

# Proscriptive Injunctions Can Elicit Greater Reactance and Lower Legitimacy Perceptions Than Prescriptive Injunctions

Louisa Pavey<sup>1</sup> , Susan Churchill<sup>2</sup>, and Paul Sparks<sup>3</sup>

Personality and Social Psychology Bulletin  
2022, Vol. 48(5) 676–689  
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DOI: 10.1177/01461672211021310  
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## Abstract

Based on previous research investigating proscriptive injunctions (requesting that one should not do something) versus prescriptive injunctions (requesting that one should do something), we propose that proscription leads to greater reactance than does prescription for a range of actions, and that this effect is associated with lower perceived legitimacy of the injunction. Across five experimental studies, our student and general population samples received proscriptions or prescriptions and reported their reactance. Proscription led to greater reactance than did prescription in all five studies. This effect was accentuated by an authoritative source (Study 2), was mediated by the perceived legitimacy of the request (Study 3 and Study 4), and was attenuated by a self-affirmation intervention (Study 5). We suggest that proscriptions are viewed as more obligatory than prescriptions, limit the scope of behavioral alternatives, restrict perceived autonomy, and elicit greater reactance. The findings have implications for the design of effective persuasive communications.

## Keywords

communication, persuasion/social influence, reactance, autonomy, message framing

Received November 20, 2020; revision accepted May 7, 2021

In persuasive communications, advice and injunctions can be presented either as a proscription (i.e., suggesting to someone that they *should not* behave in a particular way) or as a prescription (suggesting that they *should* behave in a particular way). Researchers (Janoff-Bulman et al., 2009) have suggested that proscriptive and prescriptive morality encompass two systems of moral regulation and that these two types of message activate distinct cognitive and motivational mechanisms. Janoff-Bulman et al. (2009) provided evidence to support the notion that the proscriptive system, rooted in a behavioral inhibition system (BIS) and sensitive to negative outcomes, punishments, threats, and avoidance motives, is considered to represent a stricter moral standard than is the prescriptive system, which is rooted in a behavioral activation system (BAS), and is associated with positive outcomes, rewards, and incentives (see Carver & White, 1994). Research to date, however, has not examined the effects of proscriptive and prescriptive recommendations on other important motivational constructs such as reactance, which in turn may hinder information acceptance and may even result in attitude and behavior change in a direction opposite to that recommended in the persuasive communication. The originality of the series of studies presented here lies in examining the effects of the two systems on reactance and perceptions of legitimacy, and in furthering our understanding of the differences between the

two types of persuasive attempt beyond the domain of prototypical moral behavior.

## Proscription Versus Prescription: Cognitive, Motivational, and Affective Differences

In a series of seven studies, Janoff-Bulman et al. (2009) found that proscriptive versus prescriptive morality was associated with differences in approach versus avoidance self-regulatory modes (see Elliot & Thrash, 2002). They showed that an avoidance prime resulted in greater generation of proscriptions than of prescriptions, that prescriptions were viewed as more a matter of personal preference and less mandatory than were proscriptions, and that participants were more disapproving of noncompliance with a proscription than of noncompliance with a prescription.

<sup>1</sup>Kingston University London, Kingston upon Thames, UK

<sup>2</sup>University of Chichester, Chichester, UK

<sup>3</sup>University of Sussex, Brighton, UK

### Corresponding Author:

Louisa Pavey, Department of Psychology, Faculty of Business and Social Sciences, Kingston University London, Penrhyn Road, Kingston upon Thames, Surrey KT1 2EE, UK.  
Email: l.pavey@kingston.ac.uk

Janoff-Bulman et al. (2009) concluded that proscriptive moral codes were inhibition based, and prescriptive moral codes were activation based, with implications for broader patterns of self-regulation and social behavior.

If proscription versus prescription are suggested to be inhibition versus activation based, there may be other motivational differences between the two types of injunction that can be understood by examining the wider psychological literature on the negativity bias (for reviews, see Baumeister et al., 2001; Rozin & Royzman, 2001). This body of literature suggests that events that are negatively valenced have a greater impact on an individual than do events that are positively valenced. Negative events are attended to more quickly, processed more thoroughly, and given greater weighting in decision-making processes than are positive events. The salience of negative events enables a quicker and more purposeful response to danger and threat and has been suggested to reflect an innate and evolutionarily adaptive tendency that underpins the notion of loss aversion (Rozin & Royzman, 2001; Tversky & Kahneman, 1992). With regard to learning processes, avoidance behaviors are learnt more quickly than are approach behaviors, and punishment of incorrect responses is shown to be more effective than reward of correct responses (Baumeister et al., 2001). Regarding proscriptive and prescriptive rules, one longitudinal study suggested that the skills required for compliance with proscriptive rules (i.e., the suppression of prohibited behavior) develop earlier than the skills required for compliance with prescriptive rules (i.e., sustaining an advocated behavior), and are easier for young children (aged 14–45 months) to follow than are prescriptions (Kochanska et al., 2001). The ease of learning and greater compliance with proscriptions in children is suggested to be due to the greater specificity of proscriptive requests, and to a larger number of coordinating cognitions and actions that are required to follow prescriptions than to follow proscriptions.

The literature on positive emotions could also inform our understanding of the differences between the proscriptive and prescriptive systems. Work by Fredrickson (2001, 2013) suggests that positive emotions broaden awareness and build a suite of resources that increase sensitivity to future positive experiences, activating an incentive-seeking approach. This body of research suggests that positive emotions signal less urgency than negative emotions and, as such, expand our thought-action repertoire, widen our array of thoughts and actions, and allow creativity in thinking (see Fredrickson, 2013, for a review). While proscriptions may elicit a negative affective system that narrows attention and results in a more restrictive perceived set of possible actions, prescriptions may be more likely to activate the positive affective system and less likely to activate the negative system. The prescriptive injunction would therefore be perceived as less restrictive and enable an individual to envisage multiple possible courses of compliant action.

## Perceived Choice, Autonomy, and Reactance

If prescriptive injunctions generally direct attention to a greater range of perceived choice alternatives, they might also elicit greater feelings of choice and autonomy than do proscriptions. A proscriptive injunction regarding the same behavior would narrow the perceived choice set and thus feel more restrictive, thereby undermining a sense of autonomy. Autonomy is considered to be akin to self-governance and is defined as the experience of having control over actions, being free from external constraints, and having the power to determine future circumstances and outcomes (Ryan & Deci, 2000). In addition to autonomy being associated with self-governance, it has also been closely linked to self-awareness, a reflective evaluation process, and higher-order decision-making processes (Brown & Ryan, 2003). This research suggests that autonomous individuals are self-reflective and capable of controlling their decisions and actions, as well as operating free from externally imposed constraints. Research has shown that when people experience autonomy-supportive environments, they are more likely to engage with recommendations and internalize attitudes and motivation (Núñez & León, 2015; Ryan & Deci, 2000). Autonomy-supportive persuasion attempts have been shown to increase the likelihood of subsequent attitude, motivation, and behavior change (Kinnafick et al., 2016; Miller et al., 2007; Williams et al., 1999). Greater autonomy has been associated with elevated attitude and intention change following threatening information (Pavey & Sparks, 2008, 2009, 2010), and priming autonomy has been shown to increase adaptive responses to persuasive messages (Pavey & Sparks, 2012). If prescriptive recommendations are based within the BAS, and lead to a broader scope of possible choice outcomes, a greater amount of perceived choice and motivational freedom in the resulting action may lead to higher perceptions of autonomy and compliant motivation.

When injunctions are proscriptive rather than prescriptive, however, autonomy and freedom of choice may be perceived to be restricted. A negatively framed request, associated with inhibition and carrying an expectation of a harsher judgment if transgression occurs (Janoff-Bulman et al., 2009), may result in perceptions of less choice and freedom. When a persuasive attempt is viewed as coercive or as restricting freedom of choice, reactance may ensue. Reactance theory (J. W. Brehm, 1966; K. W. Brehm & Brehm, 1981; Miron & Brehm, 2006) suggests that a perceived threat to freedom and autonomy such as that inherent in persuasive communication causes reactance, a motivational state that leads to a reassertion of the free behavior and/or belief change designed to restore the threatened freedom. This motivational state subsequently results in a person responding to a persuasive attempt in the opposite way to that intended, to reinstate the threatened freedom. Individual freedom has been suggested to have not just instrumental,

but also intrinsic value (Sunstein, 2019) and, as such, if people feel this freedom is taken away, they may protest and respond with reactance, even if doing so does not result in material benefit or even causes personal harm. This may limit the effectiveness of some interventions designed to nudge people toward certain behavioral choices (Sunstein, 2017, 2019). Empirical examples of reactance include research by Dillard and Shen (2005), who found that communications perceived as more dogmatic, forceful, and threatening (e.g., messages suggesting that the evidence for reducing alcohol consumption was “unequivocal” vs. “fairly compelling”), aroused more reactance, measured as a combination of both negative affect and negative cognitions. Reactance elicited corresponding changes in attitude and intention in the opposite direction to that advocated in the message.

Consistent with negativity bias, a field experiment by Bergquist and Nilsson (2016) found that environmental signs showing people what they should not do (e.g., “do not leave the lights on”) were more likely to be noticed by participants than those showing people what they should do (e.g., “turn off the lights”). However, they also were perceived as more demanding and as more forceful than were the prescriptive signs. This suggests that while negativity bias might result in proscriptive signs eliciting greater attention, they may also elicit a perceived loss of behavioral freedom and greater reactance due to a stronger perceived restriction on behavior. Loss-framed messages have been shown to elicit greater perceptions of threat to freedom than have gain-framed messages (Cho & Sands, 2011), and avoidance-framed messages have been found to elicit stronger reactance than have approach-framed messages (Niesta Kayser et al., 2016). A study by Pavey et al. (2018) found that proscriptive messages suggesting participants should not drink alcohol above recommended limits led to higher perceived moral norms compared with prescriptive messages that suggested participants should drink within recommended limits. This study also showed that for participants who reported high levels of alcohol consumption, the proscriptive message led to greater alcohol consumption 7 days later. The authors suggested that the increased alcohol consumption in this group may have been due to greater reactance experienced by those for whom the proscriptive message was more personally relevant (however, the mediating effect of reactance was not directly measured in that study).

### **The Role of the Legitimacy and Source of an Injunction**

Perceived legitimacy of an injunction may influence the level of reactance experienced. Legitimacy, defined here as the perception of an injunction as fair, reasonable, and justified (see Simmons, 1999; Tyler, 2006), is likely to reduce the extent to which a restriction on autonomy elicits

reactant responses such as anger, irritation, and annoyance. In J. W. Brehm’s (1966) original account, he suggests that both legitimate and illegitimate attempts at persuasion result in a reactance effect. However, Miron and Brehm (2006) suggest that while reactance is induced by individuals’ desire for autonomy, rationalization and cognitive reflective may occur that bolsters the perceived legitimacy of a request and justifies the restriction on autonomy, thus reducing reactance. While both proscriptive and prescriptive injunctions could indicate the same behavioral outcome (e.g., you should drink alcohol within government limits, vs. you should not drink alcohol in excess of government limits), prescriptive injunctions may be perceived as more legitimate (fair, reasonable, and justified) as they generate a larger perceived array of possible compliant actions and choice alternatives. Alternatively, proscriptions prompt reflection on a narrower set of prohibited actions, which threatens autonomy and represents a disproportionate, unjustified, and illegitimate restriction on autonomy. It thus seems reasonable to conjecture, therefore, that perceived legitimacy mediates the influence of proscriptive versus prescriptive injunctions on reactance. Research has explored the importance of legitimacy in predicting reactance outcomes (e.g., Sittenthaler et al., 2015; Zhang & Sapp, 2013). Zhang and Sapp (2013) found that the legitimacy of teacher requests served as a predictor of student reactance. Sittenthaler et al. (2015) examined the cognitive and affective differences resulting from legitimate and illegitimate restrictions to freedom. They found that both legitimate and illegitimate restrictions evoked reactance and anger in participants, leading to greater reactance and subsequent intentions to restore the threatened freedom than for participants in the control condition. However, differences were found in the immediacy of the reactance response, with illegitimate restrictions resulting in immediate physiological arousal and legitimate restrictions resulting in time-delayed arousal. The authors suggested that the time-delayed arousal may be due to mediating reflective processes involved after legitimate restrictions. However, the study did not directly measure the perceived legitimacy of the request across conditions.

Reactance theory suggests that when the communicator is perceived as intending to persuade, and when the communicator has a more power to instigate the restriction of a behavior, reactance will be greater, as the perceived threat to autonomy will be heightened (Miron & Brehm, 2006). S. S. Brehm and Brehm (1981) evaluated reactance in relation to social power and discussed the effects of credibility, expertise, and prestige as well as effects of rewards and punishments on reactance. In that review of the early experimental research, they concluded that agents with greater social power provoke greater reactance, and that this effect may occur even when the authority has no opportunity to punish. More recent examples confirm this

effect. For example, Invernizzi et al. (2003) found that an authoritative health institute, considered a more freedom-threatening source of information, was perceived as being less respectful of individuals' freedom of choice compared with a neighborhood association. Participants with strong smoker identities who read information from a more authoritative source had lower intentions to quit smoking compared with those who read information from the less authoritative source. Graça et al. (2013) showed that adolescents' deference to teacher authority, willingness to follow rules, and perceived legitimacy of authority was higher when the teacher was viewed as autonomy-supportive. These findings indicate that the source of an injunction may influence subsequent reactance, with requests from a source perceived as less autonomy-supportive, or a source with more social power to restrict freedom, perceived as more autonomy-threatening, less legitimate (fair, reasonable, and justified), and more likely to provoke reactance (cf. Pavey & Sparks, 2009).

### Proscription, Prescription, and Self-Affirmation

Self-affirmation theory (Steele, 1988) offers one way to explain why people may be defensive in the face of persuasive communications. The theory posits that people are motivated to maintain a global perception of themselves as "adaptively and morally adequate, that is, competent, good, coherent, unitary, stable, capable of free choice, capable of controlling important outcomes . . ." (Steele, 1988, p. 262). Messages that imply a restriction of lifestyle choices are viewed as threatening a person's sense of worth and decision-making competence (Cohen & Sherman, 2014; Sherman, 2013; Steele, 1988). One way for people to protect themselves against such a threat to self-integrity and self-worth is to derogate or reject the message (Cohen & Sherman, 2014; Sherman, 2013) or to respond with reactance to restore the threatened freedom. However, self-affirmation theory (Steele, 1988) also suggests that if individuals are given the opportunity prior to message exposure to self-affirm via an important source of self-integrity and worth—such as a personal value, core belief, or important social relation—they are less likely to derogate the message content and more likely to act in accordance with the recommendations compared with those who are not given the opportunity to affirm (see McQueen & Klein, 2006, for a review of self-affirmation manipulations). That is, if a person's sense of self-integrity and worth is affirmed, they should be less likely to process personally threatening information defensively and more likely to accept it (Cohen & Sherman, 2014). Providing an opportunity for self-affirmation may therefore reduce the potential for reactance to be experienced after receiving a personally relevant injunction, which threatens freedom of choice (Schütz et al., 2013). It also may serve to widen

thought-action repertoires and broaden the mental field, leading to an attenuated reactance effect (Rosenberg & Siegel, 2018).

### The Current Studies

Although the two motivational systems of proscriptive versus prescriptive morality and associated cognitive consequences of these have been described by previous researchers in some detail with regard to moral behaviors (Janoff-Bulman et al., 2009), they have not yet been fully explored in relation to encouraging other lifestyle or behavioral choices. Proscriptive injunctions, perceived as more specific and concrete compared with prescriptive injunctions (Janoff-Bulman et al., 2009), may activate a system of avoidance and inhibition that narrows the proceeding thought-action repertoire, signals less choice, and is perceived to place a greater restriction on autonomy and attitudinal freedom. Proscriptions may therefore symbolize a greater threat to behavioral freedom than prescriptions and be viewed as an illegitimate and disproportionate influence attempt, thus engendering greater reactance. Thus, reactance would be expected to occur to a greater extent when proscriptive versus prescriptive requests are made. This effect may be mediated by perceptions of the recommendation as legitimate.

Our goal in this research was to explore the extent to which proscriptive and prescriptive advice may be associated with differing levels of reactance, and whether this effect was associated with the perceived legitimacy of the request. The five studies that follow explore differing effects of proscriptive versus prescriptive injunctions on reactance (Study 1), differences between proscriptive versus prescriptive recommendations from differing sources on reactance (Study 2), and the effects of proscriptive and prescriptive messages on reactance mediated by perceived legitimacy (Study 3). We further explore the effect of self-generated proscriptive versus prescriptive injunctions on reactance in Study 4. In Study 5, we examine whether the effect of proscriptive versus prescriptive injunctions on reactance could be attenuated with a self-affirmation manipulation. We sought to maximize power by using measures adapted from validated scales, by using adequate predetermined sample sizes to enable sufficient power to detect medium effect sizes, and by using computer-generated randomization to experimental condition. All measures, manipulations, and exclusions are reported, and sample sizes were not increased after data analysis. Data files, analyses codes and associated materials can be accessed as Supplemental Material online here: <https://doi.org/10.7910/DVN/O2DX0K>. Examining the effects of the two systems on reactance and perceptions of legitimacy has not been explored in previous empirical research, and thus the research provides an original contribution to the literature on social influence and communication. More detailed descriptions of the hypotheses tested are presented at the

start of each study, and the implications for the effects of proscriptive and prescriptive injunctions on reactance are further explored in the final discussion.

## Study 1

In Study 1, we examined the effect of proscriptive and prescriptive injunctions about excessive internet use on a measure of reactance. Given the empirical and theoretical literature on proscriptive versus prescriptive injunctions and reactance, we expected that participants would show more reactance when an action was proscribed (i.e., when they were told that they should not do something) than when an action was prescribed (i.e., when they were told that they should do something).

### Method

**Design.** The study used a between-subjects experimental design with one independent variable (Message Type: proscriptive vs. prescriptive) and one dependent variable (reactance).

**Participants.** Participants ( $N = 71$ ) were recruited via social media and by using an undergraduate psychology student participant pool (females:  $n = 44$ ; males:  $n = 27$ ). Ages ranged from 19 to 53 ( $M = 24.24$ ,  $SD = 5.57$ ) years; participants did not report their ethnicity in this study. A sensitivity power analysis conducted for Study 1 using G\*Power suggested that a sample size of 100 would detect a medium effect size of  $d = 0.50$  using the standard criteria of  $\alpha = .05$  with 80% power. The study was underpowered due to a time limit on data collection for this study.

### Materials

**Message type.** In the prescriptive condition, participants read a message that stated, "Imagine you went to medical doctor, who said to you SHOULD spend less than 45 hours a week on the internet, because this is the recommended safe limit for internet usage. The doctor gives you no further information." In the proscriptive condition, participants read a message that stated, "Imagine you went to medical doctor, who said to you SHOULD NOT spend in excess of 45 hours a week on the internet, because this is recommended safe limit for internet usage. The doctor gives you no further information."

**Reactance.** Participants were asked to express the extent of their agreement with eight statements assessing reactance toward the message, modified from the Hong Reactance Scale (Hong, 1992): "I would feel frustrated that my ability to make a free and independent decision was being interfered with"; "I would feel angry because someone was trying to restrict my freedom to choose what I do"; "I would feel irritated because someone had pointed out something that was obvious to me"; "I would feel a sense of resistance to what was being recommended to me"; "I would feel like criticizing

the advice given to me"; "I would feel resistant to the attempt to influence my actions"; "I would feel like doing the opposite to what I am told"; and "I would feel that the advice was a bit of an intrusion." Responses were indicated on a 7-point Likert-type scale with end points of *very strongly disagree* to *very strongly agree*. Mean responses to the items were used as the measure of reactance (Cronbach's  $\alpha = .89$ ).

**Procedure.** The questionnaire was distributed online, and participants were randomly allocated to either the prescriptive ( $n = 33$ ) or proscriptive ( $n = 38$ ) condition. Participation was voluntary and all participants were entered into a prize draw of £25 (approximately US\$30). Participants were thanked and debriefed following completion of the study.

### Results and Discussion

An independent-samples  $t$  test was conducted to determine any difference between Message Type (proscriptive vs. prescriptive) on reactance. There was a significant main effect of Message Type,  $t(69) = 2.84$ ,  $p = .006$ , Cohen's  $d = 0.64$ : Reactance was significantly higher in the proscriptive condition ( $M = 4.37$ ,  $SD = 1.20$ ) than in the prescriptive condition ( $M = 3.63$ ,  $SD = 0.93$ ). The results of Study 1 suggest that participants responded with greater reactance after receiving a proscriptive injunction than a prescriptive injunction.

## Study 2

In Study 2, we examined the effect of proscriptive and prescriptive injunctions about alcohol consumption from different sources, on the likelihood of participants following message recommendations. Psychological reactance tends to be more pronounced when communicators are perceived as having greater authority, due to the potential for an authority to restrict behavioral freedoms (e.g., Invernizzi et al., 2003). A more expert source, although related to higher credibility and considered more highly influential in some persuasion contexts (see Pornpitakpan, 2004, for a review), can therefore lose its advantage when the communicator attempts to change important values or aspects of the person's identity, as this can provoke a defensive, reactance response. Experts, compared with nonexperts, can also make the influence relationship more salient to the recipient (Falomir-Pichastor et al., 2002), highlighting a threat to attitudinal and behavioral freedoms and eliciting greater reactance (Förg et al., 2007, cited in Steindl et al., 2015). Hence, we predicted that participants would display greater reactance after reading a proscriptive versus prescriptive injunction from a doctor than from a family member.

### Method

**Design.** A 2 (Message Type: proscriptive, prescriptive)  $\times$  2 (Source: doctor, family member) repeated measures design

was used, with participants reporting the likelihood of following the recommendation in each condition.

**Participants.** Participants ( $N = 111$ ) were psychology students who participated in exchange for course credit. Participants were recruited online; ages ranged from 18 to 68 ( $M = 23.39$ ,  $SD = 8.99$ ) years; 80% were female, and 86% identified their ethnicity as White British. A sensitivity power analysis conducted for Study 2 using G\*Power suggested that a sample size of 100 would detect a medium effect size of  $f = 0.25$  using the standard criteria of  $\alpha = .05$  with 80% power.

### Materials

**Likelihood of following proscriptive and prescriptive injunctions.** Each participant was presented with four statements. Two of these statements were prescriptive: “Imagine you went to the doctor, who said you should drink within government recommended safe limits for alcohol consumption,” and “Imagine a family member told you that you should drink within recommended safe limits for alcohol consumption.” Two statements were proscriptive: “Imagine you went to the doctor, who said you should not drink in excess of government recommended safe limits for alcohol consumption,” and “Imagine a family member told you that you should not drink in excess of recommended safe limits for alcohol consumption.” The order of statements was randomized for each participant and participants were asked to indicate the extent to which they were likely to follow the recommendation on a 7-point Likert-type scale from *extremely unlikely* (1) to *extremely likely* (7).

**Demographic information.** Participants were asked to indicate their age, gender, and ethnicity.

**Procedure.** Psychology undergraduate students were recruited from a University student population via a student participant pool and completed the study online. Participants were informed of the general aims of the study and told that they could withdraw from the study without need for justification or explanation. All participants signed an informed consent form, and the study had the institutional review board’s approval.

## Results and Discussion

A 2 (Message Type: prescriptive, proscriptive)  $\times$  2 (Source: doctor, family member) repeated measures analysis of variance (ANOVA) tested the effect of Message Type and Source on the likelihood participants would follow the recommendation. There was a significant effect of Message Type on likelihood,  $F(1, 110) = 18.63$ ,  $p < .001$ ,  $\eta_p^2 = .15$ : Participants rated it less likely that they would follow a proscriptive recommendation,  $M = 3.03$ ,  $SE = 0.15$ , than a prescriptive recommendation,  $M = 3.44$ ,  $SE = 0.17$ . There was

no significant main effect of Source,  $F(1, 110) = 0.81$ ,  $p = .356$ ,  $\eta_p^2 = .01$ . However, there was a significant interaction between Message Type and Source,  $F(1, 110) = 4.10$ ,  $p = .045$ ,  $\eta_p^2 = .04$ . Pairwise comparisons with Bonferroni correction showed that participants were less likely to follow proscriptive recommendations from a family member,  $M = 3.14$ ,  $SE = 0.17$ , than follow prescriptive recommendations from a family member,  $M = 3.41$ ,  $SE = 0.18$ ,  $t = 2.45$ ,  $p = .015$ . However, the mean difference between the likelihood of following a proscriptive recommendation from a doctor,  $M = 2.92$ ,  $SE = 0.16$ , and a prescriptive recommendation from a doctor,  $M = 3.46$ ,  $SE = 0.17$ , was even greater,  $t = 3.18$ ,  $p < .001$ . Further pairwise comparisons showed that the difference between the likelihood of following a proscriptive recommendation from a doctor compared with a family member approached significance,  $t = 1.82$ ,  $p = .072$ , whereas the difference between the likelihood of following a prescriptive recommendation from a doctor compared with a family member was not significant,  $t = 0.42$ ,  $p = .671$ . Repeated measures ANOVAs, including a between-subjects factor denoting message source randomization order, revealed no significant main or interaction effects of counter-balanced position.

The results of Study 2 found that participants reported being less likely to follow proscriptive compared with prescriptive recommendations, and that this difference was particularly pronounced when the recommendations came from a doctor, rather than from a family member. A doctor could be considered as more expert and authoritative than a family member and be perceived as having greater power to restrict decision-making autonomy. As such, the request may elicit the greatest reactance in the proscriptive message condition corresponding with the lower likelihood of following the recommendation (cf. Falomir-Pichastor et al., 2002; Invernizzi et al., 2003). As family members do not have the authority to impose a restriction on autonomy (cf. Sittenthaler et al., 2015; Zhang & Sapp, 2013), lower levels of reactance may be elicited in the family member, proscriptive condition than in the doctor, proscriptive condition.

## Study 3

In Study 3, we examined the effect of proscriptive and prescriptive messages about alcohol consumption on reactance toward the message, and on the perceived legitimacy of the advice. In line with the findings from Studies 1 and 2, we expected that participants would show greater reactance toward a proscriptive recommendation than toward a prescriptive recommendation (following Bergquist & Nilsson, 2016; Kouchaki et al., 2018; Pavey et al., 2018). In Study 3, we also explored the role of perceived legitimacy. Previous researchers have suggested that lower reactance occurs after assessing the request to be legitimate (as fair, reasonable, and justified; Miron & Brehm, 2006; Sittenthaler et al., 2015; Zhang & Sapp, 2013; see also Simmons, 1999). Proscriptive

requests may be perceived as less legitimate due to the greater restriction on freedom of choice they imply (disproportionate to the harm that not following the advice could cause) and, as such, provoke greater reactance (cf. Pavey & Sparks, 2009). We therefore expected that participants would perceive lower legitimacy of a proscriptive recommendation than of a prescriptive recommendation, and that legitimacy perceptions would mediate the effect of Message Type on reactance.

## Method

**Design.** The study used an experimental design with one independent variable (Message Type: proscriptive vs. prescriptive), one dependent variable (reactance), and one mediating variable (perceived legitimacy).

**Participants.** Undergraduate psychology students ( $N = 38$ ) took part during class and were predominantly female (females:  $n = 34$ ). Participants did not record their age or ethnicity in this study. A sensitivity power analysis conducted for Study 3 using G\*Power, for the main effect of message type on our outcome measures, suggested that a sample size of 40 would detect a minimum effect size of  $d = 0.80$  using the standard criteria of  $\alpha = .05$  with 80% power. Based on the medium to large effect sizes in Study 1 and Study 2, the recommended number of participants required to detect mediation using bootstrap resampling with 80% power and large effect sizes is suggested to be 36 (Fritz & MacKinnon, 2007).

## Materials

**Message type.** In the prescriptive condition, participants read a message that stated, "Imagine you went to the doctor, who said you SHOULD drink within government recommended safe limits for alcohol consumption. The doctor gives you no further information." In the proscriptive condition, participants read a message that stated, "Imagine you went to the doctor, who said you SHOULD NOT drink in excess of government recommended safe limits for alcohol consumption. The doctor gives you no further information."

**Reactance and perceived legitimacy.** The same items were used to measure reactance as in Study 1. Three additional statements devised by the authors assessed perceived legitimacy: "I would think it was fair for someone to make this recommendation"; "I would think it was legitimate for someone to give me this advice"; and "I would think it was reasonable for someone to make this suggestion." Responses were given on a 7-point Likert-type scale with end points of *very strongly disagree* (1) to *very strongly agree* (7). Mean scores of the constituent items were used as the measures of reactance (Cronbach's  $\alpha = .90$ ) and perceived legitimacy (Cronbach's  $\alpha = .91$ ).

**Procedure.** Researchers distributed the short questionnaire on paper at the beginning of two classes on alcohol consumption. Allocation to condition was made by class (prescriptive condition:  $n = 21$ ; proscriptive condition:  $n = 17$ ). Participants were thanked and debriefed following completion of the study.

## Results and Discussion

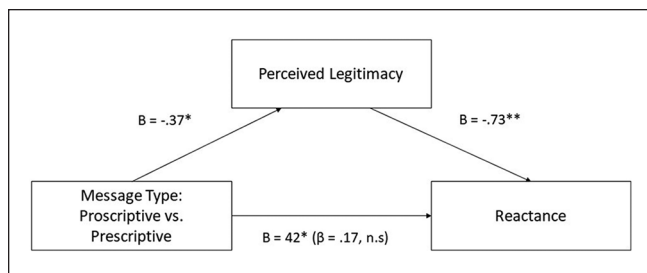
Independent-samples  $t$  tests showed a significant effect of Message Type on reactance,  $t(36) = -2.75$ ,  $p = .009$ , Cohen's  $d = 0.83$ , and on perceived legitimacy,  $t(36) = 2.42$ ,  $p = .021$ , Cohen's  $d = 0.74$ . Participants in the proscriptive condition reported greater reactance ( $M = 4.18$ ,  $SD = 1.00$ ) than did participants in the prescriptive condition ( $M = 3.27$ ,  $SD = 1.02$ ). Participants in the proscriptive condition perceived the message as less legitimate ( $M = 4.63$ ,  $SD = 1.07$ ) than did participants in the prescriptive condition ( $M = 5.40$ ,  $SD = 0.89$ ).

Regression analysis indicated that Message Type predicted perceived legitimacy,  $\beta = -.37$ ,  $t = -2.42$ ,  $p = .021$ , and that perceived legitimacy predicted reactance,  $\beta = -.73$ ,  $t = -6.34$ ,  $p < .001$ . Message Type also predicted reactance,  $\beta = .42$ ,  $t = 2.75$ ,  $p = .009$ . When perceived legitimacy and Message Type were both added to the model, Message Type no longer predicted reactance,  $\beta = .17$ ,  $t = 1.39$ ,  $p = .173$ , and perceived legitimacy remained a significant predictor,  $\beta = -.66$ ,  $t = 5.44$ ,  $p < .001$ . Mediation analysis using PROCESS macro (Hayes, 2017) with 5,000 bootstrap samples indicated that the indirect effect of Message Type on reactance via perceived legitimacy was significant,  $z = .54$ ,  $p = .012$ , 95% confidence interval (CI) = [0.09, 0.96]. The mediation model is displayed in Figure 1.

The results showed that the proscriptive message elicited greater reactance than did the prescriptive message, and that this effect was mediated by the perceptions of the proscriptive recommendation as less legitimate than the prescriptive recommendation. However, the behaviors of excessive internet use and alcohol consumption (reported in our first three studies) may not be personally relevant for all participants. In addition, there may be differences in the types of behaviors that people typically view as being those that one should or should not engage in. Moreover, Study 3 did not randomly assign participants to condition, and as such, there may be confounding variables related to the time of day or day of the week when participants took part.

## Study 4

In Study 4, we asked participants to self-generate the types of behavior that they believed they should or should not do, before asking them to rate their reactance and perceived legitimacy of a recommendation toward that behavior. We aimed to replicate the findings of Studies 1, 2, and 3 and hypothesized that participants who were asked to generate a



**Figure 1.** Study 3: Mediation analysis showing the effect of message type on reactance toward a message about alcohol consumption via perceived legitimacy, with standardized regression coefficients.

\* $p < .05$ . \*\* $p < .001$ .

proscriptive behavior and were given a recommendation about that behavior would experience more reactance and perceive the recommendation as less legitimate than would participants who were asked to generate a prescriptive behavior and were given a recommendation about that behavior. We also examined perceived moral obligation as an additional mediating variable. Proscriptive injunctions have been found to elicit greater perceived moral norms than have prescriptive injunctions (Pavey et al., 2018) and to be viewed as more obligatory than prescriptive injunctions for morally relevant behaviors (Janoff-Bulman et al., 2009). Further to this, more morally relevant choices have been found to evoke lower decision-making autonomy than less morally relevant choices (Kouchaki et al., 2018). Therefore, it is possible that the effect of proscriptive versus prescriptive injunctions on reactance reported in the previous studies may be due to the greater moral obligation felt after proscriptions, further restricting perceived decision-making freedom and reducing subsequent perceived legitimacy in the proscriptive condition.

## Method

**Design.** An experimental, between-subjects design was used, with one independent variable (Message Type: proscriptive vs. prescriptive) and three dependent variables (reactance, perceived legitimacy, and moral obligation).

**Participants.** Participants were first- and second-year undergraduate psychology students who completed the experiment during a class ( $N = 83$ ). The majority of participants were female ( $n = 61$ ). Ages ranged from 18 to 39 ( $M = 21.03$ ,  $SD = 4.34$ ) years and participants did not report their ethnicity in this study. A sensitivity power analysis conducted for Study 4 using G\*Power suggested that this sample size would detect a minimum effect size of  $d = 0.55$  using the standard criteria of  $\alpha = .05$  with 80% power. The recommended number of participants required to detect mediation using bootstrap resampling with medium effect sizes and 80% power is suggested to be 78 (Fritz & MacKinnon, 2007).

## Materials

**Message type.** Participants in the prescriptive condition were given the following instructions:

When we think about health actions, we are basically thinking about actions people should engage in. With this in mind, we are asking you to indicate health-related actions you feel you should do and tell us something about your thoughts and feelings towards these actions.

Participants in the proscriptive condition were given the instructions:

When we think about health actions, we are basically thinking about actions people should not engage in. With this in mind, we are asking you to indicate health-related actions you feel you should not do and tell us something about your thoughts and feelings towards these behaviors.

Participants then entered an action that they felt they should do (prescriptive condition) or should not do (proscriptive condition).

**Reactance and perceived legitimacy.** Participants in both conditions read the following message: “Imagine you went to a doctor, who told you to carry out the action you have indicated. The doctor gives you NO further information.” Reactance and perceived legitimacy of the recommendation were measured using the same items as in Study 3 (reactance: Cronbach’s  $\alpha = .90$ ; perceived legitimacy: Cronbach’s  $\alpha = .97$ ).

**Moral obligation.** To determine participants’ perceived moral obligation regarding the two actions, participants were asked, “Please state the extent to which you feel the above action is something you feel morally obliged to perform (‘is this action something you feel you have to—or ought to—do?’).” Responses were on a Likert-type scale from *not at all a matter of moral obligation* (1) to *completely a matter of moral obligation* (5).

**Procedure.** Participants completed an online questionnaire that randomly assigned them to either the proscriptive ( $n = 46$ ) or prescriptive ( $n = 37$ ) conditions. After completing the questionnaire, participants were thanked and debriefed.

## Results and Discussion

Participants entered a range of actions that they felt they should or should not do (e.g., exercise, eat a healthy diet, drink plenty of water, get enough sleep, smoke, drink alcohol, take drugs). Independent-samples  $t$  tests indicated that participants in the proscriptive condition felt greater reactance toward a recommendation to carry out the self-generated behavior,  $M = 4.47$ ,  $SD = 1.49$ , than did participants in the prescriptive condition,  $M = 3.11$ ,  $SD = 1.21$ ,  $t(81) = -4.51$ ,  $p < .001$ , Cohen’s  $d = 1.00$ . Participants in the



proscriptive condition also perceived the injunction to be less legitimate,  $M = 4.20$ ,  $SD = 2.07$ , than did participants in the prescriptive condition,  $M = 5.93$ ,  $SD = 0.94$ ,  $t(81) = 4.71$ ,  $p < .001$ , Cohen's  $d = 1.08$ . Participants in the proscriptive condition felt a greater moral obligation to carry out the action,  $M = 3.74$ ,  $SD = 1.18$ , than did participants in the prescriptive condition,  $M = 2.97$ ,  $SD = 1.29$ ,  $t(81) = -2.78$ ,  $p = .007$ , Cohen's  $d = 0.62$ .

Pearson's bivariate correlation analyses indicated that reactance was negatively associated with perceived legitimacy,  $r(83) = -.73$ ,  $p < .001$ , and positively associated with moral obligation,  $r(83) = .26$ ,  $p = .018$ . Perceived legitimacy and moral obligation were negatively correlated,  $r(83) = -.31$ ,  $p = .004$ , and were tested as simultaneous mediators of the effect of the proscriptive versus prescriptive message on reactance. Separate regression and mediation analyses indicated that Message Type (prescriptive condition vs. proscriptive condition) predicted perceived legitimacy,  $\beta = -.46$ ,  $t = -4.71$ ,  $p < .001$ ; moral obligation,  $\beta = .29$ ,  $t = 2.78$ ,  $p = .007$ ; and reactance,  $\beta = .45$ ,  $t = 4.51$ ,  $p < .001$ . When Message Type, perceived legitimacy, and moral obligation were entered simultaneously in a regression model predicting reactance, perceived legitimacy remained a significant predictor,  $\beta = -.66$ ,  $t = -7.60$ ,  $p < .001$ ; Message Type ( $\beta = .14$ ,  $t = 1.57$ ,  $p = .119$ ) and perceived moral obligation ( $\beta = .01$ ,  $t = 0.16$ ,  $p = .876$ ) were no longer significant. Mediation analysis using PROCESS macro (Hayes, 2017) with 5,000 bootstrap samples, with perceived legitimacy and moral obligation entered as mediators, indicated that the indirect effect of Message Type on reactance via perceived legitimacy was significant,  $z = .94$ ,  $p < .001$ ,  $CI = [0.54, 1.40]$ . The indirect effect of Message Type on reactance via moral obligation was not significant,  $z = .01$ ,  $CI = [-0.12, 0.17]$ . This indicates that perceived legitimacy was a more proximal predictor of reactance than was perceived moral obligation.

The results of Study 4 support the findings of Studies 1, 2, and 3 in indicating that proscriptions elicited greater reactance and were perceived as less legitimate than were prescriptions. This effect occurred in Study 4 even when participants generated their own proscribed and prescribed behaviors. The results suggest that the effect of proscriptive versus prescriptive injunctions on reactance was mediated by perceived legitimacy.

## Study 5

In Study 5, we examined the effects of proscriptive versus prescriptive injunctions on participants' reactance in response to a recommendation to reduce red meat consumption. We also examined whether a self-affirmation manipulation attenuated this effect. The beneficial effects of self-affirmation manipulations on attitude and behavior change have been found to be strongest for those who feel most

threatened by and defensive of personally relevant but freedom-restricting information: for example, people who drink alcohol in excess of recommended limits (Harris & Napper, 2005) and smokers (Harris et al., 2007). Both proscriptive and prescriptive injunctions may challenge an individual's self-image as a rational, competent, autonomous, and capable person, as they are clearly directed persuasion attempts. However, a proscriptive message—a reminder that one *should not* behave in a particular way—might challenge an individual's self-image and competence to a greater extent, as the perceived restriction in the resulting choice set confers less decision-making autonomy over their action. It is possible, therefore, that the beneficial effects of self-affirmation manipulations would be especially pronounced for proscriptive (vs. prescriptive) messages. In Study 5, we examined the effects of proscriptive and prescriptive messages on participants' reactance to the recommendation to reduce red meat consumption. We also examined whether a self-affirmation manipulation and personal relevance of the injunction would attenuate this effect.

## Method

**Design.** A 2 (Message Type: proscriptive vs. prescriptive)  $\times$  2 (Affirmation Manipulation: self-affirmation vs. control) between-subjects design was used. The dependent variables included participants' reactance toward the message.

**Participants.** Participants ( $N = 247$ ) were recruited using a snowballing technique. Participants were 56 males, 189 females, and two participants who did not wish to identify as male or female. Participants were aged between 18 and 76 ( $M = 40.78$ ,  $SD = 14.39$ ) years and did not report their ethnicity in this study. A sensitivity power analysis conducted for Study 5 using G\*Power suggested that a sample size of 240 would yield a minimum effect size of  $d = 0.20$  using the standard criteria of  $\alpha = .05$  with 85% power.

## Materials

**Meat consumption.** Participants reported how often they had consumed a range of 25 red meat products over the past 7 days, with responses on a Likert-type scale from *not at all* (0) to *7 or more times in the past week* (4). The sum of participants' responses to each product was taken as a measure of meat consumption ( $M = 6.78$ ,  $SD = 3.78$ ).

**Self-affirmation manipulation.** Adapting the method used by Sherman et al. (2000), participants in the self-affirmation condition were given a list of 11 values and were asked to select the value that was most important to them. Participants were asked to write down three reasons why this value was important to them and to then give an example of something they had done to demonstrate the importance of that value to them. Participants in the control condition were given the

same list of 11 values and were asked to select the value that was least important to them. Participants in this condition were asked to write down three reasons why this value might be important to someone else and to then give an example of something someone else might do to demonstrate the importance of that value.

**Message type.** Participants read a short message about the dangers of overconsumption of red meat and the UK NHS (National Health Service) guidelines for red meat consumption (i.e., no more than 70 g in a single day). Participants in the Proscriptive message condition read the following:

Imagine you went to visit your GP, who told you that you should reduce your consumption of red meat to that recommended by the NHS, to reduce your risk of developing various health problems. The doctor gives you no further information.

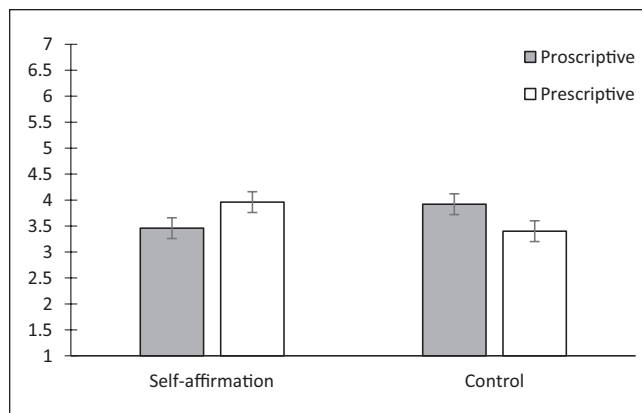
Participants in the proscriptive message condition read: “Imagine you went to visit your GP told you that you should not eat more meat than that recommended by the NHS, to reduce your risk of developing various health problems. The doctor gives you no further information.”

**Reactance.** Reactance was measured using the three affective items of the scale used in Study 1 (“I would feel frustrated that my ability to make a free and independent decision was being interfered with”; “I would feel angry because someone was trying to restrict my freedom to choose what I do”; “I would feel irritated because someone had pointed out something that was obvious to me”; Cronbach’s  $\alpha = .76$ ).

**Procedure.** Recruitment emails were sent to contacts of the researcher (e.g., family, friends, and colleagues), containing information about the study and a link to the online questionnaire. The questionnaire link was also posted on social media platforms, asking people to participate. Recruitment also occurred through a University research participation scheme: An email was sent to first- and second-year psychology undergraduate students inviting them to participate. Participants were also asked to forward the questionnaire link to any persons they believed would be willing to participate. Once informed consent was obtained, participants were randomly assigned to conditions using a computer-generated code. The study had full ethical approval from the University ethics committee.

## Results and Discussion

A 2 (Self-affirmation Manipulation: self-affirmation vs. control)  $\times$  2 (Message Type: proscriptive vs. prescriptive) between-subjects analyses of covariance (ANCOVAs) was conducted, using baseline meat consumption as a covariate. There was no significant effect of Self-affirmation Manipulation,  $F(1, 242) = 0.03, p = .854, \eta_p^2 < .01$ , or



**Figure 2.** Study 5: Mean reactance toward a message about red meat consumption, for participants in the proscriptive versus prescriptive message conditions and self-affirmation versus control conditions.

Message Type,  $F(1, 242) = 0.12, p = .726, \eta_p^2 < .01$ , on reactance. However, there was a significant interaction between Self-affirmation Manipulation and Message Type,  $F(1, 242) = 6.73, p = .010, \eta_p^2 = .03$ : Simple main effects analysis showed that in the control condition, there was a significant effect of Message Type on reactance,  $F(1, 242) = 4.81, p = .029, \eta_p^2 < .02$ , with participants in the proscriptive condition reporting greater reactance,  $M = 3.91, SE = 0.17$ , than participants in the prescriptive condition,  $M = 3.35, SE = 0.19$ . In the self-affirmation condition, there was no difference in the reactance of participants in the proscriptive,  $M = 3.45, SE = 0.21$ , versus prescriptive,  $M = 3.87, SE = 0.19$ , message conditions,  $p = .085, F(1, 242) = 4.99, p = .131, \eta_p^2 < .01$ . The interaction is displayed in Figure 2. Assessing baseline meat consumption as a moderator in the model revealed no moderation of the interaction by baseline meat consumption,  $F(1, 239) = 1.51, p = .220$ .

The results of Study 5 add further evidence of participants’ greater reactance to proscriptive than to prescriptive messages (in the control condition). However, the results also indicate that the self-affirmation manipulation attenuated this pattern of reactance effects: Self-affirmation reduced reactance in response to the more freedom-threatening proscriptive request. Although we did not measure legitimacy in this study, it is possible that the self-affirmation reduced the perceived threat to autonomy inherent in the proscriptive injunction, allowing participants to evaluate the injunction as more fair, proportionate, and legitimate, subsequently reducing reactance.

## General Discussion

The results of the five studies presented here found that proscriptive injunctions elicited greater reactance than prescriptive injunctions. This effect was heightened when the message came from a more authoritative source (Study 2)

and was mediated by the perceived legitimacy of the advice presented (Study 3 and Study 4). The effect occurred for a range of both researcher-provided and self-generated behaviors and was attenuated when a self-affirmation intervention was introduced (Study 5). The studies are the first to show that proscriptions lead to more reactance than prescriptions across a range of everyday lifestyle behaviors, and that compared with a prescriptive instruction, a proscriptive instruction can result in a lower likelihood of the recipient following the recommendation, especially when the recommendation originates from an authoritative source. In addition, we demonstrated the importance of perceived legitimacy in mediating these effects. The research is also the first to show that the effect of the proscriptive and prescriptive injunction on reactance was not present following a self-affirmation manipulation. The results of the five studies support and extend the contribution of Janoff-Bulman et al. (2009) and suggest that the proscriptive and prescriptive systems of regulation may have cognitive and motivational effects beyond the domain of prototypical moral behavior. In the studies presented by Janoff-Bulman et al. (2009), proscribed moral behaviors were associated with behavioral activation (vs. inhibition), the use of more abstract (vs. concrete) verb terms, and were viewed as more a matter of personal preference compared with proscribed moral behaviors. The current research contributes to cumulative theoretical knowledge in psychology by supporting the notion of two systems of regulation, by extending our understanding of these processes outside of the domain of prototypical moral behavior, and by showing that the two types of injunction have different consequences for reactance.

One explanation for greater reactance in the proscription than in the prescription condition is based on the difference between the two injunctions in terms of how “mandatory” or “strict” they are construed to be (Janoff-Bulman et al., 2009, p. 524). Janoff-Bulman et al. (2009) found that proscriptions (compared with prescriptions) were associated with a harsher judgment of transgressors and were perceived as less a matter of personal preference. This fits in with the idea that deontological rules (rules about obligations and duties) usually make reference to “negative obligations” (Holyoak & Powell, 2016, p. 1181) or are viewed as “constraints” and are “negatively formulated (as prohibitions)” (Davis, 1991, p. 208). For these reasons, proscriptions may be more likely than prescriptions to be associated with, or to be viewed as implying, greater constraints on action, as threats to autonomy and—consequently—as more likely to elicit reactance. This explanation is further supported by research suggesting that people choosing between options perceived as more morally relevant experience a lower sense of decision-making autonomy and choice than those given less morally relevant options (Kouchaki et al., 2018). It follows that the greater perceived moral obligation inherent in a proscriptive injunction contributes to lower perceived choice, behavioral freedom, and autonomy, thus exacerbating reactance effects. This

explanation is supported by our findings in Study 4, which showed a negative association between moral obligation and perceived legitimacy, and a positive association between moral obligation and reactance. The greater reactance toward a proscriptive recommendation may also be heightened in the broader lifestyle domain. For example, it may be perceived as less acceptable or legitimate to impose moral restrictions on health and lifestyle choices, which are more frequently perceived as matters of individual autonomy and liberty (cf. Ashcroft, 2006; Taylor & Hawley, 2006), than for more traditional, explicitly moral behaviors (Haidt & Kesebir, 2010), which have clearer implications for other people’s well-being. This reasoning has been used to explain why nudges, although often designed as autonomy-preserving influences on behavioral choice, may fail (Sunstein, 2017, 2019), that is, if they are perceived as illegitimate and intentional attempts to coerce action and restrict perceived choice. Perceived legitimacy was found in our studies to be a reliable mediator of the effect of proscription on reactance, with participants in proscriptive conditions (compared with prescriptive conditions) reporting lower perceived legitimacy of the request. Our findings therefore support previous research that has shown the importance of legitimacy in predicting reactance effects (Sittenthaler et al., 2015; Zhang & Sapp, 2013) and suggest that the perceived legitimacy of a request may be lower when moral obligations are made salient (i.e., for proscription).

A second explanation for the greater reactance experienced as a result of a proscriptive injunction stems from differences between the two injunctions in eliciting abstract versus concrete thinking, as described by Janoff-Bulman et al. (2009). The concrete thinking elicited by a proscription may result in a more specific and tangible example of a behavior or action being generated, limiting the perceived scope of possible action alternatives and constraining feelings of autonomy, thus increasing reactance. The more abstract thinking elicited by prescriptions may lead to a broader range of envisaged behavioral alternatives, increasing perceived autonomy, and ameliorating reactance effects (cf. Katz et al., 2017). Moreover, if proscriptions have a tendency to be more specific, and prescriptions have a tendency to be more general in scope, it may be that there is a clearer imagery elicited with the former, which in turn elicits a stronger affective response (Slovic et al., 2002). In summary, this explanation suggests that the more “general” injunction opens up options and permits autonomy, whereas the “specific” injunction restricts autonomy, and consequently increases reactance. Although one previous study manipulated the concrete versus abstract nature of language used in health promotion messages and found no effects on reactance (Miller et al., 2007), in that study, both the concrete and abstract messages used a prescriptive frame. Further research is required to examine whether the concrete thinking elicited by proscriptions may lead to greater reactance due to a narrowing of perceived behavioral alternatives.

Related to this explanation of our findings, the negativity bias was suggested by Janoff-Bulman et al. (2009) to account

for the asymmetry of proscriptions and prescriptions and to underpin the effects of approach versus avoidance in the moral domain. If proscriptions elicit negative emotion, this may also serve to narrow our thought-action repertoire. In contrast, the resulting action repertoires following a prescriptive recommendation may be more varied (cf. Fredrickson, 2013), allowing creativity in thinking, and thus signaling greater autonomy and choice. A proscription may therefore be beneficial in contexts where an immediate avoidance of a threat is required, or where the recommendation is perceived as legitimate due to potential for immediate harm to oneself or others. However, for other health and lifestyle choices that tend to have less immediate negative consequences both for self and others, a prescriptive injunction may be more beneficial, as this allows for more individual freedom of response and thus reduces the likelihood of reactance effects. The results of Study 5 showed that self-affirmation attenuated the effect of the injunction type on reactance. Steele (1988) suggests that the perception that one is free to make choices is central to self-integrity. Therefore, self-affirmation may alleviate the need to respond with reactance to advice and recommendations that potentially threaten self-integrity and freedom of choice (Persoskie et al., 2015). Although meta-analysis has confirmed a small but reliable effect of self-affirmation across a range of health behaviors (Epton et al., 2015), the beneficial effect of self-affirmation on reducing defensive responses may be particularly pronounced when using a proscriptive injunction, or for behaviors that are typically proscribed. Additional research is required to further explore these possibilities.

### *Limits on Generality*

Although the five studies provide strong evidence for a consistent effect of injunction type on reactance across a range of behaviors, there are some limitations to be acknowledged. The majority of participants in our samples were U.K. university students, were predominately female, and were typically of a higher socioeconomic status. This lack of diversity limits the generalization of our findings to other groups. In addition, the measure of reactance used in the five studies was a self-report measure and thus subject to the usual potential limitations (e.g., desirability bias, demand characteristics, and a requirement of individual insight). In the original formulation of reactance, J. W. Brehm (1966) suggested that for reactance to have occurred, an action taken to restore the threatened freedom should be observed. While directly measuring reactance (as a motivational state) helps us to clearly interpret the effect as reactance rather than a different motivational response, the extent to which that motivational state led to an action to reassert the threatened freedom was not assessed in our studies. Moreover, although the behaviors investigated in the current studies were of general relevance to our sample, and the injunctions referenced

tangible and discrete actions, the studies (excluding Study 5) did not examine the extent to which the messages were of specific personal relevance to the participants. A reactance effect in the proscriptive injunction condition may be more pronounced for individuals for whom the recommendation is particularly relevant (Schüz et al., 2013), and where a restriction of the behavior is particularly threatening to social identity (De Lemus et al., 2015). Although we found no interaction of a measure of personal relevance (i.e., an assessment of baseline meat consumption) with the experimental effects in Study 5, the potential for personal relevance to moderate our findings could be explored further.

### *Future Directions*

Further research is needed to extend our findings to other populations and to explore potential cross-cultural differences in the effects of proscription and prescription on reactance. Further research could include measuring the reassertion of a free behavior in an unrelated domain, or a measure of reactance that does not involve self-report (e.g., a physiological response, see Sittenthaler et al., 2015). Future research could also examine whether our findings are moderated by the recipient's agreement with the underlying goal of the injunction. If the underlying goal promoted by the injunction is autonomously endorsed and fully integrated into the recipient's belief system, it may be perceived as more legitimate than an injunction that promotes an externally regulated action or goal. It is perhaps only under conditions where injunctions express values that have not been internalized, that autonomy is threatened (and reactance effects observed).

Our five studies have important implications for the successful use of injunctions in persuasion contexts. They are the first to show a potential undesirable effect of proscriptive recommendations based on increased reactance and suggest that the design of communications that include injunctions and recommendations may be more effective if the effects of proscription versus prescription on reactance are considered. Further research is needed to explore the boundary conditions to this effect and to investigate the underlying mechanisms by which proscription and prescription results in different levels of reactance. The practical impact of these findings could be recognized by a range of policy makers and professional organizations that are concerned with persuading others to engage in behavioral change. The research makes a key contribution to the theoretical and empirical literature on persuasion, reactance, and social influence by identifying aspects of normative injunctions that may elicit unwanted responses.

### **Acknowledgments**

We thank Hannah Barfoot and Sam Lo for data collection in Study 1 and Study 5. The research reported in this article was not preregistered.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

## ORCID iD

Louisa Pavey  <https://orcid.org/0000-0002-7646-099X>

## Supplemental Material

Supplemental material is available online with this article.

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