct such informational spirals and influence behavioral intention and outcomes for the better (p. 3517).

### **Ideological Health Spirals Model**

As demonstrated by the U.S. response to the COVID-19 pandemic, health and science are increasingly politicized and polarizing topics (Gollust et al., 2020). The IHSM addresses the gap in explaining how and why political beliefs function in health behaviors (Young & Bleakley, 2020). Specifically, the model explains how selective media exposure, political polarization, and social sorting contribute to communication discrepancies (i.e., discrepancies in access to, and content of COVID-19 related information) that abates differences among attitudes, norms, and self-efficacy beliefs. These differences then manifest in health-related behaviors.

The IHSM invokes ecological models, such as Bronfenbrenner’s (1992) ecological systems theory, by suggesting there are multiple levels of influence on an individual’s social behavior and development. Policy serves as a key factor in ecological approaches, and in the context of ecological systems theory it exists at the most distal, or macro, level from an individual (Bronfenbrenner, 1992). With the potential to result in legal sanctions for certain behaviors or otherwise demand compliance with local or national-level regulations, public policy directly affects individuals’ beliefs surrounding specific behaviors (Fowler et al., 2018). An example of this can be seen in the COVID-19 pandemic with many states enacting stay-at-home orders to reduce the spread of the coronavirus and prevent overburdening of medical infrastructure

(Gigliotti & Martin, 2020). Moreland et al. (2020) found a significant decrease in public mobility during the 14-day period following the first state-issued stay-at-home order in the U.S.

The theoretical underpinnings the IHSM are social identity theory (SIT; Tajfel & Turner, 1979, 1986) and the reasoned action approach (RAA; Fishbein & Ajzen, 2011). First, the SIT stipulates that identity-based motivations shape media related behaviors (selective exposure, avoidance, and orientation) and interpersonal communication behaviors (network selection and engagement) (Deaux & Martin, 2003). Through both media-related and interpersonal channels, individuals' social identities are reinforced, thereby producing discrepancies between the communication environments created by different types of people. Considering that the information found in these spaces will vary from person to person in ways consistent with their social/political identities, communication discrepancies are likely—both in terms of COVID misperceptions and the amount of accurate COVID knowledge people will hold. The second half of the IHSM is structured by the RAA, as it explains how these communication discrepancies then inform individuals' attitudes, perceived norms, self-efficacy, and behaviors. The basic premises of the IHSM is that demographic and cultural factors, psychological traits, political orientation, and individual differences all contribute to identity-related motivations to seek out information, either through interpersonal or mediated networks. These discussions and media-related attitudes and behaviors then contribute to communication discrepancies, which inform the RAA constructs, behavioral intentions, and ultimately, health behaviors (Young & Bleakley, 2020).

Nonetheless, the IHSM is intended to better encapsulate communication discrepancies through individualized differences in content choices and takeaways from those sources, simultaneously. Here, we build upon the IHSM as a framework, through which differences in COVID-related misperceptions serve as a proxy for IHSM's concept of "communication discrepancies."

## Misperceptions and Knowledge

Human behavior is influenced by individuals' knowledge and perceptions (Janz & Becker, 1984). As indicated in the conceptual model used in this study, misperceptions and accurate knowledge regarding COVID-19 are taken together to represent communication discrepancies (Young & Bleakley, 2020). As contemporary commentators have described the current period as "an era of fake news" (Wang et al., 2019), misperception research is growing in volume and scope while accurate knowledge becomes integral to decision-making during the pandemic.

Scholars have defined misperceptions as "belief in claims that can be shown to be false... or unsupported by convincing and systematic evidence" (Nyhan, 2020, p. 221). In the beginning of the COVID-19 pandemic, researchers noticed increasing circulation of misinformation and conspiracy theories (Agle & Xiao, 2021). Although worrisome, this trend is unsurprising, considering that increased upticks in conspiratorial thinking or misinformation dissemination occur during

times of societal crisis (van Prooijen & Douglas, 2017). Early reports indicated that as many as 85% of Americans believed COVID-19 conspiracy theories to be “probably” or “definitely” true (Miller, 2020).

Moreover, misperceptions and knowledge factor into individuals’ decision-making regarding compliance with public policies (Ash et al., 2020; Bursztyn et al., 2020). Regarding the COVID-19 pandemic, individuals with lower levels of knowledge about the virus were less likely to engage in behaviors prescribed by medical experts (Clements, 2020). As such, the IHSM indirectly accounts for these communication discrepancies by considering how the variety of health-related information, gleaned from media and interpersonal sources, can be used to create “competing realities that are simultaneously constructed in the current information ecosystem,” realities which then go on to shape attitudinal, normative, and self-efficacy-related outcomes (Young & Bleakley, 2020, p. 3515).

## Public Health Policy

The IHSM suggests that expert-informed public policy can reduce the impact of COVID misperceptions on beliefs, norms, and self-efficacy related to health behaviors. Policy as a public health measure is often used to address both ongoing and acute health crises and has been associated with decreases in unhealthy behaviors and increases in health and safety-promoting behaviors (Cohen & Einav, 2001). Specifically, public policy can restrict access to health deteriorating products (Pierce, 2007) and increase access to health increasing resources (Nicholson et al., 2017).

During the initial stages of the COVID-19 pandemic, state officials enacted state- and city-level mandates announcing states of emergency, non-essential business and school closures, travel restrictions, and stay-at-home orders (Gigliotti & Martin, 2020). Most states did not enact COVID-related restrictions until the end of March 2020 (Raifman et al., 2020). Understanding how COVID-related knowledge and misperceptions interact with public health policy to shape intention to social distance may help improve public adherence to COVID-19 restrictions and recommendations. Based on the premise that misinformation and knowledge, as forms of communication discrepancies, can create competing realities for how people conceive of and respond to the COVID-19 pandemic and related public health policies, it is hypothesized that:

**H1** Agreement with misinformation beliefs will be associated with negative attitudes, normative pressure, and self-efficacy about social distancing to prevent COVID-19.

**H2** Knowledge about COVID-19 will be associated with positive attitudes, norms, and self-efficacy about social distancing to prevent COVID-19.

**H3** Attitudes, normative pressure, and self-efficacy related to social distancing will be associated with intention to social distance to prevent COVID-19.

Additionally, postulated in the IHSM is the notion that public health policies interact with the process of communication discrepancy formation and subsequent differential attitudes and beliefs around specific health behaviors (Young & Bleakley, 2020). Based on this rationale, the following hypotheses are put forth:

**H4** Stay-at-home orders will moderate the relationship between misinformation and the RAA constructs in that the relationship will be attenuated among individuals from states without stay-at-home orders compared to those with the orders.

**H5** Stay-at-home orders will moderate the relationship between knowledge and the RAA constructs in that the relationship will be strengthened among individuals from states without stay-at-home orders compared to those with the orders.

## Method

Approval was obtained from the authors' University Institutional Review Board. Data were collected through Social Science Research Solutions' (SSRS) survey partnership with Dynata to capture a wide range of communication-related variables. The survey was in the field from March 19, 2020 to March 25, 2020, during which participants were recruited via a national opt-in online panel. Participants living in the U.S. and over the age of 18 were targeted by gender, age, race, education, and region. SSRS monitored data collection to ensure data quality and check the demographic composition of the sample. Survey responses that were less than 33% of the median length of interview or cases that were straight-lined at 75% or more of grids were deemed poor-quality and were discarded from the final dataset. As a result, 1000 of 1587 respondents were retained in the final dataset. Consent was obtained from all participants before participation. Participants were compensated for their participation through the standardized procedures of the panel provider.

## Measures

### Social Distancing Attitudes

Social distancing is defined in the current study as, "limiting interactions with other people outside of your household as much as possible." Attitudes regarding practicing social distancing in the next 2 weeks were assessed using a scale based on five 7-point semantic differentials (good–bad, necessary–unnecessary, harmful–beneficial, etc.;  $\alpha=0.76$ ;  $M=5.56$ ;  $SD=1.27$ ). All items were coded positively, such that higher scores reflect more positive attitudes.

## Social Distancing Normative Pressure

Social distancing norms were measured as two items using 7-point Likert scales. Items included “do most people who are important to you think you should or should not practice social distancing in the next two weeks out of concern for the coronavirus?” (1 = should not practice social distancing, 7 = should practice social distancing) and “will most people like you practice social distancing in the next two weeks out of concern for the coronavirus?” (1 = they will not, 7 = they will). The items were combined to indicate normative pressure ( $M = 5.83$ ,  $SD = 1.33$ ,  $r = 0.59$ ).

## Social Distancing Self-Efficacy

Social distancing self-efficacy was measured by a single item on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree): “if I really wanted to, I am certain that I could practice social distancing in the next two weeks out of concern for the coronavirus” ( $M = 6.12$ ;  $SD = 1.39$ ).

## Social Distancing Intention

Participants’ intention to social distance in the next 2 weeks was assessed using 7 items that measured different types of social distancing behaviors. Example items include “cancel or postpone travel plans,” and “keep at least 6 feet away from others.” Items were measured on 7-point Likert scales (1 = extremely unlikely, 7 = extremely likely). The items were averaged into an intention scale ( $\alpha = 0.91$ ;  $M = 5.59$ ;  $SD = 1.32$ ).

## COVID Knowledge

To evaluate knowledge, participants were presented with seven statements about the coronavirus in which they responded as yes, no, or unsure. Example items include “the coronavirus can spread through small droplets in the air,” and, “the coronavirus came from people eating bats.” A count of correct items (from 0 to 7) was calculated to indicate overall knowledge ( $M = 4.33$ ;  $SD = 1.74$ ).

## COVID Misperceptions

Misperceptions (i.e., belief in misinformation) was assessed using a 12-item index. Participants’ indicated agreement with each statement on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree;  $M = 2.68$ ,  $SD = 1.33$ ). Example items include “the coronavirus is a hoax,” and, “health professionals have contained the coronavirus in the United States.” The measure had good reliability ( $\alpha = 0.90$ ).

## States’ Stay-at-Home Order

States’ stay-at-home orders were taken from Raifman and colleagues’ COVID-19 U.S. state policy database (2020), which included Washington, DC. Based on the

date of survey completion and state of residence of the participant, the presence of a stay-at-home order was dichotomized as 1 (stay-at-home order in place; n = 40) or 0 (no stay-at-home order; n = 11) at the time of participants’ survey initiation. As such, states’ stay-at-home orders varied at the time of data collection, and so the effect of this policy implementation may have been minimal regarding the magnitude of influence policy had participants’ beliefs and behaviors. At the time of their survey initiation, 30% of participants lived in states with stay-at-home orders.

**Covariates** Covariates selected were race (white or not white), income (\$20000, \$20000 to under \$30000, \$30000 to under \$40000, \$40000 to under \$50000, \$50000 to under \$60000, \$60000 to under \$70000, \$70000 to under \$100000, \$100000 to under \$150000, or more than \$150000), education level (less than high school, incomplete high school education, high school graduate, some college, 2-year associate degree, 4-year college or university degree, some postgraduate or professional school, or postgraduate or professional degree), and identification as either a Democrat or Republican, with Independents as the referent category.

**Statistical Analysis**

Descriptive statistics were calculated for all variables, as were bivariate correlations among the independent and dependent variables. An intraclass correlation coefficient (ICC) for state of residence was calculated to determine if a multilevel regression model was appropriate to test the effect of stay-at-home orders. The ICC was

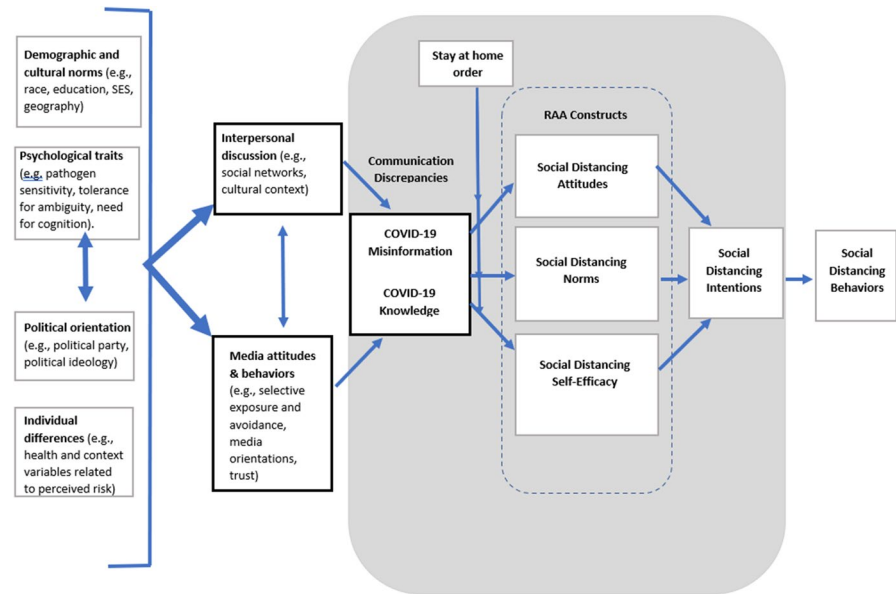


Fig. 1 IHSM with tested portion outlined in grey

zero, therefore fixed effect models were utilized with robust standard errors clustered by state ( $n=49$ ). A multiple group analysis (stay-at-home order versus no stay-at-home order) was estimated to test the model shown in Fig. 1. Consistent with the hypotheses, the paths from the RAA constructs to intention were constrained to be the same across groups and the paths from misinformation and knowledge to the RAA constructs were unconstrained and allowed to vary by the presence of a stay-at-home order. The constrained model was not statistically different from the unconstrained model [ $\chi^2(3)=0.901, p=0.825$ ]. The error terms of the mediating variables (attitudes, normative pressure, and self-efficacy) were correlated with one another. A Wald test was used to test if the difference in coefficients for misperceptions and knowledge on each of the RAA constructs across the two groups were statistically significant. Fit statistics for the models are reported below.

## Results

The sample was 54% female and 75.1% white, with an average age of 47.6 ( $SD=17.6$ ). The median income of the sample was \$50,000 to under \$60,000, and 64.2% had some or more college. At the time data were collected, 70% of participants lived in states in which there was not a stay-at-home order in place. 39% of the sample identified as Democrats and 36.1% identified as Republicans.

Overall, the sample had favorable attitudes toward social distancing ( $M=5.59$ ;  $SD=1.27$ ), perceived normative pressure approving of social distancing ( $M=5.83$ ;  $SD=1.33$ ), high self-efficacy to practice social distancing behaviors ( $M=6.12$ ;  $SD=1.39$ ), and high intention to perform social distancing behaviors ( $M=5.59$ ;  $SD=1.32$ ). Table 1 presents the bivariate correlations which are Pearson coefficients. Correlations with categorical variables are polychoric. For variables aside from political identity, all relationships were significant at the  $p<0.05$  level except for the relationship between income and attitudes. Identifying as a Democrat was only significantly negatively related to income and identifying as a Republican was only significantly positively related to income and education.

Regression coefficients for the communication discrepancy predictors, covariates, and RAA outcome variables are listed in Table 2. The model had acceptable fit [ $\chi^2(49)=48.85, p<0.05, CFI=0.98, TLI=0.92, RMSEA=0.061, CI=0.04, 0.08$ ]. Hypothesis 1 predicted that agreement with misinformation beliefs would be associated with negative attitudes, normative pressure, and self-efficacy about social distancing to prevent COVID-19, and Hypothesis 2 predicted that knowledge about COVID-19 would be associated with positive attitudes, norms, and self-efficacy about social distancing to prevent COVID-19. As shown in Table 2, misinformation was significantly negatively associated with social distancing attitudes, norms, and behaviors, therefore H1 was supported. Knowledge was not significantly related to any of the RAA constructs, therefore H2 was not supported.

Hypothesis 3 predicted that attitudes, normative pressure, and self-efficacy pertaining to social distancing would be associated with intention to socially distance to prevent COVID-19. All relationships between the RAA predictors and social



**Table 1** Bivariate correlations between the main predictors, non-categorical covariates, and the main variables of interest

| Variable       | Misinformation | Knowledge | SD Att | SD Norms | SD Eff | SD Intent | Age   | Income | Education | Republican | Democrat | Race |
|----------------|----------------|-----------|--------|----------|--------|-----------|-------|--------|-----------|------------|----------|------|
| Misinformation | –              | –         | –      | –        | –      | –         | –     | –      | –         | –          | –        | –    |
| Knowledge      | –0.58*         | –         | –      | –        | –      | –         | –     | –      | –         | –          | –        | –    |
| SD Att         | –0.43*         | 0.30*     | –      | –        | –      | –         | –     | –      | –         | –          | –        | –    |
| SD Norms       | –0.28*         | 0.22*     | 0.54*  | –        | –      | –         | –     | –      | –         | –          | –        | –    |
| SD Eff         | –0.37*         | 0.32*     | 0.48*  | 0.63*    | –      | –         | –     | –      | –         | –          | –        | –    |
| SD Intent      | –0.36*         | 0.25*     | 0.51*  | 0.60*    | 0.57*  | –         | –     | –      | –         | –          | –        | –    |
| Age            | –0.48*         | 0.47*     | 0.23*  | 0.24*    | 0.28*  | 0.23*     | –     | –      | –         | –          | –        | –    |
| Income         | –0.14*         | 0.21*     | 0.03   | 0.14*    | 0.19*  | 0.20*     | 0.20* | –      | –         | –          | –        | –    |
| Education      | –0.23*         | 0.28*     | 0.14*  | 0.22*    | 0.22*  | 0.23*     | 0.30* | 0.53*  | –         | –          | –        | –    |
| Republican     | 0.03           | 0.03      | –0.06  | –0.03    | –0.01  | –0.03     | –0.09 | 0.21*  | 0.54*     | –          | –        | –    |
| Democrat       | –0.07          | 0.07      | 0.11   | 0.10     | 0.09   | 0.11      | –0.09 | –0.10* | –0.02     | –          | –        | –    |
| Race           | 0.36*          | –.44*     | –.16*  | –.19*    | –.28*  | –.14*     | –.55* | –0.23* | –0.27*    | –0.43*     | 0.28*    | –    |

\* $P < 0.05$  or less

**Table 2** Regression coefficients of theoretical predictors and covariates in predicting reason action variables

| Independent variables | Reasoned action variables                  |   |  |   |  |   |
|-----------------------|--|---|--|---|--|---|
|                       | Attitude                                   |   | Norms                                      |   | Self-efficacy                              |   |
|                       | Policy<br><i>n</i> =251<br><i>b</i> (s.e.) | No Policy<br><i>n</i> =595<br><i>b</i> (s.e.) | Policy<br><i>n</i> =251<br><i>b</i> (s.e.) | No Policy<br><i>n</i> =595<br><i>b</i> (s.e.) | Policy<br><i>n</i> =251<br><i>b</i> (s.e.) | No Policy<br><i>n</i> =595<br><i>b</i> (s.e.) |
| Misinformation        | -0.33 (0.07)*                              | -0.36 (0.04)*                                 | -0.15 (0.08)*                              | -0.18 (0.05)*                                 | -0.29 (0.08)*                              | -0.24 (0.05)*                                 |
| Knowledge             | 0.07 (0.06)                                | 0.03 (0.03)                                   | 0.10 (0.05)                                | -0.01 (0.04)                                  | <b>0.22 (0.06)*</b>                        | <b>0.02 (0.03)</b>                            |
| Education             | 0.04 (0.04)                                | 0.03 (0.03)                                   | 0.08 (0.04)                                | 0.06 (0.03)                                   | 0.04 (0.04)                                | 0.01 (0.03)                                   |
| Income                | -0.02 (0.03)                               | -0.03 (0.02)                                  | 0.00 (0.03)                                | 0.03 (0.02)                                   | 0.01 (0.04)                                | 0.05 (0.02)                                   |
| Age                   | 0.00 (0.01)                                | 0.00 (0.00)                                   | 0.01 (0.01)                                | 0.01 (0.00)                                   | 0.00 (0.01)                                | 0.01 (0.00)                                   |
| Race                  | 0.13 (0.18)                                | -0.08 (0.13)                                  | -0.00 (0.19)                               | -0.17 (0.14)                                  | 0.12 (0.21)                                | -0.22 (0.13)                                  |
| Democrat              | 0.02 (0.18)                                | 0.21 (0.12)                                   | -0.07 (0.19)                               | 0.23 (0.13)                                   | 0.09 (0.20)                                | 0.26 (0.13)                                   |
| Republican            | 0.01 (0.20)                                | -0.04 (0.13)                                  | 0.04 (0.21)                                | -0.16 (0.14)                                  | 0.06 (0.22)                                | -0.01 (0.13)                                  |

Bold indicates significant difference between policy groups

\**p*<0.05 of less

**Table 3** Regression coefficients for the RAA predictors and SD intentions

| RAA predictors | Social distancing intentions<br><i>n</i> = 846<br><i>b</i> (s.e.) |
|----------------|---|
| Attitudes      | 0.20 (0.03)*  |
| Norms          | 0.31 (0.04)*  |
| Self-efficacy  | 0.28 (0.03)*  |

\**p* < 0.05 of less

distancing intentions were positive and significant at the  $p < 0.05$  level, supporting H3. Regression coefficients for the RAA predictors and social distancing intentions are shown in Table 3. Thus, attitudes, norms, and self-efficacy play a role in a person's intention to stay home at least during the early days of the COVID-19 pandemic.

Hypothesis 4 predicted that stay-at-home orders would moderate the relationship between misinformation and the RAA constructs such that the relationship would be stronger for individuals from states without stay-at-home orders compared to those with the orders. H4 was not supported as the relationship between misinformation and RAA constructs was not significantly stronger among individuals from states with a stay-at-home order compared to those in states without a stay-at-home order (attitude:  $\chi^2 = 0.126$ ,  $p = 0.72$ ; normative pressure:  $\chi^2 = 0.12$ ,  $p = 0.17$ ; self-efficacy:  $\chi^2 = 0.30$ ,  $p = 0.58$ ). As such, the presence of policy did not appear to affect the relationship between misinformation and attitudes, norms, and self-efficacy to stay home.

Finally, Hypothesis 5 predicted that stay-at-home orders would moderate the relationship between knowledge and the RAA constructs such that the relationship would be strengthened among individuals from states without stay-at-home orders compared to those with the orders. H5 was not supported. Results indicated that knowledge of COVID-19 was not a significant correlate of social distancing attitudes or norms. It was, however, a significant positive predictor of self-efficacy, but only for individuals living in states with a stay-at-home policy. This finding was statistically different from those in states with no stay-at-home orders ( $\chi^2 = 7.08$ ,  $p < 0.01$ ). Therefore, in states with a stay-at-home order in place, knowledge enhanced people's self-efficacy to stay home.

## Discussion

Individuals' decision-making about the performance of health behaviors often occurs in the context of policy initiatives. Ecological approaches such as the IHSM recognize the role of macrolevel behavioral determinants and the interaction of those determinants, such as policy, with communication discrepancies such as misperceptions from misinformation. In this study, stay-at-home orders implemented

in the early months of the COVID-19 pandemic were associated with a differential association of knowledge with self-efficacy related to distancing, indirectly affecting behavioral intention. In contrast, misinformation was consistently related to less positive attitudes, norms, and self-efficacy about social distancing, regardless of the policy context.

When misperceptions were higher, participants' attitudes toward social distancing were significantly less favorable and social distancing self-efficacy was significantly lower. Further, participants' who were more misinformed responded that important others would not approve of social distancing behaviors. The presence of a stay-at-home policy did not affect the between misinformation and social distancing behavioral, normative and self-efficacy-related beliefs. Having greater knowledge about COVID-19, on the other hand, did matter, but only when a stay-at-home policy was in place, such that in places with stay-at-home orders, knowledge fueled one's perception that their ability to socially distance was in their control. However, knowledge was unrelated to the other RAA constructs and was not a significant correlate of the RAA outcome variables otherwise.

The findings related to misperceptions are congruent with previous research regarding the harmful impact of misinformation on adherence to public policy (see Hartley & Vu, 2020). One limitation of the current study is that data were collected in late March 2020, during which time states were only beginning to implement stay-at-home orders. Some participants in the same states took the survey at different times such that the policy existence was different despite the state being the same. The length of time the policy was in place may not have been sufficient to influence misperceptions or other constructs from the IHSM that may take longer to form. Policy choices can shape people's normative perceptions (Galbiati et al., 2020), and norms may be more important when people are more informed about or familiar with an issue (Rimal & Mollen, 2013). As such, more time may be needed for Americans to become familiar with policies and norms regarding social distancing behaviors and for attitudes to change accordingly.

Our findings indicate that knowledge was associated with increased self-efficacy of participants in states with stay-at-home orders. Given that scholars have argued that knowledge plays a passive role in policy compliance (Innes, 2002), our results conversely consider how policy may indirectly impact the role knowledge has on policy compliance through the RAA constructs. Stay-at-home orders may empower people to make use of their knowledge to recognize their agency in avoiding COVID by staying home. Furthermore, the current findings address how policy may act as a strategy to increase knowledge and self-efficacy in the general population. At a time when state legislatures were divided over the need for mandated policy implementation, these results support the self-efficacy of public policy as a way to increase compliance with preventative health behaviors during a national emergency such as the COVID-19 pandemic.

Notably, in the absence of policy, knowledge had no significant impact on participants' attitudes or norms, although previous studies considered knowledge to be an important antecedent for sociocognitive constructs such as attitudes and norms (Polonsky et al., 2021). Despite past research connecting knowledge to greater risk perception (Aerts et al., 2020) and increased engagement in infectious

disease-related prevention behaviors (Manika & Golden, 2011), our findings are similar to those in Olum et al.'s study of Ugandan healthcare workers' attitudes about methods for preventing the spread of COVID-19 (2020), in which knowledge was not important to attitudes or normative beliefs about social distancing regardless of policy. However, the present results contradict Zhong et al.'s (2020) findings revealing an association between knowledge and a lower likelihood of negative attitudes toward COVID-19 prevention practices in a Chinese sample. The present findings may be attributed to the lack of policy, in that no cue to action was imposed to trigger attitudinal or normative responses.

### Limitations and Future Directions

As with any study, there are limitations worthy of note. As mentioned previously, one potential reason for how knowledge failed to impact individuals' attitudes or norms could be due to the time frame of data collection, in that our survey was distributed shortly after states' initial stay-at-home policies were implemented. As such, it is possible that participants did not have a long enough period of time to cultivate knowledge about COVID-19. Previous research on U.S. adults' early perceptions of COVID-19 indicate wide gaps in knowledge about the disease's symptoms, spread, and social distancing behaviors, especially among men, minorities, and younger people (Alsan et al., 2020).

Additionally, the operationalization of communication discrepancies as misperceptions and knowledge on the topic of COVID-19 does not capture content-specific exposure to interpersonal or media channels. Future research is necessary to explicate this construct within the IHSM. Additional studies are needed to understand how policy interacts with communication-related constructs over time, and whether longer differences in established stay-at-home orders between states will affect people's attitudes and norms in addition to self-efficacy. This may be especially important where norms are concerned, as the duration of time may not have been sufficient for normative beliefs about social distancing behaviors to be established (Casoria et al., 2020). Finally, because of rapid changes in the COVID-19 pandemic, people's attitudes and beliefs during the initial stages of the pandemic may not be generalizable to other stages of the COVID-19 pandemic. Longitudinal studies are needed to understand these attitudes and beliefs over a longer time. Future research should also investigate what mitigating factors are most important in the relationship between misinformation and health attitudes and behaviors, especially as performance of social distancing behaviors is important to prevent the spread of COVID-19 (CDC, 2020b).

### Conclusion

Public health emergencies such as the COVID-19 pandemic necessitate the implementation of public health policies like state-mandated stay-at-home orders to encourage the public's cooperation in reducing the transmission of communicable

disease (Gigliotti & Martin, 2020). The IHSM provides a framework to determine how these state-mandated policies influence the relationships among individuals' knowledge and misperceptions and their attitudes, norms, and self-efficacy around social distancing in accordance with the stay-at-home orders. In this study, stay-at-home orders were associated with a differential association of knowledge with self-efficacy related to distancing, indirectly affecting behavioral intention. In contrast, misinformation was consistently related to less positive attitudes, norms, and self-efficacy about social distancing, regardless of the policy context.

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### Compliance With Ethical Standards

**Conflict of Interest** The authors have no conflict of interest to disclose.

**Ethical Approval** The data presented here have not been published elsewhere and all research activities were approved by the Institutional Review Board at the University of Delaware.

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