Why Do Some Americans Resist COVID-19 Prevention Behavior?  
An Analysis of Issue Importance, Message Fatigue, and Reactance Regarding COVID-19 Messaging

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Abstract

Despite the rapid transmission of and death toll claimed by COVID-19, there is evidence of resistance toward behaviors shown to effectively prevent and slow the spread of the disease, such as mask wearing and social distancing. This study applies psychological reactance theory to examine COVID-19 message factors (i.e., message fatigue, issue importance) that may be linked to nonadherence to CDC recommendations via the experience of reactance. Participants ($N = 268$) were current U.S. residents over the age of 18 who completed an online survey about their perceptions of COVID-19 messaging in general as well as toward a specific COVID-19 message they recalled. Results of structural equation modeling indicated that perceived freedom threat toward a COVID-19 message was predicted positively by message fatigue and negatively by issue importance. Greater perceived freedom threat was linked to greater reactance, which in turn was associated with lower levels of adherence to hygiene- and social-related COVID-19 preventive behavior. Notably, the negative association between reactance and social-related adherence was stronger than that between reactance and hygiene-related adherence. Implications for the role of reactance in risk and crisis communication as well as for public health messaging during the COVID-19 pandemic are discussed.

*Keywords*: psychological reactance theory, COVID-19, message fatigue, issue importance, adherence

The 2019 novel coronavirus (COVID-19) outbreak has quickly received worldwide attention as a leading public health concern. Declared by the World Health Organization (WHO) as a public health emergency at the end of January 2020 and a pandemic mid-March 2020 (WHO, 2020b), COVID-19 has spread rapidly across the U.S. among other countries. As of January 2021, the total number of reported COVID-19 cases in the United States surpassed 21 million, with more than 2,000 individuals dying from COVID-19 per day (Centers for Disease Control and Prevention [CDC], 2020a). Although recommendations from public health officials circulated the news cycle in an attempt to “flatten the curve” and contain the spread of COVID-19, there was evidence of a resurgence in cases when states started lifting these constraints (Johns Hopkins Coronavirus Resource Center, 2020).

COVID-19, although from a well-known family of coronaviruses, presents new challenges with rapid human transmission. As research on the disease progresses, public health and government officials have communicated guidelines to reduce transmission and continue to add, change, and modify those recommendations. The virus is primarily transmitted through respiratory droplets during close human contact (del Rio & Malani, 2020); as such, messaging from agencies like the WHO and CDC advises personal hygiene-related prevention strategies (e.g., washing hands thoroughly with soap and water, wearing a face covering when in public) as well as social distancing-related strategies (e.g., staying at home as much as possible, social distancing from others outside of one’s household; CDC, 2020b; WHO, 2020a).

Although these behavioral recommendations have proven effective in slowing the spread of COVID-19 (Chu et al., 2020), many individuals, communities, and government officials have
exhibited nonadherence. Noncompliance may be in part due to how these recommendations are restrictive, inhibiting individuals from normal daily activities. Perhaps one of the most restrictive policies initiated by many local and state governments, beginning as early as March 2020 and lasting for months, was a shelter-in-place order for nonessential workers. In a country founded on civil liberties, public health mandates that are restrictive in nature evoke objections that can be counterproductive in terms of adherence; for example, many Americans have expressed frustration that mask wearing is a nuisance that infringes upon their basic civil freedoms, and therefore resist (Andrew, 2020).

The purpose of this study is to examine Americans’ reactance and subsequent (non)adherence to preventive health messaging about COVID-19. Due to the restrictive nature of the behaviors recommended to slow the spread of COVID-19 and how people from individualistic cultures like the U.S. are prone to reactance toward restrictions of personal freedoms (Jonas et al., 2009), there is cause for concern that Americans’ perceptions of these messages as freedom threatening affects their adherence to CDC-recommended behavior for preventing further spread of the disease. To systematically understand why some Americans resist these preventive behaviors, we turn to psychological reactance theory.

**Psychological Reactance Theory**

Psychological reactance theory (PRT; Brehm, 1966; Brehm & Brehm, 1981) predicts that when individuals believe their freedom of choice is restricted or eliminated, they experience a series of cognitions, emotions, and subsequent reactions related to regaining that freedom. This reactance process is comprised of four components. First, *free behavior* is any behavior that individuals are aware of and believe they have the right to enact at any given time. When free behavior is eliminated or restricted by some influence attempt (e.g., persuasive message), an
individual perceives a *freedom threat*. This threat to one’s autonomy subsequently triggers *reactance*, which is an amalgamation of anger and negative cognitions directed toward the influence attempt (Quick, 2012; Rosenberg & Siegel, 2018) and a motivational state that incites action (Brehm, 1966); as such, it elicits *freedom restoration*, or behaviors in which individuals engage to regain their sense of freedom. Freedom restoration behaviors take multiple forms, including direct (i.e., resisting a recommended behavior and/or doing the opposite of what is recommended) or indirect (i.e., vicariously observing others resist a recommendation and/or disparaging the message source or message itself; Reynolds-Tylus, 2019).

PRT research offers implications for how persuasive health messages should be communicated to avoid reactance and boomerang effects (for a review, see Reynolds-Tylus, 2019; Rosenberg & Siegel, 2018). Overwhelming evidence indicates that using forceful language – which COVID-19 messaging tends to do via directives for changes to routine behaviors (e.g., wash your hands for at least 20 seconds) and mandatory action (e.g., you must wear a mask when around others) – amplifies the experience of reactance (Reynolds-Tylus, 2019). Alternately, reactance is mitigated with tactics like choice-enhancing language (Rosenberg & Siegel, 2018), narratives (Gardner & Leshner, 2016), and gain framing (Shen, 2015) across an array of health topics. Given that the recommendations to slow the spread of COVID-19 are preventive in nature, it is relevant that PRT has utility within the domain of disease prevention messaging (Rains & Turner, 2007; Shen, 2015). Further, Reynolds-Tylus and Gonzalez (2020) extended the utility of PRT to emergency preparedness messaging, recommending that public health practitioners pretest messages to ensure that communications during emergency situations do not inadvertently trigger the reactance process. It follows that PRT provides an appropriate lens to explain why prevention messaging during the COVID-19 pandemic may result in resistance.
despite mounting evidence that the very behaviors being resisted prevent and slow the spread of
the disease (e.g., Chu et al., 2020).

A tenet of PRT is that the greater the importance placed on a free behavior, the greater
the experience of reactance when that behavior is threatened (Brehm, 1966; Brehm & Brehm,
1981). Although this tenet has received limited attention relative to PRT as a whole (Rosenberg
& Siegel, 2018), it has received some empirical support. Bensley and Wu (1991) found that
heavy drinkers who received a high-threat message restricting alcohol consumption rated the
message more negatively and exhibited more boomerang effects than comparison groups. Quick
and Bates (2010) found that individuals’ level of alcohol consumption positively predicted
perceived freedom threat toward a message restricting excess alcohol consumption. Most
recently, Al-Ghaithi et al. (2019) found that among older adults, both issue involvement and
exposure to restrictions specifically targeting this population (i.e., personal relevance) triggered
greater perceived freedom threat toward multiple types of restrictions. There is also evidence that
issue involvement moderates the reactance process. Quick et al. (2011) found that among low
levels of issue involvement, greater trait reactance was associated with greater freedom threat
perceptions toward a freedom-threatening message.

A commonality of these studies is that they examine issue importance in favor of a
behavior that is restricted (e.g., restrictions for older adults trying to renew their driver’s license),
resulting in greater perceived freedom threat toward the restrictive messaging. In the case of
COVID-19 messaging, however, the behaviors being restricted are those that work against
slowing the spread of COVID-19 (e.g., choosing not to wear a mask around individuals from
different households). Following this logic, individuals who consider COVID-19 an issue of
great importance would likely feel relatively less freedom threat towards these restrictive
messages. Therefore, as COVID-19 increases in importance, COVID-19 messaging should provide less threat to individuals’ freedom.

**H1:** Issue involvement with COVID-19 will be negatively associated with freedom threat perceptions of COVID-19 messaging.

Negative thoughts and emotions toward a message can be experienced for a variety of reasons; therefore, the extent to which they are related to freedom threat perceptions must be considered to confirm that they can in fact be conceptualized as reactance. Indeed, researchers assert that reactance should be modeled as a two-step process, with antecedents first triggering perceptions of freedom threat, which in turn elicits reactance (Reynolds-Tylus, 2019). Therefore:

**H2:** Freedom threat perceptions will be positively associated with reactance.

Persuasive health messages may also produce unintended effects – namely, reactance – if a target audience experiences message fatigue. Conceptualized as exhaustion due to repeated, prolonged exposure to similar messages about a health concern, message fatigue is a motivational state that can trigger resistance to health behavior (So et al., 2017). Researchers forewarned the risk of fatigue toward COVID-19 messaging due to the “repeated messages carrying reminders of safe distancing practices, hand washing, wearing of masks, staying home, potential COVID-19 complications, and daily updates of morbidity and mortality data through various national and professional mass media channels” (Koh et al., 2020, p. 1). Along these lines, resistance toward COVID-19 recommendations may be explained in part by message fatigue because when individuals hear the same message they have been trying to avoid, they may become resistant toward the health message (Baseman et al., 2013). Indeed, message fatigue manifests through active or passive resistance, which in turn decreases intention to adopt important health behaviors (Kim & So, 2017). For example, Kinnick et al. (1996) found that the
presence of mass-mediated compassion fatigue significantly decreased the impact of persuasive messaging on social issues. Moreover, reactance has been shown to mediate the link between message fatigue and resistance toward anti-obesity messaging (Kim & So, 2017) and bystander intervention (Reynolds-Tylus et al., 2020). As such:

H3: Message fatigue will be positively associated with freedom threat perceptions of COVID-19 messaging.

After experiencing reactance, individuals are motivated to restore their autonomy in a variety of ways, such as adopting adverse attitudes, behavioral intentions, and appraisals of messages and message sources (see Reynolds-Tylus, 2019; Rosenberg & Siegel, 2018). Recently, researchers experimentally linked reactance to behavioral resistance; Al-Ghaithi et al. (2019) found that participants experiencing heightened reactance signed a petition opposing behaviors recommended by an influence attempt. It appears that behavioral resistance is also present in the context of preventing and slowing the spread of COVID-19, evidenced by stories of individuals’ refusal to wear masks or follow social distancing guidelines that have circulated in the news during the pandemic (e.g., Andrew, 2020; McKelvey, 2020). It may be the case that individuals’ experience of reactance toward COVID-19 messaging negatively affects their adherence to these recommended – or, in some cases, required – behaviors. Therefore:

H4: Reactance will be negatively associated with adherence to COVID-19 prevention behavior.

Method

Participants and Procedures

Participants (N = 268) were current residents of the U.S. who were 18 years of age or older (see Table 1 for participant demographics as well as study variable means and standard
deviations organized by subgroup) and ranged in age from 18 to 81 ($M = 39.61$, $SD = 20.86$). The majority of the sample self-identified as White/Caucasian (78.4%) and female (72.8%). Participants represented 24 different states across the U.S., with the majority residing in California (59.0%). When asked about political affiliation, about half of the sample self-identified as Democrat (49.3%). Thirty-five percent of the sample reported meeting criteria that increase the risk for COVID-19 complications (e.g., 65+ years of age, immunocompromised, obese; CDC, 2020c). Among these individuals, the average number of risk factors was 1.54 ($SD = 0.84$, range = 1-5), the most frequently reported being that they were age 65 or older ($n = 54$). In addition, 46.3% of participants reported living in a household with at least one high-risk individual. Among these households, the household member had on average 1.73 risk factors ($SD = 0.99$, range = 1-6); the most frequently reported were 65 years of age or older ($n = 64$) and immunocompromised ($n = 45$).

Upon receiving IRB approval, trained undergraduate and graduate Communication students recruited participants by sharing the study information via social media and personal networks. Individuals who accessed the Qualtrics survey provided informed consent and then were asked about issue importance and message fatigue regarding COVID-19 messaging. Next, participants were instructed to write about a message they received about how to behave during the COVID-19 pandemic. We noted that this message could include guidelines, recommendations, or restrictions about what to do or what not to do, and that they did not have to agree with the message. Participants reported on a COVID-19 message they received from either a government official (e.g., President Trump, Vice President Pence, a state governor; $n = 88$), health organization/health organization official (e.g., the CDC, White House Coronavirus Task Force member Dr. Anthony Fauci; $n = 41$), or a news source (e.g., NPR, Fox News, CNN,
local news; \( n = 139 \). Participants were then instructed to complete a host of scales (detailed below) “based on how you feel and what you think about the COVID-19 message you wrote about.” The survey took approximately 15 minutes to complete.

**Instrumentation**

**Issue importance.** Issue importance regarding COVID-19 was assessed using four items from Quick and Stephenson (2007) that were adapted to reflect the issue of COVID-19 (e.g., “I think about COVID-19 a great deal,” “COVID-19 is a priority for me”). Items were rated on a scale from 1 (strongly disagree) to 7 (strongly agree).

**Message fatigue.** Fatigue related to COVID-19 messaging was assessed using the four-item exhaustion subscale from So et al.’s (2017) message fatigue scale. Items were adapted to COVID-19 messaging (e.g., “I am burned out from hearing that COVID-19 is a serious problem,” “I am sick of hearing about consequences of COVID-19”) and rated on a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

**Perceived freedom threat.** Individuals’ freedom threat perceptions toward the COVID-19 message they described were assessed using Dillard and Shen’s (2005) four-item Likert scale (e.g., “The message threatened my freedom to choose,” “The message tried to pressure me”). Items were rated on a scale from 1 (strongly disagree) to 7 (strongly agree).

**Reactance.** Participants’ experience of psychological reactance toward the COVID-19 message they described was operationalized as a combination of anger and negative cognitions (Quick, 2012). To assess anger, participants rated four items from Dillard and Shen (2005) on a scale from 1 (none of this feeling) to 7 (a great deal of this feeling), basing their ratings on the message they received about COVID-19. Items included “I felt irritated,” “I felt angry,” “I felt annoyed,” and “I felt aggravated.” Following Al-Ghaithi et al. (2019), negative cognitions were...
measured using three 7-point semantic differential items based on the thoughts participants had while hearing, seeing, or reading the COVID-19 message (i.e., good/bad, favorable/unfavorable, positive/negative).

**Adherence to COVID-19 prevention behavior.** Ten items were written for this study based on behavioral recommendations from the CDC (2020b) about how to prevent and slow the spread of COVID-19. Participants rated how frequently they followed these behavioral recommendations on a scale from 1 (never) to 7 (very often). To examine the underlying factor structure of the items, we performed an exploratory factor analysis (EFA) with varimax rotation. To be retained, factors were required to: (a) have an eigenvalue greater than one, (b) fall above the break point on the scree plot, (c) comprise at least three items, and (d) have theoretical interpretability (Costello & Osbourne, 2005). Cut-off criteria for factor loadings included primary loadings of 0.60 or greater and secondary loadings lower than 0.40 (Hatcher, 1994).

Based on examination of the eigenvalues and scree plot, the initial EFA yielded a 3-factor solution. However, the third factor had only one item loading above 0.60 and was theoretically uninterpretable; this item was deleted and the EFA was repeated on the remaining nine items. This second EFA revealed a two-factor solution that was theoretically interpretable with appropriate primary and secondary loadings and was thus retained. The five items that loaded on factor one represented adherence to hygiene-related behavior (*hygiene adherence*; e.g., “Use hand sanitizer that contains at least 60% alcohol” and “Avoid touching eyes, nose, and mouth with unwashed hands”) and the four items that loaded on factor two represented adherence to social distancing-related behavior (*social adherence*; e.g., “Put 6 feet of distance between yourself and other people when you go out in public” and “Stay home as much as possible”). These two factors explained 63.15% of the overall variance.
Data Analysis

Hypotheses were tested simultaneously via structural equation modeling with maximum likelihood estimation using Stata 15.0. Model fit was evaluated using the model $\chi^2$, RMSEA with 90% confidence interval, CFI, and SRMR (Goodboy & Kline, 2017; Kline, 2016). Criteria for acceptable model fit includes (1) a low, ideally nonsignificant $\chi^2$, (2) RMSEA < .08, (3) CFI > .90, and (4) SRMR < .09 (good model fit: RMSEA < .06, CFI > .95, SRMR < .08; Hu & Bentler, 1999).

Results

See Table 2 for correlations between study variables. The hypothesized structural equation model contained eight latent variables: issue involvement, message fatigue, perceived freedom threat, anger, negative cognitions, reactance (i.e., a second-order latent variable comprised of anger and negative cognitions), hygiene adherence, and social adherence. Covariates included in the model and treated as observed variables were message source, gender, political affiliation, and whether the participant had at least one risk factor for COVID-19. A confirmatory factor analysis demonstrated acceptable fit for the hypothesized model, $\chi^2(429, N = 233) = 817.76, p < .001$, RMSEA = .062 (90% CI = .056, .069), CFI = .916, SRMR = .085 (see Figure 1 for unstandardized path coefficients [UPC] and standardized path coefficients [SPC]).

H1, which predicted that issue importance would be related negatively to perceived freedom threat, was supported (UPC = -.26, SPC = -.18, $p = .01$). As predicted by H2, message fatigue was related positively to perceived freedom threat (UPC = .45, SPC = .55, $p < .001$). Perceived freedom threat was related positively to reactance, which was modeled as a combination of anger and negative cognitions (UPC = .80, SPC = .86, $p < .001$), supporting H3.
H4 was also supported; reactance was related negatively to adherence to both hygiene behavior (UPC = -.10, SPC = -.22, \( p = .006 \)) and social behavior (UPC = -.44, SPC = -.46, \( p < .001 \)).

In addition to direct relationships between variables, we also examined indirect effects in the structural model using 95% confidence intervals. Confidence intervals that did not contain zero indicated mediation. Examination of the indirect effects indicated: (a) freedom threat mediated the relationship between issue importance and reactance (95% CI -.382, -.034) as well as message fatigue and reactance (95% CI .246, .481); (b) reactance mediated the relationship between freedom threat and hygiene adherence (95% CI -.141, -.019) as well as between freedom threat and social adherence (95% CI -.478, -.221); and (c) freedom threat and reactance serially mediated the relationships between issue importance and social adherence (95% CI .009, .172), message fatigue and social adherence (95% CI -.228, -.089), and message fatigue and hygiene adherence (95% CI -.065, -.007). Perceived freedom threat and reactance did not serially mediate the relationship between issue importance and hygiene adherence (95% CI -.003, .044).

**Post Hoc Analysis**

Because differences in political affiliation may affect antecedents of the reactance process (e.g., Reynolds-Tylus et al., 2020), an analysis of variance (ANOVA) was used post hoc to examine differences in message fatigue and issue importance among political ideologies. Levene’s test indicated that the data violated the assumption of homogeneity of variance (message fatigue, \( F[2, 244] = 4.09, p = .02 \); issue importance, \( F[2, 243] = 9.78, p < .001 \)), so adjustments were made using Welch’s adjusted \( F \)-ratio and Games-Howell was used for post hoc comparisons. ANOVA results revealed significant differences among political ideologies in both message fatigue, \( F(2, 104.67) = 25.08, p < .001, \eta^2 = .18 \), and issue importance, \( F(2, 97.95) = 10.71, p < .001, \eta^2 = .09 \). Specifically, Democrats scored significantly lower in message fatigue
(M = 2.88, SD = 1.44) than both Independents (M = 3.67, SD = 1.70) and Republicans (M = 4.57, SD = 1.71); the difference between Independents and Republicans was also significant. Additionally, Democrats scored significantly higher in issue importance (M = 6.05, SD = 0.86) than both Independents (M = 5.51, SD = 1.10) and Republicans (M = 5.32, SD = 1.39).

**Discussion**

During a time of prolific health and risk communication in response to the COVID-19 pandemic, the current study applied PRT (Brehm, 1966) to examine how particular messaging factors (i.e., issue importance, message fatigue) are linked to perceived freedom threat, reactance, and resistance toward behaviors known to prevent and slow the spread of COVID-19. As predicted, greater perceived freedom threat toward COVID-19 messaging was predicted by lower perceptions of COVID-19 as an important issue and greater message fatigue. The model also supported our prediction that as freedom threat increases, reactance (i.e., anger and negative cognitions) also increases. Finally, we found that increased reactance toward COVID-19 messaging is linked to lower adherence to both social- and hygiene-related COVID-19 prevention behavior. In the discussion that follows, we address how these results extend PRT research to crisis and risk communication and provide practical implications for creating effective emergency pandemic health messaging. Importantly, these practical take-aways account for mitigating reactance while simultaneously not contributing to message fatigue.

Results of H1 indicated that as perceptions of COVID-19 as an important issue increased, freedom threat toward COVID-19 messages decreased; however, mediation analyses yielded serial mediation for the relationship between issue importance and social adherence, but not hygiene adherence. This mixed support may be due to two patterns found in existing research on this tenet. First, there is some variety with how issue importance has been operationalized in
previous reactance research. For example, Quick and Bates (2010) operationalized importance (a) behaviorally (i.e., frequency of alcohol consumption) and (b) as perceived risk. Whereas alcohol consumption was related positively with perceived freedom threat, perceived risk was not associated with freedom threat. Alternately, other studies have assessed issue importance with the Likert scale from Quick and Stephenson (2007) used in the current study (e.g., Al-Ghaithi et al., 2019; Quick et al., 2011). Second, it may be the case that issue importance must interact with message features to meaningfully influence the reactance process. Indeed, in the few studies on the role of issue importance in the reactance process, the influence of this variable was limited to its interaction with other variables. Bensley and Wu (1991) found that heavy drinkers (i.e., higher issue importance) who received a high-threat message restricting alcohol consumption rated the message more negatively and exhibited more boomerang effects than comparison groups. Further, Quick et al. (2011) found that issue involvement was not a significant predictor of freedom threat on its own and that the variable “appears to moderate a perceived freedom threat, but only when trait reactance and freedom-threatening message were considered” (p. 674). Future PRT studies that consider the role of issue importance should utilize a consistent operationalization and confirm whether this variable is meaningful only when combined with other message features. Nonetheless, there is preliminary evidence that increasing perceptions of issue importance about COVID-19 may mitigate the reactance process.

This study also examined the role of message fatigue in the reactance process, finding that greater levels of exhaustion of COVID-19 messaging was linked to a heightened experience of the reactance process (H2). This result contributes to previous research indicating that ineffective messaging due to message fatigue subsequently decreases adherence (Baseman et al., 2013; Koh et al., 2020) and that reactance is an explanatory mechanism for this process (Kim &
So, 2017; Reynolds-Tylus et al., 2020). Moreover, the link between exhaustion and reactance toward COVID-19 messaging illuminates a critical point for public health practitioners attempting to increase adherence during the pandemic: on the one hand, it is necessary to continue to provide the public with updated information and guidance related to COVID-19 as the pandemic progresses and knowledge of the virus increases, but on the other, prolonged message exposure increases the likelihood that audiences will become fatigued (So et al., 2017) and experience reactance-related nonadherence, as evidenced in this study.

To combat message fatigue toward COVID-19 updates, it is important to introduce novel ways of communicating about the pandemic. For example, messaging may benefit from compelling narratives to decrease perceived freedom threat (Gardner & Leshner, 2016) as well as reducing repetitive sayings such as “stop the spread” or “stay at home.” Another avenue may be to consider that some target audiences are more prone to message fatigue, especially regarding mass media coverage. Similar to Reynolds-Tylus et al. (2020), our post hoc results indicated differences in message fatigue based on political affiliation such that Republicans and Independents scored significantly higher than Democrats in message fatigue. Additionally, our post hoc analysis revealed that Democrats rated the issue of COVID-19 significantly higher in importance than Republicans and Independents. Perhaps these differences can be attributed to the perceived liberal media bias coverage by many Republicans, evidenced in a recent Gallup finding that only 10% of Republicans trust the mass media “a great deal” or “a fair amount” to report the news accurately and fairly in comparison to 73% of Democrats (Brenan, 2020).

Indeed, Zhao et al. (2020) found that COVID-19 prevention behavior was “dived along media bias lines” (p. 9) such that people who trust a right-leaning media source (i.e., Fox News) exhibited fewer preventive behaviors and more risky behaviors related to COVID-19 than those
who trust a left-leaning source (i.e., CNN). Ultimately, these findings stress the importance of nonpartisan messaging during a public health crisis.

Support for H3 and H4 reinforces the links between perceived freedom threat, reactance, and resistance to health recommendations that are well established within the reactance literature (see Reynolds-Tylus, 2019), but also extends these associations to the context of health risk and crisis messaging. To date, there is a paucity of research exploring how reactance functions surrounding emergency situations (for an exception, see Reynolds-Tylus & Gonzalez, 2020). It appears that even during a pandemic, threats to free behavior still trigger reactance and resistance toward behaviors that are imperative to eliminating the spread of a virus. Future studies should examine other ways that reactance manifests as freedom restoration in this context beyond direct (non)adherence for a fuller picture of how individuals restore their threatened freedom. For example, individuals may also engage in indirect forms of freedom restoration (e.g., discrediting public health or government officials, disparaging those who wear masks) as well as vicarious freedom restoration (e.g., socializing with people who do not adhere to recommendations, attending “Coronavirus parties”).

Although the current results indicated that reactance to COVID-19 messaging decreased adherence to both hygiene-related behavior (e.g., washing hands for at least 20 seconds) and social-related behavior (e.g., staying away from other people as much as possible), it is noteworthy that the negative relationship between reactance and social adherence was stronger than that between reactance and hygiene adherence. This result reflects the PRT corollary that the magnitude of a request influences the experience of reactance (Brehm, 1966). Whereas many individuals engage in hygiene adherence behaviors (e.g., washing hands often with soap and water, not touching your face with unwashed hands) outside of a pandemic to stay healthy, social
adherence behaviors appear to constitute a larger request. In a similar vein, Rains and Turner (2007) found that larger behavioral demands related to preventing the spread of illness on a college campus (e.g., donating $250 each semester for a sanitization company to sanitize campus) triggered more reactance than smaller requests (e.g., wiping down public computers with university-provided cleaning products). Although avoiding reactance across COVID-19 messaging is desirable, public health officials should consider that reactance is more likely to occur in response to messages that restrict social-related behavior like staying away from people as much as possible and putting six feet of distance between oneself and others.

The finding that reactance is more strongly related to social adherence than hygiene adherence also yields practical implications for COVID-19 messaging as it pertains to asymptomatic cases, the “Achilles’ heel of COVID-19 pandemic control” (Gandhi et al., 2020, p. 2159). Individuals can be asymptomatic but test positive for the virus, unknowingly spreading the disease to loved ones; as such, there is an increased push for social behaviors like social distancing and mask wearing while in public (CDC, 2020b; Gandhi et al., 2020). Future COVID-19 messaging should place importance on social responsibility to circumvent reactance, as messaging that conveys the impact of health behavior on friends or family (i.e., other-referencing) elicits lower reactance and higher compliance than messages conveying the consequences to oneself (i.e., self-referencing; Gardner & Leshner, 2016). Other-referencing messages could be particularly advantageous when targeting adolescents and college-aged individuals who tend to be more social, are more likely than other age groups to be asymptomatic (Kronbichlera et al., 2020), and are prone to heightened levels of reactance (Al-Ghaithi et al., 2019).
This study is not without limitations. First, the use of only the exhaustion subscale of So et al.’s (2017) message fatigue scale is a limitation as message fatigue is a multidimensional construct. Second, although we directed participants to respond to all survey items relevant to the reactance process based on their reactions to a particular message they received about how to behave during the pandemic, it may be the case that they responded based on their behavior in general and/or before receiving this message. Third, although having participants reflect on COVID-19 messaging that they encountered during their real-life experience of the pandemic offers some external validity that is often noted as a limitation of reactance research implementing hypothetical scenarios (e.g., Tian et al., 2020), this method allows for uncontrolled variability in our results. Future research should experimentally test message factors (e.g., narrative, other-referencing) and exposure to repetitive messaging (i.e., message fatigue) to confirm whether these factors influence reactance toward COVID-19 messaging.

Finally, the sample is relatively wealthy, and the majority reside in California, a largely democratic state. Especially considering the impact of political affiliation on the reactance process demonstrated in the current and previous studies (e.g., Reynolds-Tylus et al., 2020), our results may have yielded higher means for message fatigue, lower means for issue importance, and higher freedom threat perceptions of COVID-19 messaging with a larger subsample of Republicans. Given that the size of some subgroups in the current study are too small for meaningful comparisons, replication is desirable to determine whether the current results are generalizable to all Americans. Nonetheless, the implication that increasing issue importance and decreasing message fatigue toward COVID-19 messaging may reduce reactance and subsequently increase adherence contributes to preliminary evidence of COVID-19 message features that show promise in effectively promoting behaviors that will alleviate the pandemic.
References


https://doi.org/10.1016/j.arcmed.2020.06.014


https://doi.org/10.1016/j.ijid.2020.06.052


https://doi.org/10.1080/10410236.2011.567446


https://doi.org/10.1080/10810730.2010.499593


https://doi.org/10.1080/08824090701304840


Figure 1

*Structural Equation Model*

Note. Numbers represent unstandardized estimates listed first followed by standardized estimates in parentheses. For simplicity of model presentation, error terms, observed items, and covariates (i.e., message source, gender, political affiliation, and whether the individual had a COVID-19 risk factor regressed on all endogenous variables) are not included in the figure. * p < .05, ** p < .01, † p < .001. $\chi^2(429, N = 233) = 817.76, p < .001$; RMSEA = .062 (90% CI = .056, .069); CFI = .916; SRMR = .085.
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<th>$n$ (%)</th>
<th>Issue Importance</th>
<th>Message Fatigue</th>
<th>Reactance&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Hygiene Adherence</th>
<th>Social Adherence</th>
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<tr>
<td><strong>Sex</strong></td>
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<tr>
<td>Female</td>
<td>195 (72.8)</td>
<td>5.89 (0.94)</td>
<td>3.28 (1.62)</td>
<td>2.41 (1.53)</td>
<td>5.83 (0.86)</td>
<td>6.01 (0.94)</td>
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<tr>
<td>Male</td>
<td>72 (26.9)</td>
<td>5.43 (1.39)</td>
<td>4.13 (1.80)</td>
<td>2.87 (1.46)</td>
<td>5.36 (1.03)</td>
<td>5.45 (1.37)</td>
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<td><strong>Ethnicity</strong></td>
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<tr>
<td>Asian/Asian American</td>
<td>28 (10.4)</td>
<td>6.16 (0.93)</td>
<td>3.21 (1.57)</td>
<td>2.20 (1.30)</td>
<td>5.86 (0.81)</td>
<td>5.96 (0.90)</td>
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<tr>
<td>Black/African American</td>
<td>12 (4.5)</td>
<td>5.08 (1.63)</td>
<td>3.73 (1.55)</td>
<td>2.90 (1.59)</td>
<td>5.77 (0.98)</td>
<td>5.63 (0.99)</td>
</tr>
<tr>
<td>Hispanic/Latino(a)</td>
<td>20 (7.5)</td>
<td>5.84 (0.97)</td>
<td>3.32 (1.47)</td>
<td>2.31 (1.54)</td>
<td>6.10 (0.82)</td>
<td>5.98 (1.17)</td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>10 (3.7)</td>
<td>5.63 (0.67)</td>
<td>3.95 (1.37)</td>
<td>2.67 (1.35)</td>
<td>5.48 (1.19)</td>
<td>5.78 (0.97)</td>
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<tr>
<td>White/Caucasian</td>
<td>210 (78.4)</td>
<td>5.72 (1.10)</td>
<td>3.56 (1.76)</td>
<td>2.57 (1.52)</td>
<td>5.60 (0.95)</td>
<td>5.82 (1.15)</td>
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<tr>
<td>Work full-time</td>
<td>85 (31.7)</td>
<td>5.72 (1.22)</td>
<td>3.62 (1.73)</td>
<td>2.37 (1.48)</td>
<td>5.80 (1.00)</td>
<td>5.80 (1.29)</td>
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<tr>
<td>Work part-time</td>
<td>41 (15.3)</td>
<td>6.07 (0.72)</td>
<td>3.44 (1.57)</td>
<td>2.67 (1.65)</td>
<td>5.76 (0.91)</td>
<td>5.82 (0.89)</td>
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<tr>
<td>Student</td>
<td>71 (26.5)</td>
<td>5.62 (1.26)</td>
<td>3.69 (1.81)</td>
<td>2.74 (1.62)</td>
<td>5.59 (0.92)</td>
<td>5.81 (1.18)</td>
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<tr>
<td>Not employed, retired</td>
<td>70 (26.1)</td>
<td>5.75 (0.90)</td>
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<td>2.52 (1.47)</td>
<td>5.68 (0.88)</td>
<td>6.01 (0.86)</td>
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<tr>
<td>Under $20,000</td>
<td>20 (7.4)</td>
<td>5.93 (1.04)</td>
<td>3.56 (1.53)</td>
<td>2.30 (1.49)</td>
<td>5.80 (0.77)</td>
<td>6.08 (0.82)</td>
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<tr>
<td>$20,000-$49,999</td>
<td>26 (9.7)</td>
<td>5.75 (0.92)</td>
<td>3.62 (1.78)</td>
<td>2.64 (1.66)</td>
<td>5.48 (0.98)</td>
<td>6.09 (1.04)</td>
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<tr>
<td>$50,000-$74,999</td>
<td>31 (11.6)</td>
<td>5.73 (0.97)</td>
<td>3.02 (1.40)</td>
<td>2.51 (1.45)</td>
<td>5.64 (1.02)</td>
<td>6.03 (1.11)</td>
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<tr>
<td>$75,000-$99,999</td>
<td>20 (7.5)</td>
<td>5.85 (1.08)</td>
<td>2.80 (1.49)</td>
<td>2.00 (1.38)</td>
<td>5.71 (1.09)</td>
<td>6.36 (0.53)</td>
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<tr>
<td>$100,000-$149,999</td>
<td>44 (16.4)</td>
<td>5.77 (1.42)</td>
<td>3.39 (1.63)</td>
<td>2.36 (1.61)</td>
<td>5.85 (0.73)</td>
<td>5.73 (1.30)</td>
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<td>$150,000 or more</td>
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<td>5.73 (1.09)</td>
<td>3.76 (1.84)</td>
<td>2.80 (1.66)</td>
<td>5.68 (0.91)</td>
<td>5.75 (1.15)</td>
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<tr>
<td>I prefer not to answer</td>
<td>52 (19.4)</td>
<td>5.71 (1.01)</td>
<td>3.74 (1.79)</td>
<td>2.65 (1.37)</td>
<td>5.73 (1.05)</td>
<td>5.63 (1.07)</td>
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<td><strong>Geographical Location</strong></td>
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<tr>
<td>West</td>
<td>200 (74.7)</td>
<td>5.78 (1.09)</td>
<td>3.45 (1.72)</td>
<td>2.46 (1.51)</td>
<td>5.70 (0.92)</td>
<td>5.89 (1.08)</td>
</tr>
<tr>
<td>Midwest</td>
<td>7 (2.6)</td>
<td>5.64 (0.66)</td>
<td>4.54 (1.47)</td>
<td>2.65 (1.88)</td>
<td>5.49 (1.10)</td>
<td>5.68 (1.11)</td>
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<tr>
<td>South</td>
<td>40 (14.8)</td>
<td>5.74 (1.13)</td>
<td>3.65 (1.55)</td>
<td>2.85 (1.66)</td>
<td>5.87 (0.89)</td>
<td>5.72 (1.16)</td>
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<tr>
<td>Northeast</td>
<td>10 (3.7)</td>
<td>6.13 (0.88)</td>
<td>2.90 (1.58)</td>
<td>2.25 (1.22)</td>
<td>5.82 (0.93)</td>
<td>6.33 (0.61)</td>
</tr>
<tr>
<td><strong>Political Affiliation</strong></td>
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<tr>
<td>Republican</td>
<td>68 (25.4)</td>
<td>5.32 (1.39)</td>
<td>4.57 (1.71)</td>
<td>3.33 (1.63)</td>
<td>5.61 (0.95)</td>
<td>5.24 (1.34)</td>
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<tr>
<td>Democrat</td>
<td>132 (49.3)</td>
<td>6.05 (0.86)</td>
<td>2.88 (1.44)</td>
<td>1.99 (1.25)</td>
<td>5.73 (0.89)</td>
<td>6.17 (0.86)</td>
</tr>
<tr>
<td>Independent</td>
<td>50 (18.7)</td>
<td>5.51 (1.10)</td>
<td>3.67 (1.70)</td>
<td>3.04 (1.60)</td>
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<td>Other</td>
<td>16 (6.0)</td>
<td>5.91 (0.56)</td>
<td>3.66 (1.30)</td>
<td>2.60 (1.52)</td>
<td>5.55 (0.73)</td>
<td>5.88 (0.81)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Participants could select more than one category. <sup>b</sup> Reactance was computed by averaging scores on the anger and negative cognition scales.
Table 2

Scale information and correlations between study variables

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<th>α</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
<tr>
<td>1. Issue importance</td>
<td>5.76</td>
<td>1.09</td>
<td>.80</td>
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</tr>
<tr>
<td>2. Message fatigue</td>
<td>3.50</td>
<td>1.70</td>
<td>.89</td>
<td>-.48†</td>
<td></td>
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</tr>
<tr>
<td>3. Freedom threat</td>
<td>2.75</td>
<td>1.62</td>
<td>.86</td>
<td>-.41†</td>
<td>.62†</td>
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<td>4. Anger</td>
<td>2.22</td>
<td>1.63</td>
<td>.94</td>
<td>-.29†</td>
<td>.45†</td>
<td>.62†</td>
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<td>5. Negative cognitions</td>
<td>2.96</td>
<td>1.84</td>
<td>.95</td>
<td>-.36†</td>
<td>.47†</td>
<td>.58†</td>
<td>.64†</td>
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</tr>
<tr>
<td>6. Hygiene adherence</td>
<td>5.71</td>
<td>0.93</td>
<td>.78</td>
<td>-.28†</td>
<td>-.18**</td>
<td>-.10</td>
<td>-.22**</td>
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<tr>
<td>7. Social adherence</td>
<td>5.86</td>
<td>1.10</td>
<td>.87</td>
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<td>-.49†</td>
<td>-.30†</td>
<td>-.40†</td>
<td>.48†</td>
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</tr>
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</table>

Note. *p < .05, **p < .01, †p < .001. Two-tailed.