The effect of commanding language on reactance in COVID-19 and advertising contexts

Sara Klein

Name: Sara Klein

Student number: 2064651

Study program: MSc Economic Psychology

Academic year: 2021-2022

Submission date: April 1, 2022

Name supervisor: dr. Christoph Kogler

Abstract

Psychological reactance theory assumes that a motivational state marked by anger can be elicited when an individual's behavioral freedom is undermined, motivating the individual to regain freedom by undertaking the prohibited behavior. Reactance depends primarily on how behavioral restrictions are communicated to people, with the literature distinguishing between commanding and non-commanding language. In addition, the perception of behavioral restrictions and threats may depend on the context of the receiver. Applying a scenario-based approach, the present study experimentally investigated whether the effect of language (commanding vs. non-commanding) on psychological reactance differs between contexts (COVID-19 vs. personalized advertising) testing 215 participants. Concerning state reactance, the analysis showed a main effect of context, an interaction effect of language x context, but no main effect of language. Regarding behavioral intention, the analysis revealed a main effect of context, but no main effect of language and no interaction effect of language x context. The absence of a language effect might be explained by the attenuating effect of gain framing on the effect of commanding language on reactance. Additionally, people's perception of a COVID-19 technology as a benefit versus a personalized advertising technology as exploitation might clarify the higher level of reactance in the advertising context. Finally, commanding language may have boosted the context effect, explaining the interaction effect between language and context on state reactance. Overall, this study shows that the use of commanding language would be unfavorable when communicating policies to the public, especially when citizens are faced with personalized advertising technologies.

*Keywords***:** psychological reactance, commanding language, COVID-19, personalized advertising, state reactance, behavioral intention.

The effect of commanding language on reactance in COVID-19 and advertising contexts

Psychological reactance is defined as a motivational state marked by anger, that is activated when an individual's behavioral freedom and autonomy are restricted or threatened (Miron & Brehm, 2006). When aroused, reactance initiates an attempt by the individual to restore freedom and autonomy by undertaking the forbidden or discouraged behaviors, also called the *boomerang-effect* (Miron & Brehm, 2006; Rosenberg & Siegel, 2018). Psychological reactance is a blend of an individual's perceptions and behavior. The perceptual component of reactance consists of the experience of negative emotions in response to the restriction or threat and a negative attitude towards the restricting or threatening message (Sittenthaler et al., 2015). Behavioral reactance refers to behavioral intentions to restore freedom and autonomy and to actually perform the restricted or threatened behavior in order to restore freedom and autonomy (Krpan & Dolan, 2021; Sittenthaler et al., 2015)

Psychological reactance depends primarily on the language used in the behavioral restrictions or threats, which may be interpreted as controlling or as autonomy-supportive (Brinson et al., 2018; Rosenberg & Siegel, 2018). In addition, personality traits also affect the reactance effect, with some personality traits (e.g., time urgency) more susceptible to reactance arousal when behavioral freedom is threatened than other traits (e.g., enjoy achievement) **(**Rosenberg & Siegel, 2018). Furthermore, the perception of behavioral restrictions and threats may depend on the context of the receiver (Miron & Brehm, 2006). That is, in certain contexts reactance is more likely to occur than in others due to factors like attitude strength, moralized attitudes, and emotional load that might vary between different contexts.

From a theoretical perspective, it is important to extend the psychological reactance theory beyond its well-established base in the effect of language (Rosenberg & Siegel, 2018) to the effect of context. In doing so, insight can be gained into whether the effect of language on psychological reactance differs across contexts, or whether this is a generalizable and robust

phenomenon. Furthermore, from a more applied point of view, it is of utmost importance to know how to optimally communicate with people in order to convince them to comply with rules and regulations. Therefore, a richer understanding of the effect of language and context on psychological reactance is necessary to improve the effectiveness of government campaigns and thereby encourage socially desirable behavior (Brinson et al., 2018).

Commanding vs. non-commanding language

Psychological reactance depends primarily on how behavioral restrictions are communicated to people (Brinson et al., 2018; Rosenberg & Siegel, 2018). In the literature on reactance, a distinction is made between *commanding* and *non-commanding language* (Rosenberg & Siegel, 2018). Commanding language refers to the use of words such as "must" and "should" which often causes behavioral restrictions to be interpreted as authoritarian or controlling. In contrast, non-commanding language refers to the use of words such as "may" and "perhaps" and creates an impression of free choice (Brinson et al., 2018; Krpan & Dolan, 2021; Rosenberg & Siegel, 2018). In a variety of contexts, the use of commanding communication leads to more reactance and engaging in restricted behavior in comparison to non-commanding communication because commands threaten recipients' autonomy and freedom of choice (Rosenberg & Siegel, 2018). Thus, improperly constructed communication may attenuate or reverse intended effects (Crano et al., 2017). For example, research on alcohol consumption suggests that people exposed to commanding communication experienced more negative emotions, rated the message more negatively, had more drinking intentions, and drank more alcohol in comparison with people exposed to low-threat communication (Bensley & Wu, 1991). In addition, research on compulsory vaccination shows that making some vaccinations mandatory while leaving other vaccinations voluntary, results in anger and reduced choice for voluntary vaccines (Betsch & Böhm, 2015). Furthermore, a current - very relevant and visible - context where people are confronted with recommendations and

restrictions is related to the COVID-19 pandemic. Research by Krpan and Dolan (2021) on compliance with COVID-19 related recommendations, like avoiding meeting friends and family members, indicates that people find commanding messages threatening and feel angry and negative toward them. However, while they measured two different aspects of behavioral reactance (behavioral intention and actual behavior), the commanding messages only influenced behavioral intentions, not actual behavior to comply with the recommendations (Krpan & Dolan, 2021).

Accordingly, in some contexts, people show both the full perceptual (negative emotion and attitude) and behavioral (behavioral intention and actual behavior) components of reactance. In other contexts, in contrast, participants show the entire perceptual component of reactance but only part of the behavioral reactance component, namely behavioral intention but not actual behavior. This gap between behavioral intention and actual behavior that occurs in some contexts may be due to the level of reactance that is triggered in these contexts (Krpan & Dolan, 2021). As already mentioned, research by Miron and Brehm (2006) on the influence of context on reactance shows that reactance is context-based, meaning that individuals may feel great reactance when a certain behavior is not allowed or forced in one context, while they care less in another context, resulting in a weaker reactance effect. Likely candidates of context factors that influence the level of reactance might be attitude strength, moral relevance, and emotional load, as relevant research suggests that these factors vary considerably between contexts (Kodapanakkal et al., 2021; Nesse & Ellsworth, 2009; Schwarz, 2007).

COVID-19 and personalized advertising

Psychological reactance appears to be context dependent (Miron & Brehm, 2006). However, the role of context has not been studied systematically and it is unclear what the determinates of context are. The following section introduces relevant characteristics and differences of the contexts investigated in the present study, namely COVID-19 and

personalized advertising, referring to three important determinants: attitude strength, moralized attitudes, and emotional load, all of which potentially influence the level of reactance.

COVID-19

The ongoing COVID-19 pandemic resulted in many infections and deaths over the past two years (Tsoi et al., 2021). As a consequence, the government has taken several policy measures such as staying at home unless undertaking essential activities (Krpan & Dolan, 2021) or using a QR-code informing about current negative test results or vaccination status to enter public areas, like restaurants and theaters. By simply scanning someone's COVID-19 QR-code with a mobile device, the doorman of the public area can instantly see medical information about a person's COVID-19 vaccination, recent COVID-19 testing, and recent COVID-19 infections (Okazaki et al., 2012). Such technology applied specifically in the context of COVID-19 can be useful because sharing health data can help in managing infection rates and still ensure that everyday-life activities can proceed.

Personalized advertising

Recently, the use of big data technologies has emerged in many different technology domains, like marketing (Andre et al., 2017). Personalized advertising, for example, is intended as a communication strategy that aims to deliver customized messages to individuals based on personal information, such as past buying behavior, lifestyle interests, and demographics (Baek & Morimoto, 2012; Brinson et al., 2018). Personalized advertising technology offers numerous advantages for both advertisers and consumers. Advertisers benefit by reducing expenditures wasted on individuals who have no interest in their products or services. Consumers benefit by seeing more relevant, interesting, and rewarding advertisements and encountering fewer uninteresting ones. The personalizing of advertisements thus leads to increased consumer well-being by making consumer choices easier, more practical, and more efficient (Andre et al., 2017).

However, technologies used in both contexts have the potential to trigger reactance. Concerning COVID-19, there are ethical concerns about the intrusion of personal privacy and discrimination against non-vaccinated persons (Tsoi et al., 2021). The use of a QR-code to enter public areas can elicit consumer reactance when people feel that their data privacy is threatened or their sense of autonomy is undermined (Andre et al., 2017; Kodapanakkal et al., 2021). With regard to personalized advertising, the technology can be detrimental to consumers' well-being when consumers perceive advertisements as a threat to an individual's data privacy or when data privacy cannot be guaranteed, which may lead to psychological reactance (Baek & Morimoto, 2012). Individuals perceive this threat when messages contain sensitive personal information which makes them feel unable to avoid being closely observed by the government or companies. Additionally, personalized advertising generates consumer reactance by undermining consumers' sense of autonomy that consumers experience while decision-making (Andre et al., 2017). This may occur when consumers feel deprived of their ability to control their own choices.

Relevant differences of COVID-19 and personalized advertising

Furthermore, as already mentioned there seem to be important characteristics in which the COVID-19 and personalized advertising contexts differ, and which may influence the reactance effect.

The first factor that might determine the level of reactance is attitude strength, which refers to the degree to which an attitude persists over time, resists change, affects the processing of information, and directs behavior (Miller & Peterson, 2004). Likely, people's attitude about COVID-19 is stronger, compared to personalized advertising because COVID-19 is a medical issue and currently very relevant and visible. Indeed, research by Krpan and Dolan (2021) shows that people experience negative thoughts toward threatening COVID-19 messages. In contrast, the research results on the relationship between perceived threats and attitudes

towards personalized advertising are inconsistent. Research by Baek and Morimoto (2012) indicates that information privacy concerns contribute to consumers' psychological reactance because perceiving a threat leads to a negative attitude towards personalized advertising. However, the study of Brinson et al. (2018) did not find evidence for this relationship. These inconsistent findings imply that people may not have a strong attitude towards personalized advertising.

Second**,** moralized attitudes could influence reactance. Moral attitudes differ from non-moral attitudes because people consider moralized attitudes usually as fundamental right or wrong. People with moralized attitudes are particularly hard to persuade and react with anger when faced with conflicting views. In some big data technologies contexts, people's attitudes are more moralized than in other big data technologies contexts (Kodapanakkal et al., 2021). The variation in moral behavior is due to context because the norms that people adhere to and their behavior in a given context are determined by the norms that apply in that context (Zou et al., 2009). COVID-19 is a very relevant and visible medical issue, therefore it is possible that attitudes on average are more moralized in the COVID-19 context, than in the personalized advertising context. However, there is much division in society regarding COVID-19 and a lack of clarity about which norms currently apply (den Ridder et al., 2020). Consequently, it is unclear what effect moralized COVID-19 attitudes have on reactance. In addition, a favorable outcome (e.g., reducing the spread of infections) primarily determinates whether people rate a healthcare technology, like the COVID-19 QR-code technology, as morally acceptable (Kodapanakkal et al., 2020). So, in the case of COVID-19 technologies, reactance should strongly depend on how effective people consider the technology to be in achieving a favorable outcome.

Finally, a context confronting participants with COVID-19 regulations may be more emotionally loaded, compared to the personalized advertising context. As mentioned,

personalized advertising can be perceived as a threat to an individual's data privacy and therefore leads to reactance (Baek & Morimoto, 2012). However, COVID-19 is a medical context, in which sharing medical information may be perceived by people as high risk and threatening, and thus elicit more emotions and therefore more reactance. In addition, people do not react only to obvious, direct threats. Reactance can also be aroused in subtle ways and even outside of conscious awareness (Steindl et al., 2015). Maybe personalized advertising regulations are a more indirect threat issue, so the emotional load is smaller, compared to current very relevant COVID-19 regulations.

Aim of the present study

The aim of the present study is to investigate whether the effect of commanding language versus non-commanding language on psychological reactance differs between contexts. Accordingly, this study investigates the effect of language (commanding vs. non-commanding) on reactance and whether the level of reactance differs between contexts (COVID-19 vs. personalized advertising).

In line with the literature, a main effect of language is assumed: a commanding message should increase reactance, compared to a non-commanding message. In addition, a potential main effect of context is tested. As mentioned, the COVID-19 and personalized advertising contexts differ with regard to several factors potentially influencing reactance, namely attitude strength, moralized attitudes, and emotional load. Therefore, a potential effect of context on reactance is tested. Finally, the present study also investigates whether there is an interaction effect of language and context on psychological reactance. Due to the crucial differences between the two contexts, the effect of language on reactance might work be more pronounced in one context than in the other.

Furthermore, additional analyses will be conducted to investigate whether the three factors attitude strength, moralized attitudes, and emotional load determine potential differences in the level of reactance in both contexts.

Method

Participants

The participants were recruited using a convenience sample, with participants being approached via social media. A power analysis was conducted using G*power 3.1 to predetermine the target sample size (Faul et al., 2009). Based on $\alpha = .05$ and a power $(1 - \beta) = .80$ a minimum of 199 participants were needed to detect a small to medium effect of $f = .20$. A total of 215 participants, ranging from 17 to 87 years ($M = 35.5$, $SD = 16.6$) completed the study, 133 females and 82 males. The majority of the participants (87.9%) were highly educated: 25.1% of the participants had a university of applied science bachelor's degree, 24.7% had a university bachelor's degree, and 38.1% had a university master's degree or higher.

Design and procedure

The present study, which was approved by the Ethical Review Board of Tilburg University, applied a 2 x 2 between-subjects design and made use of a scenario-based approach. The main dependent variables were state reactance and behavioral intention. In addition, the independent variables were language (commanding vs. non-commanding) and context (COVID-19 vs. personalized advertising).

An online survey was conducted via Qualtrics, with each participant randomly assigned to one of the four conditions: commanding/COVID-19, non-commanding/COVID-19, commanding/advertising, non-commanding/advertising. Participants completed the scenario design by reading either the scenario of COVID-19 or personalized advertising. These scenarios consisted of a basic explanation of an emerging technology related to either COVID-

19 or personalized advertising (see appendix A for a full description of the scenario used). Embedded in the scenarios was the language manipulation, in which the participants read either the commanding message or non-commanding message (see appendix A). For example, participants assigned to the commanding/advertising condition read the following text:

> *"The government is planning to allow the use of an algorithm that can help with personalizing advertisements. This technology relies on data ranging from personal information like consumers' names, demographics, and locations to past buying behavior and lifestyle interest. Based on this information, future advertisements will be tailored to your preferences.*
>
> *You are told that you absolutely must give permission for the use of this technology".*

Measures

The manipulation of language was checked with the item "The language used in the scenario was commanding". The manipulation of context was assessed with the item "The context of the scenario was COVID-19". Answers had to be indicated on a 5-point Likert-type scale (1 - not agree all to 5 – strongly agree).

The behavioral intention of the participants was measured with the item: "How likely is it that you will accept this technology?". Answers had to be indicated on a 7-point Likert-type scale (1 - not likely at all to 7 - very likely).

Second, the Salzburg State Reactance scale, adapted to current context scenarios, was used to measure participants' state reactance (see appendix B for the full questionnaire). The scale contained ten items to measure the experience of negative emotions, negative attitudes, and aggressive behavioral intentions in response to a threatening situation (Rosenberg & Siegel, 2018). An example question was: "To what extent do you perceive the recommendation as a restriction of freedom?". Answers had to be indicated on a 5-point Likert-type scale (1 - not at all to 5 - very much).

Attitude strength was assessed with the item "To what extent do you think your attitude towards (A) personalized advertising or (B) COVID-19 restrictions will change in the future". Answers had to be indicated on a 5-point Likert-type scale (1 - not at all to 5 - very much).

Moralized attitudes were assessed with a two-item moral conviction scale. The two questions were: "How much is your position on the use of this technology connected to your core moral beliefs and convictions?" and "How much is your position on the use of this technology connected to your beliefs about fundamental right or wrong?"**.** Answers had to be indicated on a 5-point Likert-type scale (1 - not at all to 5 - very much).

Emotional load was measured with the item "To what extent do you feel negative emotions towards this technology?". Answers had to be indicated on a 5-point Likert-type scale (1 - not at all to 5 - very much).

Finally, demographics were collected using questions about age, gender, and education level (see Appendix C).

Results

Manipulation check

To check if the manipulation of commanding versus non-commanding language was successful, a two-factorial ANOVA was calculated, with language and context as independent variables, and the perception of the language as commanding as dependent variable. As expected, the analysis revealed a main effect of language F (1, 214) = 22.33, $p < .001$, $\eta^2 = .096$. Participants in the commanding conditions (M = 3.41; SD = 1.09) reported a higher perception of commanding language in comparison to the non-commanding conditions (M = 2.74; SD = 0.96). There was no main effect of context F (1, 214) = 0.22, $p = .639$, $\eta^2 = .001$ and no significant interaction of language x context F (1, 214) = 0.08, $p = .777$, $\eta^2 = .000$.

Furthermore, to check whether the manipulation of the COVID-19 context versus personalized advertising context was successful, a two-factorial ANOVA was calculated, with

language and context as independent variables, and the perception how strongly the context was related to the COVID-19 situation as dependent variable. In line with the assumptions, a significant main effect of context was observed F (1, 214) = 350.73, p < .001, η^2 = .624. Participants in the COVID-19 context (M = 4.39; SD = 0.96) indicated that the scenario was more related to COVID-19 compared to participants in the personalized advertising context (M = 1.77; SD = 1.07). In addition, there was no significant main effect of context F (1, 214) = 0.04, p = .851, η^2 = .000 and no significant effect concerning the interaction between language and context F (1, 214) = 0.25, p = .616, η^2 = .001.

In short, this suggests that the experimental manipulation of both the factors language and context was successful.

Measures of reactance

In the following, the results of the two-factorial ANOVAs with the dependent variables state reactance and behavioral intention, and the independent factors language and context are presented. The descriptive statistics for each condition can be found in Table 1.

Concerning state reactance, the analysis showed a significant main effect of context F (1, 214) = 59.10, p < .001, η^2 = .219, indicating that participants in the COVID-19 condition (M = 2.30; SD = .71) reported a lower level of state reactance compared to the participants in the personalized advertising condition (M = 3.06; SD = 0.76). No significant main effect of language was identified F (1, 214) = 0.01, p = .941, η^2 = .000. Moreover, a significant interaction of language x context on state reactance was observed F (1, 214) = 4.60, p = .033, η^2 = .021, as the difference in state reactance between the COVID-19 condition and personalized advertising condition was higher under commanding language compared to non-commanding language (see Table 1).

With regard to behavioral intention, the analysis revealed a significant main effect of context F (1, 214) = 100.86, p < .001, η^2 = .323, showing that the participants in the COVID-

19 condition (M = 5.11; SD = 1.54) reported a higher intention to accept the technology compared to the participants in the personalized advertising condition (M = 2.97; SD = 1.57). Furthermore, no significant main effect of language was identified F (1, 214) = 0.40, p = .526, η^2 = .002. Additionally, there was no significant interaction of language x context on behavioral intention observed F (1, 214) = 0.54, p = .464, η^2 = .003.

Table 1. *Estimated means and standard errors of behavioral intention and state reactance.*

Dependent variable	Commanding language				Non-commanding language			
	COVID-19		Personalized advertising		COVID-19		Personalized advertising	
	M	*SD*	M	*SD*	*M*	*SD*	*M*	*SD*
Behavioral intention	5.25	1.51	2.96	1.16	4.96	1.57	2.98	1.55
State Reactance	2.19	0.72	3.18	0.70	2.40	0.70	2.95	0.81

Note: Higher scores indicate a higher perception of the items.

Additional analysis

In this section, the results of the additional analysis for the variables attitude strength, moralized attitudes, and emotional load are presented, beginning with bivariate correlation analyses followed by two-factorial ANCOVAs.

For attitude strength, the analysis showed no correlation between both attitude strength and state reactance r (214) = -.02, p = .832 and between attitude strength and behavioral intention r (214) = .07, p = .289.

With regard to moralized attitudes, the analysis revealed a significant correlation between moralized attitudes and state reactance r (214) = .41, p < .001, and between moralized attitudes and behavioral intention r (214) = -.21, p = .002, indicating that higher moralized attitudes led to a higher level of state reactance and fewer behavioral intention to comply.

Concerning emotional load, the analysis showed a significant correlation between emotional load and state reactance r (214) = .77, p < .001 and between emotional load and

behavioral intention r (214) = -.66, p < .001. Thus, a higher emotional load resulted in a higher level of state reactance and fewer behavioral intentions to comply.

Since the variables moralized attitudes and emotional load correlates with state reactance and behavioral intention, these two variables were included as covariates in an additional analysis to test whether the original observed pattern of results was affected.

Concerning state reactance, after including the covariates moralized attitudes and emotional load, the analysis again revealed a significant main effect of context, but this effect was relatively weaker F (1, 214) = 9.99, p = .002, η^2 = .046. In addition, there was again no main effect of language F (1, 214) = 0.01, p = .935, η^2 = .000 and no significant interaction effect between language and context anymore F (1, 214) = 3.56, p = .061, η^2 = .017.

For behavioral intention, the two-factorial ANCOVA again identified a main effect of context, however the effect was relatively weaker F (1, 214) = 39.69 p < .001, η^2 = .160. In addition, there was again no significant main effect of language F (1, 214) = 1.17 p = .280, η^2 = .006 and no significant interaction effect of language x context F (1, 214) = 0.02 p = .879, η^2 = .000.

Discussion

This study examined whether the effect of commanding language (e.g., “must”, “should”) versus non-commanding language (e.g., “may”, “perhaps”) on psychological reactance differs between contexts (COVID-19 vs. personalized advertising). Concerning state reactance, the analysis revealed a main effect of context but no main effect of language. Moreover, an interaction effect between language and context on state reactance was observed. With regard to behavioral intention, the analysis showed a main effect of context, but no main effect of language and no interaction effect between language and context. Concerning the additional analysis, it was found that both moralized attitudes and emotional load correlate with

state reactance and behavioral intention. However, these covariables do not change the effect of language and context on reactance.

Theoretical and practical implications

One important – and unexpected – finding of the present study is related to the effect of language on psychological reactance since there was no general difference between commanding and non-commanding language in the level of state reactance triggered and the behavioral intention of people to accept the technology. This finding is inconsistent with the literature on reactance theory, as previous research on reactance shows that the use of commanding communication in comparison to non-commanding communication leads to more reactance and engaging more in the restricted behavior because it threatens recipients' autonomy and freedom of choice (Rosenberg & Siegel, 2018). A plausible explanation for these conflicting results might be related to the language used in the scenarios of the present study, as there might be other message characteristics that influence reactance (Dillard & Shen, 2005). Research suggests that a loss-frame message, rather than a gain-frame message, produces a greater perceived threat to freedom (Cho & Sands, 2011) and more psychological reactance (Shen, 2014). Loss-frame messages emphasize the negative consequences that can be experienced by not following the behavioral recommendation, while messages with a gain-frame highlight the desired outcomes of compliance with the recommendation (Cho & Sands, 2011). Research by Miller et al. (2021) indicates that although commanding language and loss-framing reduce behavioral intentions to accept recommendations, the applications of commanding language coupled with gain-frame messages significantly increased behavioral intentions. Gain-frame messages may therefore serve to buffer the negative effects of commanding language (Miller et al., 2021) and thereby reduce people's reactance arousal and motivation to restore freedom (Shen, 2014). Since the present study used a gain-frame, this may have reduced the effect of commanding language on state reactance and behavioral

intention (Miller et al., 2021; Shen, 2014), resulting in a low overall level of reactance in this study and no difference between commanding and non-commanding language.

With regard to the effect of context on psychological reactance, a higher level of reactance was observed in the personalized advertising context, since less state reactance and more behavioral intention to accept the technology were found in a context confronting participants with COVID-19 regulations compared to the personalized advertising context. This observation is in line with literature on reactance, which suggests that psychological reactance is context dependent (Miron & Brehm, 2006). An intuitive explanation for this finding relates to people's reasons to accept or reject the technologies. Research by Kodapanakkal et al. (2020) indicates that people's acceptance of technologies with potential advantages as well as disadvantages is much higher in a context where human lives can be saved. Since the COVID-19 technology has the advantage of benefiting the health of individuals and society, people are more likely to accept this technology. Even though personalizing advertising can be beneficial because it can make consumers' choices easier, more practical, and more efficient (Andre et al., 2017), people may also have good a reason to reject the personalized advertising technology, as people seem to care about privacy violations (Kodapanakkal et al., 2020). These privacy violations could be salient in the advertising context, causing consumers to perceive personalized advertising as exploitative. Consumers who experience this exploitation may have the perception that personalized advertising only benefits the advertisers who make a lot of money from it or that their personal data is being misused (Boerman et al., 2021). Although the findings of the present study may suggest that the perception of benefit versus exploitation may influence psychological reactance, further research into the influence of the perception of benefit and exploitation on psychological reactance is recommended to yield additional insight. Such research should further compare different contexts where people may experience benefits or exploitation to assess whether the

findings are similar or different in these contexts compared to the COVID-19 and personalized advertising context.

Concerning the interaction effect between language and context on state reactance, the difference in the level of state reactance between the COVID-19 condition and personalized advertising condition was higher when commanding language was used compared to non-commanding language. An explanation for this observation might be related to the boosting effect of commanding language on the effect of context. As already mentioned, commanding language is likely to trigger more psychological reactance in general than non-commanding language (Rosenberg & Siegel, 2018). In addition, it is also claimed that reactance is context dependent (Miron & Brehm, 2006), as a context confronting people with personalized advertising technologies triggered more reactance than a context in which people are faced with COVID-19 regulations. It can therefore be stated that the use of commanding language enhanced the effect of context on state reactance, compared to non-commanding language.

The findings of the present study also have practical implications for policymakers. As already mentioned, this study indicates that people experience more state reactance and less behavioral intention to accept the technology in a context confronting participants with personalized advertising regulations compared to a COVID-19 context. This implies that, compared to a COVID-19 context, in a personalized advertising context there is a greater likelihood that commanding language could backfire by encouraging psychological reactance, which would cause people to engage in prohibited or discouraged behaviors. Consequently, it would be unfavorable to use commanding language, especially in a context confronting people with personalized advertising technologies. When communicating personalized advertising policies to the public, policymakers should consider the effect of language on reactance. Concretely, policymakers will be better off using words such as “may” and “perhaps” and avoid the use of words such as “must” and “should”, when they communicate technologies

such as an algorithm that contains personal information (e.g., demographics and past buying behavior) to improve personalized advertising.

Strength and limitations

In this study, the experimental manipulation of both factors language and context proved to be successful. In addition, comparing reactance in the current - very relevant and visible - COVID-19 context to another context has not been done before.

Nevertheless, this study is subject to some limitations. First, the two scenarios involving the language manipulation used in this study were not officially published by the government, which may have caused respondents to react to them differently than they would respond to an official government announcement. However, it is unlikely that ecological validity would explain the absence of the effect of language on reactance, as previous studies applying hypothetical scenarios confirmed that commanding language leads to more reactance, compared to non-commanding language (Rosenberg & Siegel, 2018).

Second, 87% of the participant in this study were highly educated (college degree or higher), while in 2019 only 41% of the Dutch labor force was highly educated (Maslowski, 2020). This implies that the highly educated sample of the present study was not representative of the Dutch population and the data cannot be generalized across the Dutch population. The effect of education level on reactance has not been studied before, but related research shows that highly educated people, on average, indicate more social and institutional trust than low educated people (Dekker & van der Meer, 2011). Moreover, research by Song et al. (2018) indicates that message sources that people consider trustworthy can diminish the reactance effect elicited by potentially freedom-threatening policies. In the scenarios of the present study, the government was planning to allow a new technology, making the government the source of both messages. Therefore, the high level of trust that higher educated people have in the government may have reduced the effect of commanding language on reactance in both

contexts (Song et al., 2018), resulting in a low overall level of reactance in this study and no difference between commanding and non-commanding language. Future research could compare people with different levels of education and trust in the government in terms of reactance, thus providing more insight into the effect of educational level and trust on psychological reactance.

Finally, the present study did not measure actual behavior, as a result, it is unclear whether reactance arousal in different contexts also affects actual behavior. Research on the intention-behavior gap suggests that commanding messages that influence perceptual reactance (negative emotion and attitude) and behavioral intention, may not be sufficiently strong to change people's behavior after receiving the message (Krpan & Dolan, 2021). Future research on the effect of language and context on psychological reactance involving measuring actual behavior is recommended. In this way, additional support can be provided for translating behavioral intention into actual behavior, after which it can be used by policymakers to communicate to citizens.

Conclusion

The present study indicates that people experienced more reactance and less behavioral intention to comply in a personalized advertising context compared to a context confronting participants with COVID-19 regulations, however, there was no evidence that commanding language and non-commanding language differ in the level of psychological reactance they triggered. In addition, the difference in state reactance between the COVID-19 and personalized advertising contexts was higher when commanding language was used (vs. non-commanding). When communicating policies to the public, it would be unfavorable to use commanding language, especially when confronting citizens with personalized advertising technologies, such as an algorithm that contains personal information to improve personalized advertising. The use of commanding language will lead to more reactance arousal. Therefore,

policymakers will be better off using non-commanding words such as “must” and “should” to minimize people’s reactance and increase people’s behavioral intention to comply with the technology.

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Appendix A

Scenarios

1. COVID-19

The government is planning to allow the use of a QR-code technology that can help with reducing the spread of COVID-19 infections.

This technology will combine data about your COVID-19 vaccination, your positive and negative COVID-19 test results, and additional personal information, like your full name and date of birth, into a QR-code. When entering public areas, you need to have your QR-code scanned.

2. Personalized advertising

The government is planning to allow the use of an algorithm that can help with personalizing advertisements.

This technology relies on data ranging from personal information like consumers' names, demographics, and locations to past buying behavior and lifestyle interest. Based on this information, future advertisements will be tailored to your preferences.

Messages

1. The non-commanding message:

You are asked for permission for the use of this technology but are not obligated to do so.

2. The commanding message:

You are told that you absolutely must give permission for the use of this technology.

Appendix B

Salzburg State Reactance Scale

1. To what extent do you perceive this technology as a restriction of freedom?

- 1 = not at all
- 2
- 3
- 4
- 5 = very much

2. Are you frustrated about this technology?

- 1 = not at all
- 2
- 3
- 4
- 5 = very much

3. How much does this technology annoy you?

- 1 = not at all
- 2
- 3
- 4
- 5 = very much

4. To what extent are you offended/disturbed by this technology?

- 1 = not at all
- 2
- 3
- 4

- 5 = very much

5. To what extent do you think that the government has prejudices?

- 1 = not at all
- 2
- 3
- 4
- 5 = very much

6. To what extent do you think that the government also shows discriminatory behavior in other areas?

- 1 = not at all
- 2
- 3
- 4
- 5 = very much

7. How likely do you think it is that this technology takes advantage of other people?

- 1 = not at all
- 2
- 3
- 4
- 5 = very much

8. Would you like to ruin the government's reputation by publishing a negative review on a relevant Internet site?

- 1 = not at all
- 2
- 3

- 4
- 5 = very much

9. How strong is your wish to complain about this technology?

- 1 = not at all
- 2
- 3
- 4
- 5 = very much

10. How much would you advise other citizens against this technology?

- 1 = not at all
- 2
- 3
- 4
- 5 = very much

Appendix C

Age

What is your age in years? (open question)

Gender

How do you describe yourself?

- Male
- Female
- Non-binary / third gender
- Prefer not to say

Education level

What is the highest level of school you completed or the highest degree you have received?

- Less than a high school degree
- High school
- MBO
- HBO
- University (Bachelor's degree)
- University (Master's degree or higher
- Others