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Journal of Intercultural Communication Research

ISSN: 1747-5759 (Print) 1747-5767 (Online) Journal homepage: http://www.tandfonline.com/loi/rjic20

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To cite this article: Carel Jansen & Renate Verstappen (2014) Fear Appeals in Health Communication: Should the Receivers' Nationality or Cultural Orientation be Taken into Account?, Journal of Intercultural Communication Research, 43:4, 346-368, DOI: 10.1080/17475759.2014.981675

To link to this article: http://dx.doi.org/10.1080/17475759.2014.981675

Journal of Intercultural Communication Research, 2014
Vol. 43, No. 4, 346–368, http://dx.doi.org/10.1080/17475759.2014.981675

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Fear Appeals in Health Communication: Should the Receivers' Nationality or Cultural Orientation be Taken into Account?

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This study investigated the influence of both nationality and cultural orientation on reactions to fear appeal messages including a self-targeted or a family-targeted threat. Participants from Spain (n = 138) and from the Netherlands (n = 127) either read a version of a story that accentuated the misery of a girl suffering from chlamydia, or a version that focused on her parents' sorrow. Cultural orientation was assessed using a scale for measuring individualism and collectivism, and a scale for measuring familism. Contrary to claims from the earlier studies, neither nationality nor cultural orientation proved to interact with message version on any of the outcome variables.

Keywords: Individualism/Collectivism; Familism; Hofstede; Persuasion; Fear Appeal; EPPM

(*Received 23 July 2014; accepted 25 October 2014*)

Sixty years of research have produced an abundance of empirical studies on fear appeals: persuasive messages designed to scare people into the proposed, often health-related behaviour by describing the terrible things that will happen to them, if they do not do what the message recommends (Witte, 1992, 1998; see Ruiter, Kessels, Peters, & Kok, 2014 for an overview). Despite claims that taking nationality or cultural orientation into consideration is essential when presenting receivers with a fear appeal message (see for instance, Chung & Ahn, 2013; Lee & Park, 2012; Murray-Johnson et al., 2001; Terblanche-Smit & Terblanche, 2011),

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only a few studies have empirically tested the possible interaction between nationality or cultural orientation and message characteristics (see below).

Both from a practical and a theoretical point of view, however, finding any such interaction effects would be important. From a practical point of view, it would be most relevant to find possible interaction effects between nationality (receivers living in country X or in country Y, for instance) and message characteristics (type A messages or type B messages, for instance). Should such interaction effects exist, then information designers working for health organizations could be advised to use type A messages in country X and type B messages in country Y. From a theoretical point of view, finding possible interaction effects between message characteristics and individual differences in cultural orientation would be most relevant. Below, this theoretical relevance will be further explained.

The Extended Parallel Process Model and the Role of Cultural Orientation

Fear appeals typically include two types of information: a threat component and an action component. According to the extended parallel process model (Witte, 1992, 1998; see also Witte, Meyer, & Martell, 2001; from here: the EPPM), confrontation with these components may lead to two different appraisal processes: a threat appraisal and a response appraisal. The first appraisal consists of an assessment of the seriousness of the threat ("perceived severity") as well as the probability of the threat ("perceived susceptibility"). If the sum of perceived severity and perceived susceptibility ("perceived threat") is high enough, the emotion of fear is aroused: the EPPM posits that receivers become scared and will continue with the second appraisal process.

In this second appraisal, receivers evaluate whether the recommended behaviour is effective and feasible. The result of this assessment is called "perceived efficacy": the sum of "perceived response efficacy" (Can the recommended behaviour prevent the occurrence of the threat?) and "perceived self-efficacy" (Am I able to implement the recommended behaviour?).

Depending on the results of the two appraisal processes, the EPPM predicts one of three outcomes. If the threat is not considered to be serious and hence no fear is evoked, receivers will ignore the message and stick to their current behaviour. If receivers become scared, however, the outcome of the second appraisal process is decisive for receivers' reactions. If the recommended behaviour is perceived as effective in blocking the undesirable consequences and receivers feel capable of implementing the behaviour, they will be inclined to accept the message's claim and adopt the propagated behaviour. This (primarily cognitive) response is called "danger control". However, if the recommended behaviour is regarded as ineffective or impractical, receivers will engage in a "fear control" process. They will deny that they are at risk, or label the depiction of negative consequences as exaggerated, in order to cope with their fear of a threat they feel unable to prevent.

An ongoing discussion regarding the EPPM involves the role of individual differences in the processing and the outcomes of a fear appeal (see Popova, 2012,

pp. 465–466 for an overview of this discussion). According to the EPPM, individual differences may influence the appraisal of threat and efficacy. Witte (1992) posits that receivers always evaluate the components of a fear appeal message in relation to their prior experiences, their personality characteristics and, importantly, also their culture. Different evaluations of the same fear appeal message may influence subsequent outcomes. Witte et al. (2001) mention differences in worldviews; specifically differences in individualism vs. collectivism, as an example of individual differences that may be expected to affect the outcomes of a fear appeal (p. 28), though not in a direct manner. As explained in Murray-Johnson et al. (2001, pp. 337–338), threats to an individual may appear very important in an individualist culture, because members of such a culture recognize that their behaviour alone will determine their ability to avert the threat, while threats to the group that an individual belongs to may be more effective in a collectivist culture, because "in a collectivist culture a person's misbehaviour or failure is a disgrace to the family, or even the entire clan" (Hui & Trandis, 1986, p. 231).

Results from the few studies aimed at finding the effects of nationality or cultural orientation are far from unambiguous, however.[1] To give some examples, Chung and Ahn (2013) report that in an individualistic culture (in their experiment: the US) no significant difference was found in the effects of a "self-related" and an "other-related" fear appeal message. In a collectivistic culture (in their experiment: South Korea), however, the "other-related" message was significantly more effective than the "self-related" message. Perea and Slater (1999) found no interaction effects between cultural orientation (in this study Mexican-American vs. Anglo-American) and target of threat (self, or family and friends) in a fear appeal message. Regardless of cultural orientation, "other-related" messages were better received in this study than "self-related" messages. Lee and Park (2012) found no interaction effects between target of threat (self-targeted or group-targeted) in an anti-smoking fear appeal message, and country of origin (here: the US and South Korea) on anti-smoking attitudes or intentions. Interactions were found, however, between target of threat and cultural orientation. Individualists, that is, participants scoring below the median on a scale for measuring cultural orientation derived from Hofstede, Hofstede, and Minkow (2010), demonstrated a significantly more positive attitude towards the self-targeted threat than to the group-targeted threat. In collectivists, no significant effect of target of threat on attitude was found. However, collectivists scored significantly higher on intentions when confronted with the group-targeted threat than when confronted with the self-targeted threat. In individualists, no significant effect of target of threat on intentions was found. Another outcome of this study was that the scores on the cultural orientation scale used did not significantly differ between the South Korean and the American participants. As the authors state, this is in contrast with the common assumption in cross-cultural research that South Koreans are more collectivistic than Americans.

Most of these studies compared the effects of two versions of a fear appeal message, one including a self-targeted threat, and the other including a group-targeted threat, in two groups of receivers who were expected to differ in cultural orientation (often individualism vs. collectivism; see Hofstede, 2001). The varying conclusions from these studies may partly be explained by peculiarities in the research materials that were used. Some studies did not measure to what extent the intended differences in the messages was recognised (Lee & Park, 2012; Perea & Slater, 1999). When negative outcomes of the manipulation checks were found, this did not always lead to changes in the materials that were used in the experiments (Terblanche-Smit & Terblanche, 2011; Vincent & Dubinsky, 2004).

Furthermore, in a number of studies, cultural orientation was not measured but simply ascribed to the individual participants based on their ethnicity (Terblanche-Smit & Terblanche, 2011; Murray-Johnson et al., 2001, first study) or on their nationality (Laroche, Toffoli, Zhang, & Pons, 2001; Chung & Ahn, 2013, for instance). Publications involving experiments that did include a measurement of the cultural orientation of individual participants often reveal serious problems with the reliability or validity of the instruments used. In the second study in Murray-Johnson et al. (2001), for instance, the INDCOL scale developed by Hui (1988) was used. Results unexpectedly showed that the majority of the Taiwanese participants scored as individualists, while the majority of the American participants were found to be collectivists (p. 352). Jansen, Van Baal, and Bouwmans (2006) found similar unexpected results when measuring individualism–collectivism in South African, Spanish and Dutch participants, again using the INDCOL scale. Contrary to expectations, according to the INDCOL scores both the Dutch and the Spanish groups of participants were significantly more collectivistic than participants from all three of the ethnic subgroups of South Africans who were involved. No significant difference was found between the INDCOL scores for the Dutch and the Spanish groups nor were there any significant differences found among the three ethnic subgroups from South Africa. In this study, other instruments were also used for measuring individualism and collectivism in individuals: Scales developed by Triandis, Chen, and Chan (1998), and by Singelis, Triandis, Bhakuw, and Gelfand (1995). These instruments did not prove to be reliable, however (p. 7).

New Study

In view of the practical and theoretical relevance of a possible influence of nationality or cultural orientation on the effects of fear appeal messages, and in view of problems in earlier work in this field, we decided to perform a new study. Our study was carried out within the theoretical framework of the EPPM, and was primarily aimed at finding possible interaction effects between nationality or cultural orientation, and two versions of a fear appeal text: One included a self-targeted threat, the other included a group-targeted threat. Participants came from two

countries: the Netherlands and Spain. Based on Hofstede (2001), Dutch participants were expected to be more individualistic than Spanish participants. In the individualism–collectivism index compiled by Hofstede (2001) that includes 53 countries, the Netherlands shares positions 4 and 5 with Canada, just below Great Britain and just above New Zealand. According to the same index, Spain is a clearly more collectivistic country. Spain ranks 20, just below Israel and just above India (p. 215). Rankings of Spain and the Netherlands according to Hofstede (2001) on other dimensions are as follows (always in comparison with 52 other countries): For power distance, Spain is in position 31 and the Netherlands is in position 40. For masculinity–femininity, Spain is in shared position 37 and 38, the Netherlands is in position 51. For uncertainty avoidance, Spain is in shared position 10 through 15, the Netherlands is in position 35.

The following hypotheses were tested:

> Hypothesis 1: Nationality is related to cultural orientation.
>
> Hypothesis 2: Receivers' nationality and target of threat in a fear appeal message interact in the effects of that message.
>
> Hypothesis 3: Receivers' cultural orientation and target of threat in a fear appeal message interact in the effects of that message.

Method

Design

A 2 × 2 experimental design was employed, with group (receivers, categorized according to nationality or cultural orientation) and message version acting as factors. Participants came from the Netherlands and Spain. One message version (self-targeted, see below) was read by 119 participants (58 from Spain, 61 from the Netherlands); another message version (group targeted) was read by 146 participants (80 from Spain, 66 from the Netherlands). Cultural orientation of the participants was assessed using two instruments that were found to be reliable and valid in earlier studies (see below). As was done in earlier studies into the possible interaction between fear appeal messages and receivers' cultural orientation, dichotomous variables were constructed for comparing participants with different cultural orientations.

Materials

Two versions of a text on chlamydia were developed, which told the story of a girl called Maria who was infected with chlamydia and now could not have children. The self-targeted version accentuated the misery of the girl herself, using sentences such as: "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." The group-targeted version; from here: the family-targeted version) focused on the

pain and sorrow for Maria's parents, saying, for instance, that they "had been hoping for years that they would have grandchildren," and that they "are ashamed to admit that their daughter is now infertile."

The message versions were originally written in Dutch, and were pretested in three subsequent groups of participants, all from the Netherlands ($n = 5$, $n = 10$, $n = 10$, respectively) until clear differences in perceived target of threat (self or family) were reported. Next, the message versions were translated into Spanish and then translated back into Dutch again. After some corrections in the translations into Spanish, the two Spanish message versions were pretested, this time with participants from Spain ($n = 10$). These participants also clearly noticed the difference in target of threat. Both the Dutch and the Spanish versions of the final texts comprised about 340 words. For the complete message versions, translated into English (see Appendix).

Participants

Participants were 265 students: 138 from the University of Granada in Spain and 127 students from the University of Groningen in the Netherlands. Most of the participants (68.9%) were female: 69.3% of the Spanish participants and 68.5% of the Dutch participants. The largest age group (55.3%) was between 19 and 24 years. Of the Spanish participants, 32.8% were younger than 19, 55.5% were between 19 and 24, and 11.7% were older than 24. In the Dutch group, 35.4% of the participants were younger than 19, 55.1% were between 19 and 24, and 9.4% were older than 24. In the Spanish group, 51 were students in psychology, 39 in sociology, 41 in communication studies and 6 in literature studies (one missing value). In the Dutch group, 124 were students in communication studies, 1 in psychology and 1 in information science (1 missing value).

Procedure

All participants were approached during classes they attended at their universities. With very few exceptions, students who were invited to participate agreed to do so. Next, with the permission of the lecturer, each student read one version of the fear appeal text in his or her own language, and filled out a questionnaire, also in his or her own language, that included manipulation check items, items assessing the participant's cultural orientation, and items measuring the dependent variables, that is, the participant's reactions to the text he or she had read.

Measures: Manipulation Checks

Three questions assessed how much the girl was suffering from being infected with chlamydia (e.g. *According to this text, how bad is it for Maria that she has chlamydia?*), and three other questions assessed how much her parents were suffering due to their daughter's situation (e.g. *According to this text, how bad is it for Maria's parents that she has chlamydia?*). All items were followed by seven-point

scales, such as: 1. *Not bad at all* … 7. *Very bad*. Both for "perceived suffering of the girl" and for "perceived suffering of the parents," reliability was found to be satisfactory (Cronbach's α = .85 and .94, respectively).

Measures: Assessing Cultural Orientation

Similar to most of the earlier studies into the possible interaction between fear appeal messages and receivers' cultural orientation, individualism vs. collectivism, one of the dimensions of culture distinguished in Hofstede (2001) served as the theoretical basis for charting differences between the participants from the two countries involved.

Data were collected using the *Auckland Individualism and Collectivism Scale* (*AICS*) and the *Familism Scale* (see below). Next, based on self-referenced and culture-referenced AICS scores, participants were categorized as predominantly individualist or predominantly collectivist. Furthermore, a distinction was made between participants with high or low self-referenced and culture-referenced scores on the Familism Scale.

The *AICS*, developed by Shulruf, Hattie, and Dixon (2007), is based on a meta-analysis by Oyserman, Coon, and Kemmelmeier (2002) of 38 studies. Shulruf et al. (2007) found three dimensions of individualism (responsibility, uniqueness and competitiveness) and two dimensions of collectivism (advice seeking and harmony seeking) in a factor analysis of reactions from 199 undergraduate students from different ethnic groups in New Zealand concerning 66 items, coming from the original list of 113 items presented in Oyserman et al. (2002). Individualism and collectivism came out as distinct aspects of cultural orientation (p. 390). Shulruf et al. (2011) tested the AICS in five countries. Reliability scores for both individualism and collectivism proved to be satisfactory for the overall group of participants (Cronbach's α = .80 and .76, respectively), and also for all groups of participants from the five countries (Cronbach's α was never under .76 and .72, respectively) (p. 179). Bernardo, Lising, and Shulruf (2013) present a study in the Philippines that led to the conclusion that the AICS has a high level of construct validity (pp. 36–37).

Based, among other things, on work by Singelis et al. (1995) and Oyserman et al. (2002), Shulruf et al. (2007) regard familism (the orientation towards one's family) as related to but distinct from collectivism (p. 397). In our study the suggestion from Shulruf et al. (2007) that not only the participant's level of individualism and collectivism should be measured but also the level of familism was followed. Familism was measured with the *Familism Scale*, developed by Lugo Steidel and Contreras (2003). The Familism scale is based on a factor analysis performed with data from 124 Latino adults residing in the US. Four different factors were found: familial support, familial interconnectedness, familial honour and subjugation of self for family. Lugo Steidel and Contreras (2003) found a Cronbach's α for the overall scale of .83 (p. 323). Flores, Robitschek, Celebi, Andersen, and Hoang (2010) found a

Cronbach's α of .86 (p. 202). Schwartz (2007) found a Cronbach's α of .82, and reports similar patterns emerging from factor analyses among Hispanic, white and African participants as were found by Lugo Steidel and Contreras (p. 106, 108, 111).

Self-referenced and Culture-referenced Items

In presenting the AICS and the familism Scale to the participants in our study, a distinction was made between two different ways in which cultural orientation may be measured. Hofstede (2011) stresses the importance of differentiating between someone's personality and his or her culture (see also Hofstede, 2001, p. 2): "When you describe yourself, you talk about your personality; if you want to know about your culture, you describe where you feel at home." According to Hofstede, research results only apply at their own level, and acquiring knowledge about different levels requires different types of instruments (see also Fischer, 2006). Following this advice, use was made of both self-referenced items and culture-referenced items. Two versions were created for all items from the AICS and the Familism Scale, for example: *I think that ageing parents should live with their relatives* (self-referenced) and *In the country that I come from, people think that ageing parents should live with their relatives* (culture-referenced).

Two versions of the questionnaire were created to ensure that all participants would be presented with both self-referenced and culture-referenced items, while preventing individual participants from having to react to the self-referenced and the culture-referenced versions of the same questions.

Version A of the questionnaire included 44 questions on cultural orientation: the self-referenced versions of all even-numbered questions from both the AICS and the familism scale, plus the culture-referenced versions of all odd-numbered questions. Version B included the culture-referenced versions of all even-numbered questions from both scales, plus the self-referenced versions of all odd-numbered questions. All questions were presented as statements, such as *I feel people should cherish time spent with their family*, and were followed by a seven-point scale, such as: 1. *Don't agree at all* … 7. *Fully agree.* Version A of the questionnaire was presented to 25 Spanish and 31 Dutch participants who had read the self-targeted message version, and to 39 Spanish and 33 Dutch participants who had read the family-targeted message version. Version B of the questionnaire was presented to 33 Spanish and 30 Dutch participants who had read the self-targeted message version, and to 41 Spanish and 33 Dutch participants who had read the family-targeted message version.

In order to reach satisfactory scores for Cronbach's α, it was decided to remove data on 8 items (all from the AICS) in Questionnaire A and data on 3 items (also all from the AICS) in Questionnaire B. After this, reliability scores for all aspects of cultural orientation measured using either questionnaire proved to be acceptable: Cronbach's αs were between .60 and .83 (see Table 1).

Table 1 Reliability of Measures for Individualism, Collectivism and Familism (Self-referenced and Culture-referenced): Cronbach's αs.

	Questionnaire A	Questionnaire B
AICS items on individualism		
Self-referenced	.82	.77
Culture-referenced	.72	.66
AICS items on collectivism		
Self-referenced	.60	.65
Culture-referenced	.64	.68
Familism scale		
Self-referenced	.83	.75
Familism scale		
Culture-referenced	.76	.82

Next, six new variables were constructed: self-referenced individualism, culture-referenced individualism, self-referenced collectivism, culture-referenced collectivism, self-referenced familism and culture-referenced familism. For those participants presented with Questionnaire A, the score for self-referenced individualism, for instance, was the mean of their scores for the even-numbered questions from the AICS on individualism, while their score for culture-referenced individualism was the mean of their scores for the odd-numbered questions from the AICS on individualism. For participants who filled out Questionnaire B, the score for the self-referenced individualism score was the mean of their scores for the odd-numbered questions from the AICS on individualism, while their score for culture-referenced individualism was the mean of their scores for the even-numbered questions from the AICS on individualism, etc.

Self-referenced and culture-referenced measures proved to be related but not interchangeable. No strong correlations were found either between self-referenced individualism and culture-referenced individualism, or between self-referenced collectivism and culture-referenced collectivism. For individualism and collectivism, outcomes ranged from $r = .13$ (ns) between self-referenced individualism and culture-referenced individualism in the Spanish group, to $r = .42$ ($p < .01$) between self-referenced collectivism and culture-referenced collectivism, also in the Spanish group. The most clearly related variables proved to be self-referenced familism and culture-referenced familism, but even here the correlations showed that the variables were related but not identical. The estimated proportion of variance in one measure which the other measure accounted for (r^2) never reached 50%: Spanish group: $r = .66$; $p < .01$; Dutch: $r = .39$; $p < .01$; all participants: $r = .68$; $p < .01$ (see Table 2).

Categorizing Participants after Cultural Orientation

In order to determine to what extent individualism (self-referenced or culture-referenced), collectivism (self-referenced or culture-referenced) and familism

Table 2 Bivariate Correlations between Cultural Orientation Variables (All Participants; Spanish Participants; Dutch Participants).

	SRI	CRI	SRC	CRC	SRF	CRF
All participants						
SRI	1					
CRI	.18**	1				
SRC	.06	.17**	1			
CRC	−.06	.28**	.34**	1		
SRF	.09	.01	.36**	.28**	1	
CRF	−.06	−.04	.15*	.33**	.68**	1
Spanish participants						
SRI	1					
CRI	.13	1				
SRC	.04	.26**	1			
CRC	−.01	.34**	.42**	1		
SRF	.04	.20	.49**	.41**	1	
CRF	.02	.18	.37**	.34**	.66**	1
Dutch participants						
SRI	1					
CRI	.26**	1				
SRC	.09	−.10	1			
CRC	−.17	.19*	.20*	1		
SRF	.29**	.12	.43**	.12	1	
CRF	−.12	.10	.08	.33**	.39**	1

Note. SRI = self-referenced individualism; CRI = culture-referenced individualism; SR = self-referenced collectivism; CRC = culture-referenced collectivism; SRF = self-referenced familism; CRF = culture-referenced familism.
*$p < .05$; **$p < .01$.

(self-referenced or culture-referenced) measured the same or opposite concepts, correlations were also calculated between these variables. Correlations between individualism and collectivism, both when measured as self-referenced as well as when measured as culture-referenced, were low to moderate ($r = .06$; ns, and $r = .28$; $p < .01$, respectively). Self-referenced collectivism proved to be related to but different from self-referenced familism ($r = .36$; $p < .01$), and culture-referenced collectivism was related to but different from culture-referenced familism ($r = .33$; $p < .01$) (see Table 2).

Apparently, individualism and collectivism cannot be equated, nor can they be regarded as each other's opposite. Comparing the level of individualism and collectivism in an individual, however, may show which of these aspects of cultural orientation dominates the other one. In order to decide if a participant's cultural orientation was predominantly individualist or collectivist, two new dichotomous variables were constructed: self-referenced individualism minus self-referenced collectivism (positive or negative), and culture-referenced individualism minus culture-referenced collectivism (positive or negative). When the score for self-referenced individualism minus self-referenced collectivism or for culture-referenced individualism minus culture-referenced collectivism was positive, a participant was considered

as predominantly individualist (self-referenced or culture-referenced, respectively). When the score for self-referenced individualism minus self-referenced collectivism or for culture-referenced individualism minus culture-referenced collectivism was negative, a participant was considered as predominantly collectivist (self-referenced or culture-referenced, respectively). Participants whose difference scores were 0 (for self-referenced individualism minus self-referenced collectivism: $n = 9$; for culture-referenced individualism minus culture-referenced collectivism: $n = 8$) were left out of further analyses in which the dichotomous difference variables were used.

Dichotomous variables were also constructed for familism. When the score for self-referenced familism was higher than the median score, this resulted in a high score for the variable self-referenced familism (low or high). When the score for self-referenced familism was lower than the median score, then the score for self-referenced familism (low or high) was low. For culture-referenced familism, a similar procedure was followed, resulting in high or low scores for culture-referenced familism (low or high).

Measures: Dependent Variables

The following eight EPPM variables served as dependent variables: perceived severity (3 items, for instance: *I think chlamydia is a serious illness*; Cronbach's α .78), perceived susceptibility (3 items, for instance: *It is possible that I will be infected with chlamydia*; Cronbach's α .81), fear arousal (4 items, for instance: *Reading this text made me afraid*; Cronbach's α .94), perceived response efficacy (2 items, for instance: *I think using condoms is effective in preventing chlamydia*; Cronbach's α .76; $r = .62$), self-efficacy (2 items, for instance: *Using condoms is easy*; Cronbach's α .69; $r = .53$), danger control intention (2 items, for instance: *I intend to change my behaviour such that I won't get infected with chlamydia*; Cronbach's α .70; $r = .54$), defensive avoidance (1 item: *I don't want to think about chlamydia*) and message minimization. Five items were used here: *This text tried to manipulate me; This text was exaggerated; This text was misleading; This text did not give a correct description of chlamydia; This text does not give an objective description of chlamydia* (Cronbach's α .82). Mean scores on two of these message minimization items (i.e. *This text did not give a correct description of chlamydia; This text does not give an objective description of chlamydia*) (Cronbach's α .72; $r = .58$) were also used as an indication of the perceived realism of both versions of the story (on the possible role of perceived realism in a story's persuasiveness, see Busselle and Bilandzic (2008). The lower these scores, the more realistic the participants apparently found the story version they had read.

All items were measured on a seven-point scale (1. *Don't agree at all* … 7. *Fully agree*).

Results

First, the results of the manipulation checks will be discussed. Next, the scores for the Spanish and Dutch participants will be presented for the various aspects of

cultural orientation. Finally, main and interaction effects will be presented for cultural orientation and nationality, on the one hand, and message version, on the other.

Manipulation Checks

Two one-way analyses of variance were performed, both with message version as the only factor: one with "perceived suffering of the girl" and the other with "perceived suffering of the parents" as dependent variable. The manipulation proved to have been successful. Mean scores for perceived suffering of the girl were significantly higher (F [1, 263] = 104.67; $p < .001$; partial $\eta^2 = .28$) for those who read the self-targeted version ($M = 6.67$; SD = .46) than for those who read the family-targeted version ($M = 5.34$; SD = 1.35). Mean scores for perceived suffering of the family were significantly higher (F [1, 259] = 161.65; $p < .001$; partial $\eta^2 = .38$) for those who read the family-targeted version ($M = 6.28$; SD = .79) than for those who read the self-targeted version ($M = 4.15$; SD = 1.82). When inspecting the manipulation checks data for the Spanish and the Dutch participants, similar effects were found (see Table 3).

Table 3 Scores for Manipulation Check Variables (All Participants; Spanish Participants; Dutch Participants).

	Self-targeted version (minimum 1, maximum 7)	Family-targeted version (minimum 1, maximum 7)	
All participants			
Perceived suffering of the girl	$M = 6.67$ (SD = .46)	$M = 5.34$ (SD = 1.35)	$p < .001$ (partial $\eta^2 = .28$)
Perceived suffering of the family	$M = 4.15$ (SD = 1.82)	$M = 6.28$ (SD = .79)	$p < .001$ (partial $\eta^2 = .38$)
Spanish participants			
Perceived suffering of the girl	$M = 6.60$ (SD = .51)	$M = 5.70$ (SD = 1.26)	$p < .001$ (partial $\eta^2 = .16$)
Perceived suffering of the family	$M = 5.21$ (SD = 1.39)	$M = 6.16$ (SD = 0.89)	$p < .001$ (partial $\eta^2 = .14$)
Dutch participants			
Perceived suffering of the girl	$M = 6.74$ (SD = .40)	$M = 4.92$ (SD = 1.35)	$p < .001$ (partial $\eta^2 = .45$)
Perceived suffering of the family	$M = 3.07$ (SD = 1.54)	$M = 6.43$ (SD = 0.62)	$p < .001$ (partial $\eta^2 = .68$)

As explained above, the perceived realism of both story versions was measured using two of the items that were also used for message minimization. After reading the text, reactions of the participants ($M = 3.25$; SD = 1.42, on a scale from 1 [high perceived realism] to 7 [low perceived realism]) indicated that they found the story rather realistic. There were no main effects of story version or nationality on perceived realism, nor was there an interaction effect of these variables.

Nationality and Cultural Orientation

To test the first hypothesis, we investigated whether the Spanish participants scored differently from the Dutch participants on self-referenced individualism, culture-referenced individualism, self-referenced collectivism, culture-referenced collectivism, self-referenced familism and culture-referenced familism. A multivariate analysis of variance was performed with nationality as the only factor. After a significant multivariate effect was found (F [6, 258] = 36.45; $p < .001$; partial $\eta^2 = .46$), the effects of nationality on the different cultural orientation variables were inspected. As might be expected in view of the Hofstede rankings of the two countries, in the Dutch group the mean score for culture-referenced individualism ($M = 5.16$; SD = .55) was significantly higher ($p < .001$) than in the Spanish group ($M = 4.72$; SD = .86). As might also be expected from the Hofstede rankings, in the Spanish group the mean scores for self-referenced familism and for culture-referenced familism were significantly higher ($p < .001$) than in the Dutch group. Spanish scores for self-referenced familism and culture-referenced familism were $M = 4.75$ (SD = .90) and $M = 4.62$ (SD = .82); and Dutch scores for self-referenced familism and culture-referenced familism were $M = 3.90$ (SD = .65) and $M = 3.58$ (SD = .69). No significant effects of nationality, however, were found on self-referenced individualism, self-referenced collectivism or culture-referenced collectivism (see Table 4).

Table 4 Effects of Nationality on Cultural Orientation Variables (Minimum Score 1, Maximum Score 7).

	Spanish	Dutch	Effects of nationality
SRI	$M = 5.26$ (SD = .99)	$M = 5.36$ (SD = .80)	ns
CRI	$M = 4.72$ (SD = .86)	$M = 5.16$ (SD = .55)	$p < .001$ (partial $\eta^2 = .09$)
SRC	$M = 4.66$ (SD = 1.10)	$M = 4.88$ (SD = .91)	ns
CRC	$M = 5.20$ (SD = 1.02)	$M = 5.19$ (SD = .75)	ns
SRF	$M = 4.75$ (SD = .90)	$M = 3.90$ (SD = .65)	$p < .001$ (partial $\eta^2 = .22$)
CRF	$M = 4.62$ (SD = .82)	$M = 3.58$ (SD = .69)	$p < .001$ (partial $\eta^2 = .32$)

Note. SRI = self-referenced individualism; CRI = culture-referenced individualism; SR = self-referenced collectivism; CRC = culture-referenced collectivism; SRF = self-referenced familism; CRF = culture-referenced familism.

Effects of Message Version and Nationality, and Message Version and Cultural Orientation

To test both the second hypothesis and the third hypothesis, multivariate analyses of variance were performed, each time with two variables acting as factors: (1) message version and nationality, (2) message version and self-referenced individualism minus self-referenced collectivism (positive or negative), (3) message version and culture-referenced individualism minus culture-referenced collectivism (positive or negative), (4) message version and self-referenced familism (low or high) and (5) message version and culture-referenced familism (low or high). In each analysis, the following EPPM variables served as dependent variables: perceived severity, perceived susceptibility, fear arousal, perceived response efficacy, self-efficacy, danger control intention, message minimization and defensive motivation.

None of the analyses revealed a significant multivariate interaction effect. No significant multivariate main effects were found for message version either. A significant multivariate main effect was found for *nationality* (F [8, 249] = 13.96; $p < .001$; partial $\eta^2 = .31$). Further inspection revealed significant effects on perceived severity, perceived susceptibility, fear and self-efficacy. Spanish participants scored lower ($p < .01$) on perceived severity ($M = 5.49$; SD = 1.18) than Dutch participants ($M = 5.88$; SD = .80). Spanish participants also scored lower ($p < .05$) on perceived susceptibility ($M = 2.73$; SD = 1.58) than Dutch participants ($M = 3.09$; SD = 1.39). However, Spanish participants scored higher ($p < .001$) on fear ($M = 4.18$; SD = 1.67) than Dutch participants ($M = 3.19$; SD = 1.46). Spanish participants also scored higher ($p < .001$) on self-efficacy ($M = 6.17$; SD = 1.04) than Dutch participants ($M = 5.20$; SD = 1.48) (see Table 5).

Furthermore, a significant multivariate main effect was found for *self-referenced familism (low or high)*: F (8, 249) = 4.43; $p < .001$; partial $\eta^2 = .12$. Further inspection revealed significant effects on fear and on self-efficacy. Participants scoring low on self-referenced familism (low or high) scored lower ($p < .001$) on fear ($M = 3.34$; SD = 1.51) than participants scoring high on self-referenced familism (low or high) ($M = 4.05$; SD = 1.69). Participants scoring low on self-referenced familism (low or high) also scored lower ($p < .001$) on self-efficacy ($M = 5.30$; SD = 1.45) than participants scoring high on self-referenced familism (low or high) ($M = 6.08$; SD = 1.15).

A significant multivariate main effect was found for *culture-referenced familism (low or high)* (F [8, 249] = 6.25; $p < .001$; partial $\eta^2 = .17$). Further inspection revealed significant effects on fear and on message minimization. Participants scoring low on self-referenced familism (low or high) scored lower ($p < .001$) on fear ($M = 3.23$; SD = 1.47) than participants scoring high on self-referenced familism (low or high) ($M = 4.17$; SD = 1.68). Participants scoring low on self-referenced familism (low or high) scored higher ($p < .01$) on message minimization ($M = 3.74$; SD = 1.14) than participants scoring high on self-referenced familism (low or high) ($M = 3.29$; SD = 1.13).

Table 5 Effects of Message Version and Nationality on Scores for EPPM Variables (Minimum Score 1; Maximum Score 7).

	Spanish readers			Dutch readers			
	Self	Family	All	Self	Family	All	Effects of nationality
Perceived severity	M = 5.52 (SD = 1.25)	M = 5.47 (SD = 1.13)	M = 5.49 (SD = 1.18)	M = 5.87 (SD = .86)	M = 5.89 (SD = .75)	M = 5.88 (SD = .80)	p <. 01 (partial η^2 = .03)
Perceived susceptibility	M = 2.49 (SD = 1.54)	M = 2.89 (SD = 1.59)	M = 2.73 (SD = 1.58)	M = 3.28 (SD = 1.36)	M = 2.91 (SD = 1.41)	M = 3.09 (SD = 1.39)	p <. 05 (partial η^2 = .02)
Fear arousal	M = 4.47 (SD = 1.55)	M = 3.98 (SD = 1.73)	M = 4.18 (SD = 1.67)	M = 3.47 (SD = 1.38)	M = 2.92 (SD = 1.49)	M = 3.19 (SD = 1.46)	p < .001 (partial η^2 = .10)
Perceived response-efficacy	M = 6.25 (SD = .98)	M = 6.29 (SD = 1.01)	M = 6.27 (SD = .99)	M = 6.16 (SD = .98)	M = 6.10 (SD = 1.00)	M = 6.13 (SD = .98)	ns
Self-efficacy	M = 6.20 (SD = .87)	M = 6.15 (SD = 1.15)	M = 6.17 (SD = 1.04)	M = 5.10 (SD = 1.64)	M = 5.30 (SD = 1.32)	M = 5.20 (SD = 1.48)	p < . 001 (partial η^2 = .13)
Danger control intention	M = 4.46 (SD = 2.18)	M = 3.62 (SD = 2.04)	M = 3.97 (SD = 2.13)	M = 3.93 (SD = 1.86)	M = 3.80 (SD = 1.79)	M = 3.86 (SD = 1.82)	ns
Message minimization	M = 3.39 (SD = 1.19)	M = 3.36 (SD = 1.38)	M = 3.37 (SD = 1.30)	M = 3.46 (SD = 1.23)	M = 3.85 (SD = 1.09)	M = 3.66 (SD = 1.17)	ns
Defensive avoidance	M = 3.62 (SD = 1.80)	M = 3.87 (SD = 1.75)	M = 3.77 (SD = 1.77)	M = 3.66 (SD = 1.50)	M = 3.95 (SD = 1.15)	M = 3.81 SD = 1.51)	ns

Note. Self = self-targeted message version; Family = family-targeted message version. No significant effects of message version were found, nor any interaction effects of nationality and message version.

Significant multivariate main effects were neither found for self-referenced individualism minus self-referenced collectivism (positive or negative), nor for culture-referenced individualism minus culture-referenced collectivism (positive or negative).

Dichotomous variables were also constructed for self-referenced individualism, culture-referenced individualism, self-referenced collectivism and culture-referenced collectivism, based on the respective median scores. Multivariate analyses of variance were performed, each with one of these dichotomous variables as one of the independent variables and with message version as the other independent variable. Perceived severity, perceived susceptibility, fear arousal, perceived response efficacy, self-efficacy, danger control intention, message minimization and defensive motivation served as dependent variables. None of these analyses revealed a significant multivariate interaction effect.

In view of a possible influence of level of involvement due to the gender of the main character in the story, interaction effects were also deemed possible between gender of the participants and other independent variables, including target of threat in the text. No significant interaction effects were found, with one exception. There was a significant interaction effect between gender and nationality on fear. In the Spanish group, the difference in fear experienced by women compared to men was larger than in the Dutch group.

The continuous rating scales that were used to measure cultural orientation also made it possible to find moderation effects of message version on the relationship between the eight EPPM variables that were measured, on the one hand, and the four cultural orientation variables (self-referenced individualism minus self-referenced collectivism, culture-referenced individualism minus culture-referenced collectivism, self-referenced familism and culture-referenced familism), on the other. Moderation analyses that were carried out using the PROCESS tool developed by Hayes (see Hayes, 2013) revealed essentially the same picture as the multivariate analyses of variance did. Out of 32 possible interactions between message version as moderator and the variables measuring cultural orientation as predictors, only one such interaction effect was found: Message version and culture-referenced familism proved to have a significant interaction effect on danger control ($p = .009$; alpha set at .01 to reduce the risk of type I errors). Contrary to what might be expected, however, inspection of the correlations between culture-referenced familism and danger control in the two target-of-threat conditions showed that it was not the family-oriented text but the text that focused on the girl that led to the strongest relationship between familism and danger control. When the participants read the message version in which the focus was on the suffering of the family, the correlation between culture-referenced familism and danger control was not significant ($r = -.02$; $p = .79$). Only when the participants read the message version in which the focus was on the suffering of the girl, was the correlation between culture-referenced familism and danger control significant ($r = .28$; $p = .002$).

Discussion

This experiment was primarily aimed at finding possible interaction effects between nationality and cultural orientation, and two versions of a fear appeal text that either included a self-targeted threat, or a family-targeted threat. No such interaction effects were found, however.

Theoretical Implications

Measuring Cultural Orientation

This study distinguished between self-referenced and culture-referenced levels of cultural orientation, and between individualism-collectivism and familism. Both distinctions proved to be valuable. The low to moderate correlations show that the outcomes of self-referenced and culture-referenced measures are related but cannot be used interchangeably. As Hofstede (2001, 2011) suggests, someone's personality and his or her culture should not be confounded, and different instruments are needed to acquire knowledge about the two different levels of cultural orientation. The positive correlations (low to moderate) between individualism and collectivism, both when measured as self-referenced and when measured as culture-referenced, contradict the idea that individualism and collectivism are opposite ends of the same stick. If they were, significant negative correlations would have been found here. This was not the case, however. The results support the argument from Shulruf et al. (2007) that individualism and collectivism should be viewed as two different aspects of an individual's cultural orientation that may be compared but that are not each other's opposite. Also in conformity with Shulruf et al. (2007), collectivism proved to be related to but different from familism. The outcomes of our study suggest that the AICS from Shulruf et al. (2007) and the familism scale from Lugo Steidel and Contreras (2003) are adequate instruments for measuring three related but distinct aspects of someone's culture: individualism, collectivism and familism—specifically when the recommendation from Hofstede (2001, 2011) is followed, which is to differentiate between the self-referenced level and the culture-referenced level of cultural orientation.

Nationality and Cultural Orientation

The first hypothesis predicted nationality to be related to cultural orientation. This hypothesis was partly supported. Three out of six measures for individual cultural orientation revealed significant differences between the Spanish and the Dutch participants. The significant differences that were found were always consistent with what might be expected based on the literature about national cultures: scores on self-referenced familism and culture-referenced familism were highest in the Spanish group; scores on culture-referenced individualism were highest in the Dutch group.

Nationality, Cultural Orientation and Target of Threat

The second hypothesis predicted that receivers' nationality and target of threat in a fear appeal message would interact in terms of the effects of the message. No such interactions were found, however. The third hypothesis predicted that individual differences in cultural orientation and target of threat in a fear appeal message would interact in terms of the effects of the message. Again, no such interactions were found.

Based on Witte et al. (2001), differences in cultural orientation might have been expected to indirectly affect the outcomes of a fear appeal, i.e. through perceived threat or through perceived efficacy. In our study, however, no indications of any such indirect effects were found, nor did we find any interaction effects between cultural orientation and message characteristics. The only significant effects of cultural orientation variables we found were two main effects (both of familism variables) on self-efficacy and fear, which did not correspond to effects on any of the outcome variables (danger control intention, defensive avoidance and message minimization), along with one main effect (also of a familism variable) on one outcome variable (message minimization), which did not correspond to an effect on either perceived threat or perceived efficacy. Rather than confirming the expectations from Witte et al. (2001), these findings support the earlier conclusion of Witte and Allen (2000) that "individual differences […] do not appear to influence processing of fear appeal messages, except on rare occasions" (p. 606). Thus, our study contributes to the discussion regarding the role of individual differences in the EPPM, as referred to in Popova (2012, pp. 465–466).

Contrary to earlier studies in this field, the absence of interaction effects referred to in both the second hypothesis and the third hypothesis cannot easily be explained by shortcomings in the fear appeal texts that were used. Manipulation checks showed that differences between the version that was meant to accentuate the suffering of an individual girl on the one hand, and the version that was meant to accentuate the suffering for her family on the other, were indeed recognized as such. It also seems unlikely that the absence of interaction effects between cultural orientation and message version can be explained by flaws in the instruments that were used to determine the participants' cultural orientation. In contrast to the instruments used in earlier studies on the interaction between fear appeals and cultural orientation, such as the INDCOL scale (Hui, 1988), both the AICS (Shulruf et al., 2007) and the familism scale (Lugo Steidel & Contreras, 2003) produced outcomes with acceptable levels of reliability and face validity.

Practical Implications

If we had found interaction effects between readers' nationality or cultural orientation and target of threat in the texts, then that would have supported the suggestion found in earlier studies, such as those of Chung and Ahn (2013) and Murray-Johnson et al. (2001), that it is important to consider receivers' nationality or cultural orientation when designing a fear appeal message. Based on the results

of our study, however, the generalizability of such claims should be questioned: We found no interaction effects at all between target of threat and either nationality or cultural orientation on any of the EPPM variables.

Limitations and Future Directions

The primary limitations of our study include the limited variation in age group and educational background of the participants, as well as the small number of countries and message versions that were involved. Only university students, mostly between 19 and 24 years of age, from only two countries, Spain and the Netherlands, participated and only two versions of a fear appeal message were used. Similar choices, however, were made in most of the other studies in this field, thus making it easier to compare what was found in this study with earlier work in this field.

One of the reasons that in our study no clear interactions between receivers' nationality or cultural orientation and differing fear appeals could be found—as was also the case in, for instance, Laroche et al. (2001), Vincent and Dubinsky (2004), Jansen et al. (2006), and to a large extent Perea and Slater (1999)—may be that in fear appeal experiments such as these, messages are often presented without any visual material supporting the threat that is being put forward or the response that is being advocated. In reality, though, most fear appeals depend heavily on pictures shown in combination with very short texts. It may be that presenting various target groups with more familiar fear appeal messages, featuring pictures, would result in different effects.

Another explanation for the absence of interaction effects may be that the messages were designed to appeal to basic aspects of culture: fundamental differences in sets of values. Perhaps fear appeal messages that refer to other cultural aspects, such as familiarity with religious themes, or tolerance towards pictures explicitly showing nudity and sexual activities,[2] might have effects that vary between different target groups.

In spite of its limitations, this study raises serious questions about the recommendation made in earlier studies that information designers should use different messages when addressing audiences from different cultures or nationalities. This study also contributes new findings to the ongoing theoretical discussion regarding the role of individual differences in the EPPM. In the experiment reported here, both the processing and the outcomes of fear appeal messages were hardly affected at all by cultural orientation variables. More research into the way culture may influence the effects of a fear appeal messages is warranted.

Notes

1. In chronological order: Perea and Slater (1999), Laroche et al. (2001), Murray-Johnson et al. (2001: two studies), Williams, Donnel, Briley, Grier, and Henderson (2003: two studies), Vincent and Dubinsky (2004), Cochrane and Quester (2005), Jansen et al. (2006), Terblanche-Smit and Terblanche (2011), Lee and Park (2012), Chung and Ahn (2013).

2. Compare, for instance, HIV/AIDS fear appeals from Tanzania and Germany; http://www.careljansen.nl/Figure_1.pdf.

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Appendix. The Two 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 fulfil 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.