Reactance: the combined effect of multiple threatened freedoms and target of restrictions

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Abstract

The current study investigated reactance, specifically, whether an interaction effect exists between the number of threatened freedoms (single vs. multiple) and the target of threats to behavioural freedoms (self-experienced vs. vicarious). Psychological reactance increases in strength as the number and proportion of behavioural freedoms are threatened (Brehm, 1966). Restrictions experienced vicariously elicit a weaker reactant response than if they were to be experienced directly (Steindl et al, 2015). 176 respondents took part in the current study based on a 2 x 2 between-subjects design with the independent variables number of threatened freedoms (single vs. multiple) and target of restrictions (self-experienced vs. vicarious). The dependent variable state reactance was measured with the 10-item Salzburg State Reactance Scale (Sittenthaler et al., 2015). Participants were also asked to respond to three demographic questions. No main effect was found for number of threatened freedoms on reactance. No main effect was found for target of restrictions on reactance. No interaction effect was found between number of threatened freedoms and target of restrictions on reactance. Structural and methodological limitations that may have affected the pattern of results are discussed.

Keywords: reactance, vicarious reactance, threatened freedoms, state reactance, restrictions, behavioural freedom

Reactance: the combined effect of multiple threatened freedoms and target of restrictions

Psychological Reactance Theory (PRT) states that behavioural freedom is the belief that one can engage in a given behaviour (Brehm & Brehm, 1981). When this freedom is threatened, the individual may enter a reactant state, which is characterised by behavioural and cognitive efforts to restore the threatened freedom in conjunction with the experience of negative emotion such as anger and hostility (Brehm, 1966). The goal of reactance is to restore the threatened or restricted freedom, and reactance can translate into a number of different behaviours directed towards the restoration of a freedom. For instance, direct restoration may occur when the restricted behaviour is performed regardless of the restriction and indirect restoration may occur when a threatened person observes another performing a related behaviour. Alternatively, the restricted person may attempt to aggressively force the perpetrator to remove the imposed threat, may derogate the source of the threat or may act in a hostile manner (Brehm, 1966).

Often, due to reactance, people may find themselves in worse positions than they otherwise might have been. For instance, an anti-smoking campaign may include commanding messaging that induces reactance, resulting in increased cigarette consumption (Grandpre et al, 2009). Indeed, commanding messaging has consistently been found to increase the resulting reactant response in the target population (e.g., Brehm, 1966; Miller, 2015). While reactance may result in people making subpar decisions in such situations, a potential explanation for its existence is that it is thought to be a tool used to send social dominance signals to adversaries to maintain dominance in social hierarchies (de Almeida Neto, 2017). When an individual has no say in matters regarding themselves they are considered to be socially submissive. Conversely, acting contrary to recommendations or ignoring advice may convey signals of social dominance, potentially improving the social

standing of the individual in question. Burgoon et al. (2002) argue that reactance is the manifestation of an individual's need for self-determination. This basic need is the result of a desire to perceive ourselves as masters of our own fate. The more freedoms are threatened, and the more important the threatened freedoms are, the more the individual's need for self-determination is undermined and the stronger the reactant response (Burgoon et al, 2002).

In his seminal 1966 paper, Brehm argued that two main factors affect the resulting levels of reactance: the characteristics of the freedom and the characteristics of the threat. With regards to the characteristics of the freedom, as the perceived importance of the threatened freedom increases, reactance will increase. Similarly, as the number of threatened freedoms increases, so too will psychological reactance. With regards to the characteristics of the threat, Brehm argues that more severe threats result in greater reactance. Indeed, Heilman (1976) found that the more intense the influence attempt, the more reactance will be experienced. However, threats of large magnitude sometimes make it very difficult or impossible to continue exercising this freedom and succeed in eliminating this behaviour (Brehm & Brehm, 1981). Following a threat to a behavioural freedom, common responses are physiological arousal accompanied with anger, aggressive feelings and feelings of discomfort (Dillard & Shen, 2005). The precise nature of the experienced negative emotion is in large part dependent on specific characteristics of the threat, such as its legitimacy, its magnitude and whether the individual's freedom was threatened purposefully or not (Brehm & Brehm, 1981). People's perception of a threatening agent also plays a role in determining the resulting levels of reactance: Heller et al. (1973) found that reactance arousal increases when the individual perceives that the threatening agent is trying to influence them.

Threatening high number of freedoms

When a freedom is threatened, other freedoms may indirectly become threatened by implication, triggering a prophylactic reactant response. Brehm (1989) defines this as the implication principle, best described by the phrase 'if they took this freedom from me, what can't they take?'. A reactant response is significantly enhanced by implied threats to other freedoms (Brehm, 1989). If many freedoms were to be threatened, reactance and the accompanying response is expected to be strong: "the magnitude of reactance can be specified as increasing directly with both the number and proportion of freedoms that are threatened or eliminated" (Brehm, 1989, p.72). In an experimental study, Rains and Turner (2007) found that an increase in the magnitude of the threat resulted in increased reactance: in addition to implying a number of additional threats to students' freedoms, the actual threat that was posed (namely the prohibition of alcohol consumption in and around university) resulted in significantly more reactance and a dramatic increase in alcohol consumption. This is known as the boomerang effect, whereby an individual engages in the restricted behaviour in an attempt to restore the restricted freedom.

Vicarious reactance

Brehm (1966) theorised that a threat does not have to directly target an individual to elicit reactance. Instead, observing or reading about a threat to another person's freedom is enough to elicit a reactant response, a phenomenon known as *vicarious reactance*. Steindl et al. (2015) found support for Brehm's theory: observing a threat to another person's freedom results in the person experiencing threat and negative emotions. Based on the results of their study, Andreoli et al. (1974) concluded that vicarious reactance is a result of the anticipation of experiencing the same threat as the one observed.

Both vicarious and direct threats to behavioural freedom trigger reactance, but the work of Sittenthaler et al. (2016) suggests that the processes behind vicarious threats are different to those of threats on the self. When experiencing reactance resulting from direct threats, people have an immediate physiological and affective response. When experiencing threats vicariously, the physiological arousal is delayed, suggesting that the person needs to deliberate before coming to a conclusion (Sittenthaler et al., 2016).

In their study, Sittenthaler et al. (2016) found that cognitive load reduces vicarious reactance. The researchers asked participants to memorise a seven-digit number while perceiving threats to another individuals' freedom, resulting in reduced reactance. They also asked participants to engage in an emotionally distracting task while experiencing behavioural restrictions themselves, once again resulting in reduced reactance. The researchers therefore proposed a dual-process model of reactance, where restrictions on the self result in an instantaneous affective response. Here individuals will experience negative emotions (such as anger) in conjunction with physiological arousal without a time lag (Sittenthaler et al., 2016). Vicarious reactance is more reflective and controlled, and stems from cognitive processes. It results in a delayed physiological response, suggesting that individuals reflect on the situation before reaching a conclusion. Indeed, participants were invited to speak about their experience of Sittenthaler et al.'s study, and those who experienced threats to their behavioural freedom directly tended to allude to emotions and sentiments as explanatory factors, whereas those who experienced behavioural threats vicariously tended to make reference to concepts and ideas by explanation.

The principle proposed by Brehm that is of particular interest in the current study is that increasing the number of threatened freedoms will increase the strength of the reactant response. Considering the findings of Sittenthaler et al. (2016), notably that behavioural threats experienced vicariously are processed and produced through a different system than

behavioural threats experienced directly, the current study seeks to identify whether threatening multiple freedoms will amplify this difference in the experience of reactance .

Aim of the study

While vicarious reactance and posing threats to multiple freedoms are both subjects that have been studied extensively, no prior research has that studied them in combination. The aim of the current study is to identify the effect of threatening multiple behavioural freedoms and to determine whether this effect is different when reactance is experienced vicariously as opposed to self-experienced.

H1: participants in the multiple threatened freedoms conditions will report higher levels of reactance than participants in the single threatened freedom conditions

H2: Participants in the self-experienced restrictions condition will report the higher levels of reactance than participants in the vicarious restriction conditions

H3: There will be an interaction effect between multiple threatened freedoms × self-experienced restrictions, indicating a stronger effect of multiple freedoms threatened on reactance in conditions of self-experienced restrictions compared to conditions of vicarious restrictions.

Method

Participants

The only requirement for participants to take part in the current study was that they be 18 years of age or older. Participants were invited to complete an anonymous online self-

report questionnaire posted on social media pages (Twitter, Facebook, Whatsapp, Instagram). In total, the data of 176 participants was used in the study, of which 97 (55.2%) were female, 74 (42.0%) were male, and 5 (2.8%) listed themselves as 'other'. The age of the participants ranged from 18 to 88. The mean age of participants was 48, and the mode was 25, with a standard deviation of 16.65. Sixteen (9.1%) participants completed compulsory education, 29 participants (16.6%) gained qualification for university entrance and 130 participants (74.3%) were in possession of a university degree.

The sample size was predetermined with $\alpha = .05$, power $(1 - \beta) = .8$, and a small to medium effect size with $r = .2$. There was no existing related research indicating an expectable effect size. We conducted power analyses using G*Power 3.1 (Faul, Erdfelder, Buchner, & Lang, 2009) to identify the number of participants needed to detect a small effect ($\varphi = .2$).Running a power analysis for differences between these two independent proportions using G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) yields a sample size of $N = 199$ for $r\Phi = .39$ with $\alpha = .05$ and $1-\beta$ (power) = .8.

Design and procedure

The current study used a 2 × 2 factorial between-subjects design. The independent variables were number of threatened freedoms (single vs multiple) and the target of restriction (self-experienced or experienced vicariously). The dependent variable in all conditions was the resulting levels of reactance experienced by the participant. In all four scenarios, the threat to participants' behavioural freedom was created by having the participants imagine that the government was imposing restrictions to curb COVID-19 cases. The self-experienced threats to behavioural freedom were achieved by informing the participants that the government of their country was planning on imposing restrictions,

whereas in the vicarious conditions, participants were told that the government of a neighbouring country was imposing restrictions on their citizens. Participants in the single threatened behavioural freedom conditions were told that the government was considering imposing the prohibition of alcohol consumption. In the multiple threatened behavioural freedom conditions participants were told that the government was considering imposing a prohibition on all social gatherings. The resulting scenarios were the following: (i) self-experienced, single threatened freedom, (ii) self-experienced, multiple threatened freedoms, (iii) vicarious, single threatened freedom and (iv) vicarious, multiple threatened freedoms.

Materials

After having consented to participating in the study, participants were randomly assigned to the four conditions. They were asked to carefully read a fictitious scenario and imagine that the contents of the article were truthful. Participants were then asked to complete the Salzburger State Reactance Scale (SSR Scale). Next, the participants completed a manipulation check in the form of a four-item Likert-type scale (1=not at all, 5= very much), designed to determine whether the different conditions were successful in inducing the appropriate levels of reactance. Finally, participants were asked to answer three demographic scales, and were thanked for their participation in the study.

[extract from example article in the self-experienced multiple threat condition]

A recent news report claims that in an effort to curb soaring COVID-19 infections, the government of your country is considering the imposition of a total ban on all social interactions. A task force comprised of Government officials is meeting to discuss the merits and limitations of this measure. Government officials will then decide on the issue. Citizens will not have an input on this decision. Should the government choose to apply this measure, the ban on social interactions would take effect immediately. Any citizen caught attending a

social engagement of any sort will be subject to legal penalties. The recent surge in COVID-19 cases has prompted the government to consider this measure.

SSR Scale

The Salzburger State Reactance Scale developed by Sittenthaler et al. (2015) measures state reactance. The wording of certain questions was adapted according to the needs of the current study. The scale asks 10 questions (e.g., "A*re you frustrated by the restriction by the government?", or "How likely do you think it is that they are taking advantage of people?")*, to which the participants were asked to respond on a 5-point Likert type scale, with scores ranging from 1 – 'not at all' to 5 – 'very much'. The SSR scale had excellent internal consistency (Cronbach's $\alpha = .93$).

Manipulation check

A manipulation check was included to measure whether the conditions in which multiple freedoms were threatened was effective in eliciting a stronger reactant response than the conditions in which a single freedom was threatened. It consisted of a four-item, five point Likert -type scale that was made up of questions such as '*how severe do you consider the threat to your freedom?*', with scores ranging from 1 – 'not at all' to 5 – 'very much'.

Demographic questions

Three questions measured participants age, sex and highest completed level of education.

Results

Manipulation check

To check if the manipulation of a single versus multiple threatened freedoms was effective a two-way ANOVA was conducted, with number of freedoms and target of

restriction as independent variables, and the mean score of the manipulation check as the dependent variable. The manipulation check was calculated using a four-item five-point Likert-type scale, with questions such as 'how severe do you consider the threat to your freedom?'. The analysis revealed a main effect for number of freedoms ($F(1, 172) = .02$, $p < .001$), and a main effect for the target of the restriction ($F(1, 172) = 11.73$, $p = .001$), indicating that the manipulation of number of freedoms threatened had the intended effect. The analysis also revealed that there were no interaction effects between number of threatened freedoms × target of restriction ($F(1, 172) = .47$, $p = .496$).

Descriptive statistics

Of the 212 participants who opened the survey page, 9 (4.2%) participants did not consent to participating in the study. Of the remaining 203 participants, data from 27 (12.7%) participants was removed because, despite providing consent to participate, they did not answer any questions, resulting in a final total of 176 participants.

Table 1 depicts the means and standard deviations for reactance in each of the four conditions. The highest overall mean reactance is found in the self-experienced, single threatened behaviour condition (M = 3.27, SD = 0.90). In the self-experienced, multiple threatened behaviours condition (M = 3.17, SD = 1.19), participants reported slightly lower mean levels of reactance. Participants in the vicariously experienced, single threatened behaviour condition scored a marginally lower mean than the previous self-experienced conditions (M = 2.95, SD = .82), but interestingly, the participants in the vicariously experienced, multiple threatened freedoms condition scored comparatively higher on measures of reactance (M = 3.20, SD = 1.11).

Means and standard deviations of reactance in each of the four experimental conditions.

Target of restrictions	Number of threatened freedoms	N	Mean reactance	Standard Deviation
Self-experienced	Single freedom	43	3.27	0.90
Self-experienced	Multiple freedoms	44	3.17	1.19
Vicarious	Single freedom	43	2.95	0.82
Vicarious	Multiple freedoms	45	3.20	1.11

Note: Reactance was measured with ten items on a Likert-type scale (1 not at all to 5 = very much).

Main analysis

A two-factorial ANOVA was conducted with number of threatened freedoms (single vs multiple) and target of the imposed restrictions (self-experienced vs experienced vicariously) as independent variables, and reactance was used as the dependent variable. There was no main effect of number of threatened freedoms ($F(1, 172) = 0.21$, $p = .649$). The analysis indicated that the target of the restrictions did not have a statistically significant effect on resulting levels of reactance ($F(1, 172) = 0.95$, $p = .330$). There was no interaction effect of target of the restrictions (self-experienced vs. vicarious) and number of threatened freedoms (single vs. multiple) ($F(1, 172) = 1.36$, $p = .244$).

Additional Analyses

Bivariate Pearson's correlations were conducted to examine the relationship between reactance and the three demographic variables assessed: age, gender and level of education. Of these three, only age was found to have a statistically significant relationship with reactance, which was negative and weak in strength (r (174) = -.25, p = .001). Gender (r (174) = -.07, p = .341) and level of completed education (r (173) = -.14, p = .058) were not significantly correlated with reactance.

In order to control for a potential effect of age on the general pattern of the main results, a two-factorial ANOVA was conducted with the independent variables number of threatened freedoms (single vs. multiple) and target of restrictions (self-experienced vs. experienced vicariously) and the dependent variable levels of reactance, while including age as a covariate. There was no main effect found for number of threatened freedoms (F (1, 171) = .26, p = .61), no main effect for target of restriction (F (1, 171) = .49, p = 485) and there was no interaction effect (F (1, 171) = 2.54, p = .113), indicating that age did not significantly affect the overall pattern of results.

Discussion

The goal of the study was to determine a potential interaction effect of how a behavioural threat is experienced (vicariously vs. self-experienced) and the number of affected freedoms (single vs. multiple) on resulting levels of reactance. The study found no main effect for target of restrictions, no main effect for number of threatened freedoms and there was no interaction effect of number of threatened freedoms × target of restrictions on resulting levels of reactance. However, an analysis of descriptive statistics identified an unexpected trend: the highest levels of reactance were reported in the condition in which participants were the

target of a restriction that forbade a single behaviour. The condition in which participants vicariously experienced restrictions to multiple freedoms reported similar levels of reactance to the two self-experienced threat conditions. The condition in which participants experienced restrictions of a single behaviour vicariously scored the lowest (approximately 7% lower than the other conditions) in measures of reactance.

The current study was expected to yield a straightforward hierarchy of results. Specifically, self-experienced threats and threats to multiple behaviours were expected to elicit the most reactance, and vicarious threats and threats to a single behaviour were expected to elicit the least reactance. These expectations were based on two significant principles underlined in the literature review: Brehm's 1966 findings – as the importance of the threatened freedom increases, the resulting levels of reactance increase; and Brehm's 1989 findings – as the number of threatened freedoms increases so too does the reactant response. However, the current study identified no statistically significant results that might corroborate these findings. The expectation that participants in the vicarious condition would experience comparatively reduced reactance was upheld by the current understanding of the mechanisms by which vicarious reactance is thought to work. As Sittenthaler et al (2016) found, experiencing a threat to behavioural freedom vicariously does not immediately elicit a physiological and affective response in the same way that experiencing that same threat directly does. Instead, a negative affective response is attained through deliberation and reasoning, making it less impulsive. For this reason, resulting reactance in the vicarious conditions was expected to be less intense than reactance experienced when participants were facing the threat themselves. However, the current study was unable to find support for Sittenthaler et al.'s (2016) proposed dual-model of reactance. No significant difference was identified in the levels of reactance between participants in the self-experienced threat condition and in the vicariously experienced threat condition.

Overall, participants across all four conditions reported experiencing reactance. As deaths and malady linked to COVID-19 are an undeniable problem, one could argue that a sense of legitimacy exists in the proposed restrictions. However, the high levels of reactance that were found across the four conditions was in line with expectations due to the demanding nature of the imposed restrictions in all conditions and the commanding nature of the language used. The participants were told that this restriction would likely be imposed on them regardless of whether they agreed with it or not, and while the restrictions would have been likely to effectively reduce the number of COVID-19 infections, a similar result can be achieved by using less drastic measures (e.g., maintaining social distances, practicing appropriate hygiene and wearing a facemask). For this reason, the restrictions proposed were intended to be perceived as illegitimate to induce relatively high levels of reactance. Indeed, reactance scores across all four conditions in the current study were fairly high, indicating that on the whole, participants thought the imposed restrictions to be unjustified and excessive.

However, the present also study fell victim to some limitations. To begin with, the topic of COVID-19 and the measures that should be taken to combat it can be a contentious and polarising one. For instance, people who have fallen ill to COVID-19 may hold more favourable attitudes towards policies aimed at reducing restrictions than individuals who have not fallen ill but have experienced the economic consequences of the restrictions. The population is also divided between those who trust the government and their intentions in imposing restrictions and those who are more suspicious and believe the government is attempting to control their population (Krastev & Leonard, 2021). Additionally, policies put in place to reduce COVID-19 infection rates and public opinion regarding these policies is strongly dependent on the current rate of infections and deaths: when infections are high, strict policies are implemented to reduce infections, yet when infection rates fall, politicians face strong demands to reduce or altogether remove these policies (Tisdell, 2020).

Consequently, conducting this study at a different time and under different conditions may have yielded different results.

Whether restrictions imposed to reduce COVID-19 infections are viewed positively or negatively is an issue in which opinion can be heavily influenced by political or religious affiliation, as has been demonstrated throughout the course of the pandemic in the United States (one must only scan the headlines of Fox News and CNN to appreciate this point). Therefore, perhaps the inclusion of an item measuring political and religious affiliation would have helped shed some light on whether these factors came into play to affect resulting levels of reactance. Another potential issue in the current study was that the conditions in which the government imposed a prohibition to consume alcohol were intended to be perceived as a threat to a single behaviour – the consumption of alcohol. However, given that many participants were of and around university age, this prohibition may have unintentionally threatened several other freedoms by implication (indeed, the scenarios in which all social gatherings were prohibited was intended to function in this manner), as alcohol consumption may be interwoven with numerous activities and pastimes. This may partially account for the unexpected finding that conditions in which alcohol was prohibited seemingly elicited more reactance than conditions in which all forms of socialising were prohibited. Alternatively, participants might have thought the prohibition on all social gatherings to be a more justified restriction than the prohibition on alcohol consumption. Additionally, the prohibitions put in place in the scenarios were selected on the basis of being possible and effective in reducing COVID-19 infections, but simultaneously extreme and unjust so as to induce reactance in the participants. It is possible that the prohibition on all social gatherings was a prohibition that was too extreme to be immersive and believable, but perhaps the prohibition on alcohol consumption was slightly more believable, and so participants may have responded more seriously to these scenarios.

Finally, it is worth noting that improving the wording of some of the questions would make them far more robust and less confusing to participants, in addition to allowing for a more accurate measure of reactance. For instance, participants in the vicarious conditions were presented with the question 'would you like to ignore this measure and proceed with the prohibited behaviour regardless?' after having read a scenario explaining that a neighbouring country was imposing these restrictions on its citizens.

The current study has showed that despite vicarious reactance operating through different mechanisms than reactance experienced via direct threat, the resulting levels of reactance of people who experienced behavioural threats indirectly were indistinguishable from the levels of reactance of individuals experiencing the behavioural threat directly. This information may prove useful to policy makers, should circumstances arise that require the imposition of restrictions to a section of the population. Awareness of the potential reactant response of the entirety of the population, and not just the subsection on whom the restrictions have been imposed may prevent potential public relations disasters. The current study also served as a testament to the power of threat by implication, and the resulting amplification of a pre-existing reactant response.

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Appendix A - Scenarios

The scenarios presented to participants were almost identical, but the wording changed per scenario to reflect the condition the participants were assigned to. The changes in wording applied to the number of restricted behaviours and to specify whether this is taking place in the participant's country or in a nearby one.

Imagine that in response to the rapidly rising COVID-19 cases in [a neighbouring] your country, the government's COVID-19 committee has announced new measures effective immediately. The government has imposed a total prohibition on the consumption and purchase of all alcoholic beverages [, a prohibition on all social gatherings and the imposition of a curfew after the hours of 10PM]. These measures are [this measure is] effective immediately and will be lifted once COVID-19 infections drop below an acceptable level.

Appendix B – Demographic Questions

1. What age are you?
2. What is your gender?

Male – female – other

3. What is the highest degree or level of education you have completed?

Compulsory education – qualification for university entrance – university degree

Appendix C - Salzburger State Reactance Scale

The 10 Original Items of the Salzburger State Reactance Scale are listed below. Answers are given on a 5-point Likert-type scale from 1 (not at all) to 5 (very much). The items have to be adapted to each reactance-arousing situation. The words in parentheses at the end of each item are the short name for each item.

1. To what extent do you perceive the government's response as a restriction of freedom? (freedom)
2. Are you frustrated about the government's response? (frustrated)
3. How much does the government's response annoy you? (annoyed)
4. To what extent are you offended/disturbed by the government's response? (disturbed)
5. Do you think the government is imposing the measure [the measures] unjustly? (prejudices)
6. *Do you think that the government is discriminating against its citizens? (discriminate)*
7. How likely do you think it is that the government is taking advantage of its people? (advantages)
8. *Would you like to ignore this measure [these measures] and proceed with the prohibited behaviour [behaviours] regardless? (internet)*
9. Would you join a street protest against this measure [these measures]? (complain)
10. *Would you advise other people to ignore this prohibition [these prohibitions]? (advise against)*

Appendix D – Manipulation check

After having read the scenario and answered the questions of the SSR Scale, participants were asked to complete a four-item five-point Likert-type scale, where 1 = not at all and 5 = very much. The questions were prefaced with the statement 'please consider the scenario you read and indicate the extent to which you agree with the following statements'. Participants were asked the following questions:

1. To what extent did you feel like your choices were being taken away?
2. To what extent did you feel like you didn't have freedom?
3. To what extent did you feel trapped?
4. How severe do you consider the threat to your freedom?