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The Impact of Receivers' Nationality and Cultural Orientation on the Effects of Fear Appeals in Health Communication

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ABSTRACT

Participants from the Netherlands ($n = 52$), China ($n = 50$), and South Africa ($n = 166$) either read a self-targeted or a family-targeted fear appeal message about chlamydia. Seven aspects of individual cultural orientation were measured, and six effects of the different messages. Interactions between nationality and target of threat were found on perceived severity, perceived susceptibility, and danger control. Only for perceived susceptibility, a difference in cultural orientation partly explained this interaction. The outcomes add to the doubts about claims in earlier literature about the relevance of receivers' nationality and cultural orientation for developing a fear appeal message.

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For a long time now, there have been claims that nationality and cultural orientation influence the effects of health-related fear appeals: messages designed to scare people by describing the terrible things that will happen to them if they do not do what the message recommends. According to the often cited theoretical framework for explaining the working of fear appeals, the Extended Parallel Process Model or EPPM (Witte, 1992, 1998), a fear appeal message may lead receivers to display the recommended behavior, but only so if the threat presented in the message is perceived as severe and if the receivers perceive themselves as susceptible to the threat. If these conditions are not met, there will be no further processing of the message, and the receiver will not experience feelings of fear. If, however, both perceived severity and perceived susceptibility reach a certain threshold level, the message will arouse fear. If a frightened receiver is also presented with a measure that can be taken, there are two possibilities: danger control and fear control.

If the levels of perceived response efficacy (effectiveness of the proposed measure) and the self-efficacy of the receiver are high enough, the receiver will make attempts to avert the threat (danger control mode), which is exactly the behavior that the sender of the fear appeal message is promoting. However, if the self-efficacy and the perceived response efficacy are inadequate, the receiver will attempt to subdue the fear without fighting the threat (fear control mode). In this situation, receivers will try to defend themselves against the fear that has been aroused, and they will reject the message by regarding it as exaggerated and manipulative, for instance (see Popova, 2012).

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According to the EPPM, individual differences between receivers may impact the processing of a fear appeal, and hence its behavioral effects. As Witte (1992) states: “Each person evaluates the components of a [fear appeal] message in relation to his or her prior experiences, culture, and personality characteristics” (p. 338). Witte, Meyer, and Martell (2001) elaborate on this assumption by stating that: “the EPPM suggests that individual differences *indirectly* influence outcomes, as mediated by principles of threat and efficacy” (p. 28). As Popova (2012) explains: “The theory posits that individual differences influence the appraisal of threat and efficacy; they will be responsible for the thresholds and critical points, determining in what type of response a person engages” (p. 465).

Critical remarks on the EPPM are made in Popova (2012), among others. She raises concerns, for instance, about the presumed role of individual differences in the processing and the outcomes of fear appeals. Some studies, such as Witte and Morrison (2000) and Ruiter, Verplanken, De Cremer, and Kok (2004), found that individual differences indeed directly or indirectly influence receivers’ reactions to a fear appeal. A meta-analysis by Witte and Allen (2000), however, concluded that such an influence does not exist, or only on rare occasions.

Since the introduction of the EPPM, a number of authors have specifically focused on the impact of culture or nationality on the effects of health-related fear appeals, coming to the conclusion that these receiver characteristics should be taken into account when developing and distributing fear appeal messages. Murray-Johnson et al. (2001), for instance, claim that “fear appeals should address cultural orientation [...] to achieve maximum effectiveness” (p. 336). Chung and Ahn (2013) state that distribution of different fear appeals should be considered in South Korea and the United States “to increase message acceptance among people” (p. 452), and Rodrigues, Blondé, and Girandola (2017) claim that “effects of threatening communications are strongly culture-dependent” (p. 405).

So far, however, empirical evidence supporting such assertions is scarce and not convincing. Possible interactions effects of culture or nationality of the receivers on the one hand and characteristics of the fear appeal messages on the other hand, have been tested in only a limited number of studies. To our knowledge, empirical work in this area so far has been restricted to fourteen experiments,¹ with equivocal outcomes that at least partly can be explained by shortcomings in research materials and measurement instruments (also see Jansen & Verstappen, 2014).

Most empirical studies into the way receivers with a different culture or nationality respond to fear appeals compared the effects of two versions of a fear appeal message. One version of such a fear appeal message typically includes a self-targeted threat, and the other a family-targeted threat. These fear appeal message versions are then presented to receivers from different groups (in most cases students or other young, well-educated adults), who are expected to differ in cultural orientation. Typical examples are the experiments presented in Chung and Ahn (2013) and in Murray-Johnson et al. (2001). In order to depict the state of affairs in this field, below both these studies are briefly discussed. Two replications of the experiments performed by Murray-Johnson et al. are also shortly addressed.

Chung and Ahn (2013) asked students from the US and from South Korea to either read a “self-related” or an “other-related” fear appeal. In South Korea, the “other-related”

message proved to be more effective than the “self-related” message. No significant differences, however, were found in the US. The authors explain these results by cultural differences. An East Asian country such as South Korea is considered to exemplify a highly collectivistic culture, while the US and Canada are known for “rugged individualism” (p. 455). Referring to Laroche, Toffoli, Zhang, and Pons (2001), Chung and Ahn (2013) state that “As an American heavily emphasizes the individual’s self-sufficiency and selfcontrol of his or her own life, the American character is considered to be one of individualism” (p. 455). Problematic, however, is that Chung and Ahn assumed the existence of differences in cultural orientation between their two groups of participants but did not test this assumption.

A similar shortcoming can be found in one of the experiments performed by Murray-Johnson et al. (2001). Their study focused on the effects of fear appeals about HIV/AIDS differing in target of threat: an HIV/AIDS patient or the family of this patient. In their first experiment, participants were African American and Mexican immigrant high school youth from the US. In this experiment, cultural orientation was only ascribed to the individual participants and not measured, just as was the case in the Chung and Ahn (2013) study.

In their second experiment, now among students from the US and from Taiwan, Murray-Johnson et al. corrected this self-admitted flaw. This time, they did measure individual cultural orientation. The outcomes were highly unexpected, however. The majority of the Taiwanese participants scored as individualists while the majority of the American participants were found to be collectivists. The authors suggest that these results may be due to problems in the scale they used to measure cultural orientation, which was a variation of the Individualism-Collectivism (INDCOL) scale developed by Hui (1988). For future research, Murray-Johnson et al. recommend the use of new measures, in particular the scenario-based questionnaire introduced by Triandis, Chen, and Chan (1998) for measuring horizontal and vertical dimensions of individualism and collectivism.

Despite the problems with the INDCOL scale they used in their second experiment, Murray-Johnson et al. (2001) decided to compare the reported fear arousal of participants scoring low on this scale with the reported fear arousal of participants scoring high on this scale. Based on this comparison, the authors conclude that “it is important to consider the focus of the threat in a fear appeal, along with the audience’s cultural orientation, when developing effective public health messages” (p. 356).

In view of the shortcomings identified in the experiments by Murray-Johnson et al. (2001), Jansen, Van Baal, and Bouwmans (2006) performed a replication study using the same fear appeal messages that Murray-Johnson et al. (2001) had used (for a plea for, and a typology of replication studies, see Schmidt, 2009). Participants were students from the Netherlands, Spain, and South Africa; not only the INDCOL scale was used but also more advanced instruments for measuring cultural orientation on the individual level (Singelis, Triandis, Bhakuw, & Gelfand, 1995; Triandis et al., 1998). Jansen et al.’s study, however, suffered from unsatisfactory manipulation check outcomes. While Murray-Johnson et al. (2001) report significant differences for both their experiments in the perceptions of the two text versions they used, Jansen et al. (2006), did not find any such differences in their manipulation check of exactly the same text versions.

In a next study, Jansen and Verstappen (2014) successfully tried to prevent possible negative manipulation check outcomes by using two versions of a different but comparable fear appeal text, that now included either a self-targeted or a family-targeted threat about chlamydia. Participants in this study were students from Spain and the Netherlands. Individual cultural orientation was assessed using advanced measurement scales: the Auckland Individualism and Collectivism Scale (AICS) (Shulruf, Hattie, & Dixon, 2007) for measuring individualism and collectivism, and the Familism Scale (Lugo Steidel & Contreras, 2003) for measuring orientation to one's family. Neither nationality nor cultural orientation proved to interact with text version on any of the dependent variables that were measured. It could be argued, however, that in spite of the different positions that Spain and the Netherlands take in culture indexes such as compiled by Hofstede (2001), these two countries essentially share the same European culture.

None of the studies discussed above, nor any other studies that we are aware of have so far provided a satisfactory answer to the question if the EPPM correctly assumes that a person's culture or nationality may be decisive to the effects of a fear appeal message. Because of the relevance of this question for the further development of fear appeal theories (see also Popova, 2012), and also in view of the practical consequences of possibly finding receivers' characteristics that influence the effects of a fear appeal, we decided to perform a new empirical study that may be viewed as a conceptual rather than a direct replication of the studies discussed above (see Schmidt, 2009).

Our primary goal was to find to what extent the receivers' nationality might influence their reactions to fear appeals differing in target of threat. Furthermore, we wanted to explore to what extent such influence could be explained by the receivers' cultural orientation.

In this new study, participants came from countries that according to Hofstede clearly differ in one or more of the following five cultural dimensions: individualism-collectivism, femininity-masculinity, power distance, uncertainty avoidance, and short term versus long term orientation: The Netherlands, China, and South Africa. For the Netherlands and South Africa, country scores on these five dimensions can be found in Hofstede (2001). For China, country scores were added in Hofstede (n.d.). See Table 1.

As a number of authors in this field (Hofstede, 2001; Hofstede & Minkov, 2013; Hornikx & Le Pair, 2017; Kirkman, Lowe, & Gibson, 2006; Singelis & Brown, 1995, for instance) have argued, an individual's beliefs, attitudes, behavioral intentions, and behavior cannot be directly ascribed to his or her national culture. Instead, a person's cultural values should always be measured on an individual level. For this reason, we measured individual cultural

Table 1. Expectations based on country scores in Hofstede (2001, n.d.) for cultural orientation per nationality and per cultural dimension (scale from 0 to 100).

	The Netherlands	China	South Africa ^a
Individualism-collectivism	20	80	35
Femininity-masculinity	14	66	63
Power distance	38	80	49
Uncertainty avoidance	53	30	49
Short term versus long term orientation	67	87	34

^aHofstede (n.d.) mentions that the scores for individualism-collectivism, femininity-masculinity, power distance, and uncertainty avoidance refer to "South Africa white", while the score for short term versus long term orientation refers to "South Africa".

orientation of participants on the cultural dimensions mentioned above. We did not restrict possibly relevant cultural differences beforehand to individualism-collectivism, as is the case in most of the studies into the influence of culture on the effects of fear appeals. As Kirkman et al. (2006) state, individuals are affected by a complex set of cultural values, and including cultural values other than individualism-collectivism may lead to important new insights.

Our first hypothesis bears upon the relationship between nationality and individual cultural orientation:

H1: Dutch, Chinese and South African participants differ in individual cultural orientation.

Our second hypothesis bears upon the assumed influence of nationality on receivers' reactions to differing targets of threat in a fear appeal message:

H2: The receivers' nationality (Dutch, Chinese, or South African) will influence their reactions to fear appeals differing in target of threat (self or family).

Furthermore, we explored the following research question:

RQ1: To what extent may the possible influence of the receivers' nationality on their reactions to fear appeals with different targets of threat be explained by the receivers' cultural orientation?

Method

Design

A between-subjects experimental design was employed, with group (receivers, categorized according to nationality) and text version acting as factors. In total 268 participants from the Netherlands, China, and South Africa were randomly divided over two conditions, in which they either read a self-targeted version ($n = 134$) or a family-targeted version ($n = 134$) of a narrative fear appeal. The two versions were the same as used in Jansen and Verstappen (2014). Cultural orientation of the participants was assessed using instruments that in earlier studies were found to be reliable and valid.

Participants

Participants were young, well educated adults living in the Netherlands, China, or South Africa. Dutch participants ($n = 52$; mean age 23.01 years ($SD = 1.81$); 29 females, 23 males) all studied at the University of Groningen, Hanze University of Applied Sciences (also in Groningen), Leiden University, or the University of Amsterdam. Chinese participants ($n = 50$; mean age 23.34 years ($SD = 2.48$); 32 females, 18 males) were either students from various different universities in Shanghai and surroundings ($n = 31$) or young workers ($n = 19$) who had recently graduated from a Chinese university and were now working at the Shanghai branch of an international company.

South African participants ($n = 166$; mean age 20.63 years ($SD = 1.73$); 103 females, 63 males) all studied at Stellenbosch University.² The Dutch participants were approached personally or via social media; they filled in the questionnaire online. The Chinese participants were approached via email; they also filled in the questionnaire online. The South African participants were personally approached by the second author; they completed the questionnaire on paper.

Text versions

In both versions of the fear appeal message, the story was told of a girl called Maria who was infected with chlamydia and now could not have children. The self-targeted version of the narrative focused on the misery for Maria herself, using sentences as: “The difficult situation Maria is in has brought about a great deal of sadness and misery in her life.” The family-targeted version accentuated the misery of her family, using sentences as: “The difficult situation Maria’s family is in has led to a great deal of sadness and misery.” In Jansen and Verstappen (2014), both text versions were already available in Dutch and also in English, which is the factual lingua franca in South Africa. The English versions were now translated from English into Mandarin, using a translation and back translation procedure. See Text A and Text B in the Appendix for the complete English versions.

As a manipulation check, three questions assessed how much the girl was suffering from being infected with chlamydia (“According to this text, how bad is it for Maria that she has chlamydia?”; “According to this text, how much does Maria suffer from having chlamydia?”; “According to this text, how awful does Maria find it that she has chlamydia?”). Three other questions assessed how much her parents were suffering due to their daughter’s situation (“According to this text, how bad is it for Maria’s parents that she has chlamydia?”; “According to this text, how much do the parents of Maria suffer from Maria having chlamydia?”; “According to this text, how awful do the parents of Maria find it that Maria has chlamydia?”). All six questions were followed by seven-point scales, such as: 1 (*Not bad at all*) to 7 (*Very bad*).

To assess the construct validity of the 2-factor manipulation check instrument we intended to use, a confirmatory factor analysis using AMOS was conducted with the six items mentioned above. Following criteria presented in Kline (2005) ($\chi^2/df < 3.00$; $CFI > .90$; $RMSEA < .08$), model fit was good: $\chi^2/df = 1.72$; $CFI = .99$; $RMSEA = .05$. Next, both for the three items about the perceived suffering of the girl and for the three items about the perceived suffering of the parents, reliability scores were calculated. In both cases, reliability was found to be good (girl: Cronbach’s $\alpha = .80$; $M = 5.88$; $SD = 1.23$; parents: Cronbach’s $\alpha = .90$; $M = 4.92$; $SD = 2.00$). Based on these outcomes, the following variables were composed: perceived suffering of Maria, and perceived suffering of the parents.

Measures

Individual cultural orientation

We measured individual cultural orientation on the five dimensions presented in Hofstede (2001) (see above). For this purpose, we used the Individual Cultural Values

Scale (CVSCALE), developed and tested by Yoo, Donthu, and Lenartowicz (2011). Mazanec, Crotts, Gursoy, and Lu (2015) found the CVSCALE to be reliable and valid for assessing cultural values at the individual level; Prasongsukarn (2009) reached the same conclusion, referring to a then not yet published version of the CVSCALE.

For measuring individualism-collectivism, six CVSCALE items were used, for instance “Individuals should sacrifice self-interest for the group”. Power distance was measured with five items, for instance “People in higher positions should make most decisions without consulting people in lower position”. For uncertainty avoidance, five items were used, for instance “It is important to closely follow instructions and procedures”. For femininity-masculinity, four items were used, for instance “It is more important for men to have a professional career than it is for women”. For short term versus long term orientation, five items were used, for instance “I would give up today’s fun for success in the future”. All items were followed by a seven-point scale: 1 (*Don’t agree at all*) to 7 (*Fully agree*).

To assess the construct validity of the 5-factor measurement instrument for cultural orientation for which we intended to use these twenty-five items, a confirmatory factor analysis using AMOS was conducted with the following outcomes: $\chi^2/df = 2.07$; $CFI = .88$; $RMSEA = .06$. Next, reliability scores were calculated for the five separate sets of items. In four cases, reliability was found to be good (individualism-collectivism: Cronbach’s $\alpha = .82$; $M = 4.31$; $SD = 1.23$; power distance: Cronbach’s $\alpha = .73$; $M = 2.13$; $SD = 1.09$; uncertainty avoidance: Cronbach’s $\alpha = .87$; $M = 5.56$; $SD = 1.11$; femininity-masculinity: Cronbach’s $\alpha = .80$; $M = 3.14$; $SD = 1.62$). For short term versus long term orientation, an unsatisfactory Cronbach’s α was found ($\alpha = .55$). Hence two items were removed here, resulting in an acceptable Cronbach’s ($\alpha = .60$; $M = 6.14$; $SD = 0.83$). With the scores on the twenty-three cultural orientation items that were left, a new confirmatory factor analysis was conducted. In view of the satisfactory values for χ^2/df and $RMSEA$, and the value for CFI that closely approached the criterion as set in Kline (2005), model fit was considered as acceptable: $\chi^2/df = 2.19$; $CFI = .89$; $RMSEA = .07$. Based on these outcomes, five new variables were composed: individualism-collectivism, power distance, uncertainty avoidance, femininity-masculinity, and short term versus long term orientation.

In view of the focus in the text versions on either the misery for an individual girl or the misery for her family, we followed the advice from Shulruf et al. (2007) to also measure the level of familism, which may have a confounding effect on the scores for individualism-collectivism. For this purpose, we used the Familism Scale, which is based on a factor analysis discussed in Lugo Steidel and Contreras (2003). They report a Cronbach’s α for the overall scale of .83. Flores, Robitschek, Celebi, Andersen, and Hoang (2010) found a Cronbach’s α of .86. Schwartz (2007) found a Cronbach’s α of .82, and reports similar patterns emerging from factor analyses as found by Lugo Steidel and Contreras. The Familism Scale consists of 18 items (for instance: “Aging parents should live with their relatives”; “Children should obey their parents without question even if they believe they are wrong”), all followed by a seven-point scale with 1 (*Don’t agree at all*) to 7 (*Fully agree*).

As was done in Jansen and Verstappen (2014), we distinguished two ways to measure the level of familism, using self-referenced items and culture-referenced items (see also Fischer, 2006). For all items in the Familism Scale, two different versions

were created, for example: “I think that aging parents should live with their relatives” (self-referenced) and “In the country that I come from, people think that aging parents should live with their relatives” (culture-referenced). Version A of the questionnaire included all self-referenced versions of the even-numbered items in the Familism Scale, and all culture-referenced versions of the odd-numbered items. In version B, this was the other way around. Versions A and B of the questionnaire were distributed at random among the Dutch, the Chinese, and the South African participants. Reliability scores were good: self-referenced familism, version A: Cronbach’s $\alpha = .71$; $M = 4.46$; $SD = 0.89$; version B: Cronbach’s $\alpha = .70$; $M = 4.84$; $SD = 0.87$; culture-referenced familism: version A: Cronbach’s $\alpha = .78$; $M = 4.81$; $SD = 1.06$; version B: Cronbach’s $\alpha = .78$; $M = 4.39$; $SD = 0.97$. After having combined scores for versions A and B for both types of familism, as expected the resulting variables self-referenced familism and culture-referenced familism proved to be related but not interchangeable: $r = .74$; $p < .001$.

Dependent variables

For measuring the EPPM-related variables perceived severity, perceived susceptibility and perceived response efficacy, items could be based on Witte’s Risk Diagnosis Scale (RBD) (see Witte, Cameron, McKeon, & Berkowitz, 1996; Witte et al., 2001). Perceived severity was measured with three items, for instance: “I think that chlamydia is a serious health problem”; for measuring perceived susceptibility also three items were used, for instance: “It am at risk of becoming infected with chlamydia”). Perceived response efficacy was measured with two items, for instance: “I think using condoms is effective in preventing chlamydia”.

As the RBD does not include items for measuring the EPPM-related variables fear arousal, danger control, and fear control, items for measuring these variables were based on the operational definitions in the overview of EPPM constructs provided by Popova (2012). Fear arousal was measured with four items, for instance: “Reading this text made me afraid”; fear control was measured with three items, for example “This text was exaggerated”); for danger control one item was used: “I intend to change my behavior such that I won’t get infected with chlamydia”. All items were measured on a seven-point scale: 1 (*Don’t agree at all*) to 7 (*Fully agree*).

To assess the construct validity of the measurement instrument for EPPM-related effects, a confirmatory factor analysis using AMOS was conducted with fifteen items, intended to measure five variables (danger control was not included here since AMOS does not allow for confirmatory factor analysis with variables measured by only one item). Model fit was good: $\chi^2/df = 2.11$; $CFI = .96$; $RMSEA = .06$. Next, reliability scores for the five separate sets of items were found to be good. Hence, the following variables could be constructed: perceived severity: Cronbach’s $\alpha = .84$; $M = 5.94$; $SD = 1.15$; perceived susceptibility: Cronbach’s $\alpha = .83$; $M = 2.18$; $SD = 1.39$; perceived response efficacy: Cronbach’s $\alpha = .82$; $r = .69$; $M = 5.66$; $SD = 1.39$; fear arousal: Cronbach’s $\alpha = .92$; $M = 3.48$; $SD = 1.77$; fear control: Cronbach’s $\alpha = .81$; $M = 3.16$; $SD = 1.54$; danger control (one item): $M = 4.78$; $SD = 2.12$.

Results

Manipulation checks

Combining the data for all participants, a multivariate analysis of variance was performed with text version as independent variable and perceived suffering of Maria and perceived suffering of the parents as dependent variables. The manipulation proved successful: a significant multivariate effect was found for text version (Wilks' $\lambda = .76$; $F(2,265) = 41.34$; $p < .001$; $\eta^2 = .24$). Follow-up univariate analyses of variance showed significant effects on both dependent variables. Mean scores for perceived suffering of Maria were significantly higher for participants who read the self-targeted version ($M = 6.07$; $SD = 1.15$) than for participants who read the family-targeted version ($M = 5.70$; $SD = 1.29$); $F(1,266) = 5.98$; $p = .01$; $\eta^2 = .02$. Mean scores for perceived suffering of the parents were significantly higher for participants who read the family-targeted version ($M = 5.87$; $SD = 1.33$) than for participants who read the self-targeted version ($M = 3.97$; $SD = 2.11$); $F(1,266) = 77.49$; $p < .001$; $\eta^2 = .23$. Similar effects were found for the Dutch, Chinese, and South African participants separately.

Nationality and cultural orientation

H1 predicted that Dutch, Chinese and South African participants would differ in individual cultural orientation. To test H1, a multivariate analysis of variance was performed with nationality as independent variable and the seven individual cultural orientation variables that were measured as dependent variables. See Table 2 for mean scores and standard deviations.

A significant multivariate effect was found, Wilks' $\lambda = .47$; $F(14,518) = 17.23$; $p < .001$; $\eta^2 = .32$). Follow-up univariate analyses of variance revealed significant effects on femininity-masculinity ($F(2,265) = 25.90$; $p < .001$; $\eta^2 = .16$), power distance ($F(2,265) = 16.21$; $p < .001$; $\eta^2 = .11$), uncertainty avoidance ($F(2,265) = 12.20$; $p < .001$; $\eta^2 = .08$), short term versus long term orientation ($F(2,265) = 14.03$; $p < .001$; $\eta^2 = .10$), self-referenced familism ($F(2,265) = 18.10$; $p < .001$; $\eta^2 = .12$) and culture-referenced

Table 2. Mean scores and standard deviations for cultural orientation variables (scale from 1 to 7) for participants from The Netherlands, China, and South Africa.

		The Netherlands ($n = 52$)	China ($n = 50$)	South Africa ($n = 166$)
Individualism-collectivism	<i>M</i>	4.13	4.16	4.41
	(<i>SD</i>)	(1.12)	(1.24)	(1.26)
Femininity-masculinity	<i>M</i>	4.09 ⁽¹⁾	3.84 ⁽¹⁾	2.63 ⁽²⁾
	(<i>SD</i>)	(1.73)	(1.46)	(1.41)
Power distance	<i>M</i>	2.68 ⁽¹⁾	2.48 ⁽¹⁾	1.85 ⁽²⁾
	(<i>SD</i>)	(1.19)	(1.12)	(0.96)
Uncertainty avoidance	<i>M</i>	5.25 ⁽¹⁾	5.06 ⁽¹⁾	5.81 ⁽²⁾
	(<i>SD</i>)	(1.19)	(0.98)	(1.05)
Short term versus long term orientation	<i>M</i>	5.83 ⁽¹⁾	5.79 ⁽¹⁾	6.33 ⁽²⁾
	(<i>SD</i>)	(0.91)	(0.82)	(0.73)
Self-referenced familism	<i>M</i>	4.02 ⁽¹⁾	4.82 ⁽²⁾	4.81 ⁽²⁾
	(<i>SD</i>)	(0.66)	(0.77)	(0.92)
Culture-referenced familism	<i>M</i>	3.47 ⁽¹⁾	4.93 ⁽²⁾	4.84 ⁽²⁾
	(<i>SD</i>)	(0.62)	(0.85)	(0.95)

Note. Different superscripts indicate significant differences between nationalities ($p < .05$).

familism ($F(2,265) = 53.51$; $p < .001$; $\eta^2 = .29$). There was no significant effect of nationality on individualism-collectivism ($F(2,265) = 1.53$; $p = .22$).

Post Hoc analyses showed that South African participants scored significantly lower on femininity-masculinity ($p < .001$) than Dutch and Chinese participants ($p = .001$). No significant difference was found here between Dutch and Chinese participants. The same pattern was found for power distance: South African participants scored significantly lower than Dutch participants ($p < .001$) and Chinese participants ($p < .001$). Again, no significant difference was found between Dutch and Chinese participants. Furthermore, South African participants scored higher on uncertainty avoidance than Dutch participants ($p = .001$) and Chinese participants ($p < .001$). No significant difference was found here between Dutch and Chinese participants. South African participants also scored significantly higher than Dutch participants ($p < .001$) and Chinese participants ($p < .001$) on short term versus long term orientation. No significant difference was found here between Dutch and Chinese participants.

Furthermore, Dutch participants scored significantly lower on self-referenced familism than Chinese participants ($p < .001$) and South African participants ($p < .001$). No significant difference was found between Chinese and South African participants. The same pattern was found for culture-referenced familism: Dutch participants scored significantly lower than Chinese participants ($p < .001$) and South African participants ($p < .001$), and no significant difference was found between Chinese and South African participants.

Table 3 shows how the results in Table 2 compare to the expectations as shown in Table 1. Considerable differences ($M = 29.47$; $SD = 15.04$) proved to exist between the individual scores we found and the scores presented in Hofstede (2001, n.d.) for the countries they came from.

Interaction effects of nationality and text version

H2 predicted that the receivers' nationality (Dutch, Chinese, or South African) would influence their reactions to differing targets of threat (self or family) in a fear appeal message. To test this hypothesis, a multivariate analysis of variance was performed with nationality and text version as independent variables, and the six EPPM-related

Table 3. Results found for cultural orientation compared to expectations based on country scores in Hofstede (2001, n.d.).

	The Netherlands		China		South Africa ^a	
	Results found	Results expected	Results found	Results expected	Results found	Results expected
Individualism-collectivism	52	20	53	80	55	35
Femininity-masculinity	51	14	47	66	28	63
Power distance	28	38	25	80	14	49
Uncertainty avoidance	71	53	68	30	78	49
Short term versus long term orientation	80	67	80	87	89	34

Note. For reasons of transparency, results from our study were transformed from a scale from 1 to 7 to a scale from 0 to 100 (formula: $x \rightarrow (x - 1) * 16.67$; outcomes rounded).

^aIn view of the note with Table 1, our scores for individualism-collectivism, femininity-masculinity, power distance, and uncertainty avoidance were based on data from white South African participants; scores for short term versus long term orientation refer to data from all South African participants.

variables that were measured as dependent variables. A significant multivariate interaction effect of nationality and text version (Wilks' $\lambda = .82$; $F(12,514) = 4.31$; $p < .001$; partial $\eta^2 = .17$) was found. Results of follow-up univariate analyses of variance are as follows.

For perceived severity a significant interaction effect was found ($F(2,262) = 6.00$; $p = .003$; partial $\eta^2 = .02$). Separate post hoc tests (Bonferroni) for each of the text versions revealed that after reading the self-targeted text, South African participants scored significantly higher on perceived severity ($M = 6.18$; $SD = 1.02$) than both Dutch ($M = 5.47$; $SD = 0.96$) and Chinese participants ($M = 5.36$; $SD = 1.12$). No significant difference was found here between Dutch and Chinese participants. Reading the family-targeted text did not result in any significant differences in perceived severity between Dutch ($M = 5.78$; $SD = 1.44$), Chinese ($M = 6.35$; $SD = 1.26$), and South African participants ($M = 5.94$; $SD = 1.11$).

For perceived susceptibility also a significant interaction effect was found ($F(2,262) = 15.25$; $p < .001$; partial $\eta^2 = .10$). Separate post hoc tests (Bonferroni) for each of the text versions revealed that after reading the self-targeted text South African participants scored significantly lower ($M = 1.72$; $SD = 1.00$) than both Dutch ($M = 3.51$; $SD = 1.73$) and Chinese participants ($M = 3.65$; $SD = 1.22$). No significant difference was found between Dutch and Chinese participants. Reading the family-targeted text did not result in any significant differences in perceived susceptibility between Dutch ($M = 1.72$; $SD = 1.09$), Chinese ($M = 2.43$; $SD = 1.75$), and South African participants ($M = 1.86$; $SD = 1.04$).

Finally, for danger control a significant interaction effect was found ($F(2,262) = 3.82$; $p = .02$; partial $\eta^2 = .03$). Here, separate post hoc tests (Bonferroni) for each of the text versions revealed that after reading the self-targeted text South African participants scored significantly higher ($M = 5.10$; $SD = 2.26$) than both Dutch ($M = 3.46$; $SD = 1.61$) and Chinese participants ($M = 3.88$; $SD = 1.54$). No significant difference was found between Dutch and Chinese participants. Reading the family-targeted text did not result in any significant differences in perceived susceptibility between Dutch ($M = 4.73$; $SD = 2.01$), Chinese ($M = 5.27$; $SD = 1.89$), and South African participants ($M = 4.99$; $SD = 2.19$).³ See Table 4 for mean scores and standard deviations.

Exploring cultural explanations for interaction effects found for nationality and target of threat

RQ1 asked to what extent the possible influence of the receivers' nationality on their reactions to fear appeals with different targets of threat might be explained by the receivers' cultural orientation. To explore this question, we performed a series of analyses using the moderated mediation model presented in Hayes (2013, p. 451, Model 15). For each of the three EPPM-variables for which we found interaction effects of nationality and target of threat (E: perceived severity, perceived susceptibility, and danger control), we determined the conditional indirect effects of the independent variable nationality (N: Dutch versus Chinese, Dutch versus South African, and Chinese versus South African) and the moderator target of threat (T: self-targeted versus family-targeted), with the cultural orientation variables that we measured (C) acting as mediators. Significant conditional effects of N and T on a dependent variable

Table 4. Mean scores and standard deviations for EPPM-related variables (minimum 1, maximum 7) for participants from the Netherlands, China, and South Africa for text A (target of threat: self) and text B (target of threat: family).

		Text A (target of threat: self) (<i>n</i> = 134)			Text B (target of threat: family) (<i>n</i> = 134)		
		Netherlands (<i>n</i> = 26)	China (<i>n</i> = 24)	South Africa (<i>n</i> = 84)	Netherlands (<i>n</i> = 26)	China (<i>n</i> = 26)	South Africa (<i>n</i> = 82)
Perceived severity	<i>M</i>	5.47 ⁽¹⁾	5.36 ⁽¹⁾	6.18 ⁽²⁾	5.78	6.35	5.94
	(<i>SD</i>)	(0.96)	(1.12)	(1.02)	(1.44)	(1.26)	(1.11)
Perceived susceptibility	<i>M</i>	3.51 ⁽¹⁾	3.65 ⁽¹⁾	1.72 ⁽²⁾	1.72	2.43	1.86
	(<i>SD</i>)	(1.73)	(1.22)	(1.00)	(1.09)	(1.75)	(1.04)
Fear arousal	<i>M</i>	3.65	3.47	3.36	3.70	3.74	3.38
	(<i>SD</i>)	(1.58)	(1.69)	(1.78)	(2.10)	(1.93)	(1.71)
Response efficacy	<i>M</i>	6.29	5.90	5.71	5.63	5.69	5.33
	(<i>SD</i>)	(0.83)	(1.33)	(1.29)	(1.57)	(1.20)	(1.56)
Fear control	<i>M</i>	3.77	3.86	3.07	3.64	2.70	2.89
	(<i>SD</i>)	(1.37)	(1.55)	(1.56)	(1.34)	(1.39)	(1.58)
Danger control	<i>M</i>	3.46 ⁽¹⁾	3.88 ⁽¹⁾	5.10 ⁽²⁾	4.73	5.27	4.99
	(<i>SD</i>)	(1.61)	(1.54)	(2.26)	(2.01)	(1.89)	(2.19)

Note. Different superscripts indicate significant differences between nationalities for the text version mentioned in the top row ($p < .05$).

E through one or more mediators C would indicate that the interaction effect of N and T on E could at least partly be explained by differences in cultural orientation leading to different reactions to a fear appeal dependent on its target of threat. See Figure 1. Of note, no moderation effect of T is conceptualized for the relationship between N and C: There is no reason to expect that nationality and culture would be related differently after reading text A than after reading text B.

The moderated mediation analyses (bootstrap: 5000) showed only one significant conditional indirect effect of N, dependent on T, on a dependent variable E through a mediator C. Comparing the conditional indirect effects of nationality (here: Dutch versus South African) on perceived susceptibility through short term versus long term orientation revealed a statistically significant difference ($b_1 - b_2 = .167$; $SE = .080$; 95%

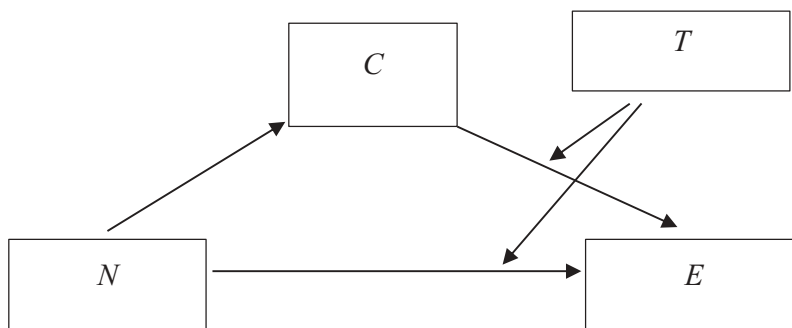


Figure 1. Conditional direct effect of N on E, and conditional indirect effect of N on E through C (see Hayes, 2013, p. 451, moderated mediation model 15). N = Nationality (independent variable): Dutch versus Chinese, Dutch versus South African, or Chinese versus South African; C = Cultural orientation variables (mediators): individualism-collectivism, femininity-masculinity, power distance, uncertainty avoidance, short term versus long term orientation, self-referenced familism, and culture-referenced familism; T = Text version (moderator): self-targeted versus family-targeted; E = EPPM variables (dependent variables): perceived severity, perceived susceptibility, or danger control.

CI = [.019; .327]) between the effect after the self-targeted text version was read ($b_1 = -.173$; $SE = .074$; 95% CI = [-.328; -.043; significant] and the effect after the family-targeted text version was read ($b_2 = -.006$; $SE = .038$; 95% CI = [-.099; .055; not significant]).

Correlations between reactions to the two different fear appeal messages and cultural orientation

To further explore the possibility that different reactions to the two different fear appeal messages could be dependent on the receivers' cultural orientation, correlation analyses were performed, both in the group of participants who had read the self-targeted text and in the group of participants who had read the family-targeted text. Especially from receivers differing in level of individualism-collectivism, self-referenced familism, or culture-referenced familism, different reactions might be expected to the texts that were used in this experiment. When reading the text with the family-targeted fear appeal, the relationships between these cultural orientation variables and EPPM-variables such as perceived severity, perceived susceptibility, and fear arousal might be expected to be positive; when reading the text with the self-targeted fear appeal such relationships might be expected to be neutral or negative. Variables included were the cultural orientation variables individualism-collectivism, self-referenced familism and culture-referenced familism on the one hand, and all EPPM-related variables that were measured on the other hand. In both the self-targeted text condition and the family-targeted text conditions, no significant correlations were found between individualism-collectivism and any of the EPPM-variables. In both conditions, culture-referenced familism was positively correlated with perceived severity (self-targeted: $r = .27$; $p < .002$; family-targeted: $r = .25$; $p = .004$) and with danger control (self-targeted: $r = .32$; $p < .001$; family-targeted: $r = .21$; $p = .01$). In the self-targeted condition, self-referenced familism was positively correlated with danger control ($r = .20$; $p = .02$). Otherwise, no significant correlations were found here.

Discussion

This study primarily aimed at finding to what extent the receivers' nationality might influence their reactions to fear appeals differing in target of threat. Furthermore, we explored to what extent such influence could be explained by the receivers' cultural orientation.

Our first hypothesis tested if participants differing in nationality also differed in various aspects of their individual cultural orientation. This hypothesis was supported: for six out of the seven aspects of individual cultural orientation we measured, we found a relationship with nationality. Importantly, however, considerable differences proved to exist between the individual scores we found for our participants and their country scores as presented by Hofstede (2001, n.d.). This outcome substantiates the advice put forward earlier by, among others, Hofstede himself to not confuse dimensions of national culture with personality, and to always measure cultural values at an individual level (Hofstede, 2001; Hofstede & Minkov, 2013).

Our second hypothesis was related to the advice found in other publications to take the receiver's cultural background or nationality into account when developing a fear appeal message (see Murray-Johnson et al., 2001; Chung & Ahn, 2013, for instance). According to this advice, interaction effects were to be expected of our participants' nationality and the target of threat in the fear appeal messages we used on the reactions to these messages as assessed with six measures based on the EPPM. Such interaction effects were found indeed on perceived severity, perceived susceptibility, and danger control.

The patterns of these interactions differed, however, in an unexpected way. According to the EPPM, for a danger control reaction to occur, levels of both perceived severity and perceived susceptibility that reach a certain threshold level are necessary. Regarding danger control, we found that the self-targeted text led to higher scores for the South African participants than for both the Dutch and the Chinese participants, while no significant differences were found between Dutch and Chinese participants. The family-targeted text did not result in any significant differences in danger control between the Dutch, the Chinese, and the South African participants. Regarding perceived severity, similar results were found: The self-targeted text led to higher scores for the South African participants than for both the Dutch and the Chinese participants, while no significant differences were found here between Dutch and Chinese participants. The family-targeted text, again, did not result in any significant differences between the Dutch, the Chinese, and the South African participants.

For perceived susceptibility, however, we found that after reading the self-targeted text, South African participants did not score higher, but lower than both Dutch and Chinese participants, while no significant difference was found between Dutch and Chinese participants. Reading the family-targeted text, again, did not result in any significant differences in perceived susceptibility between Dutch, Chinese, and South African participants. For the other three EPPM-related variables we measured (fear arousal, response efficacy, and fear control), we found no significant interaction effects of nationality and target of threat.

To explore to what extent the interaction effects between nationality and target of threat that were found could possibly be explained by cultural orientation, we performed a series of moderated mediation analyses. Only the interaction effect found when comparing the perceived susceptibility of the Dutch and the South African participants after having read the self-targeted or the family-targeted text version could partly be explained by one of the the cultural variables, short term versus long term orientation. No other indirect effects of nationality (Dutch versus Chinese, Dutch versus South African, or Chinese versus South African), depending on target of threat, emerged on any of the EPPM-variables perceived severity, perceived susceptibility, or danger control through any cultural orientation variable (individualism-collectivism, power distance, uncertainty avoidance, femininity-masculinity, short term versus long term orientation, self-referenced familism, or culture-referenced familism).

Furthermore, correlation analyses for the group who read the self-targeted text version and for group who read the family-targeted text version revealed no significant relationships in either group between individualism-collectivism and any of the EPPM-related variables. We did find significant correlations between self-referenced familism

and culture-referenced familism on the one hand and the EPPM-variables perceived severity and danger control on the other hand. These correlations, however, were all positive and hardly showed any differences between the two text version conditions.

All in all, we found no convincing evidence for the assumption that differences in nationality of receivers of a fear appeal message may influence the evaluation of such a message through their cultural orientation. Our outcomes thus add to the doubts about claims in earlier literature about the relevance of receivers' nationality and cultural orientation for developing a fear appeal.

Limitations of our study include the low number of nationalities and fear appeal messages that were involved, and the characteristics of the participants: All our participants were young and well-educated. Similar choices for such convenience samples were made, however, in most of the other studies in this field. That makes it easier to compare what was found in this study with earlier work in this field. Future studies, involving more countries, other types of fear appeal messages, and more varied groups of participants might perhaps lead to different findings.

In spite of its limitations, this study adds to the pleas for more replication studies in the field of health communication research (see McEwan, Carpenter, & Westerman, 2018, for instance). Our outcomes give rise to serious questions not only about the theoretical assumption in the EPPM that individual differences, in cultural background influence receivers' reactions to a fear appeal message, but also about the practical recommendation in earlier literature that different messages should be used when addressing audiences from different cultures or nationalities. More original studies and replication studies are needed to carefully uncover the conditions under which fear appeals may effectively be used in campaigns aimed at persuading people with different backgrounds.

Notes

1. In chronological order: Perea and Slater (1999), Laroche et al. (2001), Murray-Johnson et al. (2001; two experiments), Williams, Briley, Grier, and Henderson (2003; two experiments), Vincent and Dubinski (2004), Cochrane and Quester (2005), Jansen et al. (2006), Uskul and Oyserman (2010), Terblanche-Smit and Terblanche (2011), Lee and Park (2012), Chung and Ahn (2013) and Jansen and Verstappen (2014).
2. In view of the different effects found by Terblanche-Smit and Terblanche (2011) of varying fear appeals in different ethnical groups in South Africa, we collected data in South Africa from ethnical groups that perhaps would differ in one or more of the cultural dimensions we measured. Part of our South African participants were white ($n = 110$); the other South African participants were non-white, i.e. African or colored (an ethnic label used in South Africa for people of mixed race) ($n = 56$). None of our statistical analyses of the data collected in South Africa, however, revealed any effect of ethnicity.
3. In view of the prominence of the pregnancy theme in both text versions, possible effects of the participant's gender were also assessed. For this purpose, a multivariate analysis of variance was performed with gender, nationality, and text version as independent variables and the six EPPM-related variables as dependent variables. No significant multivariate interaction effects were found of gender and nationality, of gender and text version, or of gender, nationality and text version. A significant multivariate main effect of gender was found, however: Wilks' $\lambda = .93$; $F(6,251) = 3.27$; $p = .004$; partial $\eta^2 = .07$). Follow-up univariate analyses of variance revealed significant main effects on perceived severity (males < females) and on perceived susceptibility (males > females). There were no

significant main effects of gender on fear arousal, perceived response efficacy, fear control, or danger control.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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Appendix. Message versions

Text A: Self-targeted

Six months ago Maria Norton received some very bad news. Twenty-eight-year-old Maria learned from her doctor that she would have to live with the consequences of a chlamydia infection. This sexually transmitted disease had made her infertile. Maria would never be able to have children; she has to forget about becoming a mother. Maria had always wanted to have children. She is finding it very hard to deal with this huge disappointment and to accept that she will never be a mother. Apart from that, she is ashamed to admit that she is now infertile. When colleagues ask her if she wants to have children, she doesn't dare tell them about her unbearable situation. When she sees a woman walking down the street with a baby carriage, she always becomes very sad, because she will never be able to go for a walk like that with her child. Maria also deeply regrets that she and her husband won't be able to have children together. It was always a dream of theirs to start a family together. Now Maria is scared that her husband might leave her. Maria has been seeing him since high school, and they always thought they were made for each other. But because of this difficult situation a lot of tension has grown between them, and their relationship is going downhill. Maria is scared to be left alone. She also feels

inadequate, because she cannot give birth. She feels she is less of a woman because she is not able to fulfill the important female task of giving birth. She feels she is incomplete. The difficult situation Maria is in has brought about a great deal of sadness and misery in her life. This could all have been prevented if Maria had always used a condom. Including that one time, when she had sex with another man. Now she will have to pay a heavy price for that one fling. If only she had been wiser. If she had, she would have used a condom.

Text B: Family-targeted

Six months ago the Norton family received some very bad news. Their twenty-eight-year-old only daughter Maria learned from her doctor that she would have to live with the consequences of a chlamydia infection. This sexually transmitted disease had made her infertile. Maria will never be a mother, and her parents will never be grandparents. Maria's parents, Albert and Esther Norton, had been hoping for years that they would have grandchildren. That wish will never come true now that their only daughter can never become a mother. Albert and Esther are finding it very difficult to cope with this disappointment. Almost all their friends are already grandfathers or grandmothers. It would be fantastic if they also could have had grandchildren to take care of. When their friends ask them when they are going to be grandparents, they don't know what to say. They are ashamed to admit that their daughter is now infertile. Maria's husband, Rick Saunders, deeply regrets he can't have children. His dream was always to be a father and have a family. That cannot happen if he stays with Maria. Rick has been seeing Maria since high school, and they always thought they were made for each other. But because of this difficult situation Rick now has serious doubts. A lot of tension has grown up between them, and their relationship is going downhill. Rick doesn't know how to deal with these problems. He doesn't know what to do now. Rick's parents, Josh and Anna Saunders, are also very disappointed that their son can't provide them with offspring, that they can't be grandpa and grandma. The difficult situation Maria's family is in has led to a great deal of sadness and misery. This could all have been prevented if Maria had always used a condom – especially that one time, when she had sex with another man. Now she will have to pay a heavy price for that one fling. If only she had been wiser. If she had, she would have used a condom.