The Influence of Affective and Cognitive Appeals on Persuasion Outcomes: A Cross-Cultural Meta-Analysis

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Abstract

People are frequently exposed to different extents of affective and cognitive appeals, but it remains unclear whether appeals targeting emotions or beliefs are differentially effective across cultures. Hence, this meta-analysis investigates the relative influence of affective versus cognitive appeals for persuasion outcomes as a function of individualism-collectivism. Using 133 samples across 22 countries (N = 29,338), we found affective appeals to be relatively more effective than cognitive appeals in collectivistic societies but both appeals were similarly effective in individualistic societies. These analyses demonstrate the fruitfulness of examining affective-cognitive appeals through a cultural lens, and suggest new directions for future research.

Keywords: affect, cognition, persuasion, individualism, collectivism

The Influence of Affective and Cognitive Appeals on Persuasion Outcomes: A Cross-Cultural Meta-Analysis

Winning "hearts and minds" is central to many persuasion strategies. While individuals often rely on their own emotions and beliefs when forming their attitudes and acting on them (e.g., Aquino et al., 2016; see Haddock & Maio, 2019), they also frequently encounter different affective and cognitive appeals. For instance, with digital media and social media usage, people are exposed to appeals that target their emotions or beliefs to different extents (Matz et al., 2017; Rocklage & Fazio, 2015; Rocklage et al., 2018). Even in private interpersonal contexts, individuals are presented with more affective or cognitive appeals from their romantic partners depending on their partner's understanding of their processing interests (Tan & See, 2022). Furthermore, the prevalence of affective and cognitive appeals, such as web advertisements, differs across cultures (e.g., Albers-Miller & Royne Stafford, 1999; Ju-Pak, 1999). However, little research has examined cultural differences in receptivity to these two types of appeals. That is, even if a particular type of appeal is more prevalent in a culture, it does not mean that the particular type of appeal is more effective in producing message-congruent attitudes or behavior in that culture. Thus, we address this gap via a meta-analysis that examined the influence of affective versus cognitive appeals on attitudes and behaviors as a function of societal individualism-collectivism.

Affective Versus Cognitive Appeals

Given the lack of consistency in conceptualizing affective and cognitive appeals across disciplines, it is important to elaborate on what is and is not considered affective or cognitive in the current meta-analysis. By clarifying the conceptual and operational definitions for affective versus cognitive appeals, we extend from theoretical perspectives to examine the effectiveness of the two types of appeals across cultural contexts. According to tripartite perspectives on attitudes (e.g., Katz & Stotland, 1959; Rosenberg & Hovland, 1960;

Zanna & Rempel, 1988), attitudes are overall evaluations that are based on emotions, beliefs, and behaviors. While there are debates on the independence of affect and cognition (Breckler, 1984; Crites et al., 1994; Duncan & Barrett, 2007; Storbeck & Clore, 2007), the current meta-analysis seeks to examine the *relative* persuasiveness of affective versus cognitive appeals (e.g., Haddock & Maio, 2019; Teeny et al., 2021).

In addition, variations of affective or cognitive appeals have also been referred to in other ways such as, informational versus transformational appeals, which focus on the facts and information or the excitement and enjoyment of experience related to the attitude object, respectively (e.g., Deng et al., 2022; Nuweihed & Trendel, 2023; Puto & Wells, 1984). Another variation is the rational-functional versus emotional-experiential appeals, where the former focuses on the features, benefits, and value, and the latter on the feelings, sensations, and imagination of the attitude object (e.g., Albers-Miller & Stafford, 1999; Zarantonello et al., 2013). Importantly, these variations of affective-cognitive appeals are the same as the ones in research that directly refers to persuasion as "affective" or "cognitive," where affective appeals influence the recipient's feelings and emotions via the message content (e.g., reading about others' emotions toward the attitude object; Smith & De Houwer, 2015; See et al., 2008). Likewise, cognitive appeals are operationalized as messages that influence the recipient's thoughts and beliefs, for instance, by having the recipient read about some facts, information, or attributes related to the attitude object. Accordingly, examples of affective appeals include the use of words such as "*optimism*!" in association with the target attitude object or images such as smiling faces, and examples of cognitive appeals include the use of words such as "give various benefits" or images of scientific diagrams (Bol et al., 2014; Carfora et al., 2016)

At the same time, certain types of appeals do not fall neatly into the category of affective or cognitive appeals. One prominent example is narrative appeals. Narrative appeals

are distinguishable from affective appeals because they rely on stories to elicit a transportation process that not only influences a recipient's emotions but also their beliefs (Green et al., 2004; see Green, 2021). That is, narrative appeals can be especially persuasive because it reduces counterarguments, encourages the misconstrual of stories as actual memories, or induces identification with the story characters. Similarly, the same metaphor in an appeal can serve as a communication tool for enhancing both emotional intensity and cognitive understanding (Landau et al., 2018). As a final example, the use of gain versus loss-framed appeals has also been established to not only influence beliefs about probabilities but also elicit specific emotions (e.g., Nabi et al., 2020; Seo & Dillard, 2019; see Rothman et al., 2006). Given that these various forms of appeals do not correspond neatly to affective or cognitive appeals, we excluded them from the current meta-analysis.

We also consider that the dominance of emotions in pre-existing attitudes does *not* necessarily mean that affective appeals are more persuasive. Indeed, people might rely on their own emotions to resist attempts to change their attitudes, such that they can better counter-argue affective messages compared to cognitive messages (e.g., See et al., 2013a; see Clark & Wegener, 2013). Therefore, cognitive appeals might be more persuasive than affective appeals in general. We refer to this as the *cognitive superiority hypothesis*. On the other hand, an alternative possibility is that affective appeals are more persuasive than cognitive appeals. We refer to this as the *affective superiority hypothesis*. One reason for this is that people might experience more fluency in processing affective messages due to the greater accessibility of emotions (e.g., Giner-Sorolla, 2004). This fluency could then be attributed to their agreement with the message (e.g., Mayer & Tormala, 2010).

Yet another possibility is that because some individuals are more emotional in their attitudes while others are more cognitive (e.g., Aquino et al., 2020; see Haddock & Maio, 2019), such individual differences may lead to corresponding variations in openness to

affective and cognitive appeals (e.g., Aquino et al., 2016; Clarkson et al., 2008; Fabrigar & Petty, 1999; See et al., 2008). Such matching effects can occur because the matched appeal is more relevant to the recipient's self-concept (see Petty et al., 2000). Indeed, among emotionally-oriented individuals, affective appeals are more relevant to their own general motivation (Aquino et al., 2016), and their processing interests and abilities (See et al., 2013b), and such matched appeals are remembered with greater accuracy (Haddock et al., 2008). Likewise, these studies have also shown parallel matching effects for cognitive appeals among cognitively-oriented individuals. Importantly, if affectively- and cognitively-oriented individuals are similarly prevalent across different societies, then on average, affective and cognitive messages should be equally persuasive across cultures.

In the current research, we considered attitudes and behavioral intentions as persuasion outcomes. Attitudes are defined as the degree of positive or negative evaluation for the attitude object (Eagly & Chaiken, 2007; Fazio, 2007; Petty et al., 2007), and behavioral intentions refer to the extent to of willingness to engage in the targeted behavior (Ajzen & Fishbein, 2005; Webb & Sheeran, 2006). We examined attitudes and behavioral intentions because they are key determinants or proxies for behaviors (Ajzen & Fishbein, 2005; Glasman & Albarracín, 2006; Rhodes & Ewoldsen, 2013). At the same time, we also included studies that measured actual behaviors as persuasion outcomes.

Cultural Differences in Influence of Affective-Cognitive Appeals

Scholars have highlighted the importance of cultural contexts in attitudes and persuasion (Albarracin & Shavitt, 2018; Riemer et al., 2014). Much of this research has examined differences in the role of personal versus social factors in attitudes and persuasion. For instance, appeals that emphasized social factors such as group benefits and harmony are more persuasive in societies that are more collective whereas appeals that emphasized personal factors such as individual success and preferences are more persuasive in societies

that are more individualistic (Hornikx & O'Keefe, 2009; see also Eom et al., 2016; Savani et al., 2008). However, relatively little research has examined how cultural differences can influence the openness to affective and cognitive appeals. Although previous content analyses found affective and cognitive advertisements to be more prevalent in societies that are more collectivistic and individualistic respectively (e.g., Albers-Miller & Stafford, 1999; Ju-Pak, 1999), it remains unclear if greater prevalence of a type of appeal in a cultural context is related to its greater effectiveness. Moreover, even when one compares the persuasiveness of affective versus cognitive appeals within or across individual studies, there lacks a quantitative summary on whether one is more influential than the other across cultures.

Of relevance, one of the most established differences across culture is individualism-collectivism (e.g., see Hofstede, 1980; Triandis, 1996). It is worth noting that individualism-collectivism is a multi-faceted construct that has been examined as an individual difference (e.g., Aaker, 2000; Hornikx & Groot, 2017), and as a cross-nation difference (e.g., Maximilian & van Zoomeran, 2021; Adam-Troian et al., 2021). The latter approach allows us to consider the role of cultural differences in individualism-collectivism, and to include a relatively large number of studies in our meta-analysis because we do not need to limit our analysis to only studies that have included psychological measures of independent-interdependent self-construal. One caveat is that countries have become more similar to one another in some values that are related to individualism-collectivism (Inglehart & Baker, 2000; Kaasa & Minkov, 2020), thus suggesting that cross-nation differences are not stable over time. However, in the same analyses, it was also noted that countries have also become more polarized in other values that are also related to individualism-collectivism, thus suggesting that it is still worthwhile to examine the effects of differences across countries. Moreover, in an examination of individual value preferences and culture-referenced values (i.e., perceived cultural norms for values), the correlations between self- and culture-

referenced values were found to be strong for two values that are most relevant to our predictions for affective-cognitive appeals — autonomy and embeddedness (Fischer, 2006). This suggests that at least for these two facets of individualism-collectivism, the norms that are assessed via a country-level approach should overlap with the individual level approach (see also Adam-Troian et al., 2021).

More specifically, societies that are relatively more individualistic (e.g., North America and United Kingdom) generally value an independent self-construal, where individuals perceive themselves as unique and distinct from others; in contrast, societies that are relatively more collectivistic (e.g., Japan and China) tend to value an interdependent self-construal, where individuals perceive themselves to be embedded in relationships with others (Markus & Kitayama, 1991). Moreover, in individualistic societies, descriptive and prescriptive norms focus on people's actions as arising from their own internal states that are independent and separate from external factors, whereas in collectivistic societies, actions are responsive to others' desires and expectations (Markus & Kitayama, 2004). Importantly, these differences suggest that there are cultural differences in openness to affective or cognitive appeals.

That is, it is possible that affective appeals are more persuasive than cognitive appeals in collectivistic societies, and cognitive appeals are more persuasive than affective appeals in individualistic societies. This is because in societies that are relatively collectivistic, the importance and prevalence of interdependence promotes attention to the wider context (Nisbett et al., 2001; Varnum et al., 2010). Such attention facilitates adherence to group norms and rules, which help guide an individual to fulfill the expectations that accompany their social roles and to maintain social harmony. Moreover, in collectivistic cultures, the experience of emotions has been theorized to be a shared rather than an individual phenomenon (Uchida et al., 2022; Mesquita, 2022). That is, one's emotions are intertwined

with the emotions of others, and reflect one's interpersonal context. Indeed, when asked to review their lives and describe events that they regret, Japanese participants expressed regret more intensely than American participants for events that involved a social context (e.g., family, friends), but not for events that involved only themselves (Komiya et al., 2011). Similarly, when thinking about social relationships, Japanese athletes were more likely to mention their emotions such as excitement and joy than American athletes (Uchida et al., 2009). In the same research, relative to American participants, Japanese participants also mentioned emotions more when describing a target in relation to their social context, and mentioned the social context more when describing a target's emotions. Thus, to the extent that the interdependence of emotions also engenders greater integration of others' emotions that are conveyed in external stimuli (e.g., persuasive messages) into one's own experience, greater openness to affective rather than cognitive appeals should occur in societies that are relatively collectivistic. That is, we should observe more persuasiveness from affective than cognitive appeals in collectivistic societies.

At the same time, in societies that are more individualistic, the importance and prevalence of independence promotes attention to the focal object (Nisbett et al., 2001; Varnum et al., 2010). In addition, rule-based reasoning has been proposed to be more dominant than experience-based reasoning in such societies (Nisbett et al., 2001). Indeed, studies have shown that European Canadians attended to focal figures longer and more frequently than to backgrounds (Masuda et al., 2016), and that European Americans favored rule-based strategies over experience-based ones when making judgments (Norenzayan et al., 2002). Thus, people in such societies should be more persuaded by the positive attributes of an attitude object or to rational arguments in a cognitive appeal than by the emotions that others might experience or to emotional associations in an affective appeal. In short, we

should observe more persuasiveness from cognitive than affective appeals in individualistic societies.

Method

Literature Search

Information on the studies included in the meta-analysis are available in the online supplement. That is, all data in the meta-analysis are available in the online supplement. We conducted a keyword search on 3 June, 2023 using the following databases: Web of Science, Scopus, and PsycInfo. The search concluded on 16 June, 2023. Different terms were used to capture the targeted construct (see Table 1 in Online Supplement). For example, appeals can be referred to as persuasion, messages, or advertisements; affective can be referred to as emotional; cognitive can be referred to as informational. To manage spelling variations, truncations were used to ensure that variations were accounted for. Lastly, because attitudes (e.g., evaluations, likability, preferences) and behavioral intentions (e.g., probability, likelihood, interest) have many variations, we did not limit their search terms to gather as many potential studies as possible. In instances where an unusually high number of results were produced, subject and document limiters were included.[1] Following this, we searched for additional studies by examining the selected articles' references. We also included relevant papers (N = 21) retained from previous research activities. In total, the search yielded 28,927 possible articles. We stopped at the 12,800 records for the Web of Science search results because no other potentially relevant studies were found (Lefebvre et al., 2022).

To manage potential publication bias, we also searched for dissertations on ProQuest from 27 August, 2023 to 2 September, 2023. Because the search results were extremely high, we added "attitudes" and "intentions" into the search terms which still resulted in a relatively high number of 198,527 records. Similarly, we stopped at 3,300 records because no relevant

[1] This occurred for the Scopus database because we could only access the first 2000 records.

studies were found after scanning an additional 583 records from the last relevant article at 2,713. Based on our literature search, we ended up with a total of 18,600 possible articles, after removing 25 duplicate records. In addition, we reviewed 72, and then 23 more articles, which were identified by a reviewer across two revisions.

Inclusion Criteria

The following criteria were set a priori to the literature search. First, we selected studies that examined the relative influence of affective versus cognitive appeals where each participant only received either type of appeals. If there were other conditions (e.g., control condition), we would only extract the relative information for the affective versus cognitive appeals. This meant that most included studies were between-participant quasi-experimental or experimental in design. Second, studies had to report sample size and other relevant statistics (e.g., mean, standard deviation) for us to compute for an effect size. Third, we also selected studies that were published in English to ensure accurate comprehension for ourselves. Finally, although we focused on studies with attitudes and behavioral intentions as the dependent variables as part of our initial criteria, we were recommended to include studies with actual behaviors during the review process. Because we had not limited persuasion outcomes in our search for the original set of articles from Web of Science, Scopus, and PsychInfo, we returned to these articles, and added studies that also measured actual behaviors.

We did not select qualitative studies, studies that used metaphors or narrative persuasion, and review articles. We also excluded attack messages because research has shown that it can leave people's attitudes unchanged but impact other attitudinal properties like certainty (Ng et al., 2023a; see Tormala & Petty, 2004) and ambivalence (Ng et al., 2023b). Articles that compared affective-cognitive appeals for other types of outcomes (e.g., reaction time, perceived risks) were also excluded (e.g., Gong & Cummins, 2020; Lee et al.,

2010; Vidrine et al., 2007). Lastly, we also excluded attitudes for the appeal since they are not the same as attitudes for the target (Miniard et al., 1990; Mitchell & Olson, 1981). This is because we are interested in the relative persuasiveness of the message for the attitude object and not the message itself.

Title and Abstract Screening

In the initial screening focusing on the title and abstract, the first author independently screened the records based on the above criteria, resulting in the removal of 17,848 articles. Then, another 57 articles were removed as they were either qualitative studies, studies that used metaphors or narrative appeals, or in a different language. No automation tools were used for screening.

The first author then independently assessed the remaining 695 full-text articles for the inclusion of relevant studies, resulting in the inclusion of 68 articles. In addition, a coder with no knowledge of the hypothesis also assessed the included studies independently. There was high mean agreement (97.2%) between the first author and the coder for the inclusion of the reports, with only three reports having inconsistent evaluations. These three reports eventually remained in the analysis (i.e., Fabrigar & Petty, 1999; Lu & Shinha, 2017; Palomo-Velez et al., 2018) after an independent review by the second author. Then, 22 of the articles that were suggested by the reviewer and that met the inclusion criteria were added, resulting in a grand total of 90 articles (see Figure 1 in Online Supplement for PRISMA flowchart).

Full-Text Assessment

Relevant statistics for the attitudes, behavioral intentions, and actual behaviors for the target object were manually extracted from the included studies. We did not distinguish text-only appeals versus those that included images because past meta-analytic review did not find a difference between the two types of appeal (Seo, 2020). When encountering studies that

lacked statistics for computing the effect size, the study's authors were contacted for additional information.

Bias Assessment

Because non-significant results are less likely to be published (Rothstein et al., 2005), we also performed publication bias analyses on the effect sizes using a funnel plot test, an Egger's test, as well as an examination that compared the effects of published articles to dissertations. We also used the Cochrane risk-of-bias 2 assessor tool (Sterne et al., 2019) to code for each study's risk of bias (e.g., lack of randomization, imprecision of measurements). Considering these factors allowed a qualitative assessment of the risks of bias in the included studies. Finally, we also performed a trim and fill analysis to assess the sensitivity of the results (Duval & Tweedie, 2000).

Effect Sizes

From each study, we extracted the following information: year of publication, country, sample size, gender proportion, test statistics for the influence of affective-cognitive appeals on attitudes, behavioral intentions and/or actual behaviors. We computed standardized mean differences (SMD) for the outcomes by subtracting the cognitive appeal condition scores from the affective appeal scores such that larger positive scores meant that affective appeal was more effective than cognitive appeal. SMDs allowed the variations in measurements to be readily compared across studies (e.g., different scale intervals, item wordings).[2] The "esc" package by Lüdecke (2019) was also used to compute for effect sizes and variance from studies that only provided the overall sample size and test statistics. Furthermore, because some of the included samples were relatively small, we also applied a

[2] Variance for each sample was computed using the formula by Cohen: $v_d = \frac{n_a+n_c}{n_a n_c} + \frac{y_d^2}{2(n_a+n_c)}$, where a = affective, and c = cognitive, and n = group size. When group size is not given, the esc package is used to compute for variance.

Hedges' *g* correction to manage any estimation biases (Borenstein et al., 2009; Cheung, 2015; Hedges, 1981; see Table 3 for statistics).

Because some samples report more than one of the targeted outcomes, we averaged these outcomes into one effect size that represented the persuasiveness of the appeal using the *MAd* package (Del Re & Hoyt, 2022; e.g., Hornik et al., 2017). We adopted the attitude-behavior correlation value (r = .51, 95% CI: [.48, .54]) from a prior meta-analysis when averaging the outcomes (Glasman & Albarracín, 2006). In addition, to ensure that the findings were robust, we also conducted additional sensitivity analysis using the 95% CI as well as a wider arbitrary range of values [r = .21, .81] which we report in the supplementary.

Moderator Variable: Individualism-Collectivism

To examine if individualism-collectivism would moderate the influence of affective-cognitive appeals, we relied on the Hofstede's Individualism index to provide each included country a score that had a possible range of 0 to 100 (see Hofstede Insights, 2023). Higher scores meant more societal individualism (M = 76.235, SD = 22.546). To further test the robustness of this factor, we also examined this using another individualism-collectivism index (Minkov & Kaasa 2021; M = 41.303, SD = 73.132).

Covariate: Gender Proportion

We also used the percentage of females in the included samples as a covariate (M = 58.830%, SD = 15.419). Samples with a value of 100 indicate an all-female sample, while 0 indicated a completely male sample.

Meta-Analytic Sample

A total of 90 (76 published articles, 14 dissertations) reports with 133 samples were analyzed, comprising of 29,338 individuals in total. The average sample size was 227.293 (SD = 189.542). The samples came from 22 countries (see Table 2 in Online Supplement).

Analyses

The meta-analyses were conducted in the R (version 4.3.1) statistical platform using the *metaSEM* package (Cheung, 2023). Forest plot, funnel plot, trim and fill analysis, and Egger's test were performed using the *metafor* package (Viechtbauer, 2023). We used a random-effects model instead of a fixed-effects model as we did not assume that the included studies could represent the entire population of interest (Hunter & Schmidt, 2000). Moreover, since a wide range of topics and behaviors were examined, it is unlikely that the studies shared a common effect size. Thus, a random-effects model allows for generalizing the current findings beyond the included studies (Borenstein et al., 2009). We first began with no predictors in the random-effects model to examine on the whole, the relative influence of affective-cognitive appeals on the averaged persuasion outcomes. Then, we added gender proportion as a covariate, before examining individualism-collectivism as a moderator.

Results

Tests of Bias

To consider potential biases in the meta-analysis studies, we first examined for any publication bias by comparing dissertations and published articles in our sample. There was no significant publication bias due to the type of articles that are included in the sample, $Q(df = 1) = 0.031$, $p = .861$. Next, we report the contoured funnel plots (see Figures 2 in Online Supplement) as well as the risk of bias analyses. Firstly, visual inspection of the funnel plots revealed a range of effects sizes. Most importantly, there is no obvious asymmetry in the distribution of effect estimates. To be certain, we also conducted the Egger's test to assess for any publication bias. Supporting the visual inspections, the Egger's test results failed to support the presence of publication bias for the averaged outcomes, $b = 0.139$, 95% CI: [-0.054, 0.332], $Z = -0.369$, $p = .712$. As another test for publication bias, the Cochrane risk of bias 2 assessor tool was used (Sterne et al., 2019), and revealed that 88.9% of the studies are

of low risk while 9.4% are of some concerns due to reasons such as the imprecision of hypotheses (see Figure 3 in Online Supplement).

Relative Influence of Affective-Cognitive Appeals

Forest plots illustrated the relative influence of affective-cognitive appeals on persuasion, showing that affective appeals were more persuasive than cognitive appeals (see Figure 1).

Following best practices (Borenstein et al., 2017; IntHout et al., 2016), we also reported the 95% prediction intervals (95% PI), which are the 95% possible range of true effects to be expected in similar studies included in the current meta-analytic review. We first fitted a baseline model with only the SMD of affective-cognitive appeals. The analysis revealed significant heterogeneity in the included studies, $Q(df = 132) = 840.103$, $p < .001$.

Baseline Model

Overall, affective appeals led to more congruent outcomes with the message compared to the cognitive appeals, $SMD = 0.105$ (95% CI: [0.034, 0.176]; 95% PI: [-0.655, 0.865]), $Z = 2.895$, $p = .004$. The estimated heterogeneity τ^2 and I^2 were .143 (95% CI: [.099, .188]) and .891, respectively. The trim and fill analysis (Duval & Tweedie, 2000) revealed no missing studies on the right side, suggesting an inclusion of a relatively representative sample of studies. Because the effects in the current analysis are relatively small and heterogeneous, we do caution readers that the publication bias tests generally perform poorly (see Fernández-Castilla et al., 2021; Renkewitz & Keiner, 2019).

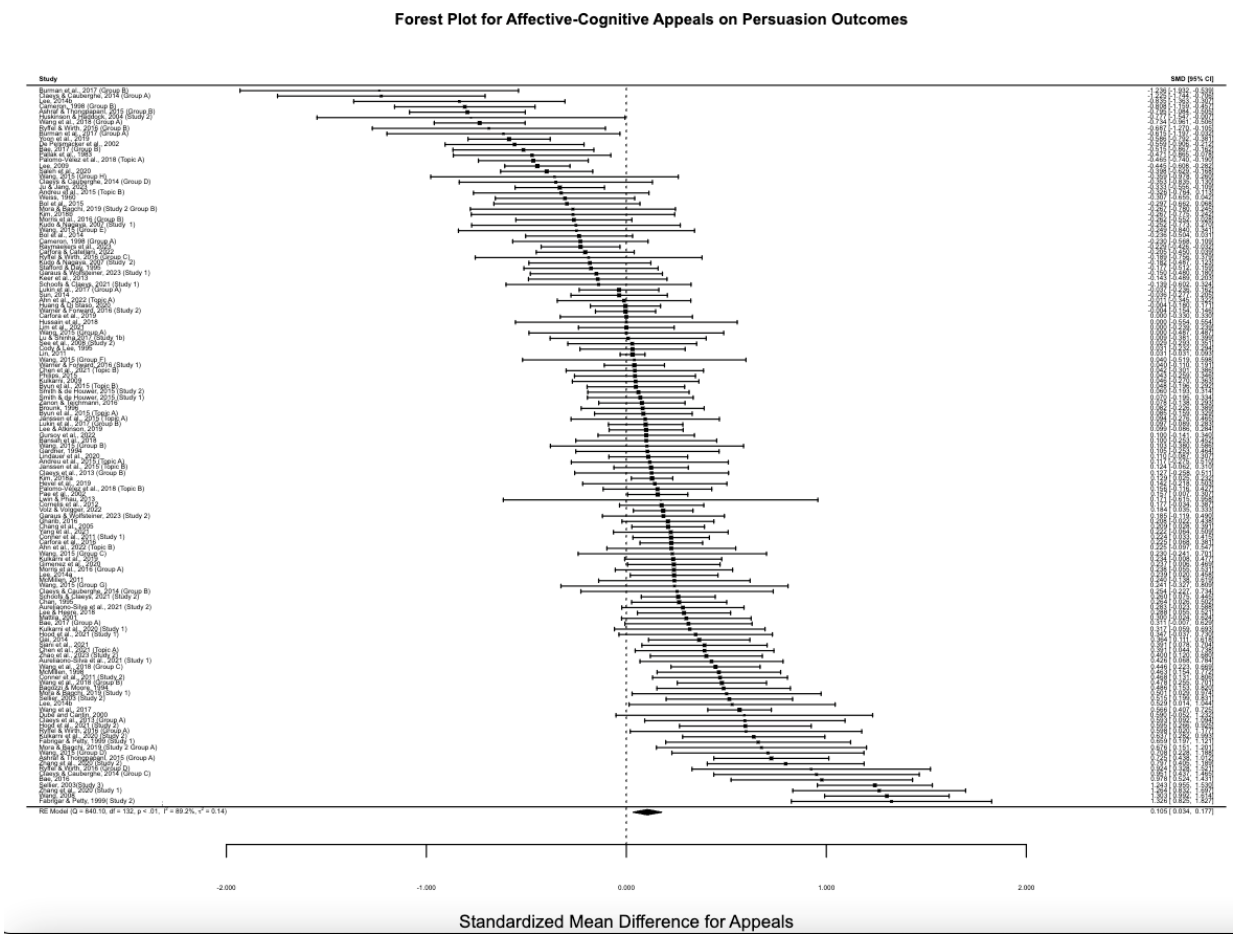

Figure 1. Forest plot of the influence on affective-cognitive appeals on persuasion outcomes.

Covariate: Gender Proportion in Sample

To account for the possible influence of gender proportion in the samples on the persuasiveness of affective-cognitive appeals (e.g., Mayer & Tormala, 2010), we fitted a mixed-effects model to include gender proportion. Importantly, the gender proportion was not a significant moderator, $Q(df = 1) = 0.263$, $p = .608$. That is, the proportion of females in the samples did not influence the effects of affective-cognitive appeals on the outcomes, $b = 0.001$ (95% CI: [-0.004, 0.006]), $Z = 0.514$, $p = .607$. Hence, gender proportions in samples did not significantly moderate the observed superiority of affective appeals.

Individualism-Collectivism

Most importantly, to examine the potential moderating influence of individualism, we included Hofstede's individualism index for each country as indicated in Hofstede Insights

(2023) into the model. The results revealed that the degree of individualism was a significant moderator ($Q(df = 1) = 8.821$, $p = .003$) for the relative influence of affective-cognitive appeals for the averaged persuasion outcomes.

Probing the moderation revealed that individualism significantly moderated the difference in persuasiveness for affective versus cognitive appeals, $b = -0.005$ (95% CI: [-0.008, -0.002]), $Z = -3.038$, $p = .002$. Decomposing the moderation using conventional values of $\pm$ 1SD, we observed that unexpectedly, for societies that are relatively individualistic (+1SD), affective and cognitive appeals were equally persuasive ($SMD = -0.033$). As we expected, for societies that are relatively collectivistic (-1SD), affective appeals were more persuasive than cognitive appeals ($SMD = 0.193$; see Figure 2). The mean correlation between individualism and the effect sizes was $r = -.210$, $p = .014$.

We also replicated these findings when using the more recent and improved individualism-collectivism indicators by Minkov and Kaasa (2021; see Online Supplement). Moreover, because it is plausible that culture differences might have become smaller due to globalization over the years (Kaasa & Minkov, 2020), we also examined the influence of globalization by using the publication year as a proxy. Importantly, no moderation was observed when publication year was added to the model, $Q(df = 1) = 0.756$, $p = .384$. Thus, there is no evidence that our findings are driven by older but not newer studies.

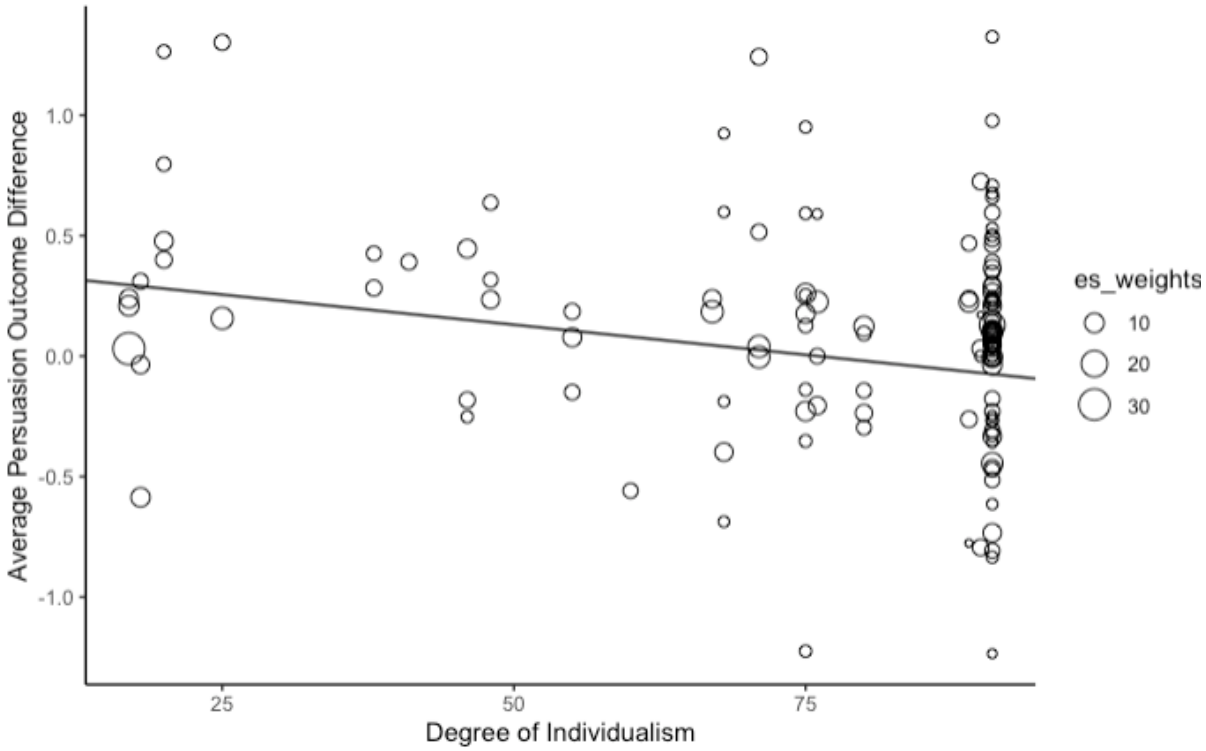

Figure 2. Regression plot for affective-cognitive appeals on persuasion across individualism-collectivism.

Discussion

We report a meta-analysis examining if the cultural context would moderate the effectiveness of these two types of persuasion appeals. Consistent with previous meta-analytic reviews (Hornik et al., 2016, 2017), we provided converging evidence by examining a wider set of affective-cognitive studies. That is, on average, affective appeals resulted in more message-congruent outcomes than cognitive appeals. These findings suggest that lay persuaders have relatively accurate lay theories about the greater effectiveness of affective than cognitive appeals, as they do tend to use emotional appeals to a greater extent (e.g., Rocklage et al., 2015; Tan & See, 2022).

The current research also suggests that the degree of individualism in a society moderates the influence of affective-cognitive appeals on attitudes, intentions, and behaviors. Specifically, in relatively collectivistic societies, affective appeals were more persuasive than

cognitive appeals. This lends support to the assumption that in collectivistic cultures, message recipients integrate the emotions elicited from external stimuli (e.g., the message) or the emotions reported by other people into their own emotional experience (e.g., Uchida et al., 2022). In comparison, in relatively individualistic societies, message recipients were similarly receptive to affective and cognitive appeals. This could be because they rely on their own affective-cognitive individual differences to determine whether an affective or a cognitive appeal is a better match for their own motivation and abilities (Aquino et al., 2016; See et al., 2013; see Haddock & Maio, 2019). Thus, future work could examine the interplay between cultural context and message tailoring in their effects on attitudes and behavioral intentions. Importantly, the present findings suggest that the relationship between individualism-collectivism and openness to affective or cognitive persuasion goes beyond a simple, antagonistic one. Moreover, the present findings also suggest that it would be fruitful to examine the interplay between cultural factors and other potential moderators. For example, culture might interact with other factors such as product versus service (Albers-Miller & Stafford), visual versus verbal communication (Ju-Pak, 1999), and luxury goods versus necessities (Drolet & Aaker, 2002).

Interestingly, these current findings seem to differ from prior research that established the causal impact of temporary independent self-construal on openness to affective persuasion (Chang & Hung, 2018; Hong & Chang, 2015). However, it is important to note that the current meta-analysis relies on cultural levels of individualism. Therefore, the current findings suggest that effects from cultural levels of individualism-collectivism do not necessarily correspond to effects from temporary or situational salience of independent-interdependent self-construals (see also Na et al. 2010). More importantly, future work would benefit from examining cultural differences in mental processes in order to understand cross-cultural differences in receptivity to affective and cognitive persuasion.

The current findings also suggest that even though cultural differences in individualism do not necessarily overlap fully with individual differences in related values (Fischer, 2006), the former is at least influential in moderating the direction of the difference between affective and cognitive appeals in their persuasiveness, with greater individualism predicting smaller differences. It is worth noting that the magnitude of such a moderating effect might not be the same over time, due to changes in level of individualism over the years (Taras et al., 2012), or changes in the differences between countries in individualism due to factors such as industrialization (Inglehart & Baker, 200) or globalization (Kaasa & Minkov, 2020). Future work could examine the role of individual differences in self-construal or values as well as macrosocietal factors in diminishing or enhancing these effects.

We consider some limitations in the current research. Firstly, while we sought to include studies from as many different countries as possible, we note that many of the included studies were conducted in the United States and other English speaking countries. This is partly an inherent limitation in the literature because of the reliance on Western (particularly United States) college students (see Henrich et al., 2010), while the literature remains scant from regions such as Africa (Mughogho et al., 2023). This is also due to the linguistic limitations of the current authors. Thus, we encourage future meta-analytic reviews, ideally from more globally inclusive teams, to evaluate the robustness of the current findings by increasing the representativeness of the individualism-collectivism factor with studies conducted in more varied countries, and studies published in other languages. On a positive note, we would like to highlight that the included samples are not primarily students (N = 15,829, 54.90%) which should provide a better representation of the within-country variations instead of reflecting only students' responses to affective-cognitive appeals.[3]

[3] Student vs non-student did not significantly moderate the effects of affective-cognitive persuasion on attitudes and behavioral intentions, and the effects of individualism remained robust. See online supplement for analysis.

Another limitation, which is typical of meta-analyses such as this one, is that we did not demonstrate a causal relationship between individualism-collectivism and receptivity to affective versus cognitive appeals.

Notwithstanding these limitations, the current meta-analysis contributes to our understanding of persuasion by providing a more nuanced understanding of the effects of affective and cognitive appeals across cultural contexts. Moreover, the present findings provide some guidance in suggesting potential mechanisms. For example, given the present finding that affective appeals are more persuasive than cognitive appeals in collectivistic cultures, perceptions of emotions as an interdependent experience should be considered as a potential causal mechanism in future research. More broadly, the present research suggests that extending a cross-cultural examination to other persuasive strategies, such as narrative framing (e.g., Braddock & Dillard, 2016), fear appeals (Tannenbaum et al., 2015), and personality targeting (Matz et al., 2017) might also shed light on differences in persuasion across cultures. Moreover, other cross-cultural distinctions have been theorized about the preference for the intensity of emotions (Tsai, 2007). That is, individuals from Western cultures prefer emotions that are stronger in arousal (e.g., excitement) while individuals from East Asian cultures prefer emotions that are lower in arousal (e.g., calm). In addition, some have argued that beliefs can be multifaceted, for instance, an attribute that benefits one's health is different from an attribute that benefits one's appearance (e.g., Drolet & Aaker, 2002). Therefore, future work could examine the extent to which these more specific types of affective or cognitive persuasion might differ across cultures.

To conclude, the current meta-analysis highlights the importance of the cultural context of persuasive communication, as affective appeals are more persuasive than cognitive appeals in relatively collectivistic societies. Thus, our research demonstrates the fruitfulness

of examining appeals through a cultural lens, and we hope that continued research will help us understand the consequences of exposure to different types of appeals across cultures.

References

Adam-Troian, J. Wagner-Egger, P., Motyl, M., Aricszewski, T., Imhoff, R.…van Prooijen (2021). Investigating the links between cultural values and belief in conspiracy theories: The key roles of collectivism and masculinity. *Political Psychology, 42,* 597-618. https://doi.org/10.1111/pops.12716

Ajzen, I. & Fishbein (2005). The influence of attitudes on behaviour. In D. Albarracin, B.T. Johnson, & M.P. Zanna (Eds.), The handbook of attitudes (pp. 173-221). Mahwah, N.J: Erlbaum.

Albarracin, D., & Shavitt, S. (2018). Attitudes and attitude change. *Annual Review of Psychology, 69*, 299–327. https://doi.org/10.1146/annurev-psych-122216-011911

Albers-Miller, N. D., & Royne Stafford, M.R. (1999). An international analysis of emotional and rational appeals in services vs goods advertising. *Journal of Consumer Marketing, 16*(1), 42–57. https://doi.org/10.1108/07363769910250769

Aquino, A., Alparone, F. R., Pagliaro, S., Haddock, G., Maio, G. R., Perrucci, M. G., & Ebisch, S. J. H. (2020). Sense or sensibility? The neuro-functional basis of the structural matching effect in persuasion. *Cognitive, Affective, & Behavioral Neuroscience*, *20*(3), 536–550. https://doi.org/10.3758/s13415-020-00784-7

Aquino, A., Haddock, G., Maio, G. R., Wolf, L. J., & Alparone, F. R. (2016). The role of affective and cognitive individual differences in social perception. *Personality and Social Psychology Bulletin*, *42*(6), 798–810. https://doi.org/10.1177/0146167216643936

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). Converting among effect sizes. In M. Borenstein (Ed.), Introduction to meta-analysis (pp. 45-49). Chichester, UK: John Wiley & Sons, Ltd.

Borenstein, M., Higgins, J. P. T., Hedges, L. V., & Rothstein, H. R. (2017). Basics of meta-analysis: I2 is not an absolute measure of heterogeneity. *Research Synthesis Methods*, *8*(1), 5–18. https://doi.org/10.1002/jrsm.1230

Braddock, K., & Dillard, J. P. (2016). Meta-analytic evidence for the persuasive effect of narratives on beliefs, attitudes, intentions, and behaviors. *Communication Monographs*, *83*, 446–467. https://doi.org/10.1080/03637751.2015.1128555

Breckler, S. J. (1984). Empirical validation of affect, behavior, and cognition as distinct components of attitude. *Journal of Personality and Social Psychology*, *47*(6), 1191–1205. https://doi.org/10.1037/0022-3514.47.6.1191

Carfora, V., Caso, D., & Conner, M. (2016). Randomized controlled trial of a messaging intervention to increase fruit and vegetable intake in adolescents: Affective versus instrumental messages. *British Journal of Health Psychology*, *21*(4), 937–955. https://doi.org/10.1111/bjhp.12208

Cheung, M. W. -L. (2015). M*eta-analysis: A structural equation modelling approach*. John Wiley & Sons, New York.

Cheung, M. W. -L. (2023). *Meta-analysis using structural equation modeling*. Retrieved from https://cran.r-project.org/web/packages/metaSEM/index.html

Clark, J. K., & Wegener, D. T. (2013). Message position, information processing, and persuasion: the discrepancy motives model. *Advances in Experimental Social Psychology*, *47*, 189–232. https://doi.org/10.1016/B978-0-12-407236-7.00004-8

Clarkson, J. J., Tormala, Z. L., & Rucker, D. D. (2008). A new look at the consequences of attitude certainty: The amplification hypothesis. *Journal of Personality and Social Psychology*, *95*, 810–825. https://doi.org/10.1037/a0013192

Crites, S. L., Fabrigar, L. R., & Petty, R. E. (1994). Measuring the affective and cognitive properties of attitudes: Conceptual and methodological issues. *Personality and*

Social Psychology Bulletin, 20(6), 619-634. https://doi.org/10.1177/0146167294206001

Del Re, A. C., & Hoyt, W. (2022). MAd: Meta-analysis with mean differences. Retrieved from https://cran.r-project.org/web/packages/MAd/index.html

Deng, T., Ekachai, D., & Pokrywczynski, J. (2022). Global COVID-19 advertisements: Use of informational, transformational and narrative advertising strategies. *Health Communication*, *37*(5), 628–636. https://doi.org/10.1080/10410236.2020.1859725

Drolet, A., & Aaker, J. (2002). Off-target? Changing cognitive-based attitudes. *Journal of Consumer Psychology*, *12*, 59–68. https://doi.org/10.1207/S15327663JCP1201_06

Duncan, S., & Barrett, L .F. (2007). Affect is a form of cognition: A neurobiological analysis. *Cognition and Emotion, 21*(6), 1184-1211, https://doi.org/10.1080/02699930701437931

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot–based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, *56*(2), 455–463. https://doi.org/10.1111/j.0006-341X.2000.00455.x

Eagly, A. H., & Chaiken, S. (2007). The advantages of an inclusive definition of attitude. *Social Cognition*, *25*(5), 582–602. https://doi.org/10.1521/soco.2007.25.5.582

Eagly, A. H., Mladinic, A., & Otto, S. (1994). Cognitive and affective bases of attitudes toward social groups and social policies. *Journal of Experimental Social Psychology*, *30*(2), 113–137. https://doi.org/10.1006/jesp.1994.1006

Eom, K., Kim, H. S., Sherman, D. K., & Ishii, K. (2016). Cultural variability in the link between environmental concern and support for environmental action. *Psychological Science*, *27*(10), 1331–1339. https://doi.org/10.1177/0956797616660078

Fabrigar, L. R., & Petty, R. E. (1999). The role of the affective and cognitive bases of attitudes in susceptibility to affectively and cognitively based persuasion.

Personality and Social Psychology Bulletin, *25*(3), 363–381. https://doi.org/10.1177/0146167299025003008

Fernández-Castilla, B., Declercq, L., Jamshidi, L., Beretvas, S. N., Onghena, P. & den Noortgate, W. V. (2021). Detecting selection bias in meta-analyses with multiple outcomes: A simulation study *The Journal of Experimental Education,* 89(1), 125-144. https://doi.org/10.1080/00220973.2019.1582470

Giner-Sorolla, R. (2004). Is affective material in attitudes more accessible than cognitive material? The moderating role of attitude basis. *European Journal of Social Psychology*, *34*(6), 761–780. https://doi.org/10.1002/ejsp.229

Glasman, L. R., & Albarracín, D. (2006). Forming attitudes that predict future behavior: A meta-analysis of the attitude-behavior relation. *Psychological Bulletin, 132,* 778-822. https://doi.org/ 10.1037/0033-2909.132.5.778

Gong, Z., & Cummins, R. G. (2020). Redefining rational and emotional advertising appeals as available processing resources: Toward an information processing perspective. *Journal of Promotion Management*, *26*(2), 277–299. https://doi.org/10.1080/10496491.2019.1699631

Green, M. C., Brock, T. C., & Kaufman, G. F. (2004). Understanding media enjoyment: The role of transportation into narrative worlds. *Communication Theory,14,* 311-327. https://doi.org/10.1111/j.1468-2885.2004.tb00317.x

Green, M. C. (2021). Transportation into Narrative Worlds. In: Frank, L.B., Falzone, P. (Eds), Entertainment-Education Behind the Scenes (pp. 87-101). Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-63614-2_6

Haddock, G., & Maio, G. R. (2019). Inter-individual differences in attitude content: Cognition, affect, and attitudes. *Advances in Experimental Social Psychology, 59,* 53–102. https://doi.org/10.1016/bs.aesp.2018.10.002

Haddock, G., Maio, G. R., Arnold, K., & Huskinson, T. (2008). Should persuasion be affective or cognitive? The moderating effects of need for affect and need for cognition. *Personality and Social Psychology Bulletin*, *34*(6), 769–778. https://doi.org/10.1177/0146167208314871

Haddock, G., Zanna, M. P., & Esses, V. M. (1993). Assessing the structure of prejudicial attitudes: The case of attitudes toward homosexuals. *Journal of Personality and Social Psychology*, *65*, 1105–1118. https://doi.org/10.1037/0022-3514.65.6.1105

Han, S., & Shavitt, S. (1994). Persuasion and culture: Advertising appeals in individualistic and collectivistic societies. *Journal of Experimental Social Psychology*, *30*, 326–350. https://doi.org/10.1006/jesp.1994.1016

Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational Statistics*, *6*(2), 107–128. https://doi.org/10.2307/1164588

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, *33*(2–3), 61–83. https://doi.org/10.1017/S0140525X0999152X

Hofstede Insights. (2023). *Country comparison tool.* Retrieved from https://www.hofstede-insights.com/country-comparison-tool

Hofstede, G. (1980). Culture and organizations. *International Studies of Management & Organization*, *10*(4), 15–41. https://doi.org/10.1080/00208825.1980.11656300

Hong, J., & Chang, H. H. (2015). "I" follow my heart and "we" rely on reasons: The impact of self-construal on reliance on feelings versus reasons in decision making. *Journal of Consumer Research*, *41*, 1392–1411. https://doi.org/10.1086/680082

Hornikx, J., & Groot, E. de (2017). Cultural values adapted to individualism-collectivism in advertising in Western Europe: An experimental and meta-analytical approach. *International Communication Gazette, 79,* 298-316.

Hornik, J., Ofir, C., & Rachamim, M. (2016). Quantitative evaluation of persuasive appeals using comparative meta-analysis. *The Communication Review, 19,* 192-222. https://doi.org/10.1080/10714421.2016.1195204

Hornik, J., Ofir, C., & Rachamim, M. (2017). Advertising appeals, moderators, and impact on persuasion: A quantitative assessment creates a hierarchy of appeals. *Journal of Advertising Research, 57,* 1-14. https://doi.org/10.2501/JAR-2017-017

Hornikx, J., & O'Keefe, D. J. (2009) Adapting consumer advertising appeals to cultural values: A meta-analytic review of effects on persuasiveness and ad liking, *Annals of the International Communication Association, 33*(1), 39-71, https://doi.org/10.1080/23808985.2009.11679084

Hunter, J. E., & Schmidt, F. L. (2000). Fixed effects vs. random effects meta-analysis models: Implications for cumulative research knowledge. *International Journal of Selection and Assessment, 8,* 275-292. https://doi.org/10.1111/1468-2389.00156

Huskinson, T. L. H., & Haddock, G. (2004). Individual differences in attitude structure: Variance in the chronic reliance on affective and cognitive information. *Journal of Experimental Social Psychology, 40,* 82–90. https://doi.org/10.1016/S0022-1031(03)00060-X

Inglehart, R., & Baker, W. E. (2000). Modernization, cultural change, and the persistence of traditional values. *American Sociological Review, 65,* 19-51.

IntHout, J., Ioannidis, J. P. A., Rovers, M. M., & Goeman, J. J. (2016). Plea for routinely presenting prediction intervals in meta-analysis. *BMJ Open, 6*(7), e010247. https://doi.org/10.1136/bmjopen-2015-010247

Ju-Pak, K.-H. (1999). Content dimensions of web advertising: A cross-national comparison. *International Journal of Advertising*, *18*(2), 207–231. https://doi.org/10.1080/02650487.1999.11104755

Kaasa, A., & Minkov, M. (2020). Are the world's national cultures becoming more similar? *Journal of Cross-Cultural Psychology, 51,* 531-550.

Komiya, A., Miyamoto, Y., Watabe, M., Kusumi, T. (2011). Cultural grounding of regret: Regret in self and interpersonal contexts. *Cognitive and Emotion, 25,* 1121-1130. doi: 10.1080/02699931.2010.516962

Kulkarni, K. K., Kalro, A. D., & Sharma, D. (2020). The interaction effect of ad appeal and need for cognition on consumers' intentions to share viral advertisements. *Journal of Consumer Behavior, 19,* 327-338, https://doi.org/10.1002/cb.1809

Landau, M. J., Arndt, J., & Cameron, L. D. (2018). Do metaphors in health messages work? Exploring emotional and cognitive factors. *Journal of Experimental Social Psychology, 74,* 135–149. https://doi.org/10.1016/j.jesp.2017.09.006

Lee, Y.-J., Haley, E., & Avery, E. J. (2010). The role of gender and message strategy in the perception of advocacy advertising. *Journal of Current Issues & Research in Advertising*, *32*(1), 47–55. https://doi.org/10.1080/10641734.2010.10505274

Lefebvre, C., Glanville, J., Briscoe, S., Featherstone, R., Littlewood, A., Marshall, C., Metzendorf, M-I., Noel-Storr, A., Paynter, R., Rader, T., Thomas, J., & Wieland, L. S. (2022). Chapter 4: Searching for and selecting studies. In: J. P.T. Higgins, J. Thomas, J. Chandler, M. Cumpston, T. Li, M. J. Page, & V. A. Welch (Eds.), Cochrane Handbook for Systematic Reviews of Interventions version 6.3. Retrieved from www.training.cochrane.org/handbook.

Lüdecke, D. (2019). *esc: Effect size computation for meta analysis*. Retrieved from https://cran.r-project.org/web/packages/esc/index.html

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224–253. https://doi.org/10.1037/0033-295X.98.2.224

Matz, S. C., Kosinski, M., Nave, G., & Stillwell, D. J. (2017). Psychological targeting as an effective approach to digital mass persuasion. *Proceedings of the National Academy of Sciences, 114*(48), 12714–12719. https://doi.org/10.1073/pnas.1710966114

Mayer, N. D., & Tormala, Z. L. (2010). "Think" versus "feel" framing effects in persuasion. *Personality and Social Psychology Bulletin*, *36*, 443–454. https://doi.org/10.1177/0146167210362981

Mesquita, B. (2022). *Between us: How cultures create emotions*. WW Norton & Company.

Minkov, M., & Kaasa, A. (2021). A test of the revised Minkov-Hofstede Model of culture: Mirror images of subjective and objective culture across nations and the 50 US states. *Cross-Cultural Research*, *55*(2–3), 230–281. https://doi.org/10.1177/10693971211014468

Minkov, M., & Kaasa, A. (2022). Do dimensions of culture exist objectively? A validation of the revised Minkov-Hofstede model of culture with World Values Survey items and scores for 102 countries. *Journal of International Management, 28*(4), 100971. https://doi.org/10.1016/j.intman.2022.100971

Maximilian, A., & van Zomeren, M. (2021). Toward a comprehensive and potentially cross-cultural model of why people engage in collective action: A quantitative research synthesis of four motivations and structural constraints. *Psychological Bulletin, 147, 667-700*. https://psycnet.apa.org/doi/10.1037/bul0000256

Miniard, P. W., Bhatla, S., & Rose, R. L. (1990). On the formation and relationship of ad and brand attitudes: An experimental and causal analysis. *Journal of Marketing Research, 27*(3), 290-303. https://doi.org/10.1177/002224379002700304

Mitchell, A. A., & Olson, J. C. (1981). Are product attribute beliefs the only mediator of advertising effects on brand attitudes? *Journal of Marketing Research, 18*(3), 318-332. https://doi.org/10.1177/002224378101800306

Mughogho, W., Adhiambo, J., & Forscher, P. S. (2023). African researchers must be full participants in behavioural science research. *Nature Human Behaviour, 7*(3), 297–299. https://doi.org/10.1038/s41562-023-01536-6

Na, J., Grossmann, I., Varnum, M. E. W., Kitayama, S., Gonzalez, R., & Nisbett, R. E. (2010). Cultural differences are not always reducible to individual differences. *Proceedings of the National Academy of Sciences*, *107*(14), 6192–6197. https://doi.org/10.1073/pnas.1001911107

Nabi, R. L., Walter, N., Oshidary, N., Endacott, C. G., Love-Nichols, J., Lew, Z. J., & Aune, A. (2020). Can emotions capture the elusive gain-loss framing effect? A meta-analysis. *Communication Research*, *47*(8), 1107–1130. https://doi.org/10.1177/0093650219861256

Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review*, *108*, 291–310. https://doi.org/10.1037/0033-295X.108.2.291

Ng., R.W.J., Bu, C., & See, Y.H.M. (2023a). Defensive confidence and certainty in unchanged attitudes: The role of affect-cognition matching. *Personality and Social Psychology Bulletin, 49,* 773-790. https://doi.org/10.1177/01461672221074102

Ng, R.W.J., See, Y.H.M., & Wallace, L. (2023b). When objective ambivalence predicts subjective ambivalence: An affect-cognition matching perspective. *Personality and Social Psychology Bulletin, 49,* 1495-1510. https://doi.org/10.1177/01461672221102015

Norenzayan, A., Smith, E.E., Kim, B.J., & Nisbett, R. (2002). Cultural preferences for formal versus intuitive reasoning. *Cognitive Science, 26,* 653-684.

Puto, C. P. and Wells, W. D. (1984) Informational and transformational advertising: The differential effects of time. *Advances in Consumer Research, 11,* 638-643.

Renkewitz, F., & Keiner, M. (2019). How to detect publication bias in psychological research. *Zeitschrift für Psychologie, 227*(4), 261-279. https://doi.org/10.1027%2F2151-2604%2Fa000386

Rhodes, N., & Ewoldsen, D. R. (2013). Outcomes of persuasion: Behavioral, cognitive, and social. In J. P. Dillard & L. Shen (Eds.), The SAGE handbook of persuasion: Developments in theory and practice (pp. 53–69). Sage Publications, Inc

Riemer, H., Shavitt, S., Koo, M., & Markus, H. R. (2014). Preferences don't have to be personal: Expanding attitude theorizing with a cross-cultural perspective. *Psychological Review*, *121*(4), 619–648. https://doi.org/10.1037/a0037666

Rocklage, M. D., & Fazio, R. H. (2015). The Evaluative Lexicon: Adjective use as a means of assessing and distinguishing attitude valence, extremity, and emotionality. *Journal of Experimental Social Psychology*, *56*, 214–227. https://doi.org/10.1016/j.jesp.2014.10.005

Rocklage, M. D., & Fazio, R. H. (2016). On the dominance of attitude emotionality. *Personality and Social Psychology Bulletin*, *42*(2), 259–270. https://doi.org/10.1177/0146167215623273

Rocklage, M. D., & Fazio, R. H. (2020). The enhancing versus backfiring effects of positive emotion in consumer reviews. *Journal of Marketing Research*, *57*(2), 332–352. https://doi.org/10.1177/0022243719892594

Rocklage, M. D., Rucker, D. D., & Nordgren, L. F. (2018). The Evaluative Lexicon 2.0: The measurement of emotionality, extremity, and valence in language. *Behavior Research Methods*, *50*(4), 1327–1344. https://doi.org/10.3758/s13428-017-0975-6

Rothman, A.J., Bartels, R.D. Wlaschin, J., & Salovey, P. (2006). The strategic use of gain- and loss-framed messages to promote health behavior: How theory can inform practice. *Journal of Communication,56,* s202-s220. DOI: 10.1111/j.1460-2466.2006.00290.x

Savani, K., Markus, H. R., & Conner, A. L. (2008). Let your preference be your guide? Preferences and choices are more tightly linked for North Americans than for Indians. *Journal of Personality and Social Psychology*, *95*, 861–876. https://doi.org/10.1037/a0011618

See, Y. H. M., Petty, R. E., & Fabrigar, L. R. (2008). Affective and cognitive meta-bases of attitudes: Unique effects on information interest and persuasion. *Journal of Personality and Social Psychology*, *94*, 938–955. https://doi.org/10.1037/0022-3514.94.6.938

See, Y. H. M., Petty, R. E., & Fabrigar, L. R. (2013a). Affective–cognitive meta-bases versus structural bases of attitudes predict processing interest versus efficiency. *Personality and Social Psychology Bulletin*, *39*(8), 1111–1123. https://doi.org/10.1177/0146167213490807

See, Y. H. M., Valenti, G., Ho, A. Y. Y., & Tan, M. S. Q. (2013b). When message tailoring backfires: The role of initial attitudes in affect–cognition matching. *European Journal of Social Psychology*, *43*(6), 570–584. https://doi.org/10.1002/ejsp.1967

Seo, K. (2020). Meta-analysis on visual persuasion – Does adding images to texts influence persuasion? *Athens Journal of Mass Media and Communications*, *6*, 177–190. https://doi.org/10.30958/ajmmc.6-3-3

Seo, K., & Dillard, J. P. (2019). A process analysis of message style and persuasion: The effects of gain-loss framing and emotion-inducing imagery. *Visual Communication Quarterly*, *26*(3), 131–145. https://doi.org/10.1080/15551393.2019.1638785

Smith, C. T., & De Houwer, J. (2015). Hooked on a feeling: Affective anti-smoking messages are more effective than cognitive messages at changing implicit evaluations of smoking. *Frontiers in Psychology*, *6*. https://doi.org/10.3389/fpsyg.2015.01488

Sterne, J. A. C., Savović, J., Page, M. J., Elbers, R. G., Blencowe, N. S., Boutron, I., Cates, C. J., Cheng, H. Y., Corbett, M. S., Eldridge, S. M., Emberson, J. R., Hernán, M. A., Hopewell, S., Hróbjartsson, A., Junqueira, D. R., Jüni, P., Kirkham, J. J., Lasserson, T., Li, T., McAleenan, A., … Higgins, J. P. T. (2019). RoB 2: A revised tool for assessing risk of bias in randomised trials. *BMJ*, *366*, l4898. https://doi.org/10.1136/bmj.l4898

Storbeck, J., & Clore, G. L. (2007). On the interdependence of cognition and emotion, *Cognition and Emotion, 21*(6), 1212-1237. https://doi.org/10.1080/02699930701438020

Tan, K., & See, Y. H. M. (2022). Tugging at their heartstrings: partner's knowledge of affective meta-bases predicts use of emotional advocacies in close relationships. *Social Cognition*, *40*(2), 150–171. https://doi.org/10.1521/soco.2022.40.2.150

Tannenbaum, M. B., Hepler, J., Zimmerman, R. S., Saul, L., Jacobs, S., Wilson, K., & Albarracín, D. (2015). Appealing to fear: A meta-analysis of fear appeal effectiveness and theories. *Psychological Bulletin, 141,* 1178–1204. https://doi.org/10.1037/a0039729

Taras, V., Steel, P., & Kirkman, B. L. (2012). Improving national cultural indices using a longitudinal meta-analysis of Hofstede's dimensions. *Journal of World Business, 47*, 329-341. https://doi.org/10.1016/j.jwb.2011.05.001

Teeny, J. D., Siev, J. J., Briñol, P., & Petty, R. E. (2021). A review and conceptual framework for understanding personalized matching effects in persuasion. *Journal of Consumer Psychology*, *31*, 382-414. https://doi.org/10.1002/jcpy.1198

Tormala, Z. L., & Petty, R. E. (2004). Resisting persuasion and attitude certainty: A meta-cognitive analysis. In E. S. Knowles & J. A. Linn (Eds.), Resistance and persuasion (pp. 65–82). Lawrence Erlbaum Associates Publishers.

Triandis, H. C. (1996). The psychological measurement of cultural syndromes. *American Psychologist*, *51*, 407–415. https://doi.org/10.1037/0003-066X.51.4.407

Tsai, J. L. (2007). Ideal affect: cultural causes and behavioral consequences. *Perspectives on Psychological Science*, *2*(3), 242–259. https://doi.org/10.1111/j.1745-6916.2007.00043.x

Uchida, Y., Nakayama, M., & Bowen, K. S. (2022). Interdependence of emotion: Conceptualization, evidence, and social implications from Cultural Psychology. *Current Directions in Psychological Science*, 09637214221109584. https://doi.org/10.1177/09637214221109584

Uchida, Y., Townsend, S.S.M., Markus, H.R., & Bergsieker, H.B. (2009). Emotions as within or between people? Cultural variation in lay theories of emotional expression and inference. *Personality and Social Psychology Bulletin*, *35*, 1427-1439. doi: 10.1177/0146167209347322.

Varnum, M. E. W., Grossmann, I., Kitayama, S., & Nisbett, R. E. (2010). The origin of cultural differences in cognition: the social orientation hypothesis. *Current*

Directions in Psychological Science, *19*(1), 9–13. https://doi.org/10.1177/0963721409359301

Verplanken, B., Hofstee, G., & Janssen, H. J. W. (1998). Accessibility of affective versus cognitive components of attitudes. *European Journal of Social Psychology*, *28*(1), 23–35. https://doi.org/10.1002/(SICI)1099-0992(199801/02)28:1<23::AID-EJSP843>3.0.CO;2-Z

Vidrine, J. I., Simmon, V. N., & Brandon, T. H. (2007). Construction of smoking-relevant risk perceptions among college students: The influence of need for cognition and message content. *Journal of Applied Social Psychology, 37*, 91-114. https://doi.org/10.1111/j.0021-9029.2007.00149.x

Viechtbauer, W. (2023). *metafor: Meta-Analysis package for R*. Retrieved from https://cran.r-project.org/web/packages/metafor/index.html

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin, 132*(2), 249–268. https://doi.org/10.1037/0033-2909.132.2.249

Xu, J. (2022). A meta-analysis comparing the effectiveness of narrative vs. statistical evidence: Health vs. non-health contexts. *Health Communication*, 1–11. https://doi.org/10.1080/10410236.2022.2137750

Zanna, M. P., & Rempel, J. K. (1988). Attitudes: A new look at an old concept. In D. Bar-Tal & A. W. Kruglanski (Eds.), *The social psychology of knowledge* (pp. 315–334). Cambridge University Press; Editions de la Maison des Sciences de l'Homme.

Zarantonello, L., Jedidi, K., & Schmitt, B. H. (2013). Functional and experiential routes to persuasion: An analysis of advertising in emerging versus developed markets. *Special Issue on Marketing in Emerging Markets*, *30*(1), 46–56. https://doi.org/10.1016/j.ijresmar.2012.09.001

Zebregs, S., van den Putte, B., Neijens, P., & de Graaf, A. (2015). The differential impact of statistical and narrative evidence on beliefs, attitude, and intention: A meta-analysis. *Health Communication*, *30*(3), 282–289. https://doi.org/10.1080/10410236.2013.842528