Culturally-oriented fear appeals: A replication study

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Culturally-oriented fear appeals in public information documents on HIV/AIDS:
An extended replication study

Murray-Johnson et al. (2001) discuss two experiments in which different fear appeal messages aimed at AIDS prevention were evaluated by participants from target groups with varying cultural backgrounds. The authors conclude that fear appeals should address cultural orientation (i.e. individualist versus collectivist orientation) to achieve maximum effectiveness. Due to a number of problems in the experiments, however, the question may be asked how valid this conclusion is. Therefore a replication study was undertaken with 435 participants from three countries: the Netherlands, Spain and South Africa. The same materials and the same questionnaires were used as in Murray-Johnson et al. (2001). Following the suggestion in Murray-Johnson et al. (2001) that in future studies horizontal and vertical dimensions of idiocentrism and allocentrism should be assessed, two extra measures for cultural orientation were added. The outcomes reported in Murray-Johnson et al. (2001) could not be replicated. None of the predicted interactions between target of threat and cultural orientation occurred. An explanation may be found in shortcomings in the text materials, and in problems concerning the reliability and the validity of the measures for cultural orientation.
In 2001, an intriguing article was published in this journal entitled Addressing Cultural orientations in Fear Appeals: Promoting AIDS-protective Behaviours among Mexican Immigrants and African American Adolescents and American and Taiwanese College Students (Murray-Johnson, Witte, Liu, Hubbell, Sampson, & Morrison, 2001). In this article, two experiments were discussed in which different fear appeal messages aimed at AIDS prevention were read by participants from target groups with varying cultural backgrounds. A fear appeal is a persuasive communication attempting to arouse fear in order to promote precautionary motivation and self-protective action (cf. Ruiter, Abraham, & Kok, 2001; Witte, 1998; Witte & Allen, 2000); in the words of Murray-Johnson et al. (2001): “fear appeal messages typically threaten audiences in an attempt to scare people into adopting the recommended responses.” (p. 336).

Amazing as it may seem in the light of the impact of the AIDS pandemic in large, culturally-differing parts of the world, Murray-Johnson et al. (2001) is one of the very few reports on empirical studies of the effects of public information documents on HIV/AIDS in which attention is paid to cultural variation in the target groups (cf. Swanepoel, 2003). As far as research into fear appeals is concerned, Murray-Johnson et al. (2001) rightfully note that “most target populations studied [...] tend to be from nations with individualist orientations (e.g., the United States, Great Britain, Australia, and Canada) and the threat messages focus on the individual” (p. 337). It is therefore with good reason that Murray-Johnson et al. (2001) decided to investigate whether members from supposedly more collectivistic cultures (e.g. Japan, Taiwan and China) would be more effectively persuaded by fear appeal messages targeted not at the individual but at the group to which the individual belongs.
In the first experiment discussed in Murray-Johnson et al. (2001), the participants were either African-American or Mexican immigrant junior high school pupils. In the second experiment, the participants were college undergraduates living in Taiwan or in the USA. In this article, a replication study of the second experiment will be discussed. This replication was undertaken in three countries: the Netherlands, Spain and South Africa. Before elaborating on the method and the outcomes of the replication study, the original experiments by Murray-Johnson et al. (2001) will be discussed in some detail. This is necessary to explain why a replication study of specifically their second experiment was deemed relevant, and how the results of this replication study compare with the findings reported by Murray-Johnson et al. (2001)

Experiments carried out by Murray-Johnson et al. (2001)

In both studies, a 2 x 2 experimental design was employed with target of threat (self versus family) and cultural orientation (individualist versus collectivist) acting as the factors. Target of threat was manipulated in a fear appeal message that was part of a larger text on HIV/AIDS (p. 341, p. 349). The first paragraphs of this text emphasised how one can be infected by the HIV virus and what can be done to avoid contracting it. In the following two paragraphs a story was told of a girl suffering from AIDS. In the text versions where the threat was to the individual, the emphasis in this story was placed on the harmful consequences for that person herself. In the texts in which the threat was to the group, the focus in the story was on the harmful consequences for the family of the girl who had been infected.

First experiment

In the first experiment, different cultural orientations were brought into play by confronting two different groups of young American high school pupils (average age
13.5) with either the text in which the target of threat was the individual, or in which the target was the group, more specifically the family. The first group of participants comprised 27 young African Americans; the second group consisted of 20 young Mexican immigrants. According to publications such as Hecht & Ribeau (1984) and Collier, Ribeau, & Hecht (1986), the American Africans were regarded as holding a more individualistic orientation and the Mexican immigrants were categorised as being more collectivistic. Immediately after the participants had read the texts, they were asked to fill in a questionnaire that included demographic questions, a manipulation check, and several sets of seven-point Likert-scale items on, for example, fear arousal (alpha=.53), attitudes towards AIDS prevention (alpha=.83) and intentions to prevent AIDS (alpha=.67).

The results showed that the manipulation had been successful: those participants in the threat to individual group believed the message to be significantly more threatening towards the individual than those in the threat to the family group, who believed AIDS to be significantly more threatening to the family (p. 344). A statistically significant interaction effect was found between target of threat and cultural orientation on the dependent variable fear arousal (while controlling for age). African American youth were most frightened by the text that threatened the individual, while Mexican immigrant youth were most frightened by the text that threatened the family: F(4,37)=4.10; p=.05. No statistical interaction effects were found, however, between target of threat and cultural orientation on attitude and intentions (pp. 344-345).

In a summary section, Murray-Johnson et al. (2001) identify some important limitations of this first experiment. First of all, concern is expressed about the weak alphas for fear and intentions, the school setting (during school hours) and the limited time available (one class period). As a result the questionnaire did not include
questions about all the variables that would have been needed for “a true test of grounded fear appeal research” (p. 347). Another limitation mentioned by Murray-Johnson et al. (2001) was the use of “youth in the height of their egocentric development stage”, which, in the view of the researchers, may have led to an inaccurate assessment of the influence of cultural orientation on attitudes and intentions. And finally, the authors identify the problem that the cultural orientation of the participants was ascribed to the individuals, but was not measured. It may well have been that some Mexican immigrants in this study held typically individualist values while some African Americans, on the other hand, may have held typically collectivist values. Referring to Triandis, Bontempo, Villareal, Asai & Lucca (1988) Murray-Johnson et al. (2001) acknowledge that it may be important to measure the individual correlate of collectivist and individualist orientation instead of “simply ascribing an orientation to participants based on their cultural heritage” (p. 347). For these reasons Murray-Johnson et al. (2001) decided to engage in a second study.

Second experiment

The second experiment was done in the USA and Taiwan. Just as in the first experiment, target of threat and cultural orientation acted as the factors in a 2 x 2 factorial design. In the texts that were used, the first paragraphs again consisted of the same factual information. In the next two paragraphs, a story was told of a girl, this time a student, suffering from AIDS, this time with fatal consequences: the girl eventually died. In the texts in which the threat was targeted at the individual, the emphasis was on the misery of the girl herself, while in the texts in which the threat was to the group, the focus was on the harmful consequences for the family. The distinction between the various cultural orientation conditions was based on Hofstede’s cross-national study (Hofstede 1984, 2001), in which the USA was categorised as a very individualistic country and Taiwan as a very collectivist
country. About half the number of participants (N=98) were students living in the USA and were expected to be, on average, more idiocentric than the participants living in Taiwan (N=93) who were expected to be, on average, more allocentric.

The questionnaire that had been used in the first experiment was extended by a large number of questions on, for example, perceived severity (alpha=.89 for self-perceived severity and .90 for family-perceived severity) and perceived susceptibility (alpha=.80). Compared to the first experiment, internal consistency improved for the question sets on fear, attitudes and intentions (alpha=.92 for fear, alpha=.85 for attitude towards self-prevention, alpha=.88 for attitude/family, alpha=.85 for both self and family intention). The most important additions to the questionnaire, however, were the questions used from a variation of the INDCOL scale (Hui, 1988). The internal consistency of this scale, developed to measure individual differences in individualism versus collectivism proved, to be adequate: alpha=.76.

Just as in the first experiment, the authors found the manipulation to be successful. The participants’ answers to the two questions involved (“In this message, AIDS was a threat to Jenny/Mei Fong [name in Chinese version] [or] Her family”; “In this message, Jenny/Mei Fong [name in Chinese version] was worried about the impact of AIDS on, Herself [or] Her family”, p. 50) indicated that the participants in the threat to individual group believed the message to be more threatening towards the individual (M=3.87, SD=1.81) than those in the threat to the family group, who believed AIDS to be more threatening to the family (M=4.63, SD=1.47); t(190)=3.22; p<.01 (p.352). No indication is given of the internal consistency of the two questions measuring the success of the manipulation.

An unexpected outcome related to the cultural orientation of the Taiwanese versus the American participants (see Table 1).
As Table 1 shows, most Taiwanese participants were found to be idiocentric, while most American participants were found to be allocentric (Pearson chi-square=51.33, df=1; p<.01). This result was the opposite of what was expected, leading the researchers to the recommendation that, in future studies, more refined measures of idiocentrism and allocentrism should be used, preferably based on the distinction between horizontal and vertical dimensions of horizontalism and collectivism as proposed in Triandis, Chen & Chan (1998). In sections that follow it will be indicated how this recommendation was dealt with in the replication study.

For their remaining analyses of the outcomes of the second experiment, Murray-Johnson et al. (2001) decided to use only the data from the high allocentrics (the top 33% according to the INDCOL scale) and the high idiocentrics (the bottom 33%), and to drop the middle third, which might represent individuals with both idiocentric and allocentric characteristics (p. 353).

A statistically significant interaction effect was found between target of threat and cultural orientation on the dependent variable fear arousal (while controlling for a number of covariates). High idiocentrics were most frightened by the text that
threatened the individual, while high allocentrics were most frightened by the text that threatened the family; \( F(3,114)=3.81; p=.05 \). No statistical interaction effects were found, however, between target of threat and cultural orientation on attitude and intentions (pp. 353-354).

Considering the results of both experiments, Murray-Johnson et al. (2001) state that it is important to address cultural orientation when assessing individuals’ responses to fear appeals. Combining the finding that, in both experiments, there was a significant interaction between target of threat and cultural orientation on fear arousal, with the suggestion from meta-analyses that greater fear leads to greater message acceptance (Boster & Mongeau, 1984), Murray-Johnson et al. (2001) suggest that “cultural orientation should be taken into account when developing effective fear appeals. Namely, those individuals who place group needs above self needs may be more persuaded by fear appeals that threaten the group or family, while those individuals who place self needs above group needs may be more persuaded by traditional fear appeals that threaten the individual” (p. 354).

**Summary**

An important conclusion from the results reported in Murray-Johnson et al. (2001) is that fear appeals that threaten the family cause greater effects for members of collectivist cultures and allocentric individuals than do fear appeals that focus on threats to the individual, and vice versa. Both in the first experiment and in the second experiment an interaction effect was found on fear of target of threat and cultural orientation of the members of the target audience. However, as far as attitudes or intentions are concerned, the conclusion in Murray-Johnson et al. (2001) that individuals who place group needs above self needs may be more persuaded by fear appeals that threaten the group, while individuals who place self needs above
group needs may be more persuaded by fear appeals that threaten the individual, is not substantiated by the findings in their experiments. No significant interaction effects were found between target of threat and cultural orientation on attitudes towards condom use intentions, nor on intentions to protect oneself against HIV infection.

A problematic aspect of both experiments seems to be the way cultural orientation was defined. In the first experiment cultural orientation was only ascribed but not measured on an individual level. The possibility expressed by the authors that individual participants would hold cultural values other than were to be expected on the basis of their nationality, was confirmed in the second experiment, in which Taiwanese participants obtained the highest scores on a scale measuring the individual-level correlate of individualism, with exactly the opposite being the case for the American participants. This result led Murray-Johnson et al. (2001) to argue for more advanced measures to assess idiocentrism and allocentrism, thereby implicitly, but with good reason, questioning the validity of the INDCOL scale that was used in the second experiment.

In view of the possible validity problems with the INDCOL scale Murray-Johnson et al. (2001) justifiably took the decision to use only the data from the bottom and the top third, and to leave out the middle group. Probably this decision explains why the outcomes of the second experiment as presented in Murray-Johnson et al. (2001) do not completely match the results as reported in the original master's thesis in which this experiment is described (Liu, 1998). The interaction effect reported in Murray-Johnson et al. (2001) between target of threat and cultural orientation on fear arousal is not reported in Liu (1998). In the words of Liu (1998): “subjects in general felt the same level of fear regardless the locus of threat or their cultural orientation” (p. 20). In Liu (1998, p. 19) the participants’ cultural orientations as used in the analyses of
variance were determined by a dichotomisation of the scores of the INDCOL-scale: those who scored less than the 50th percentile of the overall score were categorised as being more individualistically oriented, while those who scored higher than the 50th percentile were considered to be more collectivistically oriented.3

In the discussion of the first experiment, Murray-Johnson et al. (2001) regret that, because of the limited number of questions in that experiment, “a true test of grounded fear appeal research” had not been possible. The second experiment, however, used a questionnaire with many more questions than the first experiment, including, as Appendix B in Liu (1998) shows, questions corresponding with all variables from the Extended Parallel Process Model (EPPM). The EPPM, which was developed by K. Witte (the second author of the article by Murray-Johnson et al., 2001), is probably the most influential model currently used for fear appeal research. Although all variables included in the EPPM were covered by Liu’s questionnaire, neither in Liu (1998) nor in Murray-Johnson et al. (2001) there is any report of whether the statistical relations between these variables proved to exist as predicted in the EPPM.

In view of the importance of the efficacy of HIV/AIDS fear appeal messages in various cultural contexts, it was decided that a replication study would be undertaken. This study aimed at:

- assessing the added value of more advanced instruments for measuring cultural variables on the individual level, the use of which was recommended in Murray-Johnson et al. (2001);
- testing again if cultural orientation and target of threat do have an interaction effect on variables such as fear, attitudes and intentions; and
- testing the relations between fear appeal variables as predicted in the EPPM.
**Replication study**

*Design, participants and materials*

Just as in the two experiments by Murray-Johnson et al. (2001), a 2 x 2 experimental design was employed, with target of threat and cultural orientation acting as the factors.

The participants consisted of 435 university students of varying ages (17 or 18 years: N=75; 19 or 20 years: N=135; between 21 and 24 years N=176; between 25 and 30: N=48; 31 or over: N=1). A total of 63 men and 271 women participated (one missing value). Students from three countries participated: 147 participants were living in the Netherlands, 109 in Spain, and 179 in South Africa. According to Hofstede (1984, 2001), the Netherlands ranks 4/5 on individualism-collectivism, Spain is categorised as being a more collectivistic country (position 20 on this index) and South Africa ranks 16 in the individualism-collectivism list of 53 countries. However, in view of the economic and political situation of South Africa during the period of Hofstede's data collection - apartheid strongly dominated the structure of the South African society in the early seventies - there is reason to believe that white South Africans were heavily over-represented in Hofstede's sample, while other ethnic groups, such as black and coloured South Africans, were heavily underrepresented (cf. Jansen, 1999). This would explain the similarities between Hofstede's outcomes concerning South Africa and countries such as Great Britain, Australia and New Zealand on the one hand, and the differences between the scores for South Africa and other countries in Africa on the other hand. If the reasoning holds that Hofstede’s characterisation of South Africa as a country may have applied (and would still apply) mainly to the white ethnic group in this country, then an equally defendable position might be that
Hofstede's characterisation of countries in sub-Saharan Africa may also have applied (and still would apply) to black South Africans.

In view of the differences in cultural values dominating in the various ethnic groups living in South Africa today that might be relevant in health communication (see, for example, Van Niekerk, 1992; 1997; Van Dyk, 2000), the participants in this country were asked to specify their ethnic background. In South Africa, it is usual to distinguish four ethnic groups: black South Africans (sometimes referred to as African South Africans), white South Africans (an English-speaking and an Afrikaans-speaking group), Asian South Africans (predominantly of Indian origin), and coloured South Africans. This last-mentioned mixed-race group is, culturally speaking, much closer to white South-Africans, especially Afrikaans speakers, whose language and religious beliefs they share, than it is to black South Africans. Sixty participants from South Africa indicated that they were white, 51 that they were coloured and 65 that they were black; three participants did not answer this question.

The same texts were used as in the second experiment by Murray-Johnson et al. (2001). For the South African participants, who were all either native speakers of English or very proficient in English as a second language, the original English versions of the texts were used that had been found in appendix A in Liu (1998). For the Dutch participants, the texts were translated into Dutch (and back translated to make sure that the translations were correct). The same procedure was followed for the Spanish versions. In the Netherlands and Spain, students were asked to participate as part of a course they were taking at the University of Nijmegen and the University of Sevilla respectively. The South African students were recruited on two different campuses (Stellenbosch University and University of the Western Cape). Participation here was rewarded by means of a small amount of money (10 SA Rand). It took the participants about 50 minutes to complete the questionnaire.
Manipulation check

To assess whether or not the participants perceived the individual or the family in the text they had read to be the ones threatened by AIDS, the same questions were asked as in Murray-Johnson et al.'s (2001) discussion of their manipulation check (p. 350). A third question used in the questionnaire included in Liu (1998) which in that study seemingly also intended to serve the purpose of a manipulation check, was copied into the questionnaire in the replication study: “According to the message you just read, [girl in the story [or] her friends] suffered most from [girl in the story] getting AIDS.” Internal consistency of the three questions proved to be unsatisfactory: alpha=.38. Leaving one of the questions out did not result in an improvement in the alpha found. It was decided to treat each of the three manipulation check questions separately.

Measures

The questionnaire that was used included all the questions asked in Liu (1998). It was presented in English in South Africa, in Dutch in the Netherlands and in Spanish in Spain. The Dutch and Spanish versions were developed according to the same translation and back translation procedure used for the texts. All the questions that had been asked in the USA and Taiwan (included in the English version in Appendix B in Liu, 1998) were also asked in this replication study. The question numbering and format (seven-point Likert type) were the same as in Liu (1998). In Table 2 internal consistency is reported for variables measured for the complete group of participants, for each of the three countries, and in South Africa for each of the three ethnic groups involved.
### Table 2: Internal consistency of variables measured (Cronbach’s alphas)

<table>
<thead>
<tr>
<th>Variable</th>
<th>number of questions</th>
<th>complete group</th>
<th>NL</th>
<th>SP</th>
<th>SA white</th>
<th>SA coloured</th>
<th>SA black</th>
</tr>
</thead>
<tbody>
<tr>
<td>perceived severity</td>
<td>5</td>
<td>.70</td>
<td>.72</td>
<td>.71</td>
<td>.70</td>
<td>.70</td>
<td>.77</td>
</tr>
<tr>
<td>perceived susceptibility</td>
<td>3</td>
<td>.77</td>
<td>.73</td>
<td>.80</td>
<td>.72</td>
<td>.77</td>
<td>.63</td>
</tr>
<tr>
<td>fear aroused by the text</td>
<td>12</td>
<td>.93</td>
<td>.93</td>
<td>.94</td>
<td>.91</td>
<td>.93</td>
<td>.87</td>
</tr>
<tr>
<td>perceived response efficacy</td>
<td>2</td>
<td>.73</td>
<td>.69</td>
<td>.51</td>
<td>.72</td>
<td>.77</td>
<td>.75</td>
</tr>
<tr>
<td>perceived self-efficacy</td>
<td>2</td>
<td>.62</td>
<td>.70</td>
<td>.42</td>
<td>.61</td>
<td>.75</td>
<td>.35</td>
</tr>
<tr>
<td>attitude towards prevention</td>
<td>8</td>
<td>.83</td>
<td>.86</td>
<td>.76</td>
<td>.71</td>
<td>.73</td>
<td>.77</td>
</tr>
<tr>
<td>intention to adopt the promoted behaviour</td>
<td>7</td>
<td>.75</td>
<td>.86</td>
<td>.55</td>
<td>.74</td>
<td>.82</td>
<td>.53</td>
</tr>
<tr>
<td>defensive avoidance</td>
<td>2</td>
<td>.78</td>
<td>.81</td>
<td>.88</td>
<td>.69</td>
<td>.71</td>
<td>.74</td>
</tr>
<tr>
<td>individualism-collectivism (INDCOL scale)</td>
<td>43</td>
<td>.79</td>
<td>.69</td>
<td>.63</td>
<td>.69</td>
<td>.72</td>
<td>.65</td>
</tr>
</tbody>
</table>

Looking at the alphas for the group of participants as a whole, internal consistency was found to be adequate or good for most variables. When distinguishing between the various groups, the variation found between the alphas for a number of variables,
such as perceived susceptibility, perceived response efficacy, perceived self-efficacy and intention to adopt the promoted behaviour might indicate differences in the interpretation of one or more of the items involved. However, no clear pattern could be identified distinguishing one or two groups from the other groups on the basis of alphas that were consistently higher or lower than the alphas for the other groups.

In view of the unsatisfactory alphas (<.60) for perceived response efficacy, perceived self-efficacy and intention to adopt the promoted behaviour for the Spanish participants, and the unsatisfactory alphas for perceived self-efficacy and intention to adopt the promoted behaviour for the coloured South African participants indicating that the items involved may have led to interpretation problems for these specific groups of participants, it was decided to leave these variables out when performing further statistical analyses for only the Spanish or the coloured South African participants respectively.

Two sets of questions were added to the original questionnaire used in Liu (1998). Following the suggestion in Murray-Johnson et al. (2001), that in future studies measures should be used for assessing horizontal and vertical dimensions of idiocentrism and allocentrism, 16 scenario questions were included from Triandis, Chen & Chan (1998). Furthermore, 32 Likert-scale questions were added from Singelis, Triandis, Bhawuk & Gelfand (1995). Both sets of questions were developed to measure vertical and horizontal dimensions of individualism/idiocentrism and collectivism/allocentrism. According to Triandis, Chen & Chan (1998) their set of questions can be used not only as a measure of differences between cultural groups, but also to measure tendencies towards individualism and collectivism at the individual level: "one can check how many times a particular individual has used an HI, VI, HC or VC response to the 16 scenarios" (p. 288).
In short, the differences between the horizontal and vertical dimensions of individualism and collectivism can be described as follows (cf. Triandis, Chen & Chan, 1998, p. 276). Horizontal individualists (to be found, for example, in Sweden and Australia) see themselves as autonomous but do not necessarily compare themselves with others. Vertical individualists (coming, for example, from the middle and upper classes in the USA) also see themselves as autonomous, but are especially concerned with comparisons with others and they regard competition as important. Horizontal collectivists (to be found, for example, in the Israeli kibbutz) merge with in-groups (family, tribe, co-workers, nation), but do not feel subordinate to this in-group. Vertical collectivists (living, for example, in Indian villages) submit to the norms of their in-groups and are even willing to self-sacrifice for their in-group.

To measure horizontal and vertical individualism and horizontal and vertical collectivism (from here: HI, VI, HC and VC), Triandis, Chen & Chan (1998) suggest the use of 16 scenario questions, such as the following: “Suppose you are at a pizza restaurant with a group of friends. How should you decide what kind of pizza to order? (1) The leader of the group orders for everyone (2) I order what I like (3) We select the pizza that most people prefer (4) We order the most extravagant pizza available”. The choosing of option (1) is regarded as an indication of vertical collectivism, (2) would indicate horizontal individualism, (3) horizontal collectivism, and (4) vertical individualism (pp. 282-283). To determine the reliability of this set of questions, Triandis, Chen & Chan (1998) used the responses of a group of 304 students coming from Illinois and Hong Kong. The average responses to the eight odd-numbered scenarios and the eight even-numbered scenarios were calculated for the four attributes, and then the Spearman rank order correlation between HI, VI, HC and VC was determined. In Illinois, the rank order correlation of the odd and even results was .80, but in Hong Kong it was only -.20 (p. 285). No mention is made of the correlation coefficient for the odd and even results for the group of participants as
a whole. Triandis, Chen & Chan (1998) come to the conclusion that “the 16 scenarios are satisfactory for the preliminary measurement of collectivism and individualism in Hong Kong and in Illinois” (p. 286). However, in the light of the very low, even negative correlation between the odd-numbered and even-numbered scenarios for the Hong Kong participants, which would indicate a more than questionable reliability of this measure, at least for this group, it was decided to include yet another set of questions that referred to horizontal and vertical dimensions of individualism and collectivism in our questionnaire.

This last set of questions was copied from Singelis et al. (1995). In this study, aimed at refining the theory and measurement of horizontal and vertical dimensions of individualism and collectivism, 267 undergraduate students from the University of Illinois (N=96) and from the University of Hawaii (N=171) were presented with a large pool of items. Statistical analysis of these items led to a questionnaire of 32 items, consisting of four eight-item scales for HI, VI, HC and VC. The items included were, for example, “I often do my own thing”, “Competition is the law of nature”, “To me, pleasure is spending time with others”, and “I usually sacrifice my self-interest for the benefit of my group”, all to be answered on a 9-point scale (strongly disagree.. strongly agree). The following alphas were found for HI, VI, HC and VC: .67, .74, .74 and .68 (p. 256). Gouveia, Clemente, & Espinosa (2003) presented a translated and adapted version of the 32-item scale to 526 Spanish participants (290 undergraduate students and 236 people from the general population). No mention is made of the exact values of the alphas that were found for the four subsets of items, but Gouveia, Clemente, & Espinosa (2003, p. 52) state that these “were relatively similar to those reported in a recent study (Singelis et al., 1995).”

Exact copies of the 16 scenario questions from Triandis, Chen & Chan (1998), and of the 32 items from Singelis et al. (1995) were included as the last parts of our English
questionnaire. For the Dutch and Spanish version, a translation and back translation procedure was followed.\textsuperscript{7}

**Results**

Cultural orientation

To determine the possible added value of the measures included in the questionnaire for horizontal and vertical individualism and collectivism, the internal consistency of the set of 16 scenario questions from Triandis, Chen & Chan (1998) was determined first. Odd- and even-numbered question comparisons, as described in Triandis, Chen & Chan (1998, p. 285), were carried out. For the complete group of participants, the Spearman rank order correlation between the ranking of the HI, VI, HC and VC scores of the even-numbered questions and the ranking of the HI, VI, HC and VC scores on the odd-numbered questions was .00. The application of the same analysis to the Dutch, Spanish and South African subgroups led to Spearman rank correlations of .80, -.80 and .60 respectively. Clearly, these correlations scores do not support the alleged reliability of the measurement instrument involved. The large differences between the rank correlations found for the three countries, with even a negative correlation for the Spanish, remind of the differences that Triandis, Chen & Chan (1998) report when determining the rank order correlations for Illinois ($r=.80$) versus Hong Kong ($r=-.20$). Applying another, more advanced, procedure to determine the internal consistency of the set of 16 scenario questions did not change the picture. KR20 values (the equivalents of Cronbach's alphas for dichotomous questions) were calculated for all four dimensions, resulting in the following unsatisfactory scores: HI: KR20=.28, VI: KR20=.23, HC: KR20=.13, VC: KR20=.12.
To determine the internal consistency of each of the four cultural dimensions as defined by Singelis et al. (1995), alphas for all four subsets of their 32-items questionnaire were calculated, resulting in the following outcomes: HI: alpha=.54, VI: alpha=.70, HC: alpha=.67, and VC: alpha=.59. Possibilities were investigated to improve the alphas by leaving out various items from the subsets. This only resulted in a slight possible improvement for the HC questions: alpha=.68.

Although the alphas for the four groups of questions from Singelis et al. (1995) are clearly better than the corresponding KR20s for the scenario questions, at least two of these alphas still are not satisfactory: the subsets of questions measuring HI and VC have to be considered as unreliable. For this reason, it was decided not only to omit the answers to the scenario questions from Triandis, Chen & Chan (1998) from the further statistical analyses, but to do the same with the participants' scores on the four cultural dimensions as defined by Singelis et al. (1995). Only the INDCOL scores (minimum value 1 indicating the most individualistic orientation possible; maximum value 7 indicating the most collectivistic orientation possible) were considered to be reliable enough to serve as a measure of cultural orientation. Table 3 shows the INDCOL scores for the Dutch, Spanish and South African participants.

Table 3 Cultural orientation (defined as score on the INDCOL index) by country of origin

<table>
<thead>
<tr>
<th>Participants</th>
<th>INDCOL score (the higher the more collectivistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutch</td>
<td>M=4.48, SD=.38</td>
</tr>
<tr>
<td>Spanish</td>
<td>M=4.52, SD=.39</td>
</tr>
<tr>
<td>South African</td>
<td>M=3.58, SD=.50</td>
</tr>
</tbody>
</table>
F(2, 433)=44.47; p<.001; \eta^2=.516. In post-hoc tests (Bonferroni; p <.05), the differences between the mean scores for the Dutch and the South Africans and the differences between the mean scores for the Spanish and the South Africans proved to be statistically significant.

These results are in clear contrast to expectations that can arise from the findings of Hofstede (1984, 2001), where the Netherlands rank 4/5, South Africa ranks 16, and Spain ranks 20 on the individualism-collectivism scale. Table 4 shows the INDCOL scores for the various ethnic groups in South Africa.

Table 4  Cultural orientation of South African participants (defined as score on the INDCOL index) by ethnic background

<table>
<thead>
<tr>
<th>Participants</th>
<th>INDCOL score (the higher the more collectivistic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>M=3.52, SD=.47</td>
</tr>
<tr>
<td>coloured</td>
<td>M=3.55, SD=.45</td>
</tr>
<tr>
<td>Black</td>
<td>M=3.66, SD=.55</td>
</tr>
</tbody>
</table>

F (2,175)=1.392; p=.25

While it was expected that white South Africans would be the most individualistic, black South Africans the most collectivistic, with coloured South Africans holding a position somewhere in the middle, the INDCOL scale does not reveal any significant differences between these subgroups. The three South African groups have average scores that do not differ statistically. According to the INDCOL scores, all three
groups are clearly more individualistic than the Dutch and the Spanish. These unexpected results will be discussed in the last section of this article.

Manipulation check

Manipulation checks for the targets of the threat messages (self versus family) were computed for each of the three questions involved. For the first two questions, those reported on in Murray-Johnson et al. (2001), the results indicated that the manipulation had not been effective: \( t(425) = -0.088; p = 0.93 \), and \( t(424) = 0.218; p = 0.22 \), respectively. From the results of the third manipulation check question asked, however, it would seem that the manipulation was effective: \( t(428) = -9.470; p < 0.001; \eta^2 = 0.173 \). It has to be noted, however, that this question (copied exactly, like all the other questions from Liu, 1998), did not ask if the girl in the story or her family had suffered most as a result of the girl getting AIDS. The opposition here was between the girl and her friends. The unfortunate wording of this question makes it difficult to conclude that the manipulation was a success, despite the statistically different scores for this item (\( M = 2.86, SD = 2.49 \) for those who read the threat to individual test; \( M = 4.89, SD = 1.91 \) for those who read the threat to the family text).

After examining the texts that were used by Liu (1998) and copied and translated for this replication study, it is not really surprising that the results of the manipulation check seem problematic. The following extracts are from the text in which the target of threat was the individual.

About twelve months ago, the youngest daughter of the Hamptons, Jenny, a 21-year-old college student, died of a combination of pneumonia, kidney and heart failure. Nobody dared to be close to her. Her boyfriend, Rick, called her at first, then disappeared. [...] Jenny’s family was ashamed of her, too. They did
not want to talk about her or her health problems. [...] In class, her classmates avoided her and nobody would sit next to her. [...] She felt so lonely when people stopped visiting her. During her last two weeks of life, nobody visited her. She died lonely and scared, because she did not use a condom when she had sex. (from: Liu, 1998, Appendix A)

The text which the target of threat was the family included the following extracts.

About twelve months ago, the youngest daughter of the Hamptons, Jenny, a 21-year-old college student, died of a combination of pneumonia, kidney and heart failure. Jenny experienced a lot of physical pain, but it was nothing compared to the psychological and emotional torture her family and friends had to endure.[..] Her boyfriend Rick suffered from the gossip about his “AIDS girlfriend”. He was humiliated and ridiculed. [...] Jenny’s family suffered the most. They were shunned by their co-workers and friends. [...] The family’s honor had been destroyed and they were ashamed to leave the house. [...] Jenny’s family, boyfriend, and friends all suffered as much if not more than Jenny did. The pain Jenny’s family experienced with her dying did not go away. People continue to ignore and be mean to them, just because Jenny did not use a condom when she had sex. (from: Liu, 1998, Appendix A)

Informal discussion with a number of the participants after the experiment had taken place revealed that they found it difficult to categorise the first text as self-targeted. In this version, not only Jenny’s suffering, but also the shame for her family, is referred to. In respect of the second text, the comment was often made that even in a collectivistic environment it would seem strange to say that the deceased girl’s suffering from physical pain was nothing compared with the psychological and emotional torture her family and friends had to endure.
Interaction effects of cultural orientation and target of threat

A series of univariate analyses of variance were carried out to investigate possible interaction effects between target of threat (self or family) and cultural orientation. To be able to use cultural orientation as a fixed factor in the analyses of variance, this variable was dichotomised first. Just as was done in Liu (1998) the bottom half on the INDCOL scale (N=217) were considered as individualists and the top half (N=218) as collectivists. In this case, power was .81 to detect a small to medium effect size (f=.20) and >.99 to detect a medium effect size (f=.25) for all analyses of variance with alpha set at .05 (Cohen, 1977, p. 312). After that, for the same reasons that Murray-Johnson et al (2001, p. 353) refer to, a tertile split was employed separating high idiocentrics (the bottom third of the INDCOL scale, N=146) from high allocentrics (the top third of this scale, N=145) and leaving out the middle third (N=145). In this case, power was .85 to detect a medium effect size (f=.25) for all analyses of variance with alpha set at .05 (Cohen, 1977, p. 312).

Table 5 shows the results for each of the dependent variables included in the analyses when the INDCOL scores were dichotomised and when a tertile split was employed.
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Table 5  Interaction effects of target of threat and cultural orientation

<table>
<thead>
<tr>
<th>dependent variable</th>
<th>score for group as a whole</th>
<th>interaction effect; INDCOL scores dichotomised</th>
<th>interaction effect; tertile split employed on INDCOL scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>perceived severity</td>
<td>M=5.05, SD=3.18</td>
<td>ns (p=.489)</td>
<td>ns (p=.216)</td>
</tr>
<tr>
<td>perceived susceptibility</td>
<td>M=3.18, SD=1.17</td>
<td>ns (p=.174)</td>
<td>ns (p=.110)</td>
</tr>
<tr>
<td>fear aroused by the text</td>
<td>M=4.06, SD=1.13</td>
<td>significant (p=.023); η²=0.012</td>
<td>significant (p=.047); η²=0.014</td>
</tr>
<tr>
<td>perceived response efficacy</td>
<td>M=6.19, SD=1.19</td>
<td>significant (p=.006); η²=0.017</td>
<td>significant (p=.003); η²=0.030</td>
</tr>
<tr>
<td>perceived self-efficacy</td>
<td>M=5.84, SD=1.18</td>
<td>ns (p=.687)</td>
<td>ns (p=.589)</td>
</tr>
<tr>
<td>attitude towards prevention</td>
<td>M=5.97, SD=1.06</td>
<td>ns (p=.279)</td>
<td>significant (p=.042); η²=0.015</td>
</tr>
<tr>
<td>overall intention to adopt the promoted behaviour</td>
<td>M=5.61, SD=1.47</td>
<td>ns (p=.074)</td>
<td>significant (p=.036); η²=0.015</td>
</tr>
<tr>
<td>defensive avoidance</td>
<td>M=1.91, SD=1.14</td>
<td>ns (p=.896)</td>
<td>ns (p=.256)</td>
</tr>
</tbody>
</table>

When INDCOL is dichotomised, two out of eight possible interaction effects investigated turn out to be statistically significant (dependent variables: fear and perceived response efficacy). When a tertile split is carried out on the INDCOL scores, four interaction effects prove to be significant (dependent variables: fear,
perceived response efficacy, attitude and intentions). Further analyses of the outcomes, however, show that none of these interaction effects confirm the expectation from Murray-Johnson et al. (2001) that the highest scores are reached when the target of threat in the text is in accordance with the cultural orientation of the participant. For example, looking at the overall fear, the only variable for which Murray-Johnson et al. (2001) report a significant interaction effect in their USA-Taiwan study (p. 353), the following scores were found in this replication study.

Table 6  Fear aroused when targets of threat was family or individual and cultural orientation was collectivistic or individualistic (outcomes for all participants and outcomes for high allocentrics and high idiocentrics)

<table>
<thead>
<tr>
<th></th>
<th>all participants</th>
<th>high allocentrics and high idiocentrics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>allocentric:</td>
<td>idiocentric:</td>
</tr>
<tr>
<td></td>
<td>top half on INDCOL</td>
<td>bottom half on INDCOL</td>
</tr>
<tr>
<td>target of threat:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>family</td>
<td>M=3.91, SD=1.36</td>
<td>M=4.30, SD=1.38</td>
</tr>
<tr>
<td>individual</td>
<td>M=4.09, SD=1.52</td>
<td>M=3.87, SD=1.34</td>
</tr>
</tbody>
</table>

Both when the INDCOL scores are dichotomised and when a tertile split on these scores is carried out, the highest fear scores are found when the threat in the text is targeted in the opposite direction of the cultural orientation of the participants.
Fear appeal variables

According to the Extended Parallel Process Model (see Witte, 1998, p. 428; Murray-Johnson et al., 2001, p. 337) fear appeals operate on the assumption that the members of the target audience will engage in an appraisal process if they perceive a threat in their environment. If the individuals who are addressed by the fear appeal are not aware that the threat is severe or that they are susceptible to the threat, then the EPPM predicts that they are likely to ignore the risk message and not even think about the recommended self-protective behaviour. Only individuals who perceive the threat as severe and feel at risk themselves will be frightened enough to determine their most appropriate behaviour. The type of behaviour they will display will depend on their belief that this response will indeed avert the negative consequences associated with the threat, and also on the recognition that they themselves are able to display the suggested behaviour. If the individuals' perceived response efficacy and their perceived self-efficacy is sufficiently high, they will tend to adopt the recommended response. However, if the individuals' perceived response efficacy or their perceived self-efficacy is too low, these individuals often become defensive and deny the potential impact of the message threat in their lives.

The questions that were copied from Liu (1998) made it possible to investigate whether the variables in the EPPM are related statistically as is predicted by this fear appeal theory. First, using linear regression analysis, it was determined to what extent perceived severity and perceived susceptibility contributed to fear arousal. Then a distinction was made then between those participants who indicated that they were really frightened (score for overall fear ≥ 6 on a seven-point scale, N=39) and those whose answers did not indicate that they were really afraid (score <6, N=396). Consequently, two-tailed t-tests were used to it investigate if the high fear participants differed from the low fear participants as far as their intention to adopt
the recommended response and their defensive avoidance of the fear arousing information were concerned. The expectation from the EPPM was that high fear participants would have higher scores on both dependent variables than low fear participants would. Finally, it was determined whether the intention of the high fear participants to adopt the promoted behaviour or defensive avoidance, depended on the scores for perceived response efficacy and perceived self-efficacy. For this purpose, linear regression analyses were again carried out. The findings were as follows.

- Both perceived severity and perceived susceptibility proved to contribute significantly and positively to the predicted fear scores: \( R=.418; \beta \) for perceived severity = .190 (\( p<.001 \)); \( \beta \) for perceived susceptibility = .314 (\( p<.001 \)).

- The intention of the high fear participants to adopt the promoted behaviour was significantly higher (\( N=39; M=6.11; SD=1.09 \)) than that of the low fear participants (\( N=395; M=5.56; SD=1.49 \)); \( t(432)=-2.279; p=.02; \eta^2=.012 \). The scores for defensive avoidance were in the opposite direction. The defensive avoidance of the high fear participants was significantly lower (\( M=1.33; SD=.74 \)) than that of the low fear participants (\( M=1.97; SD=1.16 \)); \( t(433)=3.352; p=.001; \eta^2=.025 \).

- Among the high fear participants, perceived response efficacy did not contribute significantly either to predicted intention to adopt the promoted behaviour (\( p=.335 \)), or to predicted defensive avoidance (\( p=.138 \)). Perceived self-efficacy, however, proved to contribute significantly and positively to predicted intention to adopt the promoted behaviour: \( \beta=.501; p=.001 \). The contribution of perceived self-efficacy to predicted defensive avoidance was negative, and nearly reached statistical significance: \( \beta=-.300; p=.060 \).

These results partially do and partially do not substantiate the EPPM. As predicted, perceived severity of the threat and perceived susceptibility of the target audience...
contributed significantly to fear arousal. Also, as expected, high fear participants more often expressed their intention to engage in the promoted behaviour than did low fear participants. However, in this study, high fear participants did not express a tendency to avoid the threat message more often than low fear participants. The opposite proved to be the case. Contrary to the expectations based on the EPPM, there was no significant relation between perceived response efficacy on the one hand, and intention to adopt the promoted behaviour and defensive avoidance on the other hand, for the high fear participants. However, as predicted for these participants, the intention to behave as recommended proved to be positively related with perceived self-efficacy, and the inclination towards defensive avoidance was negatively related (on a nearly statistically significant level) to perceived self-efficacy. These outcomes seem particularly relevant where the black South Africans are concerned. For this subgroup the percentage of high fear individuals was relatively high (21.5%) compared to the percentage high fear individuals in the complete group of participants in this study (9.0%).

Discussion

Just as was the case in the second study by Murray-Johnson et al. (2001), the scores on the INDCOL scale in our study were in sharp contrast to what was expected. The outcomes suggest that both the Dutch and the Spanish participants were more collectivistic than the South Africans; the white, black and coloured South Africans all turned out to be equally individualistic. These findings raise serious doubts about the validity of the INDCOL-scale and underline the recommendation in Murray-Johnson et al. (2001) that more refined measures be used to determine cultural orientation on an individual level. The internal consistency of the set of 16 scenario questions in Triandis, Chen & Chan (1998), which are referred to by Murray-Johnson et al. (2001) when suggesting alternative measures for individualism and
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collectivism, proved to be disturbingly weak. The reliability of the sets of items proposed by Singelis et al. (1995) to measure the same four dimensions of cultural orientation distinguished by Triandis, Chen & Chan (1998) also did not prove satisfactory. It should be noted that the outcomes were not as might have been expected in other studies either in which the 32-item set from Singelis et al. (1995) was deemed to provide an adequate measure of cultural orientation. Triandis, Chen & Chan (1998) make reference to a 1995 data collection study in which the 32 items of the Singelis et al. (1995) article were administered to Hong Kong and Illinois samples. “The profiles of these samples were not different […] Horizontal individualism and Self-Reliance are higher in Illinois than in Hong Kong, but so is Vertical Collectivism.” (pp. 276-277). In view of the observation that Hong Kong is relatively collectivistic (Bond, 1994; Leung, 1987), Triandis, Chen & Chan (1998) speak of the 32 items set from Singelis et al. (1995) as an “unsatisfactory measurement” (p. 276). Further development of reliable and valid measures for cultural orientation and the testing of these instruments in varying contexts seems necessary to enable future fruitful cross-cultural and intercultural research.

Perhaps one of the reasons why the measures for cultural orientation developed thus far sometimes lead to outcomes that contradict the expectations might be the fact that, in many studies in which these measures were used, the only participants were students. The extent to which these participants are prepared to express the values of the cultural group to which they belonged before going to university may be limited by a tendency ascribed to students “to differentiate themselves from others and to express their individual selves” (Jetten, Postmes, & McAuliffe, 2002; McAuliffe, Jetten, Hornsey, & Hogg, 2002). If students are indeed a-typical in important respects of the culture they are presumed to represent, it might be wise, in future studies where cultural orientation is one of the key variables, to involve not only students, but also other participants.
In the light of both the unsatisfactory measures for cultural orientation and the problematic outcomes of the manipulation check for the texts, it is hardly surprising that the outcomes in Murray-Johnson et al. (2001) could not be replicated. None of the predicted interactions between target of threat and cultural orientation were found. This conclusion, combined with the problematic argument in support of the conclusions in Murray-Johnson et al. (2001) mentioned earlier, raises doubts about the validity of their claim that cultural orientation is an important variable to consider when analysing the effectiveness of fear appeals. (p. 356) Before such a claim can be made, other studies are needed, preferably using texts that are more carefully designed than those used by Liu (1998).\textsuperscript{12}

The analyses of the relations between the fear appeal variables reveal that heightening perceived severity and perceived susceptibility did lead to greater fear, and that the perception of self-efficacy in high fear participants positively contributed to the intention to engage in the promoted behaviour. Although not all the expectations from the EPPM were confirmed, and although the number of high fear participants whose answers could be used to predict tendencies for danger control or fear control was relatively small, these outcomes suggest that fear appeals that meet the conditions specified in the EPPM may indeed have a beneficial effect on HIV/AIDS health behaviour. HIV/AIDS communication that emphasises the severity of the disease and the vulnerability of the target audience can be successful, provided that the members of the target audience feel confident enough about their own capabilities to adopt self-protective behaviour. However, for members of the target audience who lack the confidence to act as recommended, fear appeal messages may be counter-effective.\textsuperscript{13} Finding effective ways to improve perceived self-efficacy for audiences from varying cultural backgrounds is an important challenge for researchers in the field of HIV/AIDS communication.\textsuperscript{14}
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Acknowledgements

We are grateful to all the students for participating in this study, and to Dr. Manuel Jesus Sanchez Franco of the University of Sevilla and Dr. Leon de Stadler of Stellenbosch University who helped us reach the Spanish and South African participants. We thank Dr. Hans Hoeken and Dr. P. Swanepoel for their advice in critiquing a draft version of this text.

Notes

1. This study is part of a larger project that focuses on the effectiveness of public information documents on HIV/AIDS in South Africa. The project, which is partly funded by the South African-Dutch research organisation SANPAD, is being carried out by a group of researchers and students from three South African universities (Pretoria, Stellenbosch and Unisa) and three Dutch universities (Nijmegen, Tilburg and Twente). For more information, see www.epidasa.org.

2. This thesis is not referred to in Murray-Johnson et al. (2001), but Mrs. Wen-Ying Liu, author of the thesis and one of the authors of Murray-Johnson et al. (2001), was kind enough to send us a copy.

3. Another explanation for the differing results reported in the two publications may lie in the covariates introduced in the analyses of variance. Liu (1998) states that “any influence of demographic variables was controlled for when significant (e.g. gender, age, residency)” (p. 18). In Murray-Johnson et al. (2001), no criterion is mentioned for the selection of the covariates for which the influence was controlled. In the analysis with fear as the dependent
variable, the following variables were used as covariates: sexual orientation, degree of exclusivity in relationship, prior use of condoms, number of different sexual partners in previous three months, and whether participant knew sexual partner well (Murray-Johnson et al., 2001, p. 353). From Appendix B in Liu (1998), it emerges that these variables relate to six out of eleven questions that ask for personal information. It remains unclear why Murray-Johnson et al. (2001) decided not to control for other variables corresponding with questions in this questionnaire (for example, age, gender and residency).

4. Gouveia, Clemente, & Espinosa (2003) suggest that the Spanish “are half way between collectivism and individualism [..], that is, between Latin America and Europe.” (p. 59)
Positions of South-Africa, Great Britain, Australia, New Zealand, West Africa and East Africa on four of Hofstede's dimensions (no scores are provided for South Africa on short-term versus long-term orientation, the fifth Hofstede dimension):

<table>
<thead>
<tr>
<th></th>
<th>South Africa</th>
<th>Great Britain</th>
<th>Australia</th>
<th>New Zealand</th>
<th>West Africa</th>
<th>East Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>masculinity - feminity</td>
<td>13/14</td>
<td>9/10</td>
<td>16</td>
<td>17</td>
<td>30/31</td>
<td>39</td>
</tr>
<tr>
<td>uncertainty avoidance</td>
<td>39/40</td>
<td>47/48</td>
<td>37</td>
<td>39/40</td>
<td>34</td>
<td>36</td>
</tr>
<tr>
<td>power distance</td>
<td>35/36</td>
<td>42/44</td>
<td>41</td>
<td>50</td>
<td>10/11</td>
<td>21/22/23</td>
</tr>
<tr>
<td>individualism - collectivism</td>
<td>16</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>39/40/41</td>
<td>33/34/35</td>
</tr>
</tbody>
</table>

West Africa: Ghana, Nigeria, Sierra Leone

East Africa: Ethiopia, Kenia, Tanzania, Zambia

In the questionnaire three items on defensive avoidance were included. In view of the unsatisfactory alpha found for this set of three questions (.57), it was decided to leave one of the items out of the further analyses.

In the case of the Spanish translation of the 32 items from Singelis et al. (1995), it proved to be very useful that we had a copy available of the Spanish written questionnaire that was kindly sent to us by one of the authors of Gouveia, Clemente, & Espinosa (2003).
8. Possibly, this is the reason why this question is not explicitly mentioned in relation to the manipulation check in Murray-Johnson et al. (2001, p. 350).


10. Realo & Goodwin (2003) suggest that "whereas allocentric attitudes have their roots in relatively stable personality traits [...] the strength of the allocentric attitudes of individuals also depends on various environmental, demographic, and social demands and the cultural tradition of the group to which they belong" (p.699).

11. See also Bresnahan, Levine, Shearman, & Lee (2005), who carried out a validation study of self-construal measures intended to measure independence and interdependence with data collected in Korea (N = 200), Japan (N = 212), and the U.S. (N = 166). The data showed that the three scales that were compared (Singelis’ Self-Construal Scale, Cross, Bacon & Morris’ Relational Interdependent Self-Construal Scale, and Kuhn & McPartland’s Twenty Statements Test) lacked convergent and discriminant validity, both pan-culturally and within each of the three countries included in the study. Bresnahan et al. come to the conclusion that “the results of all analyses were inconsistent with the claim that self-construal measures are construct valid.”

12. In the field of document design there is a wealth of literature available for this purpose. See, for instance, the overviews in Schriver (1997) and in Jansen & Maes (1999).
13. For support for this suggestion, see Witte (1998) and Witte & Allen (2000). See also Ruiter et al. (2001), however, for a critical review of the fear appeal literature from which they conclude that “the contribution of fear appeals to the adoption of self-protective behaviour is in doubt” (p.626).

14. See also Ruiter et al. (2001), who suggest that “a greater focus on precautionary information and the promotion of action at the expense of prompting fear arousal is likely to be more consistently effective than attempts to frighten people about health risks with images of death and injury” (p. 626).
References


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