BRIEF REPORT

The Utility of Choice-Enhancing Language in Emergency Preparedness Messages: An Application of Psychological Reactance Theory

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ABSTRACT

Objective: This study uses psychological reactance theory as a framework for designing effective emergency preparedness messages. Psychological reactance is the motivational state that occurs when individuals perceive their freedom to be threatened. From the standpoint of persuasive message design, reactance is an undesirable outcome that should be avoided whenever possible.

Methods: Participants ($N = 174$) were randomly assigned to view 1 of 2 emergency preparedness messages (choice-enhancing language ["the choice is yours"] vs choice-restricting language ["you must"]) in a between-subjects-posttest-only online survey experiment.

Results: Structural equation modeling revealed that choice-restricting language resulted in greater freedom threat and subsequent reactance. Reactance resulted in a diminished attitude and subsequent intention to prepare an emergency kit.

Conclusion: Public health practitioners would benefit from the inclusion of choice-enhancing language in their public communications, alongside the exclusion of choice-restricting language. Pretesting of messages is recommended to avoid eliciting reactance and subsequent boomerang effects.

Key Words: choice, emergency preparedness, freedom threat, message framing, psychological reactance

INTRODUCTION

Central to effective emergency preparedness is the engagement of public audiences before a crisis occurs.[1] In engaging the public, health and safety organizations must design their messages to clearly describe the concrete steps that individuals can take in order to prepare for and respond to emergencies when they occur. On one hand, these messages must be clear in advocating for specific actions, so that the message content is readily understood and remembered by the target audience.[1] On the other hand, these messages should restrain from being overly forceful, lest they arouse psychological reactance.[2]

Psychological reactance theory (PRT) relies on the foundational premise that individuals cherish their autonomy.[2] Psychological reactance is the motivational state that occurs when an external stimulus is perceived as threatening one's freedom to choose.[2] Psychological reactance is operationalized as an amalgamation of anger and negative cognitions,[3] which is preceded by a freedom threat.[4] From the standpoint of designing persuasive messages, the arousal of reactance should be avoided whenever possible, as reactance is associated with undesirable persuasive outcomes, including diminished attitudes and intentions.[4] Given the undesirable consequences of reactance, considerable research has examined the language and message features most likely to elicit or inhibit reactance.[4,5] In particular, messages featuring choice-restricting language have been shown to elicit greater freedom threat and subsequent reactance than messages using choice-enhancing language.[5]

The current study seeks to use PRT as a framework for developing effective emergency preparedness messages. The use of choice-restricting language in an emergency preparedness message (eg, "you must") is anticipated to elicit greater freedom threat and subsequent reactance than a message featuring choice-enhancing language (eg, "the choice is yours"). Expected outcomes of reactance include diminished attitudes and subsequent intentions toward the advocated behavior.[4] The logic of the current study is formalized below as hypotheses,

H1: Choice-restricting language will elicit greater freedom threat than choice-enhancing language.

H2: Freedom threat will be positively associated with psychological reactance.

H3: Psychological reactance will be negatively associated with attitude.

H4: Attitude will be positively associated with behavioral intention.

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TABLE 1

Zero-Order Correlation Matrix, Means, and Standard Deviations

Variable	1	2	3	4	5	6	7	8
1. Anger	–							
2. Negative cognitions	0.16*	–						
3. Freedom threat	0.53**	0.16*	–					
4. Attitude	-0.35**	0.04	-0.17*	–				
5. Intention	-0.06	-0.01	-0.07	0.40**	–			
6. Message condition	0.15	0.05	0.31**	-0.13	-0.04	–		
7. Emergency kit prepared	0.04	-0.02	-0.03	0.08	0.21**	-0.02	–	
8. Disaster experience	0.05	0.01	-0.02	0.07	0.08	0.13	0.24**	–
Mean	1.40	1.24	2.57	4.11	3.21	–	–	–
SD	0.67	2.04	0.92	0.79	1.01	–	–	–

Note: *$P < 0.05$, **$P < 0.01$. *Message condition* was coded: 0 = choice-enhancing language, and 1 = choice-restricting language. *Emergency kit prepared* and *disaster experience* were both coded: 0 = no, 1 = yes.

METHODS

This study was a between-subjects-posttest-only online survey experiment. Participants ($N = 174$) were randomly assigned to view 1 of 2 messages (choice-restricting language vs choice-enhancing language), advocating for preparing an emergency kit. Participants were recruited via Amazon's Mechanical Turk (MTurk). Participants were eligible to complete the study if they met the following criteria: (1) 18 years of age or older, (2) US citizens or residents, and (3) MTurk reliability rating of 0.80 or higher.

Participants ($N = 174$) ranged in age from 20 to 98 years ($M = 36.06$, $SD = 12.37$) and were mostly female (61.5%). Most participants were white, or Caucasian (73.6%); followed by African American, or black (9.8%); Asian (7.5%); Hispanic, Latino, or of Spanish origin (6.9%); American Indian or Alaskan Native (1.7%); or some other racial/ethnic background (2.3%). Participants were well represented in terms of annual household income (< US $15 000 [10.9%], $15 000–$24 999 [9.8%], $25 000–$34 999 [17.2%], $35 000–$49 999 [13.8%], $50 000–$74 999 [23.6%], $75 000–$99 999 [10.3%], $100 000–$149 999 [8.6%]; $150 000–$199 999 [1.1%], ≥ $200 000 [2.3%], did not answer [2.3%]). Half of the participants (50.0%) had personally experienced a disaster at some point in their lives. Few participants (39.1%) had an emergency kit in their home.

Messages were text-only and approximately 140 words in length. Messages were based off of Centers for Disease Control and Prevention (CDC) recommendations (see https://www.cdc.gov/disasters/earthquakes/supplies.html). The experimental manipulation was included in the last line of the message. In the *choice-restricting condition*, the message concluded by stating, "You must create an emergency kit to protect yourself in case of a disaster. You simply have to do it!" In the *choice-enhancing condition*, the message concluded by stating, "Consider creating an emergency kit to protect yourself in case of a disaster. The choice is yours!" See Supplementary Material for message stimuli.

MEASURES

Unless otherwise noted, all items were measured on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). See Table 1 for a correlation matrix, means, and standard deviations for all variables. See Supplementary Material for all study measures.

Psychological reactance is operationalized as a latent construct comprising anger and negative cognitions.[3,4] *Anger* ($\alpha = 0.92$) was assessed on a 4-point Likert scale (1 = *none of this feeling* to 4 = *a great deal of this feeling*) with 4 items (irritated, angry, annoyed, aggravated)[3] prefaced by the stem, "How did you feel while viewing this message?" *Negative cognitions* were assessed via the thought-listing procedure.[6] Participants wrote down all of the thoughts they had while viewing the message, and coded each thought for relevance (ie, if the thought was relevant or irrelevant to the message) and valence (ie, if the thought was negative, neutral, or positive).[4] For subsequent analysis, only participants' relevant, negative thoughts were retained (see Quick et al.[4] for more on this method).

Freedom threat was measured with 4 items[3] (eg, "The message tried to pressure me"; $\alpha = 0.83$). *Attitude* was measured with 4 items[7] (eg, "Preparing an emergency kit for my home is a good thing for me to do"; $\alpha = 0.94$). *Behavioral intention* was measured with 3 items[7] (eg, "In the next month, I plan to prepare an emergency kit for my home"; $\alpha = 0.87$).

RESULTS

Analyses were conducted using structural equation modeling with the maximum likelihood robust* estimator in Mplus 8.0 for Mac. Model fit was considered "good" when CFI ≥ 0.95, and SRMR ≤ 0.08.[8] Model fit was considered "acceptable" when CFI ≥ 0.90, and SRMR ≤ 0.09.[9] RMSEA is

*MLR corrects for non-normality in data. Preliminary analyses revealed that anger was kurtotic (|2.0|) and negative cognitions were both skewed and kurtotic (|2.0|).

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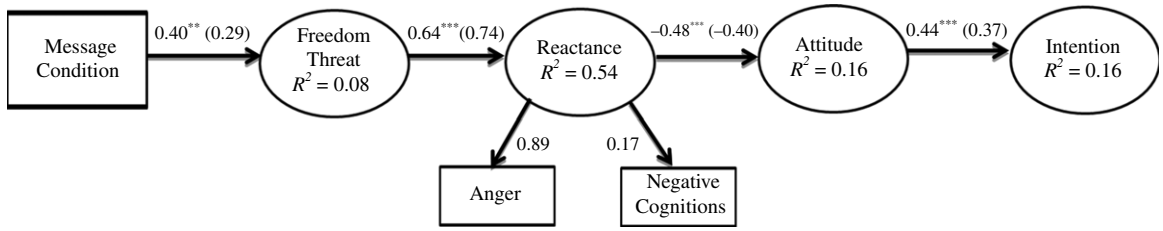
FIGURE 1

Structural Model.



***Note*: Unstandardized estimates are listed first, followed by standardized estimates in parentheses. Message condition was coded: 0 = choice-enhancing language; 1 = freedom-threatening language. The path between emergency kit prepared (0 = no, 1 = yes) and intention is not shown (UPC = 0.28, SPC = 0.15, $P < 0.05$). *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$. χ^2 (83, $N = 174$) = 161.50, $P < 0.001$, CFI = 0.93, SRMR = 0.06.**

not reported because the sample size of the current study is less than 250.[9] Consistent with established procedures, the 2-step analysis procedure was employed.[8] Before examining the hypothesized structural model, the measurement properties of all 4 latent variables (freedom threat, anger, attitude, intention) were examined via a confirmatory factor analysis. The measurement model demonstrated acceptable fit, χ^2 (83, $N = 174$) = 161.50, $P < 0.001$, CFI = 0.93, SRMR = 0.06.

For the main analysis, message condition was modeled as an observed variable (0 = choice-enhancing language, 1 = choice-restricting language). Reactance was modeled as a latent variable comprising anger and negative cognitions. A preliminary analysis revealed that having an emergency kit was associated with behavioral intention and was controlled for in the analysis. The hypothesized structural model demonstrated acceptable fit, χ^2 (85, N =174) = 19.24, $P < 0.001$, CFI = 0.92, SRMR = 0.07. The unstandardized path coefficients (UPC) and standardized path coefficients (SPC) are included below. See Figure 1 for a visual representation of the structural model.

In support of H1, choice-restricting language elicited greater freedom threat than choice-enhancing language (UPC = 0.40/SPC = 0.29, $P < 0.01$). In support of H2, freedom threat was positively associated with psychological reactance (UPC = 0.64/SPC = 0.74, $P < 0.001$). In support of H3, psychological reactance was negatively associated with attitude (UPC = -0.48/SPC = -0.40, $P < 0.001$). In support of H4, attitude was positively associated with behavioral intention (UPC = 0.44/SPC = 0.37, $P < 0.001$). The structural model accounted for the following variance in endogenous variables: (1) freedom threat ($R^2 = 0.08$), (2) reactance ($R^2 = 0.54$), (3) attitude ($R^2 = 0.16$), and (4) intention ($R^2 = 0.16$).

DISCUSSION

The purpose of this study was to apply PRT in order to identify effective messaging strategies for public engagement of emergency preparedness behaviors. Consistent with existing PRT research,[4,5] the use of choice-restricting (vs choice-enhancing) language in an emergency preparedness message elicited greater freedom threat (H1) and subsequent reactance (H2). Reactance was associated with diminished attitude (H3) and subsequent behavioral intention (H4). From a practical standpoint, public health practitioners tasked with developing emergency preparedness messages for public audiences should use choice-enhancing language, while avoiding choice-restricting language.

The study also speaks to the practicality of applying PRT during the formative stages of message design. In particular, to prevent potential boomerang effects, message content and language should be pretested to ensure that reactance is not unintentionally elicited among target audiences. The study adds to the existing toolkit of theories that emergency preparedness scholars can draw on for formative research, design, and evaluation.

Future research can improve upon this study in several ways. First, the study was limited by the use of behavioral intention in lieu of a behavioral outcome. Second, the study examined a single topic (preparing an emergency kit). Third, participants were predominantly white. Racial minority groups in the United States are more vulnerable to natural disasters and suffer disproportionally from their consequences.[10] Future research could build on the current study by measuring behavioral outcomes, examining additional topics, and recruiting a more diverse sample in terms of race.

CONCLUSION

Emergency preparedness messages featuring choice-enhancing language were found to be more effective – via reduced freedom threat and reactance, resulting in more favorable attitudes and intentions – than messages with choice-restricting language. Public health practitioners would benefit from including choice-enhancing language in their communications, while avoiding choice-restricting language. Pretesting

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messages to ensure that reactance is not elicited among target audiences is also recommended.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit https://doi.org/10.1017/dmp.2020.11.

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