Original Article

Why Is Right-Wing Media Consumption Associated With Lower Compliance With COVID-19 Measures?

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Abstract: Exposure to right-wing media has been shown to be related to lower perceived threat from COVID-19, lower compliance with prophylactic measures against it, and higher incidence of infection and death. What features of right-wing media messages may account for these effects? In a preregistered cross-sectional study (N = 554), we tested a model that differentiates perceived consequences of two CDC (Centers for Disease Control and Prevention) recommendations – washing hands and staying home – for basic human values. People who consumed more right-wing media perceived these behaviors as less beneficial for their personal security, for the well-being of close ones, and the well-being of society at large. Perceived consequences of following the CDC recommendations mediated the relationship between media consumption and compliance with recommendations. Implications for public health messaging are discussed.

Keywords: media, values, value-instantiating beliefs, COVID-19, compliance

COVID-19 presented an unprecedented challenge to public health systems worldwide. The time needed to develop the vaccines and failure to contain the virus made the outcomes of this pandemic particularly dependent on behavioral choices of individuals, such as decisions to comply or not comply with the recommendations of health authorities. Understanding the mechanisms that affect decisions to comply with public health recommendations is important for limiting the harm caused by COVID-19 and future pandemics.

Some predictors of compliance with health recommendations are well-established, such as trust in the institutions, income, and gender (Bish & Michie, 2010). The COVID-19 pandemic, however, is further complicated by the politization of the virus in many countries. In the United States, party affiliation of public officials is associated with differences in the frequency and content of messaging on COVID-19: Democratic politicians discussed the pandemic more frequently and placed more focus on public health risks than did the Republicans, and the Republicans put the focus on the economic implications of the virus and China's role in its origins (Green et al., 2020). Partisan media presented American viewers with conflicting messages (Bursztyn et al., 2020; Motta et al., 2020). Republican party affiliation and exposure to right-wing media were shown to be related to lower compliance with Centers for Disease Control and Prevention (CDC) health recommendations regarding social distancing (Allcott et al., 2020; Andersen, 2020; Barrios & Hochberg, 2020; Simonov et al., 2020; Wright et al., 2020, Zhao et al., 2020), lower perceptions of risks associated with COVID-19 (Allcott et al., 2020; Barrios & Hochberg, 2020), and less fear of the virus (Harper et al., 2020). Even more alarmingly, exposure to right-wing media has been associated with higher infection and death rates for COVID-19 (Bursztyn et al., 2020).

This study unpacks the relationship between right-wing media exposure and attitudes and behavior related to COVID-19 prophylactic measures in the United States. Understanding the psychological mechanisms through which exposure to right-wing political messaging affects compliance with public health recommendations on COVID-19 can help to (a) identify the features of messages

that can cause harm to public health, (b) communicate to the media the reasons for avoiding such features in their messaging, and (c) develop strategies for mitigating and counteracting the harm done by politicized messaging.

Information and Formation of Attitudes

The theory of planned behavior (TPB; Ajzen, 1991; Ajzen & Fishbein, 1975) provides a conceptualization of the effects of exposure to information, such as mass media messages, on behavior. The TPB specifies three proximal predictors of behavior: attitudes, subjective norms, and perceived behavioral control (Ajzen & Fishbein, 1975). Media messages can potentially influence all three predictors: Attitudes can be affected through persuasion, subjective social norms can be inferred from media climate, and portrayal of behavioral constraints can influence perceived behavioral control.

Here we argue that for information to be effective in changing social norms and perceived behavioral control, it should first and foremost be effective in changing attitudes. The three components of the TPB are interrelated (Hagger et al., 2002). Although these base components are often theorized as independent predictors of the behavioral intention, conceptually, changes in attitudes can impact both perceived social norms (Fabrigar & Krosnick, 1995; Marks & Miller, 1987) and objective social norms. Perceived behavioral control, on the other hand, was originally theorized as a moderator of the attitude–behavior and norm–behavior relationship (Ajzen, 1985), and recent studies provide support for this conceptualization (La Barbera & Ajzen, 2021). For this reason, in this study we focus on the effects of media consumption on attitudes and then behavior.

Ajzen and Fishbein proposed that attitudes are a product of knowledge about the attributes of an object or a behavior and subjective evaluations of these attributes. In this model, "a person is viewed as processing the information he has about an object in arriving at his evaluation of the object" (Ajzen & Fishbein, 1975, p. 222). Differences in available information about an object can therefore lead to differences in attitudes. This intuitive model of attitude formation is commonly shared among psychologists, but using it to predict attitudes and behavior from information has proved difficult. TPB posits a number of boundary conditions to the effects of information on the attitude: To affect the attitude, information has to be relevant, accepted (believed), and nonredundant. Even if all these conditions are satisfied, the size of the effect would depend on subjective evaluation of the relevant attribute (Ajzen & Fishbein, 1975). The boundary conditions are numerous and latent, therefore difficult to assess.

Information does not always affect attitudes in a predictable manner. While attitudes are the strongest of the three TPB predictors, the relationship between attitudes and behavior is not particularly strong (Armitage & Connor, 2001). It is no surprise that predicting the behavioral consequences of exposure to information is challenging. Research in health communications shows that even when the information is purposefully designed to produce change in behavior, this effect is typically small (Abroms & Maibach, 2008; Noar, 2006; Snyder & Hamilton, 2002). While in some cases knowledge about health conditions is related to health behaviors (e.g., Lael-Monfared et al., 2019; Lindau et al., 2002; Osborn et al., 2011), studies often find weak or nonsignificant relations between the two constructs (e.g., Chen et al., 2014; Guerra et al., 2005; Hwang et al., 2014; see Berkman et al., 2011 for a relevant review). In a series of studies, Ajzen et al. (2011) found no relationship between seemingly relevant knowledge and corresponding attitudes and behavior: Environmental knowledge was unrelated to conservation attitudes and behavior, and alcohol knowledge to attitudes toward drinking and drinking behavior. Ajzen concludes that evaluative implications of information – rather than its mere availability – affect behavior. It is therefore particularly helpful to identify features of messages about COVID-19 that have evaluative implications and that are likely to induce attitudinal and behavioral change (van Bavel et al., 2020).

Value-Instantiating Beliefs

The Ajzen and Fishbein model (Ajzen & Fishbein, 1975) posits that any object or behavior can be evaluated according to an unlimited number of attributes, but only a small subset of such evaluations will contribute to the attitude. Assessing and comparing grounds for evaluation necessitates a comprehensive typology of such grounds; TPB does not provide it. We propose using Schwartz's (1992) typology of values to assess perceived implications of objects and events. Values, as defined by Schwartz (1992), are beliefs about desirable end-states that serve as grounds for evaluation and selection of objects, events, and behaviors. Table 1 provides the list of values and their definitions. Schwartz's typology of values is comprehensive: Individual values are used to describe and measure regions of the motivational continuum of related motivations, and any value could be situated within it based on its relations to other values (Schwartz, 1992). At the same time, the typology differentiates values based on their motivational content. Using Schwartz's values for classifying grounds of evaluation can therefore capture a large proportion, if not most, of relevant criteria while also providing insight into the content of these criteria.

We employ the construct of value-instantiating beliefs (VIBs; Ponizovskiy et al., 2019; Ponizovskiy, 2021) to describe personal beliefs about perceived consequences of

Table 1. Schwartz typology of basic human values

Value	Definition
Security	Safety, harmony, and stability of society, of relationships, and of self.
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms.
Tradition	Respect, commitment, and acceptance of the customs and ideas that traditional culture or religion provide.
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact.
Universalism	Understanding, appreciation, tolerance, and protection for the welfare of *all* people and for nature.
Self-direction	Independent thought and action – choosing, creating, exploring.
Stimulation	Excitement, novelty, and challenge in life.
Hedonism	Pleasure and sensuous gratification for oneself.
Achievement	Personal success through demonstrating competence according to social standards.
Power	Social status and prestige, control or dominance over people and resources.

Note. Adapted with permission from Schwartz, 1994. © John Wiley and Sons.

objects, actions, or events for values. Examples of VIBs are "social distancing protects me from illness" (positing a positive relationship between a behavior, washing hands, and the value of security) or "social distancing limits my freedom" (positing a negative relationship between social distancing and the value of self-direction). VIBs may differ in strength (social distancing can be seen as very, moderately, or slightly limiting to one's freedom) and in direction (social distancing can be seen as limiting or expanding personal freedom).

VIBs are beliefs, and can be acquired through the same processes as other beliefs: personal experience, inference, and socialization (Wyer & Albarracin, 2005). A person can come to believe that social distancing protects their safety through personal experience (e.g., by contracting a virus in a social setting in the past). Alternatively, a person can infer that social distancing protects their safety by observing COVID infections among circles of friends, and attributing the differences in disease spread to differences in socialization patterns. However, complex relations, such as the health risks of socialization, are difficult to learn solely on the basis of personal experience and inference. This makes the third route of belief formation – socialization – particularly important. An individual can also be persuaded about the protective effects of social distancing by other people who hold this belief. Mass media are a particularly powerful channel of communication, making them a likely source of individual evaluative beliefs. On the basis of the conceptualization of VIBs as learned expected consequences of behavior, we hypothesize that they mediate the relationship between socialization experiences and attitudes.

VIBs are beliefs that have evaluative implications, as proposed by Ajzen et al. (2011), and can capture the differences in perceptions of measures to combat COVID-19 that arise from differences in exposure to right- versus left-wing media. By the merit of conceptual differentiation of grounds of evaluation (i.e., values), the VIBs make it possible to quantify and compare evaluative implications of judgments made on qualitatively different motivational grounds. Theoretically, VIBs are a potential novel set of mediators of the socialization–attitude and socialization–behavior relationships. While conceptually related to the behavioral beliefs of the TPB model, the VIBs can at the same time be comprehensively measured and differentiated. If VIBs mediate the socialization–attitude relationship, identifying specific VIBs that are affected by socialization experiences, and are then translated into attitudes, can help identify potential pathways of persuasion.

Applying this conceptualization to the case of media effects on prophylactic behavior during the COVID pandemic allows us to ask the following questions: Perceived consequences for which values differ between consumers of right- versus left-wing media? Which of these perceived consequences are relevant to attitudes toward preventative measures and to compliance with them? VIBs can be particularly informative for understanding beliefs that underly more value-expressive attitudes: attitudes that express central values or are important to the self-concept (Katz, 1960; Maio & Olson, 1995, 2000). Since the COVID-19 pandemic has been politicized, attitudes relevant to it are likely to be value-expressive.

In this study we focus on beliefs about the implications of behavior for values, not on individual differences in value priorities. While value priorities differ along the lines of political ideologies (Caprara et al., 2017; Schwartz et al., 2014) and are predictive of attitudes, these effects provide little information about the process through which messaging translates into behavior. To understand this mechanism, we focus here on the perceived consequences of behaviors for values.

Current Study

In the current study we test a VIB-based model of attitudes toward and compliance with two CDC recommendations for COVID-19: staying home (CDC, 2020a) and washing

hands often (CDC, 2020b). We hypothesize that right-wing media – as compared to left-wing media – provide consumers with information that downplays the positive consequences of complying with the CDC recommendations for basic human values, for example, security, benevolence, or self-direction. Consumers of right-wing media, after being exposed to this information, form less positive VIBs about these behaviors, which, in line with Ajzen and Fishbein's (1975) expectancy value theory, jointly contribute to less positive attitude toward and lower compliance with the recommendations.

We developed and preregistered the following set of hypotheses for the study:

Hypothesis 1 (H1): Exposure to right-wing media will be associated with weaker compliance with the CDC recommendations.

Specifically:

Hypothesis 1a (H1a): Exposure to right-wing media will be associated with leaving one's residence more often.

Hypothesis 1b (H1b): Exposure to right-wing media will be associated with washing one's hands less often.

Hypothesis 2 (H2): The relationship between exposure to right-wing media and attitudes toward following the CDC recommendations will be mediated by VIBs.

Specifically:

Hypothesis 2a (H2a): VIBs will mediate the relationship between exposure to right-wing media and attitude toward leaving one's residence.

Hypothesis 2b (H2b): VIBs will mediate the relationship between exposure to right-wing media and attitude toward washing hands.

The theoretical model is summarized in Figure 1.

To test these hypotheses, we conducted a large online survey measuring media exposure, VIBs, attitudes, and self-reported compliance with health officials' recommendations and fit the data to the theoretical model presented in Figure 1. Additionally, we compared our model with competing models. The first competing model considered perceived efficacy of CDC recommendations instead of VIBs as the mediator of the media–attitude relation. Perceived efficacy is commonly used to capture subjective assessments of policies in health communications (Rogers, 1975, 1983). The second competing model used political orientation instead of media exposure to predict VIBs. While media exposure is a more proximal indicator of informational input, political affiliation can affect broader patterns of information consumption through selective exposure, or preference for messages that are in line with one's political views (Knobloch-Westerwick & Meng, 2009; Stroud, 2010).

The preregistration protocol is available on the Open Science Framework (OSF) platform: https://osf.io/p6c2d.

Method

Sample

The required sample size was estimated using a simulation study. The R code of the simulation study, as well as all study materials and data, can be found on the OSF platform: https://osf.io/ft4q3. The goal was to obtain .95 power to detect the smallest effect of interest (indirect effect of media exposure on the attitude toward following CDC recommendations) of .20 at the .05 alpha error probability. The target sample size was 550.

The data were collected on May 12, 2020. Participants were recruited via the Amazon Mechanical Turk services and were reimbursed 1.50 USD for participation in the survey. The survey was open to all Amazon Mechanical Turk users who resided in the United States and were over 18 years old. Participants who were required by their employers to travel to work were screened from the study. The effective sample size was 554 participants.

Overall, 48 US states were represented in the sample, except for Idaho and Wyoming. A total of 62% of participants identified as men, 36.5% as women, and 0.1% chose "other." The mean age was 37.3 years (SD = 10.4); 72% had completed a bachelor's degree or higher. The average number of people in the household was 2.94 (SD = 1.35). In total, 56% of participants said they lived in a big city or a suburb of a big city, while 43.5% said they lived in a town/small city, in a village, or on a farm. The household income for 38% of participants was reported to be less than $50,000, and 61.6% reported higher income. On the political orientation scale, 39.2% of participants described themselves as leaning left and 45.9% as leaning right.

Procedure and Measures

All participants provided informed consent. The study received ethical approval from the Ethics Committee of Ruhr University Bochum, Faculty of Psychology, decision number 595. The survey began with questionnaires for behavior and attitudes, followed with a VIB questionnaire for the behavior "staying home." Then participants reported on their sociodemographic background and media consumption and completed the second VIB questionnaire for the behavior "washing hands." The average completion time was 6.5 minutes.

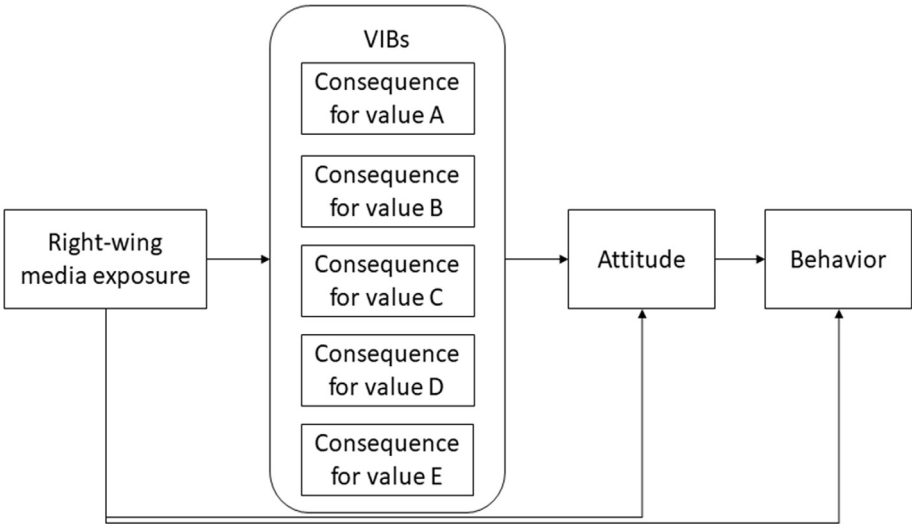

Figure 1. Theoretical model: predicting compliance behavior from exposure to right-wing media through VIBs and attitude.

Measures

Behavior

Staying home compliance was measured with the following question: "How many times during the past week did you leave your residence? Try to remember as accurately as possible. Please count the times when you left your residence for more than 15 mins. Do not include going to the yard or throwing out the trash." Participants were asked to input a number. *Hand washing* compliance was measured with the question: "How many times have you washed your hands yesterday? Try to remember as accurately as possible." Participants were asked to choose between six options: 1 = *0–1 time*, 2 = *2–4 times*, 3 = *5–7 times*, 4 = *8–10 times*, 5 = *11–13 times*, 6 = *14 times or more*. While the distribution of hand washing was close to normal (M = 3.4, SD = 1.3, skewness = 0.43, kurtosis = −0.54), the distribution of leaving home strongly deviated from normal (M = 3.7, SD = 4.6, skewness = 4.54, kurtosis = 32.59). Of all participants, 10% did not leave their homes during the week, and 55% left home between one and three times. We therefore deviated from the preregistration protocol and transformed this variable by taking a square root of the reported number of outings. The distribution of the transformed variable was close to normal (M = 1.67, SD = 0.97, skewness = 0.96, kurtosis = 3.42).

Attitudes were measured with a 5-item, 7-point (−3 to +3) semantic differential scale with the prompts, "Staying at home during the pandemic is…" and "Washing my hands more often during the pandemic is…" and the anchors *good–bad*, *harmful–beneficial*, *pleasant–unpleasant*, *useless–useful*, and *enjoyable–unenjoyable*. Alpha reliability was .83 for the attitude toward staying home and .78 for the attitude toward washing hands.

Value-instantiating beliefs (VIBs) were measured with the 21-item VIBs Questionnaire (Ponizovskiy, 2021). The questionnaire was developed for standardized assessment of perceived consequences of behaviors for all 10 values specified in the original version of Schwartz theory of basic human values (Schwartz, 1992): self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, benevolence, and universalism. Including all values in assessment avoids making assumptions about the relevance of values to the target behavior for specific individuals, makes the measure applicable across behaviors without modifications, and allows us to compare perceived consequences across values and behaviors.

The items of the questionnaire are semantic differential scales that assess perceived consequences of the target behavior for a specific value. Consequences for each value are measured with two to three items. An item consists of a behavioral prompt and response anchors. The behavioral prompts were, "Staying at home during the pandemic would…" and "Washing my hands more often during the pandemic would...". An example item measuring VIB for conformity had anchors, "Violate the rules and expectations of others" versus "Be in line with the rules and expectations of others," on a 7-point scale, from −3 to +3. Participants were instructed to use the central point of the scale if they did not believe the behavior had consequences for the value, or if the question was not applicable. Mean standardized alpha reliability was .64 for VIBs of staying home and .67 for VIBs of washing hands.We initially planned to center VIB scores within individuals to correct for individual response tendency. However, it became apparent that this procedure is statistically redundant when multiple VIBs are included in the model. We therefore used the raw scores.

Media exposure was measured with the matrix question: "How often do you get your news from the following outlets?" with items Fox News, CNN, MSNBC, NPR, *New York Times*, *Washington Post*, Sean Hannity (radio), Rush

Limbaugh (radio), Breitbart, and a 5-point Likert-type response scale (1 = *never*, 5 = *very often*). The media were selected from the Pew Research dataset (Jurkowitz et al., 2020). We first selected media outlets that had more than a twofold difference in Republican versus Democratic consumption and then selected the five most popular outlets. Only four outlets met the selection criteria for the Republican-preferred sources.

Perceived efficacy of CDC recommendations: "In your opinion, how effective are the following recommendations at combating the spread of COVID-19?" with items "Staying at home" and "Washing your hands" and a 7-point Likert-type response scale, from 1 = *not effective at all* to 7 = *extremely effective*.

Sociodemographic Variables

Participants reported whether they are required to travel to work (exclusion criterion), their age, gender, education, number of people in the household, state of residence, place of residence (settlement size), objective and subjective income, and political orientation. A detailed report on these measures is available on the project's OSF page.

State-Level Data

To control for environmental factors that might affect compliance behavior, we used secondary state-level data. The number of COVID-19 infections and deaths per state were obtained from the CDC (CDC, 2020c) and information on state-level shelter-in-place policies on the date of data collection was obtained from the COVID-19 US State Policy Database (Raifman et al., 2020).

Results

In line with the preregistered analysis plan, we first tested which VIBs were most relevant for each attitude. For attitude towards *staying home*, the strongest correlations were obtained for hedonism, $r(551) = .51$, $p < .001$, security ($r = .47$, $p < .001$), self-direction ($r = .42$, $p < .001$), universalism ($r = .42$, $p < .001$), and benevolence ($r = .41$, $p < .001$) VIBs. For attitude toward *washing hands*, the strongest correlations were obtained for universalism ($r = .48$, $p < .001$), benevolence ($r = .44$, $p < .001$), hedonism ($r = .41$, $p < .001$), security ($r = .40$, $p < .001$), and conformity ($r = .37$, $p < .001$) VIBs.

We further examined the measurement models for the latent variables: attitudes and media exposure. Attitudes toward staying home and washing hands were tested in a single model as correlated factors. This model required one modification: a covariance was added between the items "pleasant–unpleasant" and "enjoyable–unenjoyable" for both attitudes. The resulting model had acceptable fit (CFI = .946; RMSEA = .096, SRMR = .008). The two attitudes correlated positively ($r = .76$, $p < .001$). Exposure to right- and left-wing media was also tested in a single model with correlated latent constructs. Right-wing media were represented by Fox News, Sean Hannity (radio), Rush Limbaugh (radio), and Breitbart. Left-wing media were represented by CNN, MSNBC, NPR, *New York Times*, and *Washington Post*. The model showed adequate fit without any modifications (CFI = .970, RMSEA = .081, SRMR = .044). The two factors correlated positively ($r = .53$, $p < .001$). See Online Supplement for details (Ponizovskiy et al., 2020).

In the next step, we tested two structural equation models (SEM) as specified in the preregistration: Media exposure predicted behaviors of staying home and washing hands through VIBs and attitudes (Figure 1). In both models, we controlled for age, gender, education, political orientation, subjective income, objective income, number of people in the household, place of residence, and state-level number of infections, deaths, and shelter-in-place policies. We deviated from the preregistered protocol by adding a latent construct for left-wing media exposure: Otherwise, right-wing media exposure was confounded with total amount of media consumption, as indicated by an $r = .53$ correlation between the two types of media consumption.

Compliance With "Staying Home" Recommendation

The initial model showed suboptimal fit to the data (CFI = 0.861, RMSEA = .070, SRMR = .099). None of the control variables, except the number of COVID-19 cases in the state, predicted behavior. We therefore simplified the model by removing all controls except for the number of COVID cases in the state. The modified model showed adequate fit to the data (CFI = .940, RMSEA = .065, SRMR = .081). The number of state-level COVID-19 cases did not predict behavior in the modified model ($b = .03$, $SE = .04$, $p = .412$). Figure 2 presents the unstandardized regression coefficients for all variables in the model except controls.

As predicted (H1a), exposure to right-wing media was related to leaving home more often: The total effect of right-wing media exposure on behavior through both direct and indirect paths was $b = .27$, $SE = .05$, $p < .001$. The model explained 8% of variance in behavior. Also as predicted (H2a), VIBs emerged as a significant mediator of the relationship between right-wing media exposure and the attitude. Conditional on the assumption that media exposure affects the VIBs, which, in turn, affect the attitude, the VIBs accounted for a significant portion of variance. However, the data can also be consistent with alternative models. Indirect effects of exposure to right-wing media on attitude were significant via security ($b = -.13$, 95% CI [−.19, −.07], $SE = .03$, $p < .001$), hedonism ($b = .07$, 95%

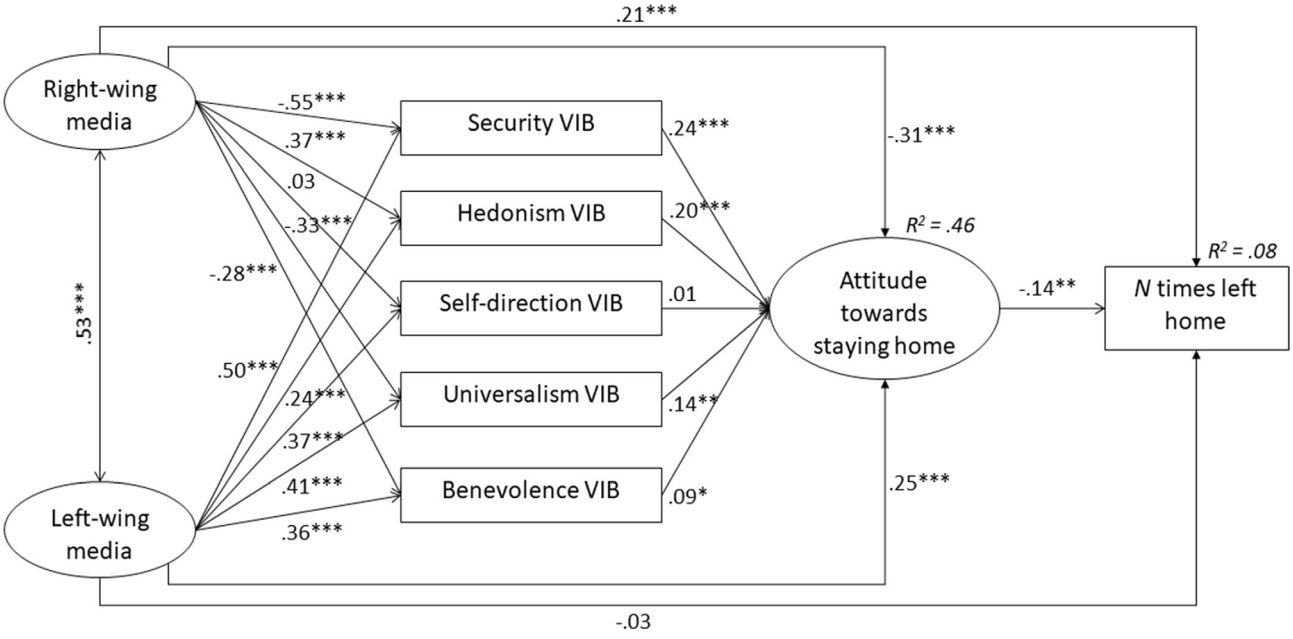

Figure 2. Structural equation model predicting compliance with "staying home" recommendation from media exposure, VIBs, and attitudes. *p < .05, **p < .01, ***p < .001. Unstandardized regression coefficients. N = 553.

CI [.03, .11], SE = .02, p < .001), and universalism (b = −.05, 95% CI [−.09, −.01], SE = .02, p = .016) VIBs. The total effect of right-wing media exposure on attitude through both direct and indirect paths was b = −.45, 95% CI [−.57, −.32], SE = .07, p < .001. The leftover direct effect of right-wing media exposure on behavior was significant (b = .21, 95% CI [.10, .31], SE = .05, p < .001).

For the values of security, benevolence, and universalism, the pattern of correlations between media exposure and the VIBs was mirrored for left-wing media: While consumers of right-wing media perceived less positive consequences for these values, consumers of left-wing media perceived more positive consequences. For the value of self-direction, consumers of left-wing media perceived more positive consequences, while this VIB was not related to right-wing media consumption. Finally, for the value of hedonism, both right- and left-wing media consumption was related to more positive perceived consequences. The total effect of right-wing media exposure on attitude toward staying home was b = .52, 95% CI [.38, .66], SE = .06, p < .001. The direct effect of left-wing media consumption on behavior was not significant (b = −.03, 95% CI [−.15, .09, p = .618]. The model explained 46% of variance in attitude toward staying home. The results were essentially identical in the models with and without all control variables. Additionally, we tested the model with the raw scores for behavior using a negative binomial SEM for robustness check. The findings remained unchanged. These additional analyses are reported in the Online Supplement (Ponizovskiy et al., 2020).

Compliance With "Washing Hands Often" Recommendation

The initial model showed suboptimal fit (CFI = .855, RMSEA = .073, SRMR = .110). Only two of the controls were significantly related to behavior. People with higher objective income (b = .18, SE = .07, p = .011) and women (b = .29, SE = .11, p = .010) reported higher frequency of washing hands. After simplifying the model by removing nonsignificant controls, the model showed acceptable fit to the data (CFI = .930, RMSEA = .067, SRMR = .099). The effects of objective income (b = .13, SE = .06, p = .028) and gender (b = .29, SE = .11, p = .007) remained significant in the modified model. Figure 3 presents the unstandardized regression coefficients for all variables in the model, except controls.

The effect of right-wing media on the frequency of washing hands was fully mediated by VIBs and attitudes (total indirect effect: b = −.14, 95% CI [−.21, −.07], SE = .04, p < .001). The direct (b = .13, 95% CI [−.02, .28], SE = .08, p = .09) and total (b = −.01, 95% CI [−.15, .13], SE = .07, p = .908) effects were not significant, providing only partial support for H1b. The model accounted for 7% of variance in behavior. As predicted (H2b), VIBs emerged as a significant mediator of the relationship between exposure to right-wing media and attitude toward washing hands. Indirect effects of exposure to right-wing media on attitude were significant via security (b = −.07, 95% CI [−.11, −.03], SE = .02, p = .001), benevolence (b = −.05, 95% CI [−.08, −.01], SE = .02, p = .006), and hedonism

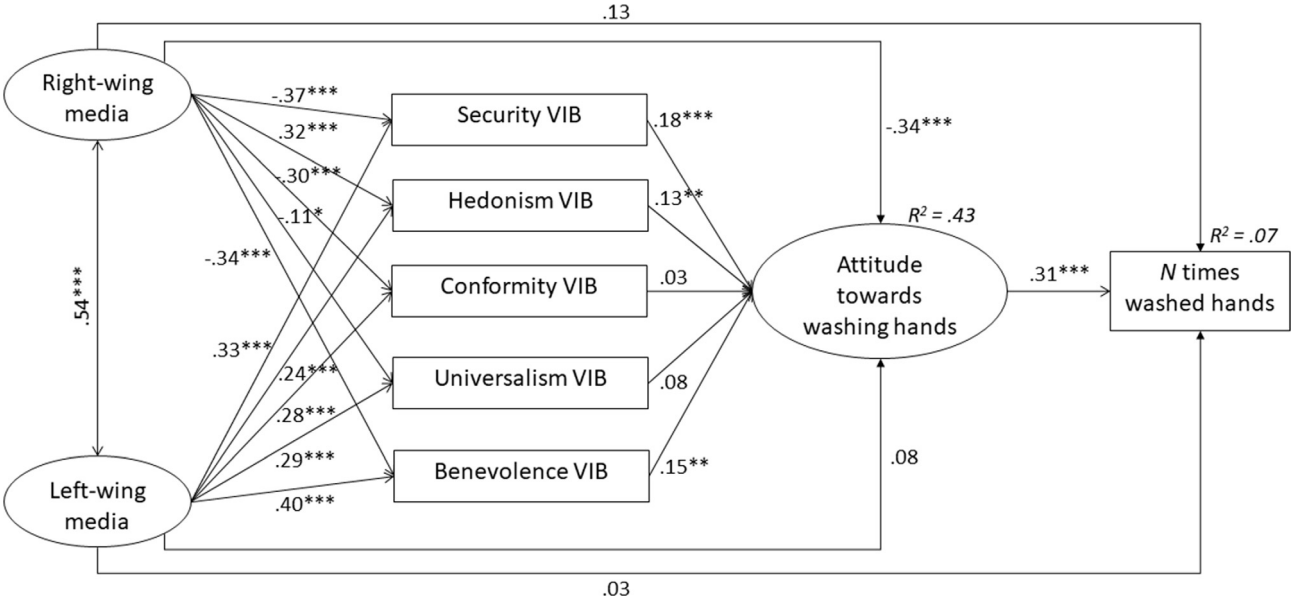

Figure 3. Structural equation model predicting compliance with "washing hands often" recommendation from media exposure, VIBs, and attitudes. *p < .05, **p < .01, ***p < .001. Unstandardized regression coefficients. N = 553.

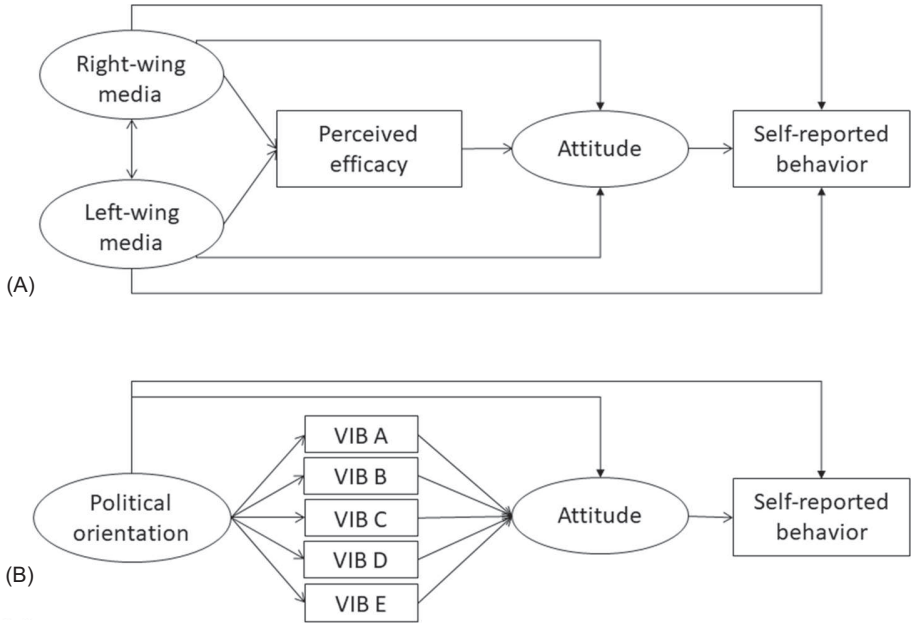

Figure 4. Alternative theoretical models predicting compliance with CDC recommendations.

(b = .04, 95% CI [.01, .07], SE = .01, p = .006) VIBs. The total effect of right-wing media exposure on attitude through direct and indirect paths was b = −.44, 95% CI [−.54, −.33], SE = .05, p < 001.

Values of security, conformity, benevolence, and universalism correlated in the opposite directions with right- and left-wing media exposure. Right-wing media consumers perceived less positive consequences, and the left-wing media consumers, more positive consequences of washing hands for these values. Consumption of both right- and left-wing media was positively correlated with perceived consequences of the behaviors for hedonism. The total effect of right-wing media exposure on attitude toward washing hands was b = .26, 95% CI [.15, .38], SE = .06, p < .001. The direct effect of exposure to left-wing media on self-reported behavior was not significant (b = .03, 95% CI [−.12, .19], SE = .08, p = .676.

The model explained 43% of variance in attitude toward washing hands.

Competing Models

We further compared our models with an alternative set of models where the media–attitude relationship was mediated by perceived efficacy of CDC recommendations (Figure 4A). The first model predicted compliance with the recommendation to stay at home. Right- and left-wing media exposure were the predictors, perceived efficacy of staying at home was the mediator, followed by the attitude and the self-reported behavior. This model showed adequate fit to the data (CFI = .959, RMSEA = .059, SRMR = .078). Perceived efficacy outperformed VIBs in predicting attitude toward staying home (R^2 = .62 vs. R^2 = .46). The indirect effect of right-wing media exposure on attitude via efficacy was b = −.31, SE = .04, p < .001, and the indirect effect on behavior was b = .04, SE = .01, p = .005. The identically specified model predicting frequency of washing hands also showed acceptable fit to the data (CFI = .935, RMSEA = .068, SRMR = .105). In this case, the model with VIBs outperformed the model with perceived efficacy as a mediator of the media–attitude relationship, since the indirect effects of media on attitude and behavior via efficacy were not significant (b = −.03, SE = .03, p = .217 and b = −.01, SE = .01, p = .235, respectively). Both models explained approximately 43% of variance in attitudes.

To examine whether media exposure is a better predictor of compliance than political orientation, we tested competing models where media exposure was replaced with political orientation as the predictor of VIBs (Figure 4B). Political orientation was specified as the predictor, VIBs – as mediators of the relationship between political orientation and attitudes toward prophylactic behaviors, and attitudes as predictors of self-reported behavior. Both models with political orientation showed acceptable fit to the data (CFI = .916, RMSEA = .098, SRMR = .082 for staying home, CFI = .922, RMSEA = .087, SRMR = .082 for washing hands). For staying home, the model with political orientation explained less variance in attitude (44% vs. 46%) and behavior (5% vs. 8%) than the original model with media exposure. For washing hands, the model with political orientation explained less variance in attitude (39% vs. 43%) and the same amount of variance in behavior (7%) compared to the original model with media exposure.

Discussion

In this study, we estimated a VIB-based model of attitudes toward and compliance with CDC recommendations to understand what features of right-wing messaging on COVID-19 might explain lower compliance. We found that people who consume right-wing media perceive following CDC recommendations as having less positive consequences for the values of security, benevolence, and universalism, and that these differences are associated with less positive attitudes and lower compliance. For staying at home, exposure to right-wing media was related to lower frequency of the behavior both directly and indirectly. For washing hands, exposure to right-wing media was only related to lower frequency of the behavior indirectly, through VIBs and attitudes. Our findings concur with other studies that showed a link between exposure to right-wing media and compliance with health officials' recommendations on COVID-19 (Allcott et al., 2020; Andersen, 2020; Barrios & Hochberg, 2020; Simonov et al., 2020; Wright et al., 2020).

The "Why?" of Media–Behavior Link

While exposure to right-wing media affected almost all VIBs, only some of these VIBs further translated into the attitude and behavior. Unsurprisingly, the strongest mediating effect was for the security VIB: The more people consumed right-wing media, the less positively they perceived the consequences of staying home and washing hands for their security. On the other hand, consumption of left-wing media was related to more positive perceived consequences of both behaviors for security. The pattern corresponds to content analytic findings on polarization in media messaging on COVID, where the Democratic elites highlighted the public health implications of the pandemic, while the Republicans downplayed them (Green et al., 2020).

A weaker, but comparable in size mediating effect was observed for prosocial VIBs: Right-wing media exposure was related to less positive perceived consequences for benevolence (concern for the well-being of close others) and universalism (concern for the well-being of all people), and left-wing media exposure was related to more positive perceived consequences for these values. Benevolence but not universalism VIB mediated the media–attitude relationship for washing hands. Universalism but not benevolence VIB mediated the media–attitude relationship for staying at home. This may relate to the functions of the behaviors as understood by the participants: Whereas washing hands limits the transmission of the virus in one's immediate surroundings (and is therefore most relevant to the health of close others), social distancing is often portrayed as a way to "flatten the curve," or reduce the burden of COVID-19 on society in general.

Unexpectedly, the media–behavior link was also mediated by hedonism VIB (perceived consequences of

behaviors for sensual pleasure) for both behaviors. Hedonism was also the only VIB that was predicted positively by both right-wing and left-wing media consumption; for most others, the links with two types of media were in opposite directions. We offer no clear interpretation of the finding but suspect that people who consume more media in general may find more pleasure in the everyday routine.

Alternative Explanations

The proposed model where media consumption predicted attitudes and behavior outperformed an alternative model where attitudes and behavior were predicted from political orientation. When both media consumption and political orientation were in the model, only media consumption predicted behavior. This finding suggests that media is a more proximal predictor of attitudes and behavior, in line with the information-based account of attitude formation (Ajzen & Fishbein, 1975).

Using perceived efficacy of CDC recommendations as a mediator instead of VIBs showed mixed results. While efficacy predicted more variance in attitude toward staying home compared to VIBs, it did not mediate the relationship between media consumption and attitude toward washing hands often. VIBs were more consistent as mediators of media–attitude link across the two behaviors. There are important differences between perceived efficacy and VIBs as grounds for judgments: Perceived efficacy is more specific in that it only informs us about one important belief; VIBs are more abstract and inform us about a range of different beliefs relevant to humans' evolutionary needs. The data presented here do not allow definitive conclusions to be made, but VIBs might have an advantage over perceived efficacy in particular use cases. VIBs capture a wider range of beliefs relevant to an attitude and can provide information about relative contributions of qualitatively different beliefs to the attitude.

Limitations

The study is cross-sectional and does not establish causal relations between the constructs. The mediation model specified media exposure as a predictor of VIBs, and VIBs as predictors of attitudes and then behavior. While the data agreed with the model, this does not rule out models that assume other causal relations. The causal effect of VIBs on attitudes has been demonstrated experimentally (Ponizovskiy et al., 2019). However, the causal effect of media exposure on VIBs was not empirically corroborated before. Further studies using experimental or longitudinal designs will be needed to corroborate this assumption. The causal link between right-wing media consumption and compliance with health officials' recommendations for combatting COVID-19 was demonstrated in earlier studies (Bursztyn et al., 2020; Simonov et al., 2020; Wright et al., 2020). In the present study, we elaborated on the psychological mechanism linking media consumption to behavior.

The study used a sample that is not representative of the US population. In particular, men and individuals leaning right on the political spectrum were overrepresented. Although not intentional, this bias suited the needs of the study: Oversampling participants who were more likely to be exposed to right-wing media allowed for a more even distribution of right-wing media and left-wing media consumers than would be found in a nationally representative sample. While the sample supported a test of the hypothesized model of persuasion, care should be taken when interpreting the specific weights of the statistical models. The relative contributions of different VIBs to attitudes and behavior may differ from those in the general population in correspondence with the biases of the sample.

Although our model explained over 40% of variance in attitudes toward both behaviors, it accounted only for about 7–8% of variance in actual behavior. Attitude was only weakly related to behavior for both prophylactic behaviors. A longitudinal study tracking changes in behavior instead of a one-shot measure of average behavior during a week (leaving home) or a day (washing hands) might have shown stronger effects. We argue that despite the small proportion of explained variance in behavior, these findings can have large implications for slowing down the spread of the virus. First, even small changes in behavior can affect the speed of transmission. Second, changes in attitudes can affect behavior and transmission rates in the long run by shaping the normative climate (van Bavel et al., 2020).

Finally, the questionnaire we used to measure VIBs has important limitations. The aim of the questionnaire was to assess the entire universe of beliefs linking a specific behavior to values. Such beliefs are innumerable, and their assessment necessitates compromise.

On the one hand, some items measured the beliefs that are not held by many participants. The participants were instructed to use the neutral response option (4 on the 7-point scale) whenever the value was not relevant for the behavior. The neutral response option was used, on average, in 32% of responses to individual items. The item that received the most neutral responses was, "Washing my hands more often during the pandemic would prevent me from gaining money and status/allow me to gain money and status," with 55% of participants choosing the neutral option. We included questions that elicited neutral responses from most participants to avoid making assumptions about the beliefs and worldviews of our participants, and to enable comparisons between more and less relevant values.

On the other hand, some beliefs that participants held might not have been captured by the items. Only two to three items were used to assess the entirety of beliefs about consequences of a behavior for a particular value. Since beliefs about possible consequences of behaviors for values are innumerable, the limited scope of the questions necessarily results in mismatches between the beliefs and the items. For example, a person might find staying at home pleasant because it would allow them to take a bubble bath during the day. That belief would indicate positive expected consequences for the value of hedonism. For that person, the VIB hedonism item "[it would] be pleasant to [their] senses, such as taste, smell, vision, and touch" would match well, and the person would find it easy to indicate agreement with the item. However, the same item might be difficult to answer for a person who would find staying at home equally pleasurable but would use the extra time to read a book. This possible mismatch between the items and the beliefs that they aim to assess deserves attention. We put forward two considerations that temper our concern about the validity of the scale.

First, even in situations where the individual beliefs are not well represented by the item, we expect participants to be more likely to agree with statements that correspond to their perceived consequences for values. Continuing with the example, the hypothetical reader would be *more likely* to indicate that staying at home would be pleasant to their senses than a person who does not find staying at home pleasant.

Second, each VIB is assessed with several items, and the items were selected to capture the consequences for different theoretical facets of values. For example, the second VIB item, "staying at home will be a way to indulge myself" would match the hypothetical reader well and would result in higher VIB hedonism score compared to a person who finds staying at home unpleasant. This composite logic of the subscales increases the validity of the scale at the expense of its reliability.

Despite these qualifications, it is still plausible that there exist beliefs about consequences of behaviors for values that are not captured with the present instrument sufficiently well. Such beliefs may contribute to the relation between media exposure and attitudes detailed in the present article. In addition, the list of values, although theoretically comprehensive, may not encompass all grounds for evaluation equally well, especially ones that are specific to situational or cultural contexts (e.g., Aavik & Allik, 2002; De Raad et al., 2016). For these reasons, we cannot claim that the models presented in this article are complete. However, the statistical models presented that incorporate perceived consequences of behaviors for values using our method allowed us to account for a substantial proportion of the relationship between media exposure and compliance attitudes, as well as a large proportion of variance in the attitudes.

Implications

In this study, we hypothesized and tested a novel mediator of the relationship between exposure to media and behavior: the VIB. VIBs, or beliefs about consequences of objects, actions, or events for basic human values, occupy a similar role to the TPB behavioral beliefs (Ajzen, 1991): They provide cognitive support for attitudes. Unlike the behavioral beliefs, the conceptualization of VIBs enables a comprehensive assessment and comparison across the grounds of evaluation. Comparing the performance of different VIBs as mediators of the socialization–behavior relationship can point to the psychological mechanisms of persuasion: By merit of which changes in beliefs does the attitude change?

We identified differences in beliefs that are associated with exposure to right-wing (as compared to left-wing) media and lower compliance with CDC recommendations for COVID-19. Our findings point to two pathways through which exposure to right-wing media may impact prophylactic behavior: first, fewer perceived benefits of prophylactic behavior for personal security, and second, fewer perceived benefits of following prophylactic measures for the well-being of others.

Studies conducted during the COVID pandemic found that right-wing politicians (Green et al., 2020) and media outlets (Motta et al., 2020) downplay the public health risks associated with COVID-19. In our data, beliefs about consequences of prophylactic measures for personal security were the strongest mediators between media consumption and compliance with CDC recommendations. These results highlight the strength of behavioral consequences that can follow the (mis)representation of public health risks of COVID-19. These findings also contradict the suggestion that overly grim representations of COVID-19 can induce the feeling of helplessness and be counterproductive (van Bavel et al., 2020) – in our data, the more relevant to their personal security participants found prophylactic measures, the more they followed the prophylactic protocol.

The comparable size of the effects of prosocial VIBs (benevolence and universalism) suggests that compliance with CDC recommendations may also be affected by the portrayal of prophylactic measures in terms of their consequences for others. This finding corroborates early accounts of effectiveness of prosocial messaging on health behavior during the COVID-19 crisis (Brooks et al., 2020; Everett et al., 2020). Additionally, in our data, prosocial VIBs were associated with attitudes and behavior only when they were congruent with the function of the behavior: Perceptions of consequences for benevolence mediated

the media–behavior relation for the behavior that primarily affects people in the same household (washing hands), and perceived consequences for universalism mediated the effect for the behavior that affects general transmission (staying home). This underscores the importance of messaging that is congruent with people's motivations.

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Conflict of Interest
The authors declare that there is no conflict of interest.

Publication Ethics
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Open Data
The preregistration protocol is available on the Open Science Framework (OSF) platform: https://osf.io/p6c2d. All study materials, data, and code can be found at https://osf.io/ft4q3. The data that support the findings of this study are openly available in Open Science Framework repository at http://doi.org/10.17605/OSF.IO/FT4Q3 (Ponizovskiy, Grigoryan, & Hofmann, 2020).

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