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Descriptive or injunctive: How do restaurant customers react to the guidelines of COVID-19 prevention measures? The role of psychological reactance

Gi Won Kang, Zhenxian (Zoey) Piao, Jae Youn Ko

College of Hotel and Tourism Management, Kyung Hee University, 26 Kyungheedae-ro, Dongdaemun-gu, Seoul 02447, Republic of Korea

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ABSTRACT

In this study, we employed an experimental design to empirically test how restaurant customers react differently to normative appeals (descriptive vs. injunctive) relating to COVID-19 prevention measures through freedom threat and negative cognition. We conducted t-tests, serial mediation, moderation, and moderated serial mediation analysis to test the hypotheses using SPSS 23.0 and PROCESS macro v.3.5 (model 6 and model 85). Injunctive normative appeal causes an increase in freedom and a less favorable attitude than descriptive normative appeals. The findings also demonstrate the serial-mediated effect of freedom threat and negative cognition on attitude. Furthermore, the effectiveness of normative appeals depends on an individual’s age. This study contributes to the academic literature on hospitality by applying psychological reactance theory and testing the model within a restaurant context. It also discusses the implications of its findings for consumers and restaurant managers.

1. Introduction

COVID-19 is unprecedented in terms of its contagiousness. Potential vaccines to combat the virus are still in the trial stage. After the COVID-19 outbreak was classified as a global pandemic on March 11, 2020, national lockdowns, social distancing, stay-at-home orders, and mobility restrictions were imposed. This resulted in dwindling demand for hospitality businesses (Bartik et al., 2020). The tourism and hospitality industries face a challenge owing to the impact of the pandemic. Since more than 100 countries entered lockdowns or ordered people to stay at home, intercity and air travel in 2020 decreased by 70–90% globally, compared to 2019 (Dunford et al., 2020). The largest increases in unemployment were in industries that require physical contact with customers, such as hospitality, entertainment, and tourism, with a decrease in demand for these services due to the lockdown. Only 18% of customers responded positively when asked if they would travel and stay at a hotel, even in destinations with very few COVID-19 cases (Gursoy and Chi, 2020). According to experts, the worst-case scenario is that over half of restaurants may not survive (Severson and Yaffe-Bellany, 2020). Dine-in services in restaurants have confronted closures (Mervosh et al., 2020), resulting in a 58% drop in revenue from March to May 2020 (Cielo ICVA, 2020). The restaurant industry is particularly vulnerable to the COVID-19 pandemic (Brizek et al., 2021) due to the physical setting of restaurants in which many people use shared spaces, and the official announcement by the CDC that COVID-19 is spread mainly via close contact. A strategy to maintain consumer demand during this crisis is important (Sigala, 2020). Given the extended economic crisis, restaurants were allowed to reopen under required prevention guidelines, which included 50% maximum capacity, 6-foot physical distancing, and increased procedures to prevent infections (Clarey, 2020). As a result, we decided to focus our research in the restaurant context.

Despite a lockdown, the number of cases has not dropped dramatically in Australia (Cockburn and Taylor, 2020). Furthermore, it is impossible to ignore the economic insecurity caused by lockdowns. To revive the hospitality industry, governors decided to resume economic activities, re-opening hotels, restaurants, and bars. This was on the condition that they follow regulations to protect their employees, customers, and communities from the spread of COVID-19. Health institutes, the Center for Disease Control and Prevention (CDC), and the Ministry of Food and Drug Safety (MFDS) recommended no-contact restaurant services, such as drive-through, delivery, and take-out. Moreover, regulators mandated customers to comply with several prevention measures while accessing dine-in services, such as physical

* Corresponding author.
E-mail addresses: giwona1@coway.co.kr (G.W. Kang), piaoozxspsc.co.kr (Z.Z. Piao), jyko@khu.co.kr (J.Y. Ko).

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distancing, hand washing, and using face masks (Prasetyo et al., 2020). To boost customer compliance, designing guidelines for COVID-19 prevention in a normative way would help (Van Bavel et al., 2020). This is because social norms play a significant role in individuals’ tendencies toward pro-social behavior (Reese et al., 2014). For example, it has been found that campaigns using descriptive, normative appeals reduce energy consumption (Allcott, 2011) and alcohol consumption (Glider et al., 2001). The point is that normative appeals yield different results depending on the type of appeals (Schultz et al., 2007) because injunctive normative appeals and descriptive normative appeals differ in how explicitly they call for action (Jacobson et al., 2011). Thus, there may be a discrepancy in how individuals perceive the message and react to it.

Several scholars have viewed the global pandemic as a psychological threat, causing anxiety and defensive behavior (Jutzi et al., 2020; Pyshczynski et al., 2020). In the face of regulations, people voice their concern about freedom threats and ignore the measures. In addition, experts point out a disconnect between recommendations and their implementation. For example, many Americans are still not complying with public health guidelines (Balch, 2020). From a psychological perspective, scholars have found that psychological reactance is an obstacle to adherence to public health guidelines (Jordan et al., 2020; Ringold, 2002; Sibony, 2020; Van den Broucke, 2020). Psychological reactance theory asserts that individuals perceive threats to their freedom when they are forced to change their attitudes or behaviors in a certain way (Brehm, 1966). For example, people protest mask mandates as violations of their freedom. This urges us to investigate the potential causes and psychological processes that drive COVID-19 related reactions. To deal with a global pandemic outbreak efficiently and the economic recovery of restaurant industry, we need to understand whether people are favorable to normative appeals that require their behavioral change. We expect that this study can address the issue about COVID-19 rule breakers and improve the public response to pandemics from a theoretical perspective regarding normative appeals and psychological reactance. Another obstacle in creating an effective message is age (Miller et al., 2007). While messages about the seriousness of COVID-19 and the importance of measures against it flood in, these regulations are still ignored or not complied with properly. In particular, younger populations do not appear to view the situation as dire and even hold a dismissive attitude toward strict measures in comparison to older populations (Bhanot, 2020). There are difficulties in designing promotional health messages targeting young populations because of the distinct differences in psychological reactance across age (Dowd et al., 2001; Hong and Page, 1989). As the role of a specific group is significant in dealing with the COVID-19 situation, we believe that investigating the level of reactance across age will bring out theoretical and managerial implications.

However, no study on the COVID-19 pandemic has investigated the effects of normative appeals on freedom threat, negative cognition, and attitude while adding age as a moderator. Although social psychology has been widely used in academic research to solve various problems that occur in the hospitality and tourism field (Stringer and Pearce, 1984), reactance theory is one of three theories that were not used in any of the collected literature concerning tourism and hospitality (Tang, 2014). To fill this gap, this study attempts to examine (1) the difference in normative appeals (descriptive vs. injunctive) on freedom threat, negative cognition, and attitude; (2) the serial mediating effect of freedom threat and negative cognition on the relationship between normative appeals and attitude; and (3) the moderated mediating effect of age on the relationship among freedom threat, negative cognition, and attitude. Our research can help the restaurant industry determine which types of normative appeals to implement and understand how normative appeals (independent variable), freedom threat (first mediator), negative cognition (second mediator), and age (moderator) jointly affect consumer attitudes.

2. Theoretical background

2.1. Normative appeals

The COVID-19 outbreak has compelled people worldwide to follow preventative guidelines that have been suggested as the only way to contain the spread of the virus in the absence of treatment or a vaccine (Sibony, 2020). Accordingly, social and behavioral scholars have shed light on managing the pandemic by regulating individuals’ behavior. This can be achieved with advice from public health experts and epidemiologists, who recommend physical distancing, hand washing, and wearing face masks in public (Van Bavel et al., 2020). However, ensuring that people behave in a certain way – in particular, the engagement in sustainable prevention behavior – is one of the biggest challenges (Van den Broucke, 2020). Despite policymakers’ efforts to minimize the devastating consequences, there were 360,000 new weekly cases reported in the United States (World Health Organization, 2020) at the time of this paper’s writing (August 16th, 2020). There have been reports of people flouting prevention guidelines or condemning the use of face masks (Balch, 2020). One potential cause of noncompliance is the psychological reactance of the public in response to normative message intervention regarding public health problems (Ringold, 2002; Sibony, 2020). This assumption leads to the question of whether normative appeals regarding COVID-19 prevention will be effective in influencing consumer behavior in a hospitality setting, and how different the impact will be between the two types of normative appeals.

Given that prosocial behavior is driven by a desire to adhere to social norms (Krupka and Weber, 2009), a large body of research has emphasized the significant potential of social norms in shaping human behavior, particularly consumer behavior (Bilancini et al., 2020; Cialdini et al., 1991; Goldstein et al., 2008). Social norms refer to rules and norms shared by a group of people that regulate human behavior without the force of law (Cialdini and Trost, 1998; Kavounis et al., 2020). As noted, social norms have garnered attention in a variety of domains, from sociology to public health, including conservation activities, charitable donations, and alcohol consumption (Farrow et al., 2017). Moreover, activating social norms through messages can shape sustainable consumer behavior. Most hospitality literature has focused on the effect of normative appeals on reuse programs, such as towel reuse in hotels (Gössling et al., 2019; Reese et al., 2014; Terrier and Marfaing, 2015), to understand whether hotel guests can be convinced to reuse towels by pro-environmental appeals. Research suggests that hotel guests are influenced by information about what other guests choose to do using descriptive normative messages. Therefore, messages containing descriptive norms lead to an increase in reusing towels (Goldstein et al., 2008). In contrast, Salminen and Lankoski (2019) focused on the effect of social norms on sustainable food choice and found that injunctive social norms do not play an effective role in sustainable food choice. Thus, the effectiveness of social norms differs depending on norm type.

As the degree of social enforcement varies depending on norm type and settings, researchers define two types of social norms, descriptive and injunctive norms, each of which calls for a separate source of human motivation (Cialdini et al., 2006; Melsyk et al., 2011; White and Simpson, 2013). While descriptive norms refer to the behavior of the majority, reflecting how common the behavior is or what is most commonly done, injunctive norms rely on actions having social approval or disapproval (Lapinski and Rimal, 2005). Thus, injunctive norms encourage individuals to act in a way that follows the values held by the public (Terrier and Marfaing, 2015). For instance, Goldstein et al. (2008) manipulated descriptive norms and injunctive norms as “75% of guests reused their towel” and “75% of guests think reusing their towel is the right thing to do.”

Considering that, globally, public health is threatened, and people must adhere to strict rules to contain the spread of the virus, it is
important to explore the relationship between normative appeals and the COVID-19 pandemic response. One important consideration is that social norms can be manipulated by contextual cues (appeals and messages) to promote engagement in prevention behaviors. In the context of COVID-19, “Do your part to keep our community safe” is designed to show that prevention behaviors benefit one’s community (Yoeli and Rand, 2020). Jordan et al. (2020) suggest that indicating the benefits to a community is more impactful than focusing on the benefits to an individual. However, social information that applies external pressure on people to comply or to refrain from performing a certain act threatens their freedom of choice, which causes individuals to feel coerced into compliance (Brehm and Brehm, 1981). Therefore, this study follows recent works that highlight the social motives behind COVID-19 prevention behavior (Lees et al., 2020) and suggests the effects of norm-based appeals on the pandemic response.

2.2. Psychological reactance

People are experiencing a new normal due to COVID-19 related restrictions (Kim, 2020). Practicing protective measures and forcing restrictions that call for a complete lockdown require behavioral change (Sibony, 2020). However, changing behavior is not simple (Van den Broucke, 2020) because compliance generates psychological reactance (Brehm, 1966). Any force that compels individuals to perform a certain action can potentially be perceived as a freedom threat. That is, whenever people feel pressured or controlled to follow rules and change their behavior, a threat to freedom occurs (Brehm and Brehm, 1981; Clee and Wicklund, 1980). People’s concept of freedom is behavioral reality, rather than abstract freedom in a general sense (Brehm, 1966). Accordingly, individuals perceive freedom only when they are able to enact their behaviors. Psychological reactance theory specifies that the pressure to comply with a certain act (wearing a face mask) or restricted behavior (physical distancing) due to the COVID-19 pandemic threatens freedom of choice (Akhtar et al., 2020). Freedom threats comprise the use of controlling messages (Shen, 2015; Dillard and Shen, 2005). The more coercive a message, the stronger the threat to one’s need for self-determination (Kavvouris et al., 2020).

It has been suggested that the threat’s extent is affected by the features of the message. Specifically, freedom threats vary by normative appeal based on how explicitly the appeal calls for action. (Jacobson et al., 2011). Explicit commands are clear and direct, utilizing forceful language such as “ought” and “should” (Miller et al., 2007). The word “should” in injunctive normative appeals, conveys an explicit request, and this type of appeal is more direct. Therefore, greater coerciveness of compliance generates a stronger freedom threat (Eagly and Chaiken, 1993). In contrast, descriptive normative appeals that are less coercive and use less explicit commands are less likely to cause freedom threats and negative cognition (Jacobson et al., 2011; Kavvouris et al., 2020). Based on this reasoning, we propose the following:

H1. Injunctive normative appeals trigger a higher a) freedom threat and b) negative cognition, thereby arousing a less positive c) attitude than descriptive normative appeals.

In studies on psychological reactance, the construct has been operationalized as either a single perspective (negative cognition or anger) or a combination of both components (Dillard and Meijerendonk, 2002; Dillard and Shen, 2005; Kavvouris et al., 2020) to affect individuals’ persistence to persuasion. However, it has been suggested that, with diverse self-reporting techniques, viewing reactance from a single perspective of cognition enables the construct to become more measurable (Dillard and Shen, 2005). Furthermore, the cognition response approach to persuasion maintains that message receivers attempt to relate new information to their existing knowledge regarding the topic, consequently generating cognitions that disagree about the issue, protecting themselves from freedom threat by counterarguing.

As normative appeals consist of COVID-19 prevention guidelines that focus less on the threat-to-health aspect of the messages compared with other health communications discussing negative consequences, this study conceptualizes reactance as negative cognition that occurs in response to normative messages that threaten freedom. Reactance is a potential cause of non-compliance with social distancing exhortations (Sibony, 2020). Given that people express psychological reactance against regulations that they perceive constrain behavioral freedom (Laurin et al., 2012; Rhodewalt and Davison, 1983), social scholars and marketers should explore the cause of reactance and utilize strategies to minimize it in the COVID-19 pandemic (Akhtar et al., 2020). Perceived freedom threats are one possible cause of reactance. As the freedom threat increases, people have different reactions such as anger, protest, and confrontation (Argouslidis et al., 2018). Parallelly with the study of psychological reactance theory (PRT) measuring consumer attitudes (Kim and Hunter, 1993a, 1993b), this study views attitude toward persuasive messages as a dependent variable. Previous research has suggested that freedom threat explains the relationship between message appeals and reactance (Dillard and Shen, 2005). When individuals perceive a message designed to persuade them to adopt a certain act, their freedom of choice is threatened; thus, inspiring counterarguement. Moreover, negative cognition intervenes in the message-attitudinal outcome relationship (Miller et al., 2007), and the antecedent- consequent relationship between freedom threat and attitude (Dillard and Shen, 2005; Rains and Turner, 2007). That is, any message that aims to change someone’s behavior is perceived as a threat to freedom, and people who hold negative cognitions and exhibit unfavorable attitudes toward the control or restriction of their freedom (Ma et al., 2019). Therefore, we hypothesize that the effect of normative appeals on attitude is serially mediated by freedom threat and negative cognition.

H2. a) Freedom threat and b) negative cognition serially mediate the effect of normative appeals for COVID-19 prevention on attitude.

Although norm-based messages may offer useful information, there are limitations to how much normative messages can elicit actions in response to audience characteristics (Wright et al., 2004). Individuals vary; therefore, the impact of normative appeals depends on demographics, including gender and age. While no significant gender difference in psychological reactance (Brehm and Brehm, 1981; Hong and Page, 1989; Woller et al., 2007) was found, it has been suggested that reactance is age-specific (Labouvie-Vief et al., 1989). Thus, we expect age to be associated with levels of psychological reactance. Differences in the levels of reactance were noted (Arnett, 2006; Moreira et al., 2020; Hong et al., 1994), and younger age groups (18–29 years old), who are in a critical period of cognitive and social transformation, are more likely to be reactant than the older group (30–40 years old) (Dowd et al., 2001). This explains that maturity enables individuals to see fewer situations as freedom threats. Moreover, aging helps better control emotions in dealing with freedom-threatening situations and reactance (Hong et al., 1994) because of age-related differences in maturity. Younger populations perceive that they have little control over their choice, resulting in a higher level of reactance (Brehm and Brehm, 1981). Both conclusions highlight that younger individuals are more likely to exhibit psychological reactance.

H3. The effects of normative appeals on freedom threat, negative cognition, and attitude are moderated by age. Younger people perceive a stronger a) freedom threat and b) negative cognition than the older population, thereby resulting in a less positive c) attitude toward COVID-19 prevention normative appeals.

Overall, the effect of normative appeals on negative cognition differs across ages; specifically, the younger the population, the more negative the impact on attitude toward injunctive normative appeals through freedom threat and negative cognition. In line with previous studies, we expect to find a mediating effect of psychological reactance and a moderated mediating effect of age.
H4. The mediated effect of normative appeals on attitude through psychological reactance is moderated by age. Younger individuals exhibit higher freedom threat and negative cognition when presented with injunctive normative appeals than when they are exposed to descriptive normative appeals.

H4a. The effect of normative appeals on attitude through freedom threat is moderated by age.

H4b. The effect of normative appeals on attitude through negative cognition is moderated by age.

H4c. The effect of normative appeals on attitude through freedom threat and negative cognition is moderated by age.

3. Methods

3.1. Stimuli design and participants

A single factor (normative appeals: descriptive vs. injunctive) between-subject design with manipulated normative appeals was employed to test the hypotheses. The stimuli utilized in the current study were designed based on the COVID-19 pandemic guidelines officially announced by the Ministry of Food and Drug Safety in Korea. A descriptive normative appeal was operationalized as “the majority of customers in our restaurant have complied with the following guidelines: 1) wear masks before and after meals and 2) limit talking with others during meals.” The injunctive normative appeal was operationalized as “the majority of customers in our restaurant think that everyone should comply with the following guidelines: 1) wear masks before and after meals and 2) limit talking with others during meals” (see Appendix A).

We recruited participants who were over 20 years old and had visited a restaurant in the past three months by using a simple random sampling method through the Korean online research company Korea, Mbrain, in August 2020. Participants were randomly assigned to one of two conditions (descriptive and injunctive) and were read the scenario they were assigned. In the pre-test, all participants took at least two minutes to complete the self-administered questionnaire. Therefore, any answered in less than two minutes was considered unreliable responses and eliminated in the main study. After data cleaning, a total of 324 valid responses (N = 162, in descriptive condition; N = 162, in injunctive condition) were used for subsequent analyses.

3.2. Procedures and measures

Participants were randomly assigned to one of two appeals (descriptive or injunctive normative appeal). At the beginning of the survey, participants were instructed to imagine themselves in a scenario where they went to a restaurant and were shown a normative appeal (descriptive or injunctive) attached at the front of the restaurant entrance regarding COVID-19 protective measures. Having read the scenario and appeal, participants were told to complete questions regarding their perception of freedom threat, negative cognition, attitudes toward normative appeals, and demographic information. To minimize the effect of other variables, selection bias was controlled by randomly assigning participants and, except for two types of normative appeals, identical measurements were used among the two main study groups.

We used two items to check for the manipulation of each normative appeal. For descriptive normative appeal, the manipulation check items, adopted from Elgaaied-Gambier et al. (2018), are “This appeal that you viewed describes the practice of most restaurant customers in terms of COVID-19 prevention guidelines” and “This appeal that you viewed asked you to consider what others in this restaurant are doing.” The manipulation check items for injunctive normative appeal, adapted from White and Simpson (2013), are “This appeal that you viewed asked you to consider what others in this restaurant approve of” and “This appeal that you viewed asked you to consider what others in this restaurant want you to do.” All four items were measured on a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. Freedom threat was measured using three items adopted from Dillard and Shen (2005), (e.g., “The message threatened my freedom to choose”). Negative cognition was measured using three items (Silvia, 2006) (e.g., “While reading this message I was thinking of points that went against the argument”). Consumer attitudes toward normative appeals were measured using three items adopted from Dillard and Shen (2005) (e.g., I support what the appeal was trying to accomplish”). A 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree was used for all questions (see Appendix B).

3.3. Statistical analyses

We conducted descriptive statistics, Cronbach’s α, and correlation analysis with SPSS 23.0 before hypothesis testing. Then, we ran the independent samples t-test to explore the differences in normative appeals on freedom threat, negative cognition, and attitude, respectively (H1). To analyze the serial mediation role of freedom threat and negative cognition (H2), we conducted a mediation analysis (PROCESS v.3.5 Model 6; Hayes, 2018). The moderation and moderated mediation role of age (H3) were analyzed using PROCESS macro v.3.5 model 85 (Hayes, 2018). Since several studies have explored the differences in psychological reactance caused by gender (Joubert, 1990; Seemann et al., 2004), as well as the relationship between reactance and perceived personal risk (Brehm, 1966; Hall et al., 2018; Steinild et al., 2015), our study used gender and risk perception of COVID-19 as covariates variables. We employed the bootstrapping method to test the significance of the effects and obtain robust standard errors for parameter estimation (Hayes, 2013). The bootstrapping method condition produces 95% bias-corrected confidence intervals for these effects from 10,000 resamples of the data. When confidence intervals do not include zero, the effects are significant at α = 0.05.

4. Results

4.1. Manipulation checks

A total of 100 undergraduate students at Kyunghee University were recruited for the manipulation check to confirm what the two types of normative appeals were about (descriptive) “most customers in this restaurant comply with the guidelines” and (injunctive) “most customers want others in the same restaurant to comply with the guidelines.” The results showed that participants in the descriptive condition considered the normative appeal to be descriptive (M descriptive = 5.44, SD descriptive = 1.05), while those in the injunctive condition viewed the normative appeal as being injunctive. There was no significant difference between the descriptive and injunctive groups (M injunctive = 5.78, SD injunctive = 0.95). As the results demonstrate, the mean and standard deviation of the two types of appeals were all above average; therefore, the manipulation was effective.

4.2. Sample characteristics

A total of 324 valid questionnaires were obtained. As presented in Table 1, there was an approximately equal proportion of females (53.7%) and males (46.3%). More than 60% of the respondents were younger than 40 years old. In terms of education, 64.8% held a bachelor’s degree or higher (29.9%). Approximately 66% of respondents earned less than 3400$ monthly. A total of 27.5% reported visiting restaurants less than twice a week. Another 38.6% visited restaurants 2–5 times a week (Table 1).
2.4. Preliminary checks

We tested the reliability of the scales in a preliminary analysis. The results suggest that the scales measuring freedom threat (Cronbach’s α = 0.902), negative cognition (Cronbach’s α = 0.908), and attitude (Cronbach’s α = 0.866) are reliable. Table 2 provides the correlations, reliabilities, means, and standard deviations for all variables.

4.4. Hypothesis tests

An independent samples t-test was performed to test H1. The results shown in Fig. 1 revealed a significant difference in freedom threat (t(322) = 2.402, p = .012) as the dependent variable in the main effect of normative appeals. In contrast, negative cognition (t(322) = 2.029, p = .012) showed no significant difference. Specifically, the injunctive normative appeal (M=2.95, SD=1.62) provoked a significantly higher freedom threat than the descriptive normative appeal (M=2.27, SD = 1.48) (H1a). Additionally, the results revealed that attitude (t(322) = 21.579, p = .000) toward normative appeals showed significant differences based on the type of appeal, indicating that the injunctive normative appeal (M = 5.23, SD = 1.33) provokes less positive attitudes than the descriptive normative appeal (M = 4.82, SD = 1.81) (H1c). Therefore, H1 was partially supported.

We used model six of the PROCESS macro (Hayes, 2018), based on OLS regression, and the bootstrap method to test H2. Besides the direct and indirect effects of normative appeals on attitude, this model allows a process in which normative appeals cause freedom threat, which, in turn, causes negative cognition, concluding with attitude as an outcome. Compared with the Sobel test (Sobel, 1982) or the causal steps process (Baron and Kenny, 1986), bootstrapping is considered to be free from assumptions about the sampling distribution of the indirect effect and also has better control of type 1 errors. This allows for the control of the indirect effects of individual mediators while controlling for other variables (Preacher and Hayes, 2008). As indicated by the path coefficients in Fig. 2, normative appeals had a significant positive effect on freedom threat (a1 = 0.677, SE = 0.0434). Freedom threat had a significant positive relationship with negative cognition (d21 = 0.4904, SE = 0.0434), which led to a significant negative relationship with attitude (b2 = −0.3751, SE = 0.0434). We further examined the indirect effect of normative appeals on attitude through freedom threat, with only freedom threat as the mediator: a1b1 = −0.1843, SE = 0.0591, 95% CI −0.3158 to −0.0830. Participants who viewed injunctive normative appeals perceived higher freedom threat (a1 = 0.6770, SE < .0000), thereby responding with a less positive attitude (b1 = −0.2723, p < .000). In contrast, the indirect effect of normative appeals on attitude through only negative cognition as the mediator was not significant as the confidence interval crossed zero (a2b2 = 0.0273, SE = 0.0503; 95% CI −0.0753 to 0.1254). That is, the impact of normative appeals on attitude is not mediated by negative cognition. The result (10,000 bootstrap samples) showed a significant indirect effect of normative appeals on attitude through both freedom threat and negative cognition in serial (a1d21b2 = −0.1245, SE = 0.0414; 95% CI −0.2176 to −0.0537). This result provides evidence of serial mediation. Thus, H2 was supported.

To test H3 and H4, we conducted a moderated mediation analysis using model 85 in PROCESS macro v.3.5, with 10,000 bootstrap samples, 95% bias-corrected confidence intervals, and controlling for gender and risk perception of COVID-19 as covariates (Hayes, 2018).

The statistical model (B) in Fig. 3 describes the model in path diagram form, which translates into three linear equations, below:

\[
M_1 = \beta_1 X + \beta_2 U_1 + \beta_3 U_2 + e_1
\]

\[
M_2 = \beta_1 X + \beta_2 U_1 + \beta_3 U_2 + e_2
\]

\[
Y = \gamma_1 X + \gamma_2 W + \gamma_3 XW + \beta_1 M_1 + \beta_2 M_2 + e_Y
\]

The estimated regression coefficients are listed in Table 3. The signs of the coefficients for the product terms (a31, a32, c3) reflect a trend for normative appeals (descriptive or injunctive) to have a larger freedom threat and negative cognition, and less positive attitudes among the

Table 1

| Demographic variable | n | % | Demographic variable | n | % |
|----------------------|---|---|----------------------|---|---|
| Gender               |   |   | Gender               |   |   |
| Male                 | 150| 46.3| Female               | 174| 53.7|
| Age                  | 20-29| 97| 9.20| 30-39| 102| 31.5|
|                      | 40-49| 60| 18.5|                      |   |   |

Table 2

| Variable            | Means | SD  | AVE  | 1     | 2     | 3     | 4     |
|---------------------|-------|-----|------|-------|-------|-------|-------|
| 1. Flexpressive     | .500  | .501|      |       |       |       |       |
| 2. Freedom threat   | 2.612 | 1.584| .735 | .214**|       |       |       |
| 3. Negative cognition| 2.228| 1.428| .557 | .091  | .539**|       |       |
| 4. Attitude         | 5.026 | 1.271| .706 |       | .161**|       |       |
| 5. Age              | 2.29  | 1.112|      | .0003 | .070  | .035  | .013  |

*p < .05, **p < .01, ***p < .001
a = descriptive appeal, 1 = injunctive appeal
b = 1 = 20 s, 2 = 30 s, 3 = 40 s, 4 = 50 s, 5 = 60 s
c = AVE by Hair et al. (2006)
d = Cronbach’s α
e = mean age 41

Fig. 1. Mean levels of freedom threat, negative cognition, and attitude across the two experimental conditions. **p < .001.
relatively younger participants. However, age only plays a moderating role in the relationship between normative appeals and freedom threat \((a_{31} = -0.3701, 95\% CI = -0.6753 \text{ to } -0.0650, p = .0176)\). There was a significant interaction effect between normative appeal and age on freedom threat, as shown in Fig. 4. The numbers on the x-axis are mean-centered and these are around 0, the mean age (41-year-old), with a data range of 0.5 SD. Within the x-axis, positive numbers refer to the group over the age of 41 while negative numbers indicate the group younger than the age of 41. Specifically, as an interval is wider, a number that represents a certain group of age is further away from 41. Thus, only Hypothesis 3(a) was supported.

Furthermore, freedom threat is positively related to negative cognition \((d = 0.4826, 95\% CI = 0.3980-0.5672, p < .000)\), but negatively related to attitude \((b_1 = -0.2759, 95\% CI = -0.3556 \text{ to } -0.1962, p < .000)\). Negative cognition had a negative relationship with message attitude \((b_2 = -0.3731, 95\% CI = -0.4612 \text{ to } -0.2850, p < .000)\). This model has three indirect effects, calculated as the products of paths linking X to Y through two mediators. The indirect effect was through freedom threat \((M_1)\). This was the product of the function linking normative appeals to freedom threat \((a_{11} + a_{31}W)\) and the effect of freedom threat on attitude \((b_1)\):

\[
a_{M1} = (a_{11} + a_{31}W) b_1 = a_{11}b_1 + a_{31}b_1 W = -0.1875 + 0.1021 W
\]

The equation is a linear function of age with intercept \(a_{11}b_1 = -0.1875\) and slope \(a_{31}b_1 = 0.1021\). The moderation index for this specific indirect effect was \(a_{31}b_1 = 0.1021\).

The specific indirect effect through negative cognition \((M_2)\) was calculated similarly to the product of the function linking normative appeals to negative cognition \((a_{12} + a_{32}W)\) and the effect of negative cognition on attitude \((b_2)\):

\[
a_{M2} = (a_{12} + a_{32}W) b_2 = a_{12}b_2 + a_{32}b_2 W = 0.0289 + 0.0398 W
\]

This is also a linear function of age with intercept \(a_{12}b_2 = 0.0289\) and slope \(a_{32}b_2 = 0.0398\). The moderation index for this indirect effect was \(a_{32}b_2 = 0.0398\).

The remaining specific indirect effects operate through M1 and M2 in serial and are quantified as the product of the function linking restaurant normative appeals to freedom threat, the effect of freedom threat on negative cognition \((d)\), and the effect of negative cognition on restaurant attitude:

\[
a_{M1}M2 = (a_{11} + a_{31}W)db_2 = a_{11}db_2 + a_{31}db_2 W = -0.1223 + 0.0666 W
\]

which is a linear function with intercept \(a_{11}db_2 = -0.1223\) and slope \(a_{31}db_2 = 0.0666\). The moderation index for this specific indirect effect was \(a_{31}db_2 = 0.0666\).

The functions in Fig. 5 represent the connection between age and each indirect effect and the indices of moderated mediation in correspondence with the slopes of the lines. A bootstrap confidence interval for each slope indicates that the specific indirect effect is moderated by age. The index of moderated mediation is positive with 95\% confidence (0.0180-0.2002); thus, the indirect effect of normative appeals on attitude through freedom threat depends on age. In particular, the mediated effect of normative appeals on attitude through freedom threat is moderated by relying on low M-1SD, \((SD = -1.1116, b = -0.3010, CI = 0.4883 \text{ to } 0.1491 \text{ and moderate } M, (b = 0.1874, CI = 0.03162 \text{ to } 0.0835)\). However, no significant moderated mediation was found for age above the mean. Thus, H4a is supported. However, such a comparison is not applicable to indirect effects through negative cognition. The index of moderated mediation was positive, but it crosses zero (-0.0472 to 0.1266), meaning that there is no moderation of the specific indirect by age. For the serial indirect effect through both freedom threat and negative cognition, the index of moderated mediation is positive with 95\% confidence (0.0114-0.1348), so we can say that this indirect effect depends on age. A moderated mediation effect was also observed among participants below the mean age (M-1SD, \(b = -0.1964, CI = -0.3277 \text{ to } -0.0942 \text{ or the average } (M, b = -0.1223, CI = -0.2099 \text{ to } -0.0526)\). Consequently, the findings support that age plays a moderating role, as proposed in H4. Thus, H4(a)

Fig. 2. The serial mediation model using PROCESS v3.5, model 6, bootstraps = 10,000. Note: Path coefficients are unstandardized; CI = Confidence Interval; \(a_{12}d_{12}b_2\) = indirect effect; \(c\) = total effect; \(*p < .05, **p < .01, ***p < .001\).
and H4(c) were supported.

5. Discussion

Losing customers due to the COVID-19 pandemic and the resulting regulations on behavior are inevitable. Unsurprisingly, notices in hotels, restaurants, and bars mandating COVID-19 prevention measures, such as social distancing and wearing masks, is now a common phenomenon. To effectively communicate public health practices, the introduction of a norm-based strategy is critical. Despite the prevalent use of normative appeals in other domains, lack of research in the hospitality sector has left us lagging on this account.

In this study, we examined how consumers respond differently to two types of normative appeal. We studied the impact of these appeals on consumers’ psychological reactance, with age as a moderator. The findings revealed that the effects of normative appeals on freedom threat and attitude were both significant. However, the effect on negative cognition was not significant. This means that consumers are more likely to focus on the content rather than the tone or medium of the messages, as they understand the emergency of the COVID-19 situation. In line with previous studies (Jacobson et al., 2011; Kavvouris et al., 2020; Moon et al., 2015; Schulz et al., 2007; Yakobovitch and Grinstein, 2016) on individuals’ perceptions of normative appeals, our findings indicate that injunctive normative appeals adopted in a restaurant setting during COVID-19 are more likely to be seen as a threat to freedom than descriptive normative appeals. In other words, individuals tend to be less favorable toward injunctive normative appeals. Injunctive normative appeals exert higher pressure to comply and are more likely to be viewed as compulsory, thereby being perceived as a freedom threat. This finding points to a latent possibility of psychological reactance when employing injunctive normative appeals in restaurants.

Next, the effect of normative appeals on attitude is serially mediated by freedom threat and negative cognition. This result suggests that psychological reactance mediates attitude toward normative appeals in the current setting, on condition that freedom threat is an antecedent variable of negative cognition. Also, the finding that freedom threat and negative cognition serially mediate the relationship between public health appeals and attitude is parallel with that of the previous study on

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Fig. 3. A moderated serial multiple mediation model in a conceptual form (A) and in the form of a statistical model (B) (except two covariates to avoid visual clutter).
the subject of pro-environmental campaigns (Kavvouris et al., 2020). In addition, we demonstrate age as a potential moderator. The moderating role of age in the effect of normative appeals on freedom threat was observed between the younger and older groups in our study. As hypothesized, younger participants perceived a much higher threat to freedom when they were exposed to an injunctive normative appeal than a descriptive normative appeal. In contrast, a significant difference in freedom threat between the types of appeals was not found among older participants. This result is congruent with previous studies (Hong et al., 1994; Dowd et al., 2001; Miller and Quick, 2010). A potential explanation for this is that maturity from life experience makes individuals view fewer situations as freedom threats, which reduces reactance levels.

We further examined the moderated mediation role of age for each of the three indirect effects. The results show that age (M) is a significant moderated mediator between the indirect effect of “normative appeals (X) → freedom threat (M1) → attitude (Y)” and “normative appeals (X) → freedom threat (M1) → negative cognition (M2) → attitude (Y).” Thus, hypotheses H4(a) and H4(c) are supported.

### Table 3
Unstandardized OLS regression coefficients with confidence intervals (standard errors in parentheses) estimating freedom threat, negative cognition, and attitude of restaurant.

|                          | Freedom threat (M1) | Negative cognition (M2) | Attitude (Y) |
|--------------------------|---------------------|-------------------------|--------------|
|                          | Coeff. (SE)         | 95% CI                  | Coeff. (SE)  | 95% CI                  | Coeff. (SE)  | 95% CI                  |
| Descriptive or Injunctive(X) | a11 → 0.6795*** (0.1710) | 0.3431, 1.0159         | a12 → -0.0774 (0.1344) | -0.3418, 0.1871       | c'1 → -0.1193 (0.1072) | -0.3302, 0.0915         |
| Freedom Threat(M1)       | d → 0.4826*** (0.0430) | 0.3980, 0.5672         | b1 → -0.2759*** (0.0405) | -0.3556, -0.1962      |
| Negative Cognition(M2)   |                     |                         | b2 → -0.3731*** (0.0448) | -0.4612, -0.2850      |
| Age(W)                   | a21 → 0.2556* (0.1039) | 0.0513, 0.4600         | a22 → -0.0619 (0.0804) | -0.2202, 0.0963       | c’2 → 0.0068 (0.0642) | -0.1195, 0.1331         |
| X x W                    | a31 → -0.3701* (0.1551) | -0.6753, -0.0650       | a32 → -0.1066 (0.1200) | -0.3428, 0.1295       | c’3 → 0.0306 (0.0958) | -0.1579, 0.2191         |
| Sex(U1)                  | a41 → -0.1694 (0.1727) | -0.5092, 0.1703        | a42 → -0.5032*** (0.1327) | -0.7642, -0.2422      | b3 → -0.0466 (0.1081) | -0.2593, 0.1661         |
| Risk perception of COVID-19(U2) | a51 → 0.0538 (0.0744) | -0.0926, 0.2003        | a52 → -0.0384 (0.0572) | -0.1508, 0.0741       | b4 → 0.0640 (0.0456) | -0.0257, 0.1538         |
| Constant                 | i01 → 2.2839*** (0.4152) | 1.4277, 3.1401         | i02 → 1.9569*** (0.3480) | 1.2722, 2.6415        | i1 → 6.4142*** (0.2909) | 5.8418, 6.9865         |
| R²                       | 0.072 F(313) = 4.9421, p < .0002 |               | 0.3303 F(311) = 26.056, p < .0000 |               | 0.4644 F(309) = 39.1456, p < .0000 |

Restaurant normative appeals (descriptive/injunctive) and age (in 10 s of years) are the mean center.
*p < .05, **p < .01, ***p < .001.

![Fig. 4. Moderating role of age between normative appeals and freedom threat.](image)
When participants are older, the moderated mediation effect of both H4(a) and H4(b) was not significant.

5.1. Theoretical implications

Understanding the mechanism of psychological reactance toward normative appeals is worth noting from a theoretical perspective. This study makes several theoretical contributions in the following four aspects. First, this phenomenon has not been studied and specifically applied to the hospitality sector. Policymakers have promoted prevention measures in a variety of ways, such as posters, fliers, and letters. However, scant research has investigated the effects of these norm-based messages, especially in the field of hospitality. One exception is a study by Bilancini et al. (2020) that examined the role of behavior influencing fliers during the pandemic. Therefore, this study explores fresh territory and extends the literature on social norms through manipulating COVID-19 related normative appeals and comparing descriptive and injunctive normative appeals. Second, we make a theoretical contribution to the field by adding the mechanism of psychological reactance to the hospitality literature. Notably, only 12 articles applying social psychology theories in leading academic journals were published between 1999 and 2012 in the domains of hospitality and tourism (Tang, 2014). The psychological reactance of restaurant customers has been largely unexplored. The tourism and hospitality discipline still needs its own theories to build up its scientific identity and status (Oh et al., 2004). Therefore, this study focuses on psychological reactance to clarify the point that restaurant customers can be affected by manipulated normative appeals. Third, age might be a variable in other studies as a moderator because different ages relate to different insights of individuals. However, this study supports the view that stronger reactance occurs among younger populations, resisting guidelines if they know that others already collectively follow them. This suggests that descriptive normative appeals may formulate in individuals’ responsibility for practice involvement; thus, people might be less sensitive to norm-based messages. Hence, messages should not have a coercive tone to compel people to accept a certain view or action, such as “what you ought to do.” Moreover, our work explains how psychological reactance is generated and offers insight for campaign designers who aim to create persuasive messages. Finally, the study indicates that freedom threat is related to age. Younger populations tend to perceive a stronger threat to freedom than older populations do. Hence, it might be more effective for restaurants that target younger populations or those that mainly serve young customers to use descriptive, norm-based messages to promote campaigns.

5.2. Managerial implication

Every restaurant manager must adhere to public health guidelines and personal hygiene standards. Managers must compel customers to comply with the COVID-19 prevention guidelines in restaurants. Therefore, recognizing psychological reactance in these guidelines can aid managers in developing more effective campaigns. These findings have several implications for restaurant managers. First, the effectiveness of the two types of normative appeals is contingent on consumers’ perceptions of the threat to freedom. In particular, the emphasis on highlighting what others typically do in descriptive normative appeals provokes a lower freedom threat, which results in a more positive attitude. This finding indicates that people are more likely to follow the guidelines if they know that others already collectively follow them. This suggests that descriptive normative appeals may formulate individuals’ responsibility for practice involvement; thus, people might be less sensitive to norm-based messages. Hence, messages should not have a coercive tone to compel people to accept a certain view or action, such as “what you ought to do.” Moreover, our work explains how psychological reactance is generated and offers insight for campaign designers who aim to create persuasive messages. Finally, the study indicates that freedom threat is related to age. Younger populations tend to perceive a stronger threat to freedom than older populations do. Hence, it might be more effective for restaurants that target younger populations or those that mainly serve young customers to use descriptive, norm-based messages to promote campaigns.

5.3. Limitations and future research

Despite the relevant contributions, this study has several limitations. First, our sample was concentrated in one area, the Republic of Korea, where the possibility of consumers perceiving a threat to their personal liberty due to COVID-19 prevention regulations, is relatively low. Further research is needed to understand whether our findings can be applied to other countries. Second, the operationalization of
psychological reactance is limited to a single construct (negative cognition), even if reactance has been operationalized as an intermingling of negative cognition and anger in previous research (Dillard and Shen, 2005). Future research with an affective concept (anger) is warranted. Third, our study examines and reports attitudes instead of actual behavior. Thus, future research could focus on actual behavioral engagement by conducting field studies for example. Finally, future research with other demographic variables such as employment status, salary, ethnicity, area of residence, rural versus urban settings, and visit frequency, as moderators or covariance variables should also present interesting results.

Data availability
Data will be made available on request.

Appendix A

| The majority of customers in our restaurant have complied with the following guidelines. | The majority of customers in our restaurant think that everyone should comply with the following guidelines |
|---|---|
| ‘Wearing masks before and after meals’ | ‘Wearing masks before and after meals’ |
| ‘Better not to talk with others during meals’ | ‘Better not to talk with others during meals’ |

Appendix B

Freedom threat (Youn and Kim, 2019; Dillard and Shen, 2005).

1. The message threatened my freedom to choose
2. This message tried to restrict my daily life
3. This message gives me a feeling of threatening my freedom.

Negative cognition (Youn and Kim, 2019).

1. I disagree with what the appeal is trying to show.
2. While reading this appeal, I was thinking of points that went against the argument
3. I am being negative about the appeals.

Attitude (Dillard and Shen, 2005).

1. I feel good about the appeal
2. I support what the appeal was trying to accomplish
3. I am favorable towards the appeal relating to COVID-19 prevention guidelines
4. The appeal relating to COVID-19 prevention guidelines is desirable

Risk perception of COVID-19 (Dryhurst, et al., 2020; Leiserowitz, 2006; Bord, et al., 2000).

1. How worried are you personally about the COVID-19?
2. How likely do you think it is that you would be directly and personally affected by covid19 in the next 6 months?
3. How likely do you think it is that your friends and family in the country you are currently living in will be directly affected by the covid-19 in the next 6 months?

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