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**Extending Psychological Reactance Theory to Include Denial of Threat and Media Sharing
Intentions as Freedom Restoration Behavior**

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Abstract

This study extends psychological reactance theory by examining denial of a public health threat and resistance toward media sharing as two novel types of freedom restoration. Participants ($N = 220$) were randomly assigned to watch a video advocating COVID-19 guidelines and completed an online survey assessing corresponding perceptions and behavioral intentions. Results of structural equation modeling supported the two-step model of reactance: greater perceived freedom threat was related to greater reactance, which in turn was linked to lower intentions to comply with COVID-19 guidelines, lower intentions to share the video with one's online social network, and greater denial of COVID-19 as a public health threat. Implications for psychological reactance theory and health campaign design are discussed.

Keywords: psychological reactance theory, freedom restoration, denial of threat, media sharing, COVID-19

Extending Psychological Reactance Theory to Include

Denial of Threat and Media Sharing Intentions as Freedom Restoration Behavior

With the prioritization of understanding unintended effects of health campaigns (Cho & Salmon, 2007), psychological reactance theory (PRT; Brehm, 1966) has helped health communication researchers and campaign designers explain why and how individuals resist persuasive messaging. Despite considerable early research on the host of undesirable outcomes attributed to the experience of reactance (i.e., freedom restoration behavior; see Reynolds-Tylus, 2019), PRT research largely relies on attitudes and direct resistance as outcomes of interest (Quick & Stephenson, 2007), limiting the utility of PRT in predicting how persuasive health messaging backfires. Toward a more holistic understanding of outcomes beyond direct resistance, the current study explores two potential freedom restoration behaviors not yet empirically examined: denying the existence of a threat and resistance toward media sharing.

PRT (Brehm, 1966) comprises four central constructs. First, *free behavior* is any action individuals acknowledge and believe they can act upon. Second, PRT requires a *perceived freedom threat*, which occurs when an external stimulus (e.g., persuasive request) is perceived to hinder or eliminate one's free behavior (Reynolds-Tylus, 2019). Third, perceived freedom threat triggers *psychological reactance* (i.e., anger and negative cognitions toward the threat; Rosenberg & Siegel, 2018). Fourth, reactance motivates individuals to engage in *freedom restoration behavior* (FRB) to regain their sense of freedom (Dillard & Shen, 2005).

PRT is modeled as a two-step process (i.e., a persuasive attempt first triggers perceived freedom threat, which elicits reactance) to ensure that anger and negative cognitions can be attributed to reactance (Reynolds-Tylus, 2019). Thus, we must first confirm this association to then examine the extent to which reactance is related to FRB in a given context. A timely health

context in which FRB has been evidenced is COVID-19; throughout the pandemic, many Americans have resisted recommendations from the Centers for Disease Control and Prevention (CDC) such as mask wearing, social distancing, and vaccination (Kaiser Family Foundation [KFF], 2021; Pietsch, 2020). Due to the severity of COVID-19 as a public health risk, it is relevant for health communication researchers to identify not only why Americans are resistant, but also how FRB manifests in response to COVID-19 messaging. Given evidence that greater perceived freedom threat towards COVID-19 messaging is linked to greater reactance (Ball & Wozniak, 2021), we predict:

H1: Perceived freedom threat toward messaging about COVID-19 guidelines is positively related to reactance.

Upon experiencing reactance, individuals restore their autonomy via FRB (Brehm, 1966), which can occur directly or indirectly. The link between reactance and direct FRB (i.e., resisting the recommended behavior) has received overwhelming empirical support (see Reynolds-Tylus, 2019), including within the context of COVID-19 prevention behavior. For example, Ball and Wozniak (2021) found that greater reactance was associated with lower adherence to COVID-19 prevention behavior (e.g., hand washing, social distancing). To replicate this finding, we propose:

H2: Reactance is negatively related to intentions to comply with COVID-19 guidelines.

Especially when direct resistance is not feasible (e.g., due to state- or country-wide mask mandates), FRB can occur indirectly (e.g., engaging in behavior tangentially related to the threatened behavior, derogating the message source; Reynolds-Tylus, 2019). Although individuals engaged in indirect FRB may adhere to direct behavioral recommendations, indirect FRB itself has important implications due to the public health risk posed by COVID-19. The

current study extends PRT by examining two types of indirect FRB consistent with the theory's articulation but that have yet to receive empirical support: denying the existence of a threat and resistance toward media sharing.

Denying the existence of a threat to one's freedom was articulated as FRB in early work on PRT and later referenced within freedom-threatening message manipulations (e.g., "stop the denial"; see Reynolds-Tylus, 2019), but not yet empirically examined as FRB. Anecdotal evidence of individuals denying that COVID-19 exists and spreading rhetoric that it is a hoax has circulated the media throughout the duration of the pandemic (e.g., Marples, 2020), with implications for increased public health risk (see Pietsch, 2020). As such, this context is suitable for exploring denial of a threat as a type of FRB. Therefore:

H3: Reactance is positively related to denial of COVID-19 as a public health threat.

Especially considering the prevalence of media-based approaches to COVID-19 messaging (e.g., Riley et al., 2021), a novel consideration is whether reactance inhibits media-based health messaging – specifically, message sharing on social networking sites (SNSs). World health agencies have used SNSs to disseminate messaging about COVID-19 health risk, curb misinformation, and share information and policy updates (Mohamad, 2020). Additionally, use of SNSs enables electronic sharing with one's online social network, which allows target audiences to receive important health information from trustworthy social media connections (Abroms & LeFebvre, 2009) thereby promoting attitudes toward health behavior with wide reach (Pedersen et al., 2020). As such, COVID-19 health guidelines may be more widely received through SNSs – unless reactance toward these messages inhibits sharing. Given that health communication research has yet to explore the relationship between reactance and sharing on SNSs, we pose the following:

RQ: Is reactance related to intentions to share messaging about COVID-19 guidelines via SNSs?

Method

Participants and Procedures

Participants ($N = 220$) were U.S. residents ranging in age from 18 to 80 years ($M = 31.81$, $SD = 17.00$). Most participants identified as women (68.2%) and White (78.6%), with many affiliated with the Democratic party (45.9%; Independent, 28.2%; Republican, 19.5%; other, 5.5%). Most participants reported being vaccinated against COVID-19 (77.7%; unvaccinated, 14.1%; unvaccinated but had an appointment scheduled at the time of the study, 7.3%) and had not previously been diagnosed with COVID-19 (75.5%; previously diagnosed, 19.1%; unsure/prefer not to say, 5.0%).

Following institutional review board approval, trained undergraduate students recruited participants via social media. Individuals who chose to participate were directed to an anonymous Qualtrics survey and provided informed consent. Participants watched a video stimulus, completed a 10-minute questionnaire on components of PRT (see Instrumentation below), and provided basic demographic information.

Video Message

Participants were randomly assigned to one of three video messages advocating recommendations from the CDC to mitigate the spread of COVID-19 (e.g., wash hands, wear mask in public). As a part of a larger study, the three videos had features specific to entertainment qualities (hedonic media, non-hedonic media, and control media) and were tested to trigger the reactance process. Each video was approximately 60 seconds in length.

Instrumentation

Perceived Freedom Threat. Perceived freedom threat was measured using Dillard and Shen's (2005) four-item scale, which participants rated from 1 = *strongly disagree* to 7 = *strongly agree*. A sample item included "The message threatened my freedom to choose" ($\alpha = .91, M = 2.13, SD = 1.38$).

Reactance. Following Rosenberg and Siegel (2018), reactance was operationalized as a combination of anger and negative cognitions. For anger, participants rated four items regarding the extent to which they experienced specific emotions while watching the video using a 7-point Likert scale (e.g., aggravated, angry; Dillard & Shen, 2005; $\alpha = .85, M = 1.63, SD = 1.03$). Negative cognitions were assessed with three items rated on a 7-point semantic differential scale using the stem "The thoughts you had while watching the video were _____" (e.g., favorable/unfavorable; Al-Ghaithi et al., 2019; $\alpha = .91, M = 2.91, SD = 1.49$).

Behavioral Intentions. Following Dillard and Shen (2005), behavioral intentions were rated on a 100-point scale ranging from 1 = *definitely will not* to 100 = *definitely will*. For intentions to comply with COVID-19 guidelines, participants rated four items on the extent to which they intend to engage in behaviors recommended in the video (e.g., "I intend to wash my hands"; $\alpha = .92, M = 84.24, SD = 23.02$). For intentions to share on social media, participants rated four items on the extent to which they would share the video message via SNSs (e.g., "If I saw this video on social media, I would repost it to my profile"; $\alpha = .92, M = 32.57, SD = 31.78$).

Denial of COVID-19 as a Threat. Denial of COVID-19 as a public health threat was assessed using the five-item version of Maridor et al.'s (2017) Skepticism toward Emerging Infectious Diseases Scale. Items were adapted by replacing "emerging diseases" with "COVID-19" (e.g., "I doubt that COVID-19 poses a critical threat to the general public") and rated from 1 = *strongly disagree* to 7 = *strongly agree* ($\alpha = .71, M = 2.77, SD = 1.18$).

Data Analysis

Hypotheses were tested via structural equation modeling with maximum likelihood estimation using Stata 15.0. Model fit was evaluated using the model χ^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 χ^2 , (2) RMSEA < .08, (3) CFI > .90, and (4) SRMR < .09 (good model fit: RMSEA < .06, CFI > .95, SRMR < .08; Hu & Bentler, 1999).

Results

Preliminary Analyses

The hypothesized model contained one latent variable, reactance, which comprised observed variables anger and negative cognitions. Other observed variables included perceived freedom threat, intention to comply with COVID-19 guidelines, intentions to share on SNSs, and denial that COVID-19 is a public health threat. Covariates, which were dummy coded and included in the model as observed variables predicting each endogenous variable, were political affiliation (Democrat, Independent, Republican, Other), vaccination status (currently vaccinated, not currently vaccinated but scheduled an appointment, not currently vaccinated and no appointment scheduled), gender identity (man, woman), and media type (hedonic, non-hedonic, control).

Fit indices demonstrated poor fit for the initial model, $\chi^2(17) = 37.72, p < .01$, RMSEA = .094 (90% CI = .054, .135), CFI = .921, SRMR = .030. Modification indices suggested that the error terms of anger and negative cognitions should be allowed to covary. Fit indices for this final model demonstrated adequate fit, $\chi^2(16) = 32.25, p < .01$; RMSEA = .086 (90% CI = .042,

.129); CFI = .938; SRMR = .030 (see Figure 1 for unstandardized path coefficients and standardized path coefficients).

Main Analyses

In support of H1, perceived freedom threat was related positively to reactance, which was modeled as a combination of anger and negative cognitions ($b = .32, b^* = .64, p < .001$). H2 and H3 were also both supported; psychological reactance was negatively related to intentions to comply with COVID-19 guidelines ($b = -20.06, b^* = -.56, p < .001$) and positively related to denial of COVID-19 as a threat ($b = 1.00, b^* = .58, p < .001$). For the RQ, reactance was negatively related to intentions to share the video on SNSs ($b = -17.28, b^* = -.39, p < .01$).

In two cases, covariates emerged as significant contributors to these relationships. Regarding political affiliation, participants who identified as Democrat reported lower levels of denial that COVID-19 is a threat ($b = -.51, b^* = -.22, p = .02; M = 2.35, SD = 0.97$) than Independents ($M = 3.03, SD = 1.33$), Republicans ($M = 3.22, SD = 1.11$), and those who responded “Other” ($M = 3.29, SD = 1.11$). Regarding vaccination status, participants who reported that they were unvaccinated and had not scheduled a vaccination appointment reported lower intentions to comply with COVID-19 guidelines ($b = -15.80, b^* = -.24, p = .01; M = 59.76, SD = 35.10$) than those who were already vaccinated ($M = 88.65, SD = 17.30$) and those who had scheduled a vaccination appointment ($M = 83.75, SD = 20.75$).

Indirect Effects

Indirect effects in the structural model were examined using 95% percentile bootstrap confidence intervals based on 5,000 resamples; confidence intervals not containing zero indicated mediation. Reactance mediated relationships between perceived freedom threat and (a) intentions to comply with COVID-19 guidelines (95% bootstrap CI -9.17, -3.68), (b) denial that

COVID-19 is a public health threat (95% bootstrap CI .148, .493), and (c) intentions to share on social media (95% bootstrap CI -8.59, -2.48).

Discussion

This study examined PRT within the context of COVID-19 and extended the theory to two types of indirect FRB. Greater perceived freedom threat toward COVID-19 messaging was related to greater reactance (H1) which in turn was associated with lower intentions to comply with COVID-19 guidelines (H2), providing further support for the two-step model of reactance within this context (Ball & Wozniak, 2021; Quick & Considine, 2008).

Greater reactance was also related to two novel FRBs: greater denial that COVID-19 is a public health threat (H3) and lower intentions to share media about COVID-19 guidelines on SNSs (RQ). Due to overreliance on behavioral intention as freedom restoration (Quick & Stephenson, 2007), considerably less research has explored indirect forms of freedom restoration despite their ability to yield tangential negative implications, as observed within the current health context. The novel contribution of these two types of FRB underscores that, regardless of whether individuals engage in direct FRB, they may engage in behaviors that bolster false rhetoric about a public health threat and/or thwart the spreadability of prosocial online health messaging to restore their sense of autonomy. Future research should continue to examine denial of a threat and social media sharing as types of FRB to establish generalizability across contexts, as there is always possibility for an effect unique to the context (Jackson & Jacobs, 1983).

Additionally, political affiliation and vaccination status emerged as significant contributors to relationships among reactance, denial of COVID-19 as a threat, and intentions to adhere to COVID-19 guidelines. Previous research examining COVID-19 preventative behavior and political affiliation has indicated that Democrats engage in significantly more prevention

than Independents and Republicans for both hygiene-related (e.g., mask wearing) and social-related (e.g., social distancing) behavior (Ball & Wozniak, 2021). This trend also appears within data on COVID-19 vaccination rates; ongoing monitoring of vaccination rates indicates that 91% of Democrats are currently vaccinated, versus only 59% of Republicans and 68% of Independents (KFF, 2021). Considering that Republicans and Independents report significantly higher rates of COVID-19 message fatigue and lower ratings of COVID-19 issue importance (Ball & Wozniak, 2021), the importance of these characteristics within the current study reinforces that particular subgroups of individuals in the U.S. may require tailored COVID-19 messaging to circumvent the reactance process.

Theoretical and Practical Implications

Theoretically, the current study extends PRT by providing evidence for two types of FRB not yet empirically examined: denial of the existence of a public health threat and resistance to share health-related media with one's online social network. Both behaviors align with indirect FRB, which typically includes derogating the message source, engaging in behavior tangentially related to the restricted freedom, and/or vicariously observing others' defiant behavior (Reynolds-Tylus, 2019). Uncovering these additional types of indirect FRB contributes to a more holistic picture of unintended effects that may occur in response to reactance-inducing persuasive health messaging.

Practically, given the importance of assessing unintended effects of health campaigns (Cho & Salmon, 2007), results have implications for health messaging. Evidence of these FRBs increases the priority for message designers to circumvent the reactance process – especially among reactance-prone subgroups – because reactance is associated with outcomes beyond simple direct resistance; that is, greater denial that COVID-19 poses a threat to public health,

despite mounting scientific evidence suggesting otherwise. Notably, adopting a conspiracy mentality is linked to distrust in science and expert recommendations, nonadherence to social norms, underestimation of one's risk, and nonadherence to public health guidelines (see Imhoff & Lamberty, 2020).

Additionally, as technology-mediated communication becomes increasingly ubiquitous (Carr, 2020), health communication researchers must understand what facilitates (and inhibits) message sharing on SNSs. Our findings suggest that greater reactance is associated with decreased intentions to share health-related media with one's online social network. This result is useful for health campaign designers as it offers reactance as an explanatory mechanism for how individuals make cognitive decisions on whether to spread health messages on SNSs. Because the use of SNSs in health campaign messaging is advantageous due to its fast and wide reach in which receiver-sources are able to amplify original messages (Shi et al., 2018), researchers should consider the content of their message and assess its likelihood of eliciting reactance when deciding if SNSs will be a channel central to their campaign.

Limitations

The current investigation is not without limitations. The sample was relatively homogenous, largely comprised of individuals who identify as White and women. Due to the racial disparities in illness severity and morbidity of COVID-19 (Hooper et al., 2020), future studies should include more diversity to gain a fuller picture of how COVID-19 messaging affects perceptions of recommended prevention behaviors. Additionally, data were collected in Spring 2021, around the time the CDC extended COVID-19 vaccine eligibility in the U.S. to all individuals 18 years or older (CDC, 2021), potentially confounding perceptions as to the extent to which prevention behaviors remained necessary when vaccinated. Nonetheless, results

confirm the two-step model of reactance in this context and, most notably, extend PRT by providing empirical support that reactance is associated with two novel types of FRB: greater denial of a public health threat and lower intentions to share media with SNSs.

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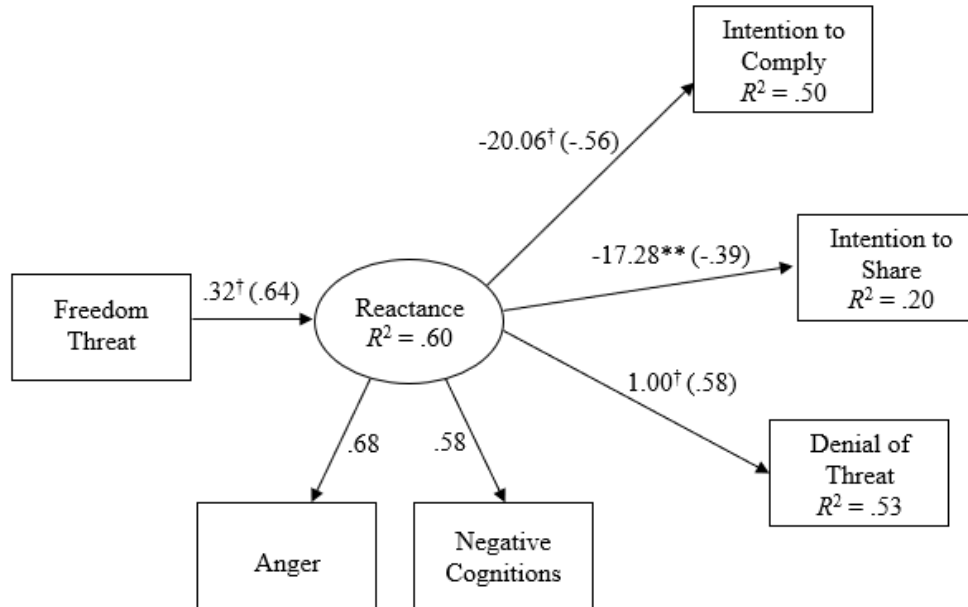
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Figure 1*Structural Equation Model*

Note. Numbers represent unstandardized estimates listed first followed by standardized estimates in parentheses. For simplicity of model presentation, error terms and dummy-coded covariates (i.e., political affiliation, vaccination status, gender identity, and media type) are not included in the figure. * $p < .05$, ** $p < .01$, [†] $p < .001$. $\chi^2(16) = 32.25$, $p < .01$; RMSEA = .086 (90% CI = .042, .129); CFI = .938; SRMR = .030.