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Examining the Moderating Role of Self-Construal on Fear Appeal in Preventing Colorectal Cancer

Suprapa Sa-ngasri[1], Watcharaporn Boonyasiriwat[2]

[1]Basic and Applied Social Psychology Master student, Faculty of Psychology, Chulalongkorn University, Bangkok, THAILAND
[2]Faculty of Psychology, Chulalongkorn University, Bangkok, THAILAND
Correspondence: Suprapa Sa-ngasri, Faculty of Psychology, Chulalongkorn University, Bangkok 10330, THAILAND E-mail: 6177652738@student.chula.ac.th, suprapa.sa13@gmail.com

Abstract

The congruent effect of a fear appeal message type (self-focused versus family-focused), and cultural orientation (individualist versus collectivist) is believed to be crucial since it increases adaptive outcomes (attitudes and behavioral change). However, the notion has been inconclusive for over a decade. The current study aimed to examine the moderation effect of self-construal on the relationship of different focuses of fear message type and fear appeal outcomes, including perceived threat, fear emotion, attitudes, and intention toward colorectal cancer (CRC) screening. This 3x2 (three types of self-construal priming: independent, relational versus collective self-construal x two types of fear message: self-focused versus family-focused) factorial research study was conducted among 133 high-risk participants aged 40-70 years. The participants were randomly assigned to one of six groups via Qualtrics (online platform) to prime different types of self-construal, before reading either self-focused or family-focused fear-arousing messages that recommended fecal immunochemical test (FIT) to prevent CRC. The between-group MANOVA did not confirm the moderating role of induced self-construal. Nevertheless, moderated mediation analysis using measured self-construal revealed a crucial role of measured self-construal on perceived CRC threat as well as its role on intention of attending a colorectal screening. These findings can be applied to promote cancer screening.

Keywords: Self-construal, Fear appeal, Extended Parallel Process Model, Colorectal cancer, Fecal immunochemical test

What was Known

- Fear appeal effectiveness may depend on cultural orientation
- Individuals with different self-construal might process fear appeal messages differently

What's New and Next

- Self-focused and other-focused fear appeal promoting colorectal cancer screening can induce threat perception equally
- Perceived colorectal cancer threat is crucial for promoting preventive screening
- Future studies should carefully investigate the effects of self-construal priming and experimental medium

Introduction

Colorectal cancer (CRC) is one of the most life-threatening cancers, responsible for the second leading cause of fatalities worldwide. In Thailand, a number of new patients registered in the system of the National Cancer Institute (NCI) distinctly emphasized the growth of CRC in 2021[1]. In 2021, there were 66,378 cancer patients (30,576 males and 35,802 females) registered in NCI database[2]. Statistically, CRC was found more among males (5,587 patients) than females (4,350 patients) in 2021. To clarify, CRC was the first most common cancer diagnosed among males, followed by liver and bile duct cancer. For females, CRC is the second most diagnosed cancer after breast cancer. CRC patients are mostly diagnosed at stage 4[1] with 46 % of the patients in which the cancer would spread to other organs and can hardly survive. In addition, patients in the advanced stage would usually be suffered from various complications due to treatments and the disease itself. Both physical and psychological pain is identified in CRC patients[3] i.e., gastro-intestinal symptoms, sepsis, nausea, fatigue, depression, and anxiety. Apart from personal suffering, CRC would impact widely involving people around them especially family members since the patients with pain would find their everyday life more difficult. All in all, CRC is not only common cancer found in Thailand, but also fearful for patients and their families.

However, screening is the primary way to prevent CRC. Thailand has two standard screening techniques: Fetal immunochemical Test for Hemoglobin (FIT test) and colonoscopy[4]. Despite government support, the ignorance of CRC screening was reportedly still noticeable.

Therefore, launching financial support and motivating Thais to undergo a CRC screening is essential.

A fear appeal has been vastly applied in health communication to promote prevention, and risk avoidance relating to health behaviors. Nevertheless, some scholars expressed concern about the effect of audience-based variables when receiving fear message types. Witte, 1992, the Extended Parallel Process Model (EPPM) developer, noticed that individuals might not constantly evaluate the components of fear messages similarly[5]. It may be caused by their different past experiences, personalities, and cultures. Due to personality differences, it was suggested that different types of fear messages probably resulted in threat perception dissimilarity in those with independence and dependence on self-construal. Self-construal is the extent to which individuals identify the self or give a self-meaning, primarily involved in how individuals view themselves about others[6]. The tripartite self-construal, including independent, relational, and collective, was employed to study intensively. Independence self-construal emphasizes being unique or different as a basis of self-esteem feeding[6]. Relational self-construal is the extent to which individuals construe the self or define themselves based on a close relationship, and collective self-construal[7] is the extent to which individuals identify themselves within large collectives or social groups[5]. Fear appeal studies have been famously conducted in a western setting. The previous study revealed some concerns about using fear appeal in different cultures[8]. It was hypothesized that messages used in western countries (e.g., the United States) that frighten individuals by impressing possible harm to self might not be adequate to induce fear among individuals in eastern countries, for instance among the Chinese who place significance on others' welfare. For that reason, cultural orientation or self-construal has become the center of interest in many following studies.

Even though some studies have attempted to prove the moderating role of self-construal, they refrained from doing it when an individual processed different fear message types (self-interest focus versus other-interest focus)[9,10]. This notion's lack of replicability increased doubts about the self-construal effect on evaluating fear appeal components. The current study examines whether the congruence of self-construal and fear message types would increase threat perception about CRC, which eventually promotes positive attitudes, and intention to undergo CRC screening.

Materials and Methods

Ethical approval

This study was approved by the Research Ethics Review Committee for Research Involving Human Research Participants, Group I, Chulalongkorn University, COA No. 029/65 on 7 February 2022 and all participants provided electronic informed consent.

Study design

The current study employed a 2×3 factorial design to examine the interaction effect of fear message types (self-focused versus family-focused), and self-construal priming (independent, relational and collective) on dependent variables: perceived threat, feelings of fear, attitudes, and intention. The participants were randomly assigned to one of six groups to complete either independent, relational, or collective self-manipulation and read the other-focused or self-focused messages.

Participants

The study was conducted among people aged between 40 to 70 years old residing in Bangkok, Thailand. Most participants worked at Chulalongkorn University (CU) and Bangkok District Offices. The method to approach participants was done formally by a data collection letter. The formal letters were sent with a brief description of the study attached with the online survey link and QR code to all CU departments and 14 Bangkok District Offices as a convenient sampling. Each unit assigned the single point of contact to handle survey distribution. Snowball sampling was another method to reach participants as well. The total response rate was 237 respondents. Regarding the inclusion and exclusion criteria, there were 134 participants from the online survey. Inclusion criteria included age (40-70 years old), location (residents in Bangkok), and non-experienced CRC screening. Exclusion criteria were their incompleteness of manipulations, lacking responses to dependent variable measures, and did not permit the use of their data for further analysis. This sample size was sufficient based on sensitivity analysis using G*power and the recommendation of minimum cell size[11] for MANOVA analysis. The sensitivity analysis indicated that the sample size had 80% power to detect effect size. After the data preparation for analysis, the final number of participants was 133 due to outlier detection.

Materials and measurements

Pilot studies were carried out to validate, and test the reliability of all materials and measurements. The Cronbach's alpha of each measurement was presented. This online experiment consisted of 4 parts, and was conducted in the Thai language. Firstly, the self-construal scale was used to identify participants' tripartite self-construal before the priming. It consisted of 14 items to assess three subscales: independent (4 items e.g., "I enjoy being unique and different from others in many respects", Cronbach's alpha = 0.82), relational (5 items e.g., "In general, my close relationships are an important part of my self-image", Cronbach's alpha = 0.90) and collective (5 items e.g., "I will sacrifice my self-interest for the benefit of the group I am in", Cronbach's alpha = 0.89) self-construal which was measured on a 7-Likert scale (1= strongly disagree to 7= strongly agree). Thus, the scores of each item for each subscale were summed.

Secondly, self-construal priming activities consisted of the pronoun finding tasks, and different/similar tasks. The pronoun finding task was adapted from the original study[12]. This activity aimed to emphasize the word that primed a particular type of self-construal over again. The story was written in Thai language. For independent self-priming, the story revolves around having a good time with 'myself' and doing something for 'myself'. In this condition, participants were asked to count a total of 18 words of 'I'. The story focuses on spending quality time with 'the loved one' for relational self-priming. The repetition of words expressing the concept of 'you and I' was offered in the story, and the participants needed to count all 18 words of 'you and I'. For collective self-priming, the story narrates spending valuable time with a group of friends. The word 'we' was repeated, and participants had to count all 18 words that used 'we'. The different/similar activity was adapted from the original study[13]. The activity required participants to think and indicate which aspects they differed in from family and friends in independent self-priming. In contrast, participants in relational self-priming had to think and identify which aspects were similar to their close contacts. In the collective self-priming, participants had to consider what aspects were similar to their close group.

The next part was fear message types. The fear messages were manipulated as another independent variable presenting either other-focused or self-focused conditions. The fear message about CRC and FIT test screening was developed based on the EPPM. Two main elements of fear message types included: threat (susceptibility and severity) and efficacy (self-efficacy and response efficacy). Most of the elements were the same except for susceptibility, especially components of efficacy that should be controlled as equally high across two

conditions. In the self-focused message, the susceptibility component dealt with one's chances of suffering severe consequences from CRC, while the family-focused message described how one's family suffered some severe consequences. The lengths of the two messages were comparable (450 and 477 words, respectively). Information on risk factors[14] and FIT test screening accuracy[15,16] was retrieved from official medical institute web pages. The materials can be viewed via this link:

https://drive.google.com/drive/folders/1YlBd5DdAAhv-4bbFqn6cVN1KdYZ1iIAE?usp=sharing

Next, the *measures of dependent variables* included a measure of perceived threat, feelings of fear, attitudes and intention about colorectal screening. Eight items assessed the perception of CRC threat among participants for a perceived threat. The subscale included perceived susceptibility (4 items, e.g., "*I am at risk for getting colorectal cancer*") and severity (4 items, e.g., "*Colorectal cancer is a serious threat*") measured on the 7-Likert scale (1= strongly disagree to 7= strongly agree). All eight items formed a reliable measure of perceived threat (Cronbach's alpha = 0.89). For *feelings of fear*, three items were used to measure the fear experienced from the fear messages (e.g., "the messages used in this study made me feel afraid," Cronbach's alpha = 0.93) on a 7-Likert scale (1= strongly disagree to 7= strongly agree). For *attitudes*, nine items assessed the attitudes toward FIT test screening among participants (e.g., "Attending FIT test screening in the next 4 weeks is essential for you", Cronbach's alpha = 0.70) on a 7-Likert scale (1= strongly disagree to 7= strongly agree). *To assess behavioral intention to have FIT test screening*, three statements were measured (e.g., "I plan to attend FIT test to prevent myself from CRC in the next four weeks", Cronbach's alpha = 0.95) on a 7-Likert scale (1= strongly disagree to 7= strongly agree). Although the perceived efficacy in the current study was not a dependent variable, it was necessary to ensure that the participants had high perceived efficacy in a FIT test screening. The two subscales of perceived efficacy included perceived self-efficacy (e.g., "After reading the message, I think I can attend colorectal cancer screening via FIT test") and perceived response efficacy (e.g., "After reading the message, I think attending colorectal cancer screening via FIT test is effective to prevent colorectal cancer", Cronbach's alpha = 0.92) on a 7-point Likert scale (1= strongly disagree to 7= strongly agree).

Data collection

The data were collected by online survey using Qualtrics. Participants were recommended to use a computer for their convenience to complete all activities. The average time to complete the survey was around 30 minutes. The data collection was carried out between February to April 2022.

Statistical analysis

The two-way MANOVA was performed via SPSS to compare the mean differences in the measures of perceived threat, feelings of fear, attitudes and intention with a fear message type and self-construal priming as independent variables with a significance level at 0.05. In addition, the PROCESS macro version 4.0[17] was used to explore relationships among variables as an additional analysis on SPSS.

Results

Demographical information of participants

The final participants included in data analysis were 133 (M_{age} = 49.35, SD= 6.19). The participants were males (49.62%), females (49.62%), and others (0.76%). Approximately, half of them were married (51.88%), childless (49.62%), and earned 20,001–30,000 Baht per month (42.86%). 51.88% of participants were married in which 17.39% of them were married with no children, 31.88% of them were married with 1 child and 50.72% had 2 or more children while 49.12% of them remained single. 42.86% of all participants also earned 20,001–30,000 Baht per month. In addition, most of them were government officers (71.43%), and had no family health history of colorectal cancer (92.48%). Also, characteristics of participants in all six conditions were equalized by random assignment technique to dwindle bias and strengthen the internal validity of the study.

Manipulation check

Self-construal. To confirm that each type of self-construal was successfully primed, participants indicated how much they agreed with 12 statements measuring self-construal activation on a 7-point Likert scale (1= totally disagree to 7= totally agree). An example of the items was "At the moment, I feel satisfied with being myself", "At the moment, I feel satisfied with having good relationships with a loved one", "At the moment, I feel satisfied with being a part of a group". A one-way ANOVA was employed to test the mean differences in manipulation check assessment among three self-construal priming conditions (independent versus relational versus collective self-priming), and results showed no significant differences among self-construal priming. In sum, unfortunately, the manipulations were not successful in activating different self-construal among participants.

Fear message types

Six questions were used to test whether the participants perceived the message threatened themselves or the participants thought the message threatened their family members on the 7-Likert scale (e.g., "in the message, colorectal cancer is a threat to yourself", "in the message, colorectal cancer is a threat to the family"). The independent samples t-test revealed no significant mean difference of the perceived target of the CRC threats between self-focused versus family-focused message conditions, indicating that the manipulation was unsuccessful.

Hypothesis testing

Before testing the hypothesis, regression was conducted to investigate the effect of the demographical information of participants. The result indicated that age, marital status, monthly income, career, number of children, and family health history of CRC have a significant effect on dependent variables. MANCOVA was conducted to compare means of the perceived threat, feelings of fear, attitudes, and intention measures among six conditions with self-construal priming and fear message type as independent variables (Tables 1 and 2). Age, marital status, monthly income, career, number of children and family health history of CRC were controlled. The first set of dependent variables, including perceived threat and fear, was analyzed. The result revealed there was no significant differences in perceived threat, and feelings of fear scores based on fear message $F(2, 121) = 0.34$, $p = 0.71$; Wilk's $\Lambda = 0.99$, partial $\eta^2 = 0.01$ and self-construal priming $F(4, 242) = 0.96$, $p = 0.43$; Wilk's $\Lambda = 0.97$, partial $\eta^2 = 0.02$. Furthermore, there was also no significant interaction effect between fear messages and self-construal priming on those two dependent variables, $F(4, 242) = 0.25$, $p = 0.91$; Wilk's $\Lambda = 0.99$, partial $\eta^2 = 0.004$. The second set includes attitudes and intention toward FIT test screening as dependent variables. The result revealed there was no significant differences in attitudes and intention based on fear message $F(2, 121) = 0.40$, $p = 0.67$; Wilk's $\Lambda = 0.99$, partial $\eta^2 = 0.01$ and self-construal priming $F(4, 242) = 0.67$, $p = 0.61$; Wilk's $\Lambda = 0.98$, partial $\eta^2 = 0.01$. Moreover, there was no significant interaction effect between fear messages and self-construal priming on either attitudes or intention, $F(4, 242) = 1.09$, $p = 0.36$; Wilk's $\Lambda = 0.97$, partial $\eta^2 = 0.02$ (Table 3).

Table 1 Comparison of means and standard deviations of perceived threat and feelings of fear scores in each experimental condition

Variables	Fear message conditions	Self-construal primes	Mean	SD	n
Perceived threat	Self-focused	Independent	4.31	1.25	23
		Relational	4.09	1.60	20
		Collective	4.23	1.07	22
	Family-focused	Independent	4.21	1.32	21
		Relational	4.09	1.12	24
		Collective	4.59	1.02	23
Feelings of fear	Self-focused	Independent	4.59	1.95	23
		Relational	4.60	1.69	20
		Collective	4.38	1.34	22
	Family-focused	Independent	4.70	1.66	21
		Relational	4.26	1.90	24
		Collective	4.54	1.54	23

SD, standard deviation

Table 2 Comparison of means and standards deviations of intention and attitudes scores in each experimental condition

Variables	Fear message conditions	Self-construal primes	Mean	SD	n
Intention	Self-focused	Independent	5.22	1.50	23
		Relational	4.93	1.45	20
		Collective	4.32	1.74	22
	Family-focused	Independent	4.59	1.60	21
		Relational	4.36	1.82	24
		Collective	4.74	1.50	23
Attitudes	Self-focused	Independent	5.07	1.05	23
		Relational	4.71	0.86	20
		Collective	4.57	0.80	22
	Family-focused	Independent	4.63	0.93	21
		Relational	4.99	1.01	24
		Collective	4.68	0.86	23

SD, standard deviation

250

Table 3 MANCOVA analysis for two sets of dependent variables

Dependent variables	Source	Wilk's Λ	F	Hypothesis df	Error df	p	Partial η²
Perceived threat and feelings of fear	Intercept	0.67	29.80	2	121	<0.001	0.33
	Age	0.95	3.50	2	121	0.03	0.06
	Marital status	0.96	2.31	2	121	0.10	0.04
	Monthly income	0.88	7.96	2	121	<0.001	0.12
	career	0.96	2.24	2	121	0.11	0.04
	Family health history	0.96	2.21	2	121	0.11	0.04
	Fear message	0.99	0.34	2	121	0.71	0.01
	Self-construal	0.97	0.96	4	242	0.43	0.02
	Fear * Self	0.99	0.25	4	242	0.91	0.004
Attitude and intention	Intercept	0.62	36.98	2	121	<0.001	0.38
	Age	0.95	3.43	2	121	0.04	0.05
	Number of children	0.95	3.02	2	121	0.05	0.05
	Marital status	0.90	6.58	2	121	0.002	0.10
	Monthly income	0.86	9.58	2	121	<0.001	0.14
	Family health history	0.97	2.14	2	121	0.12	0.03
	Fear message	0.99	0.40	2	121	0.67	0.01
	Self-construal	0.98	0.67	4	242	0.61	0.01
	Fear * Self	0.97	1.09	4	242	0.36	0.02

Fear = fear message types; Self= Self-construal priming

Additional analysis

Even though we failed to detect the effect of the manipulated self-construal, we conducted a moderated mediation analysis to explore their roles as measured variables. The self-construal scores measured before the priming were used as moderators in a series of analyses using PROCESS version 4.0 (model 7)[16]. The model included fear message types as a predictor (dichotomous), feelings of fear (continuous), attitudes (continuous), intention (continuous) as criterion variables, perceived threat (continuous) as a mediator, and finally, the three types of self-construal (continuous, one at a time) as a moderator (Figure 1). Age, career, marital status, monthly income, number of children and family health history of colorectal cancer were controlled. Each type of self-construal was tested separately for each criterion variable. The significance of the direct and indirect effects was evaluated by means of 5,000 bootstrap samples to create bias-corrected confidence intervals (CIs; 95%).
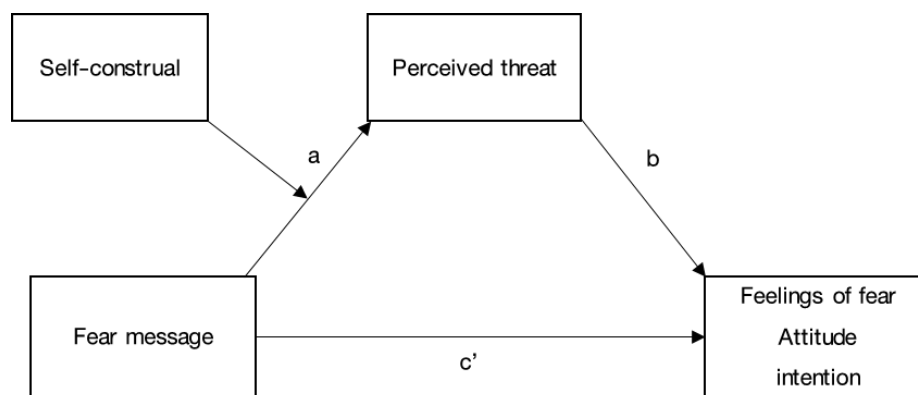
Figure 1 The overall model of PROCESS macro analysis (Model 7)

Feelings of fear. The analysis revealed that the relationship between perceived threat, mediator, on feelings of fear was positively significant on path b ($B = 0.30$, $SE = 0.04$, $t = 8.18$, $p < 0.001$). The positive relationship between independent, relational, and collective self-construal, and perceived threat was significant ($B = 0.70$, $SE = 0.20$, $t = 3.50$, $p < 0.001$); ($B = 0.89$, $SE = 0.19$, $t = 4.60$, $p < 0.001$; $B = 0.89$, $SE = 0.23$, $t = 3.79$, $p < 0.001$), respectively. However, the relationship between fear message types, and perceived CRC threat was not significant on path a_{self1}, $_{self2}$ and $_{self3}$ ($B = -0.14$, $SE = 5.85$, $t = -0.03$, $p = 0.98$); ($B = 9.07$, $SE = 8.17$, $t = 1.11$, $p = 0.27$); ($B = 12.17$, $SE = 10.40$, $t = 1.17$, $p = 0.24$). The relationship between fear message types, and feelings of fear was not significant as well on path c' ($B = -0.08$, $SE = 0.69$, t

= –0.12, p = 0.91). Furthermore, the relationship between fear message types and feelings of fear mediated by perceived threat depending on independent self-construal was not significant (moderated mediation index= 0.003, Boot SE = 0.08, LLCI = –0.17, ULCI = 0.17). The relationship between appeal message and feelings of fear mediated by perceived threat depending on relational self-construal was also not significant (moderated mediation index= –0.08, Boot SE = 0.09, LLCI = –0.25, ULCI = 0.09). The relationship between fear message type and feelings of fear mediated by perceived threat depending on collective self-construal was insignificant (moderated mediation index = –0.11, Boot SE = 0.12, LLCI = –0.34, ULCI = 0.12). This indicated that there was no interaction effect of fear message type and any types of self-construal on the perceived threat which mediated the relationship of fear message type on feelings of fear (Figure 2).
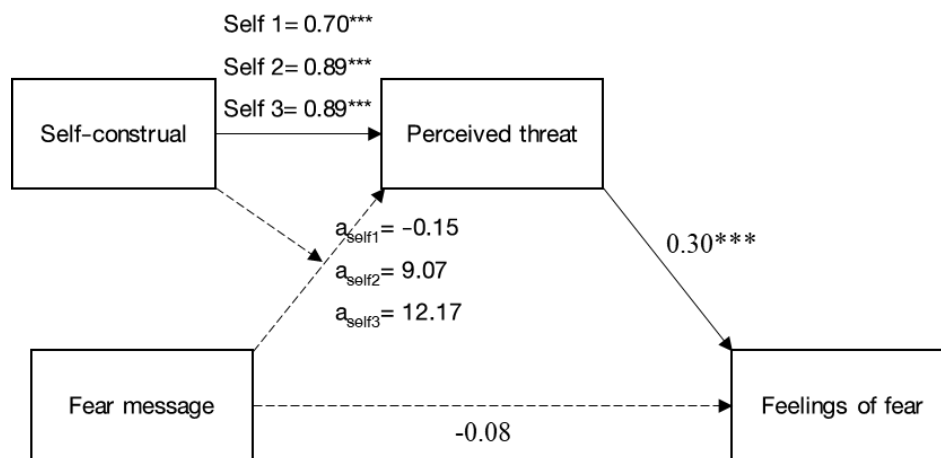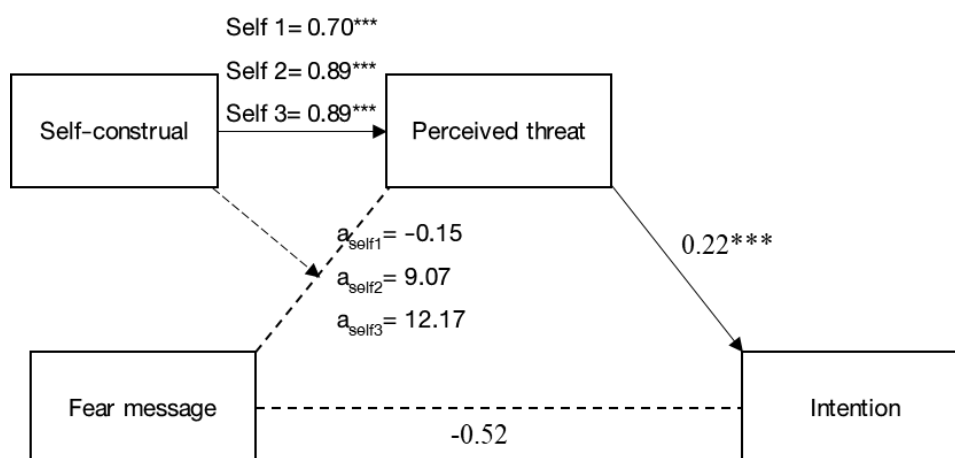

Figure 2 The analysis of moderated mediation on feelings of fear

Dashed lines present non-significant effect while solid ones reflect the opposite. Path a is changed based on different types of self-construal as a moderator. Path a_{self1} is the effect of fear message on perceived threat when independent self-construal is added. Path a_{self2} is the effect when relational self-construal is added, and path a_{self3} is the effect when collective self-construal is added. Self 1= independent self-construal, self 2= relational self-construal, self 3= collective self-construal. Path coefficients are unstandardized regression coefficients, ***p<0 .001

Attitudes toward attending a FIT test. When attitudes were used as a criterion variable, the relationship between perceived threat and attitudes on path b was almost significant, but not since the bootstrap included 0 (B = 0.14, SE = 0.07, t = 1.94, p = 0.05). The relationship between fear message type and attitudes was not significant on path c' (B = –0.26, SE = 1.36, t = –0.19, p = 0.85). Moreover, the relationship between appeal message and attitudes mediated by

perceived threat depending on independent self-construal and was found non-significant (moderated mediation index= 0.002, Boot SE = 0.05, LLCI = -0.08, ULCI = 0.10). The relationship between appeal message and attitudes mediated by perceived threat depending on relational self-construal was not significant (moderated mediation index = -0.04, Boot SE = 0.04, LLCI = -0.13, ULCI = 0.05). The relationship between fear message type and attitudes mediated by perceived threat depending on collective self-construal was not significant (moderated mediation index= -0.05, Boot SE = 0.63, LLCI = -0.19, ULCI = 0.06). This also indicated that there was no interaction effects of fear message type and any types of self-construal on the perceived threat which mediated the relationship of fear message type on attitudes (Figure 3).
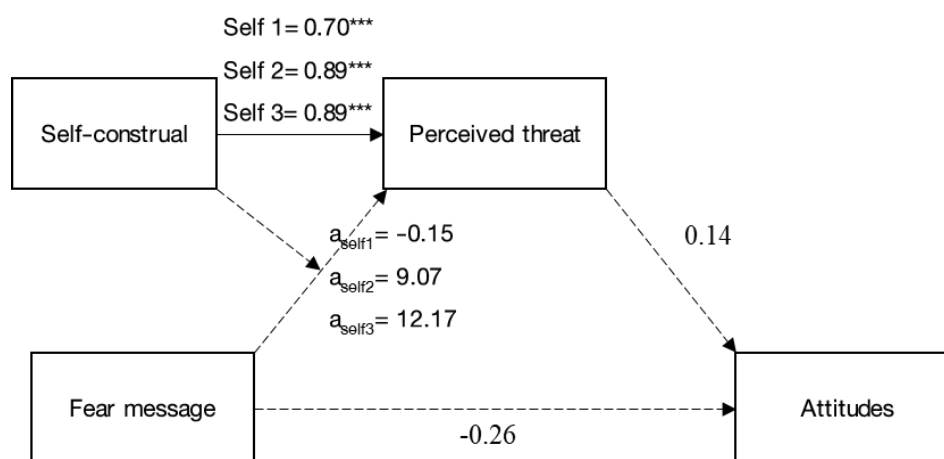
Figure 3 The analysis of moderated mediation on attitudes toward FIT test screening
Dashed lines present non-significant effect while solid ones reflect the opposite. Path a is changed based on different types of self-construal as a moderator. Path a_{self1} is the effect of fear message on perceived threat when independent self-construal is added. Path a_{self2} is the effect when relational self-construal is added, and path a_{self3} is the effect when collective self-construal is added. Self 1= independent self-construal, self 2= relational self-construal, self 3= collective self-construal. Path coefficients are unstandardized regression coefficients, ***$p < 0.001$

Intention to attend a FIT test. When intention was used as a criterion variable, the relationship between perceived threat and intention was found positively significant on path b (B = 0.22, SE = 0.04, t = 5.84, p < 0.001). Nonetheless, the relationship between fear message type and intention on path c' was non-significant (B = -0.52, SE = 0.72, t = -0.72, p = 0.47). Similarly, the relationship between fear message type and intention mediated by perceived threat depending on independent self-construal was not significant (moderated mediation index = 0.002, Boot SE = 0.06, LLCI = -0.13, ULCI = 0.13). The relationship between fear message type

and attitudes mediated by perceived threat depending on relational self-construal was still not significant (moderated mediation index= –0.06, Boot *SE*= 0.07, LLCI = –0.20, ULCI = 0.07). The relationship between fear message type and attitudes mediated by perceived threat depending on collective self-construal was still non-significant (moderated mediation index= –0.09, Boot *SE*= 0.09, LLCI = –0.28, ULCI = 0.09) (Figure 4).

Figure 4 The analysis of moderated mediation on intention to attend FIT test

Dashed lines present non-significant effect while solid ones reflect the opposite. Path a is changed based on different types of self-construal as a moderator. Path a_{self1} is the effect of fear message on perceived threat when independent self-construal is added. Path a_{self2} is the effect when relational self-construal is added, and path a_{self3} is the effect when collective self-construal is added. Self$_1$= independent self-construal, self 2= relational self-construal, self 3= collective self-construal. Path coefficients are unstandardized regression coefficients, ***p <0 .001

To summarize, perceived CRC threat, the mediator, significantly affected dependent variables. All types of self-construal were found to be positively associated with the perceived CRC threat, although fear-appeal type did not significantly relate to any variables in the model. Therefore, there was no direct or indirect effects of the fear message on feelings of fear, attitudes, and intention found through perceived threat.

Discussion

Notably, the manipulation checks showed that both manipulations of self-construal and fear messages failed to elicit their effects among the participants. Possible explanations for the self-construal manipulation failure might be, firstly, the priming channel. All manipulations were implemented in the online survey, which enabled many possible confounds during the

255

experiment, such that the participants might not give full attention to the manipulations, and/or their surroundings may interfere and influence their perception or thought. Secondly, the self-construal priming methods themselves also have a replicability issue. Some studies[18] failed to investigate the effect of manipulated tripartite self-construal on prosocial. Despite the effectiveness of self-construal priming found in a meta-analysis[19], the bias of selecting only published studies possibly presenting desirable results (significant) might cause inconsistency among studies. More importantly, self-construal priming might not be effective when being used as a whole[20]. The result from the previous study indicated that self-construal priming might activate some specific dimensions (i.e., difference versus similarity and self-direction versus reception to influence) of self-construal (independent versus interdependent).

For fear appeal manipulation failure, the explanation of an inability to differentiate regarding the different focused messages (self-focused versus family-focused) might be explained by the self-expansion model[21]. According to the self-expansion model, people in close relationships include others in self-processing: perspectives, resources, and identities. The latest experiment on a visual and cognitive process confirmed that participants could not separate themselves from close others[22]. Even though the fear messages in the current study explicitly emphasized on different impacts of CRC on patients themselves (self-focused: symptoms and pain from treatment and disease), and family members (family-focused: involvement of family in taking care of the patients, financial issues, and psychological impact on family), it might be difficult for our participants to consider their own long-term sufferings independently from their surrounding close ones. This may explain why the manipulation did not successfully prime participants to think about their own or others. Furthermore, the focused disease, CRC, may provoke a noteworthy aftermath compared to previous studies. While the previous study emphasized sexually transmitted disease (STD)[8,9,10] and smoking[23], CRC is a much more serious illness, considered to be a possibly incurable disease which heavily influences both patients and family members. The result could indicate that when applying the notion of fear message types to promote cancer screening, the different types of messages focusing on self-threat versus others-threat might not be critical.

The additional analysis found significant positive relationships among all types of self-construal on perceived CRC threat. To explain, illness could be interpreted as a threat to self since it can obstruct people from engaging in physical activities essential, and meaningful to their sense of self, for example, incapability to complete their achievement (independent self-construal)[6], inability to fulfill their social roles as lovers or parents (relational self-construal)[7], or a

failure to carry out roles in a particular group (collective self-construal)[6]. This could emphasize the crucial role of self-construal in fear appeal processing[24]. Scholars or campaign practitioners can incorporate self-construal to emphasize the threats to self, which can potentially provoke behavioral outcomes. The positive relationship between perceived CRC threat, and fear appeal outcomes: fear emotion and intention could indicate perceived CRC threats as a crucial factor in promoting CRC screening. However, the relationship between the perceived CRC threats on attitude is almost significant in the current study. Policy practitioners or health campaigns are believed to capably apply this finding to promote the behavioral intention of CRC screening by concentrating on a threat component accompanied by a high-efficacy message.

More importantly, the limitations of the current study should be noted. Firstly, due to the COVID-19 spreading, the campus was in lockdown resulting in the shift of laboratory experiments to online activities. The online experiment can be contaminated by various confounding variables i.e., participants' surroundings. This cannot ensure whether the result was precisely coming from their thoughts and perceptions regarding the materials used in the study especially the priming activities. Additionally, the self-construal primes have not yet produced consistent results across studies. Some scholars found that self-construal primes should be used vigilantly; they should not be used to prime self-construal as a whole[20]. Finally, the target disease, CRC, might produce fairly high threat perception among participants due to its severe consequences on both patients and family members. The failure to detect different perceptions between self-threatened messages versus family-threatened messages might be explained by a disease nature. Despite some limitations, the current study is considered to pioneer the utilization of the tripartite self-construal to investigate the congruence of the effect of self-construal and fear message types on fear appeal outcomes among participants (40-70 years old) in Thailand.

Conclusion

Although the results did not support the hypotheses and doubts about the rise of the role of self-construal, the result benefits can be of a use when constructing fear message types about cancer. Cancer is chronic and possibly incurable, so it threatens all aspects of life among individuals. When constructing a fear message type, either a message focusing on a threat to self, or others affects threat perception among the audience identically. Self-construal can be another crucial psychological disposition in the process of fear appeal. The perceived threat can lead to behavioral intention when promoting cancer screening. Lastly, future studies should 1)

carefully use and select self-construal primes 2) beware of an experiment medium 3) vigilantly select a target disease when examining the different focused messages of fear appeal.

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Conflicts of Interest

We have no conflicts of interest to disclose.

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