

A meta-analysis of gender roles in advertising

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Abstract Although interest regarding gender role portrayals in advertising has persisted for many years, the degree of gender stereotyping in advertising, possible changes of gender stereotyping over the years, and the nature of the relationship between gender stereotyping in advertising and role changing developments in society have not yet been studied in previous research. To address these issues, this study provides a meta-analysis of the research on gender roles in TV and radio advertising based on 64 primary studies. The results show that stereotyping is prevalent in advertising. Stereotyping occurs mainly related to gender's occupational status, meaning gender equality in advertising is least likely in an area that is the primary concern of gender-related politics. Stereotyping in advertising has indeed decreased over the years, although this decrease is almost exclusively due to developments in high masculinity countries. The results of a correlation analysis and a simultaneous equation model show that gender stereotyping in advertising depends on gender-related developments and value changes in society rather than the other way around. These results provide for the first time empirical support for the mirror argument over the mold argument in the long-standing debate about advertising's consequences for society. The findings further provide implications for researchers, public policy makers, and marketing practitioners.

Keywords Advertising · Gender roles · Meta-analysis

Scholars of different disciplines in the behavioral and social sciences have been concerned about social and cultural consequences of advertising. One of these consequences is the possible reinforcement of social stereotypes such as those based on gender role portrayals, particularly the ones related to women. Advertising frequently uses gender roles to promote products, and researchers have therefore shown remarkable interest in the portrayal of men and women in advertising since the 1960's (e.g., Belkaoui and Belkaoui 1976; Hawkins and Coney 1976).

Several content analyses have been conducted in order to investigate gender role portrayals in advertising and have led to quite an amount of research over the past four decades. Authors generally agree that advertising uses stereotypical gender roles (Courtney and Whipple 1983; Furnham and Mak 1999). Several issues remain controversial, though. Previous studies do not rely on a clear concept of gender stereotyping and therefore do not provide a consistent picture regarding in what way and to what degree males and females are stereotyped. Furthermore, some authors consider that advertisements are moving toward a slightly less stereotypical stance (Wolin 2003), particularly in Western societies (Furnham and Mak 1999), while other authors stress that women are still being portrayed in a stereotypical way; and stereotyping is even becoming worse (e.g., Ganahl et al. 2003b; Milner and Higgs 2004). As both factors of culture and time are typically confounded when reviewing data collected in different cultures at different periods in time, we do not know whether any variation in stereotyping is due to developments over time, due to cultural variation, or due to both. Further evidence is needed to disentangle the effect of both factors.

Provided that advertising relies on stereotyped gender roles to promote products, and that there has been a

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variation of gender stereotyping over the years, the questions of whether this variation is connected to gender-related developments in society and what the nature of this relationship looks like arise. Critics state that advertisements show social stereotypes, which, in turn, reinforce stereotypical values and behavior in society. The criticism is based on the assumption that what people see or hear in the media influences their perceptions, attitudes, values, and behavior. However, does advertising indeed impact these values or does it simply reflect what already exists (Holbrook 1987)? Both positions have their supporters in the literature, but so far none of the previous studies has provided unambiguous empirical evidence that is supportive of either position.

The present study contributes to the literature as follows. First, the study provides a meta-analysis of the research on gender roles in advertising (on TV and radio) and introduces the use of stereotype component categories in order to measure the manner and degree of gender stereotyping in advertising. Second, the study answers the questions of whether gender stereotypes in advertising have changed over the years and whether they are culture dependent. Third, by using data on gender-related developments in society, the study tries to answer the question of whether these developments impact gender stereotyping in advertising (i.e., advertising reflects gender-related values of a society) or whether gender stereotyping in advertising influences gender-related developments in society (i.e., advertising impacts gender-related values). The quantitative results provide a clearer picture of gender stereotyping in advertising compared to what has been provided in primary studies and narrative reviews. Furthermore, the findings contribute to the long-standing debate in the literature about the relationship between advertising content and values in society by providing an empirical approach to test their mutual influence. The findings provide valuable insights for public policy makers, marketing practitioners and advertisers.

Conceptual background

The degree to which and the manner in which gender is stereotyped in advertising

Stereotypes are a set of concepts pertaining to a social category (Vinacke 1957). Gender stereotypes are beliefs that certain attributes differentiate women and men (Ashmore and Del Boca 1981). Research suggests that they have four different and independent components: trait descriptors (e.g., self-assertion, concern for others), physical characteristics (e.g., hair length, body height), role behaviors (e.g., leader, taking care of children), and occupational status

(e.g., truck driver, housewife) (Deaux and Lewis 1984). Each component has a masculine and a feminine version with masculine and feminine components significantly more strongly associated with males and females, respectively. Many content analyses have provided a catalogue of variables related to gender roles. These variables can be grouped along these components except for the first one, since the first component is not directly observable by means of a content analysis. For instance, age of central figures in advertising relates to physical characteristics, profession of central figures to occupational status, and a central figure's expertise or the way she/he talks about products to role behaviors.

Stereotyping is not necessarily a negative judgment since stereotypes lead to expectations that can provide a useful orientation in everyday life. However, stereotypes can lead to oversimplified conceptions and misapplied knowledge evaluations, and thus to wrong evaluations of subjects of a social category. For instance, when evaluations of job applicants are strongly based on stereotypes, men are favored over women for jobs that men have traditionally done (Tosi and Einbender 1985). Such a stereotype threat (i.e., the activation of "negative" stereotypes when gender is salient) attributes to gender gaps and has been shown, for instance, to impact the mind-set of test-takers at school, which contributes to different performance of girls and boys in math-intensive fields (Lewis 2005). Hence, stereotyping becomes problematic when stereotypes lead to expectations and judgments that restrict life opportunities for subjects of a social category. This is the reason why public policy, particularly in the European Union, is concerned about marketing activities that promote gender stereotypes (European Parliament 2008).

Each gender stereotyping component can lead to negative consequences that restrict life opportunities, particularly for women. Stereotyping of physical characteristics (e.g., beauty ideals for women) can lead to reduced self-dignity and body dissatisfaction, stereotyping of role behaviors (e.g., women taking care of children) may lead to restricted opportunities of self-development, and stereotyping of occupational roles can lead to disadvantages in women's careers. Avoiding such stereotypes and achieving equal life opportunities for both genders in different spheres of life (e.g., income, career) is a central concern of gender policy and has become a social objective in many societies (e.g., European Parliament 2008). Such goals are based on the idea that gender roles are mainly determined by the social environment, and not by biology, although both approaches provide explanations for gender roles and sex differences. The major changes in gender roles over the years, however, provide some evidence that it is the social factors rather than the biological factors that determine these outcomes, because biology has not changed over this

period (Ceci et al. 2009). Equal representation in different spheres of life is a main goal of social development in many developed countries and is indicated by worldwide rankings such as United Nations indices that measure, for instance, gender equality advancement by indicators such as the deviation from equal distribution of parliamentary seats among genders. The idea is based on the fundamental human right of equal opportunities regardless of gender, race, or age, and this idea leads political measures regarding gender equality, such as the introduction of gender quota for particular jobs. Therefore, equality serves as a basis of comparison for gender stereotyping.

The ideal of gender equality primarily serves as a basis for comparison when it comes to occupational status and role behavior as these factors can be directly influenced by the social environment, for instance by political measures and regulations, or the education system. As for physical characteristics, gender-related differences are biological, so an equality goal is less meaningful. Rather the actual occurrence of certain physical characteristics is a comparison baseline for an unbiased representation that avoids stereotypes. In the following, age of central figures in advertising is the only variable that refers to physical characteristics. An unbiased depiction of the age of women and men in advertising would need to represent all age groups according to the age distribution in society. Since the average age of central figures used in advertising is less than the average in a society, there is already a biased depiction of both genders. In order to find out whether the depiction of women is more or less biased than that of men, age equality of central figures can be used as a standard of comparison, while the deviation from this equality can provide a relative, though not an absolute, measure of stereotyping, thus showing the difference in the degree of gender stereotyping between the two genders. This measure is still not perfectly accurate and might even underestimate the bias of women's age over men's age, since the life expectancy of women in society is actually higher than that of men (United Nations 2008). Taken together, the more the depiction of certain characteristics in advertising deviates from the objective of equality, the higher is the degree of stereotyping across the components of role behavior and occupational status, as well as regarding age as a particular physical characteristic.

So far, we do not know the degree to which gender stereotyping in advertising occurs. Providing a numerical value for the degree of stereotyping can reveal which variables and components are affected the most by stereotyping in advertising. Some variables and components reflect the characteristics of the significant social changes of gender more than others. For example, the occupational status of women (e.g., as professionals) has changed dramatically over the years, and this component may be

particularly interesting to examine in order to see how much gender stereotyping occurs in advertising against the background of changes in society. Hence, a first step in a quantitative review of previous studies would be to describe the degree to which gender is stereotyped along several variables and stereotyping components.

The development of gender stereotyping in advertising over the years

Due to the fact that gender stereotyping is still used in advertising, critics state that advertising does not reflect the significant advancement of the gender equality movement in many societies. Basically, there are two general conclusions: pessimistic and optimistic. Pessimistic studies stress that women are still being portrayed in a negative, stereotypical way, and this kind of stereotyping is even becoming worse. For instance, Ganahl et al. (2003b) have investigated TV commercials from three major US networks and have compared their results with a previous content analysis of US TV commercials by Bretl and Cantor (1988). They found that commercials perpetuate traditional stereotypes despite significant changes in women's roles in the US. Milner and Higgs (2004) have investigated gender stereotyping in Australian TV advertisements and compared their results with two previous studies from the early 1990s and 1980s. They conclude that portrayals of women in Australian advertising are becoming more stereotypical, and these depictions are becoming even more distant from the reality of women's lived experience, such as their occupational roles.

Optimistic studies consider women as gaining substantial ground on their male counterparts and breaking out of negative stereotyping. They suggest that role portrayals in commercials are more representative of contemporary women and are gradually becoming equal to men (Furnham and Mak 1999; Sharits and Lammers 1983). In his critical review of several studies on gender-role portrayals in advertisement from the late 1980s onward, Gunter (1995) has noted that gender-role stereotyping in advertisement has declined. Wolin (2003) has reviewed 28 content analyses of print and TV advertisements, and although she found both increasing and decreasing gender bias, she has rather detected a tendency towards decreasing stereotyping. Furnham and Mak (1999) have looked at 14 studies from 11 countries that have investigated different stereotyping variables. The authors state in their review that such a decline has occurred in Europe but not in Asia or Africa.

All of the above-mentioned opposing conclusions are based on narrative reviews of previous studies. Possible explanations for the variation of these findings are not only the lack of a quantitative measure for the changes in stereotyping in advertising, but also the cultural and

temporal context of the studies reviewed. For instance, different regulatory standards on advertisements or varying efforts in achieving gender equality vary over time and between cultures. The impact of both factors—time and culture—may be confounded considering that data on gender stereotyping in advertising are from different countries and collected at different periods in time. Whether gender stereotyping has changed over the years, whether any differences are caused by cultural differences, or whether both factors are important requires an analytical approach that disentangles both effects.

The relationship between gender stereotyping in advertising and gender-related developments in society: the “Mirror” vs. “Mold” argument

The long-standing debate about advertising’s consequences for society has two opposing positions (Holbrook 1987; Pollay 1986, 1987). These positions will be characterized in the following with respect to the relationship between gender-related values of a society and gender stereotyping in advertising. As a matter of course, gender-related values of a society include or are related to norms, perceptions, and behavioral patterns in a society.

The “mirror” argument states that advertising reflects values that already exist (Holbrook 1987). Gender roles in advertising thus reflect cultural expectations towards gender. Advertisers just “conventionalize our conventions, stylize what is already a stylization” (Goffman 1979, p. 84). Although advertising systematically under-represents several aspects in life while making other aspects more important, changes in advertising content are more likely to correspond to changes in society than vice versa. As changes regularly occur in the cultural climate (e.g., a society’s view of gender roles alters), advertisers adapt the images they portray to that which is more widely accepted. The position is usually bolstered by the fact that, given the many factors that influence the value system of a society, the impact of advertising is almost negligible. Advertisers are aware of this fact and use existing values in a society to promote their brands rather than trying to alter these values (Holbrook 1987).

The “mold” argument, on the other hand, assumes that advertising is able to mold and shape the values of its target audience (Pollay 1986, 1987). Hence, gender roles in advertising create, shape, and reinforce gender-stereotypical beliefs and values in a society (Ganahl et al. 2003b). The argument is based on the fact that changes in attitudes and behavior can be brought about as a result of exposure to media and advertising and that people learn from media. The position is in line with the arguments provided by cultivation studies. According to cultivation theory, television has long-term effects on viewers that are small, gradual, indirect,

while at the same time cumulative and significant. Repeated TV viewing can cultivate viewers’ perceptions and beliefs to be more consistent with the world presented in television programs than with the real world (Gerbner et al. 2002). Television viewing has been shown to contribute to the learning of gender stereotypic perceptions amongst children (McGhee and Frueh 1980). However, the findings must be treated with caution, as the interpretation of correlational relationships is problematic, and any inferences of causal relations are fraught with ambiguity. The problem of causality can be tackled via experimental designs. Since these studies have so far only demonstrated short-term changes in attitudes and beliefs, they do not provide conclusive proof that such effects occur in natural, everyday viewing environments and that such learning produces long-term change in beliefs and values of a society on an aggregate level.

An empirical investigation of both views is still lacking. In order to answer the question of whether gender roles in advertising impact gender-related values in society or vice versa, appropriate methods must at least take a macro-perspective rather than an individual perspective and consider the reciprocal relationship between both variables (Pollay 1987).

Method

Literature search

Researchers have investigated how gender roles are portrayed in advertising for more than 40 years. The research has gradually transferred from magazine ads to television commercials because of the increasing contact rate of television in households and its wide variety of audiences. The study by Dominick and Rauch (1972) is generally considered the first major study on gender roles in television commercials and has been followed by a series of other studies. Another early content analysis is the study by McArthur and Resko (1975), which is based on commercials aired in 1971 (and thus actually uses data from the same year as the study by Dominick and Rauch (1972)). Many other content analysis studies have followed the coding categories used by McArthur and Resko (1975). The high number of studies on the topic conducted and published after their study and the fact that so few changes and adaptations of the scheme have been made suggest that the original categories are quite comprehensive and appropriate to use in different years and for different cultures; the data allow a comparison of trends over time as well as between cultures.

As a matter of comparability, a study has to apply the coding scheme or at least parts of the coding scheme

proposed by McArthur and Resko (1975) or the refined variations of the scheme as described by Furnham and Mak (1999) to TV and radio advertisements in order to be included in this meta-analysis. The scheme has been developed for a quantitative content-analytical procedure, comparing men and women as depicted in advertising according to several gender role variables.

The following search strategy was adopted. First, articles from the study overview provided by Furnham and Mak (1999) were selected; references in these articles were searched and a reference tree search of each of these articles was conducted (via the Social Science Citation Index (SSCI)). The same procedure was repeated for the articles that were found by the first step to be appropriate for the analysis, that is, the references were scanned and the literature that refers to the particular article was searched via SSCI. The procedure was repeated for newly found manuscripts until no new manuscripts could be revealed. Furthermore, keyword searches (“gender role” or “sex role”) and (“stereotyp*” or “portrayal”) and (“advertis*”) were used on a number of databases and internet search engines (e.g., EBSCO, Google Scholar, PsycINFO, Social Science Citation Index). With this strategy, the vast majority of content analyses dealing with gender roles in TV/radio advertising should be retrieved, regardless of the particular coding scheme that was used.

The literature search covered the period from 1975 (the publication year of the study by McArthur and Resko) up to the end of 2007. The search revealed 84 content analyses on gender roles in TV/radio advertisements. The following criteria for inclusion were applied.

Studies that applied the coding categories either to selected products or particular target groups such as children (e.g., Furnham et al. 1997; Furnham and Saar 2005 (in their second study); Neto and Furnham 2005) were excluded, as these results are too specific and hardly comparable to the results of other studies. Most studies try to be representative for gender roles in advertising in a particular country for a specific time period and therefore include advertisements from TV and radio channels that are usually directed towards a general, not segmented, audience. For instance, advertising for children leads to substantially different results in terms of role of central figures in the advertisement (dependent versus autonomous) or their age (young versus middle-aged/old) compared to advertising targeting the full population; if these studies had been included to represent a particular country or a particular year, the overall meta-analytic results would be biased. Thus, 14 studies were dropped.

Studies were found inappropriate for the meta-analysis when variable categories were used that differ from the original coding categories. For instance, some content analyses that are based on other coding schemes dealing

with gender roles in advertising (such as the scheme proposed by Goffman (1979)) mostly include a product type coding as well; however, the product categories differ significantly from the categories of the product type coding that is applied by McArthur and Resko (1975). Therefore, 25 studies with substantially different categorizations were not included.

Six studies with appropriate coding categories were excluded since necessary data for calculating effects sizes were not available and could not be retrieved from the authors: (1) Arima (2003) gave results for clusters where separate data for females and males were no longer accessible; (2) Chao (2005) applied the coding categories to a group of award-winning advertisements which were collected over a period of 6 years without providing data for each year; (3) Ganahl et al. (2003a) used some of the appropriate categories but did not provide data in their paper; (4) Mwangi (1996) did not report appropriate percentages that could be used for effect size calculation; (5) Rak and McMullen (1987) used the coding categories to code interactions of males and females in commercials but not for characteristics of both genders; (6) Sakamoto et al. (1999) applied the coding categories to selected award-winning advertisements which were grouped along a ten-year period without providing data for each year.

Some manuscripts included more than one sample either from different countries (Furnham et al. 2000a; Furnham and Farragher 2000; Furnham et al. 2000b; Gilly 1988; Milner and Collins 2000; Siu and Au 1997; Wee et al. 1995), or from different times of the day (Furnham and Voli 1989; Harris and Stobart 1986; Lee 2003), or from different broadcast stations (Furnham and Chan 2003; Furnham and Thomson 1999; Monk-Turner et al. 2007; Wee et al. 1995). These samples were included as independent studies in the meta-analysis, and country and daytime were considered to be potential moderating factors that might have influenced the results presented in the studies. When more than one channel was investigated within the same country in the same year, the channels were considered to be equivalent in the same country, as the common approach is to choose one or two most viewed and most popular channels in each country for the purpose of the content analysis. Finally, studies reporting the same results were included only once (Lee 2003, 2004; Milner 2002, 2005).

A total of 37 manuscripts covering 64 independent studies were found appropriate for the meta-analysis. For each study, effect sizes were calculated for each of the gender role variables as described in the following. Furthermore, several moderators were coded based on study characteristics.

Coding of gender role variables

McArthur and Resko (1975) provide data for seven characteristics of the central figures separately for males

and females: sex of the central figure, basis for credibility, role, location, arguments given on behalf of a product, rewards offered for using a product, and type of product advertised. Furnham and Mak (1999) add four more variables that were most consistently used in the follow-up studies: mode of presentation, background, end comment, and age. Although most authors have applied the same variables, coding procedures can vary, because authors have altered the variable categories (i.e., variable values) or added categories for their own purposes. Comparisons are possible when certain categories are combined consistently. Combining of categories is also necessary for the purpose of the meta-analysis, because 2×2 tables are necessary to calculate an appropriate effect size (odds ratio). The most meaningful way to combine variables with more than two categories was chosen; that is, categories that were most consistently combined in the studies used for the meta-analysis were chosen. In most cases, the “other” category was excluded. A few effect sizes could not be calculated, because the categories in the studies did not match with the combined categories used for the meta-analysis. Table 1 provides an overview of the effect sizes for each gender role variable that could be retrieved from the studies.

The gender role variables with the categories that were eventually used for the meta-analysis are:

Mode of presentation This variable records the type of appearance for the central figures as appearing in the commercials, either as 1 = visual (silent or speaking) or 2 = voice-over.

Credibility The variable describes the basis of the central figure’s credibility and was coded as either 1 = product user or 2 = authority. Several studies included the category “other” under “authority” when only a few others (less than 5%) were coded; in this case, the combined category was used, but the effect sizes for the different codings were controlled by a moderator variable.

Role The central figure was categorized according to her/his every day role in life in which she/he was cast as either 1 = dependent/relative to others (including parent, spouse, homemaker, boy-/girlfriend, sex object, decorative) or as 2 = autonomous/independent from others (including professional, worker, celebrity, interviewer/narrator). Some studies have combined the second category with “other” (in case of few codings) which was controlled for by a moderator variable.

Location The location in which the central characters appeared were categorized as 1 = home/domestic, 2 = work/occupational.

Age The variable describes the central figure’s portrayed age and was coded as either 1 = young or as 2 = middle-aged or old. Some studies used 30 years as cut-off criteria and some studies used 35 years, a difference in the effect sizes that was controlled for by inclusion of a moderator variable.

Argument Central figures were categorized according to the type of argument they gave on behalf of a product as either 1 = opinion/non-scientific or 2 = factual/scientific.

Product type Central figures were categorized according to the type of product with which they were associated as either 1 = domestic (body, home, food) or 2 = other (auto, sports, leisure, entertainment, services, finance, other). The original product type codings in the studies ranged between two and eleven categories and were combined this way in order to have a maximum consistency over the varying categories used in the studies.

End comment Central figures were coded according to whether they made a final brief remark (e.g., a phrase delivering a slogan) or not, along the following categories: 1 = absent or 2 = present.

Background The variable describes the background against which the central figure was portrayed as either 1 = mostly female or as 2 = mostly male.

The variable “reward type” where central figures were categorized according to the type of reward they were depicted with in the advertisement was dropped, because the coding was rather inconsistent within the studies in the meta-analysis. Only 21 of 38 effect sizes could have been used, while 17 values would have been dropped due to coding inconsistencies.

The categories of the variables are ordered such that an overrepresentation of women compared to men in the first category indicates stereotyping. The variables are related to the components of stereotyping as follows:

- Occupational status: role, location
- Physical characteristics: age
- Role behaviors: mode of presentation, credibility, argument, product type, end comment, and background

Occupational status and the role behavior variables that are used in this study are all variables that can be compared against the baseline of gender equality; age should be compared against the factual age distribution. But as described above, the equality baseline was used as a relative measure rather than an absolute value of stereotyping.

Using equality as a comparison baseline for product type is based on the assumption that the number of female and

Table 1 Effect sizes provided by the studies

#	Study	Mode of presentation	Credibility	Role	Location	Age	Argument	Product	End comment	Background
1	Bretl and Cantor 1988		X	O	O		X	X		
2	Cagli and Durukan 1989, study 2		X	X		X	X			
3	Cagli and Durukan 1989, study 1		X	X		X	X			
4	Fullerton and Kendrick 2000		O			X				
5	Furnham and Bitar 1993	X	X	X	X	X	X	X	X	X
6	Furnham and Chan 2003, study 1	X	X	X	X	X	O	X	X	X
7	Furnham and Chan 2003, study 2	X	X	X	X	X	O	X	X	X
8	Furnham and Farragher 2000, study 1	X	X	X	X	X	X	X	X	X
9	Furnham and Farragher 2000, study 2	X	X	X	X	X	X	X	X	X
10	Furnham and Imadzu 2002, study 1	X	X	X	X	X	X	X	X	X
11	Furnham and Imadzu 2002, study 2	X	X	X	X	X	X	X	X	X
12	Furnham and Saar 2005, study 1	X	X	X	X	X	X	X	X	X
13	Furnham and Saar 2005, study 2	X	X							
14	Furnham and Schofield 1986		X	X	X		X	X		
15	Furnham and Skae 1997	X	X	X	X	X	X	X	X	X
16	Furnham and Spencer-Bowdage 2002, study 1	X	X	X	X	X	X	X	X	X
17	Furnham and Spencer-Bowdage 2002, study 2	X	X	X	X	X	X	X	X	X
18	Furnham and Thomson 1999, study 1		X	X	X		X	X		
19	Furnham and Thomson 1999, study 2		X	X	X		X	X		
20	Furnham and Voli 1989, study 1	X	X	X	X		X	X	X	X
21	Furnham and Voli 1989, study 2	X	X	X	X		X	X	X	X
22	Furnham and Voli 1989, study 3	X	X	X	X		X	X	X	X
23	Furnham et al. 2000a, study 1	X	X	X	X	X	X	X	X	X
24	Furnham et al. 2000a, study 2	X	X	X	X	X	X	X	X	X
25	Furnham et al. 2000b, study 1	X	X	X	X	X	O	X	X	X
26	Furnham et al. 2000b, study 2	X	X	X	X	X	O	X	X	X
27	Furnham et al. 2001	X	X	X	X	X	X	X	X	O
28	Gilly 1988, study 1		X	X	X	X				
29	Gilly 1988, study 2		X	X	X	X				
30	Gilly 1988, study 3		X	X	X	X				
31	Harris and Stobart 1986, study 1		X	X	X		X	X		X
32	Harris and Stobart 1986, study 2		X	X	X		X	X		X
33	Harris and Stobart 1986, study 3						X	X		
34	Hurtz and Durkin 1997		X	X	X		X	X		

Table 1 (continued)

#	Study	Mode of presentation	Credibility	Role	Location	Age	Argument	Product	End comment	Background
35	Ibroscheva 2007	X	X	X	X	X		X		
36	Kim and Lowry 2005	X	X	X	X	X	OO	O		X
37	Lee 2003, study 1		X	X	X			X		
38	Lee 2003, study 2		X	X	X			X		
39	Livingstone and Green 1986	X	X	X			O	X		
40	Manstead and McCulloch 1981	X	X	X	X		X	X		
41	Mazzella et al. 1992	X	X	X	X	X	X	X		X
42	McArthur and Resko 1975		X	OO	OO		O	O		
43	Milner 2005, study 1		X	X		X				
44	Milner 2005, study 2		X	X		X				
45	Milner 2005, study 3 ^a		X	X		X				
46	Milner and Collins 1998		X	X		X				
47	Milner and Collins 2000, study 1		X	X		X				
48	Milner and Collins 2000, study 2		X	X		X				
49	Milner and Collins 2000, study 3		X	X		X				
50	Milner and Collins 2000, study 4		X	X		X				
51	Milner and Higgs 2004		X	X		X				
52	Monk-Turner et al. 2007, study 1		X	X			X	X		
53	Monk-Turner et al. 2007, study 2		X	X			X	X		
54	Monk-Turner et al. 2007, study 3		X	X			X	X		
55	Neto and Pinto 1998	X	X	X	X	X	X	X	X	X
56	Siu and Au 1997, study 1		X	X		X				
57	Siu and Au 1997, study 2		X	X		X				
58	Skoric and Furnham 2002, study 1 ^b	X	X	X	X	X	O	X	X	X
59	Skoric and Furnham 2002, study 2 ^b	X	X	X	X	X	O	X	X	X
60	Uray and Burnaz 2003	O	X	X	X	X	X	X	X	X
61	Valls-Fernandez and Martinez-Vicente 2007			X	X	X		X		
62	Wee et al. 1995, study 1		X	X		X				
63	Wee et al. 1995, study 2		X	X		X				
64	Wee et al. 1995, study 3		X	X		X				

“X” indicates that a study provides an effect size for the particular gender role variable. “O” indicates that a study provides variable codings, but categories were combined in a way that does not fit with the categories used in the meta-analysis. “OO” indicates that a study provides variable codings, but data were insufficient to calculate effect sizes

^a Same data as in Milner 2002

^b Same data as in Skoric and Furnham 2003

male decision-makers in the broad categories that were used for the meta-analysis should be about equal. Although particular body products are targeted at women and therefore more women are shown as product users than men in the advertisements, the broader categories of

domestic products versus other products comprise products that are targeted at both genders equally. An equality baseline would further imply an equal sharing of power in decision-making for products of a particular product category. The baseline of equal sharing of decision-

making is not only a social goal but also in line with data of the changing roles of women regarding the products they choose to buy. For example, more than 50% of buyers of new cars, a product that is traditionally perceived as primarily bought by men, are female (Candler 1991). Furthermore, modern families with shared decision making is becoming the norm for most American couples (Solomon 2004, p. 419).

Coding of moderator variables

The highly standardized coding scheme and procedure that was applied in all studies allows a comparison of the results over different studies after controlling for differences between the studies. The studies differ with respect to some methodological factors and some substantial issues, both of which are considered in the meta-analysis by using moderator variables. While the substantial issues (country and time) are particularly important for our research question, methodological factors are accounted for in order to parcel out confounding effects.

The substantial moderators that were used to test our research question are:

Country/Masculinity Index The studies were performed in different countries. In order to describe a gender-related cultural orientation of each country, country index scores on masculinity were taken from Hofstede (2001). Masculinity stands for a society in which social gender roles are distinct, whereas femininity stands for a society in which social gender roles overlap. Although cultural changes occur and a single measure at one point in time (most of Hofstede's indices are derived from empirical work that took place in the early 1970s) may provide a biased measure, recent research has shown that the masculinity index is rather stable and is less likely to have changed over time (Linghui and Koveos 2008). The masculinity index of the countries where the studies were performed has a range from 5 to 70 ($m = 56.32$, $std = 13.29$), indicating substantial cross-cultural variability.

The studies by Furnham et al. (2001) and Milner (2005) investigated gender stereotyping in advertising in Ghana, Kenya, and Zimbabwe. Hofstede provides few indices for African countries, but only for some regions in Africa. The masculinity index for the region West Africa was used for Ghana and the index for the region of East Africa was used for Kenya. However, no index score is appropriate to be used for Zimbabwe. Wee et al. (1995) investigated a Malaysian Channel that was targeted to both Singaporean and Malaysian audiences, both countries with quite similar masculinity indices (48 and 50). The study was coded as Malaysian. Fullerton and Kendrick (2000) investigated a Spanish-language channel in the

US; the study was coded with the masculinity index of the US.

Year The data were collected in different years, with the earliest data collected in 1971 and the latest in 2005. It should be noted that the year of data collection precedes the publication year of a study (e.g., the data for the McArthur and Resko (1975) study were collected in 1971). All but one study (Furnham and Schofield 1986) reported the year of data collection, which was used as a moderator. For this study, the publication year minus 3 years was used, that is, the average time distance (3.17 years) between the publication year and the year of data collection as given by the rest of the studies. For a more convenient interpretation of the results, years were recoded, starting with the value 1 for 1971 up to 35 for 2005.

Interaction between masculinity index and year The effects of year and culture can be independent. However, there may also be an interaction between both variables such that the impact of culture on gender stereotyping in advertising might have changed at different rates across countries. An interaction term of year and masculinity is included as an additional moderator.

The method factors that are used as controls in order to parcel out confounding effects due to differences in method are:

TV vs. radio Few studies have applied the coding scheme to radio stations (Furnham and Schofield 1986; Furnham and Thomson 1999; Hurtz and Durkin 1997; Monk-Turner et al. 2007). A dummy variable was included to distinguish between TV and radio.

Time of day Studies differ in terms of the time of day when the sample of advertisements was collected. Different advertisements are shown at different times of the day to target a particular audience (Furnham and Mak 1999). In order to control for sampling equivalence, a dummy variable was included that distinguishes between samples of advertisements that were collected over the whole day or during daytime and those that were collected exclusively during prime time (starting at earliest at 6 pm and ending at latest at 12 midnight). Before combining samples of advertisements that were collected over the whole day with those that were collected only during daytime (morning or afternoon) into one category, several tests on whether the effect sizes for each gender role variable differ between both groups were performed. No significant differences were found.

Total sample vs. subsample of central figures Most studies used variable codings for the total sample of visual and

voice-over figures, while other studies exclusively coded some variables for a subsample of either voice-overs, visually presented figures, or radio figures. When appropriate, the independent samples were collapsed. In all other cases, a moderator that distinguishes between the total sample and subsamples of central figures was included.

Central figures per advertisement The number of central figures that were coded per advertisement varies. Gender roles can differ for primary and secondary central figures (Furnham and Spencer-Bowdage 2002). Therefore, a moderator variable that distinguishes the cases according to whether only one or more than one central figure per advertisement has been coded was included. In one study (Furnham and Spencer-Bowdage 2002), data were available for up to two central figures combined as well as for the primary and the secondary central figure separately. The combined sample was used, as this is the most common procedure in the majority of the studies.

Duplicates Some studies included duplicate advertisements, some did not. A dummy variable was added as another control variable.

Credibility coding, role coding, and age coding Some gender role variables were not coded consistently as already mentioned above. In particular, moderator variables were included for some inconsistent codings of categories for credibility, role, and age. Several studies included the “other” category under “authority” when coding for credibility. Some studies have combined the role category “autonomous/independent from others” with the category “other”. Finally, the cut-off criteria between young and middle-aged/old of the variable age were either 30 years or 35 years. In all cases, a dummy variable was included to indicate the different coding.

Table 2 provides an overview of the moderator variables and their categories for each study.

Meta-analytic procedures

The effect size metric selected for the analysis is the odds ratio that is the recommended measure of choice for measuring associations when the studies are summarized by fourfold tables (Fleiss 1994). The odds ratio o is centered around 1, with 1 indicating no relationship. Values greater than 1 indicate that females are overrepresented in the first category of the variable, and values between 0 and 1 indicate that males are overrepresented. For instance, a value of 2 for the variable “age” suggests that the odds that female characters in advertising are “young” are two times the odds for male characters.

The natural logarithm of o takes a value of zero when no relationship exists between two factors, yielding a similar interpretation as common effect sizes such as correlation coefficients. To reduce the bias caused by one or more small cell frequencies, it is good practice to add .5 to each cell frequency; by this, $\ln(o)$ and its standard error can also be calculated when a cell frequency is equal to zero (Fleiss 1994).

The meta-analytic procedures of effect size integration were performed taking a random-effects perspective and considering artifact correction (Hall and Brannick 2002; Shadish and Haddock 1994). The integration of the log odds uses variance weights in order to consider the varying sample sizes of the studies. In addition, a procedure for attenuation correction of each log odds was applied as suggested by Hunter and Schmidt (2004) considering interrater reliability coefficients. A few studies provided only overall interrater reliabilities but no reliabilities for each gender role variable. In these cases, the overall reliability for all log odds taken from the particular study was used. For 4% of the log odds, no reliability coefficient was available. In this case, the mean reliability of the remaining log odds related to the same gender role variable was used. The statistical significance of the average $\ln(o)$ for each gender role variable was judged using a 95% confidence interval (Whitener 1990) and was tested by z -statistics. The average $\ln(o)$ was then reconverted into the average odds ratio using the antilog procedure.

Regression model

In order to test whether time and culture have an impact on the size of the log odds of the gender role variables, a regression analysis which also accounted for method differences between the studies was performed. Following the random-effects perspective, the method of moments was used where the residual sum of squares of an OLS regression of the moderator model was used to estimate the random variance (Raudenbush 1994). The total variance (conditional variance of the effect size due to sampling error plus random variance of the population effect size) was then used as a weight in a weighted regression analysis.

Correlation analysis and simultaneous equation model

In order to investigate the relationship between gender stereotyping in advertising and developments regarding gender values in a society, one out of two gender-related indices published in the Human Development Report (HDR) by the United Nations Development Program (UNDP) was used. In the inaugural issue of the HDR, the UNDP (1990) proposed the Human Development Index

Table 2 Moderator variable categories for each study

#	Study	Country	Year	Channel	Time of day	Sample definition	Central figures / ad	Duplicates
1	Bretl and Cantor 1988	USA	1985	TV	whole/during day	visual	1 cf	included
2	Cagli and Durukan 1989, study 2	Turkey	1978	TV	whole/during day	total	up to 2 cf	excluded
3	Cagli and Durukan 1989, study 1	Turkey	1988	TV	whole/during day	total	up to 2 cf	excluded
4	Fullerton and Kendrick 2000	USA ^b	1998	TV	primetime	total	up to 4 cf	excluded
5	Furnham and Bitar 1993	Great Britain	1990	TV	whole/during day	total	1 cf	excluded
6	Furnham and Chan 2003, study 1 ^a	Hong Kong	2001	TV	whole/during day	total	1 cf	excluded
7	Furnham and Chan 2003, study 2 ^a	Hong Kong	2001	TV	whole/during day	total	1 cf	excluded
8	Furnham and Farragher 2000, study 1	Great Britain	1997	TV	whole/during day	mixed ^d	up to 3 cf	excluded
9	Furnham and Farragher 2000, study 2	New Zealand	1996	TV	whole/during day	mixed	up to 3 cf	excluded
10	Furnham and Imadzu 2002, study 1	Great Britain	2000	TV	whole/during day	total	up to 2 cf	excluded
11	Furnham and Imadzu 2002, study 2	Japan	2000	TV	whole/during day	total	up to 2 cf	excluded
12	Furnham and Saar 2005, study 1	Great Britain	2003	TV	whole/during day	mixed	up to 2 cf	excluded
13	Furnham and Saar 2005, study 2	Poland	2003	TV	whole/during day	mixed	up to 2 cf	excluded
14	Furnham and Schofield 1986	Great Britain	–	Radio	whole/during day	voice	up to 2 cf	excluded
15	Furnham and Skae 1997	Great Britain	1995	TV	whole/during day	total	1 cf	excluded
16	Furnham and Spencer-Bowdage 2002, study 1	South Africa	2000	TV	primetime	total	up to 2 cf	excluded
17	Furnham and Spencer-Bowdage 2002, study 2	Great Britain	2000	TV	primetime	total	up to 2 cf	excluded
18	Furnham and Thomson 1999, study 1 ^a	Great Britain	1995	Radio	whole/during day	voice	up to 2 cf	excluded
19	Furnham and Thomson 1999, study 2 ^a	Great Britain	1995	Radio	whole/during day	voice	up to 2 cf	excluded
20	Furnham and Voli 1989, study 1	Italy	1987	TV	whole/during day	total	up to 2 cf	excluded
21	Furnham and Voli 1989, study 2	Italy	1987	TV	whole/during day	total	up to 2 cf	excluded
22	Furnham and Voli 1989, study 3	Italy	1987	TV	primetime	total	up to 2 cf	excluded
23	Furnham et al. 2000a, study 1	France	1995	TV	whole/during day	total	up to 2 cf	excluded
24	Furnham et al. 2000a, study 2	Denmark	1995	TV	primetime	total	up to 2 cf	excluded
25	Furnham et al. 2000b, study 1	Hong Kong	1997	TV	whole/during day	total	up to 2 cf	excluded
26	Furnham et al. 2000b, study 2	Indonesia	1997	TV	whole/during day	total	1 cf	excluded
27	Furnham et al. 2001	Zimbabwe	1999	TV	primetime	total	1 cf	excluded
28	Gilly 1988, study 1	USA	1984	TV	whole/during day	total	up to 3 cf	included
29	Gilly 1988, study 2	Mexico	1984	TV	whole/during day	total	up to 3 cf	included
30	Gilly 1988, study 3	Australia	1985	TV	whole/during day	total	up to 3 cf	included
31	Harris and Stobart 1986, study 1	Great Britain	1983	TV	whole/during day	visual	1 cf	excluded
32	Harris and Stobart 1986, study 2	Great Britain	1983	TV	primetime	visual	1 cf	excluded
33	Harris and Stobart 1986, study 3	Great Britain	1983	TV	whole/during day	voice	1 cf	excluded

Table 2 (continued)

#	Study	Country	Year	Channel	Time of day	Sample definition	Central figures / ad	Duplicates
34	Hurtz and Durkin 1997	Australia	1993	Radio	whole/during day	voice	up to 2 cf	excluded
35	Ibroscheva 2007	Bulgaria	2004	TV	primetime	total	up to 2 cf	excluded
36	Kim and Lowry 2005	South Korea	2001	TV	primetime	total	up to 2 cf	included
37	Lee 2003, study 1	Singapore	2000	TV	whole/during day	visual	1 cf	excluded
38	Lee 2003, study 2	Singapore	2000	TV	primetime	visual	1 cf	excluded
39	Livingstone and Green 1986	Great Britain	1983	TV	primetime	total	up to 2 cf	excluded
40	Manstead and McCulloch 1981	Great Britain	1979	TV	primetime	total	up to 2 cf	excluded
41	Mazzella et al. 1992	Australia	1989	TV	primetime	total	up to 2 cf	excluded
42	McArthur and Resko 1975	USA	1971	TV	whole/during day	total	up to 2 cf	excluded
43	Milner 2005, study 1	Kenya	2002	TV	whole/during day	total	up to 3 cf	included
44	Milner 2005, study 2	Ghana	2002	TV	whole/during day	total	up to 3 cf	included
45	Milner 2005, study 3	South Africa	2002	TV	whole/during day	total	up to 3 cf	included
46	Milner and Collins 1998	Turkey	1992	TV	whole/during day	total	up to 3 cf	included
47	Milner and Collins 2000, study 1	Sweden	1997	TV	whole/during day	total	up to 3 cf	included
48	Milner and Collins 2000, study 2	Russia	1997	TV	whole/during day	total	up to 3 cf	included
49	Milner and Collins 2000, study 3	USA	1997	TV	whole/during day	total	up to 3 cf	included
50	Milner and Collins 2000, study 4	Japan	1997	TV	whole/during day	total	up to 3 cf	included
51	Milner and Higgs 2004	Australia	2002	TV	whole/during day	total	up to 3 cf	included
52	Monk-Turner et al. 2007, study 1 ^a	USA	2004	Radio	whole/during day	voice	1 cf	excluded
53	Monk-Turner et al. 2007, study 2 ^a	USA	2004	Radio	whole/during day	voice	1 cf	excluded
54	Monk-Turner et al. 2007, study 3 ^a	USA	2004	Radio	whole/during day	voice	1 cf	excluded
55	Neto and Pinto 1998	Portugal	1996	TV	primetime	total	1 cf	excluded
56	Siu and Au 1997, study 1	Singapore	1992	TV	primetime	total	up to 3 cf	included
57	Siu and Au 1997, study 2	China	1992	TV	primetime	total	up to 3 cf	included
58	Skoric and Furnham 2002, study 1	Great Britain	1997	TV	whole/during day	total	1 cf	excluded
59	Skoric and Furnham 2002, study 2	Serbia	1997	TV	whole/during day	total	1 cf	excluded
60	Uray and Burnaz 2003	Turkey	1997	TV	whole/during day	visual	up to 2 cf	excluded
61	Valls-Fernandez and Martinez-Vicente 2007	Spain	2005	TV	primetime	total	up to 2 cf	excluded
62	Wee et al. 1995, study 1 ^a	Singapore	1988	TV	primetime	total	up to 3 cf	included
63	Wee et al. 1995, study 2 ^a	Malaysia	1988	TV	primetime	total	up to 3 cf	included
64	Wee et al. 1995, study 3 ^a	Malaysia ^c	1988	TV	primetime	total	up to 3 cf	included

The table shows the categories of the moderator variables for each study. Country refers to the country where the study was performed. Year refers to the year of data collection. Channel indicates whether the study deals with TV or radio advertising. Time of day refers to the time of the day when the sample of advertisements was collected. Sample definition distinguishes between studies that either used codings for the total of visual and voice-overs figures or for a subsample. Central figures per advertisement indicate how many figures per advertisement were coded. Duplicates indicate whether duplicate advertisements were included in the sample or not

^a Different studies for different broadcasting stations

^b Spanish language TV in the US

^c Malaysian channel with Malaysian and Singaporean Audience

^d Mixed = differs for variables under investigation

(HDI), which is a composite index that takes life expectancy, adult literacy, and real GDP per capita adjusted for purchasing power parity into account. The UNDP (1995) introduced two additional measures of human development, the Gender-Related Development Index (GDI) and the Gender Empowerment Measure (GEM). The GDI uses the same dimensions as the HDI except for the fact that the former takes gender disparities in human development into account. The GEM is a measure of the degree of women's participation in political, economic, and professional activities and considers women's share of parliamentary seats, their share of earned income, and their share of jobs classified as professional, technical, administrative, and managerial. The aim and underlying premise of the GDI is to include gender equality in an overall assessment of a country's achievements. This identifies gender inequality as a human development issue, rather than a gender issue. The GEM, however, attempts to measure equity in agency rather than achievements in well-being (Bardhan and Klasen 1999) and is, therefore, considered a better indicator of women's changing capabilities to take advantage of opportunities. The measure lies between zero and one with greater values signifying higher levels of gender equality in a country.

The indices in each report are based on data from either 2 years prior (HDR 1999 to 2008) or 3 years prior (HDR 1998 and before). Hence, indices based on data from 1996 are lacking, where the average of the indices of 1995 and 1997 was used.

In the first analysis, the GEM from the same, as well as from one, two, and three years before and after the year of data collection of each study used in the meta-analysis were chosen. By correlating the data on gender stereotyping in advertising with the past, present, and future GEM values, the results should indicate whether gender stereotyping patterns in advertising are related to gender equality developments in a society and if so, whether the patterns in advertising precede or follow the gender-related values in society. A significant correlation would reveal that gender-related values are related to stereotyping patterns in advertising. When correlations are stronger for lagged GEM variables (i.e., gender stereotyping in advertising is more strongly related to past gender-related values in society), the results would indicate that gender-related values in society are likely to precede stereotyping in advertising.

In order to provide further proof of the relationship between stereotyping in advertising and gender-related values in society, a second analysis was performed in which the GEM from the year of the data collection of each study was selected. By applying a simultaneous equation model, the reciprocal relationship between gender-related values in society and gender stereotyping patterns in

advertising was tested. Simultaneous equation modeling requires the inclusion of exogenous variables in order to meet the conditions of identification (Bollen 1989), that is, additional predictors in the model beyond the degree of gender stereotyping in advertising and gender-related values as measured by the GEM are needed. For this purpose, the substantial predictors from the regression analysis, that is, masculinity (MASC), year (YEAR), and the interaction between these variables (MASCxYEAR), were chosen as exogenous variables that impact gender stereotyping in advertising. The degree of gender stereotyping in advertising (GSA) was measured as a mean value over all gender role variables in a study. As for the GEM, the HDI is an appropriate predictor since both measures are related, but the underlying indicators are different. Assuming that advertising content has a causal influence on values, this effect is presumably conditioned by the amount of advertising in the society. To account for this effect, the amount of ad spending per capita for TV and radio advertising (in US\$) (ADSPEND) was used as a proxy variable. Yearly data for most countries are provided by the Countries & Consumers database from Euromonitor International.

The resulting parsimonious models of the simultaneous equation are

$$\text{GEM} = \beta_{01} + \beta_{11}\text{GSA} + \beta_{21}\text{HDI} + \beta_{31}\text{ADSPEND} + \mu_1$$

and

$$\begin{aligned} \text{GSA} = & \beta_{02} + \beta_{12}\text{GEM} + \beta_{22}\text{MASC} + \beta_{32}\text{YEAR} \\ & + \beta_{42}\text{MASC} \times \text{YEAR} + \mu_2 \end{aligned}$$

where μ_1 and μ_2 are error terms assumed to be normal. A three-stage-least-square procedure (3SLS) is used to estimate the model, where the exogenous variables are taken to be instruments for the endogenous variables. Hence, the dependent variables GEM and GSA are treated as correlated with the error term, whereas all other variables are uncorrelated with the error terms.

Results

Effect size integration

Table 3 presents the results of the effect size integration. All of the gender role variables yield significant effects of the average $\ln(o)$, indicating a difference between females and males regarding the first category of the particular variable.

The average odds ratio in the last row indicates the odds that females are presented in the first category of each

Table 3 Meta-analytic odds ratios

Gender role variable	Weights ^a	k ^b	N ^c		Average ln(o)	−95% CI	+95% CI	Average OR
			female	male				
Mode of presentation	v	28	2526	3644	1.321***	1.034	1.608	3.747
	v/r				1.350***	1.066	1.635	3.859
Credibility	v	61	6530	7428	1.164***	.958	1.371	3.204
	v/r				1.214***	1.010	1.419	3.368
Role	v	59	6491	7334	1.380***	1.140	1.619	3.973
	v/r				1.434***	1.199	1.669	4.195
Location	v	39	3389	4449	1.244***	1.069	1.418	3.468
	v/r				1.305***	1.133	1.476	3.686
Age	v	44	5807	5795	1.159***	.975	1.342	3.186
	v/r				1.229***	1.043	1.416	3.418
Argument	v	32	2273	3824	.320**	.107	.533	1.378
	v/r				.387***	.166	0.607	1.472
Product type	v	41	2801	4605	.750***	.583	.916	2.116
	v/r				.777***	.607	0.948	2.176
End comment	v	23	1635	2519	.877***	.560	1.193	2.402
	v/r				.903***	0.592	1.214	2.466
Background	v	26	2385	3161	1.175***	.598	1.752	3.237
	v/r				1.208***	.633	1.784	3.348

A random effects model approach is used for integration of odds ratios and for calculation of confidence intervals

^a v = integration applies variance weights; v/r = integration applies variance weights and attenuates each effect size for measurement error using intercoder reliabilities

^b k is the number of studies/effect sizes

^c N is the combined sample size of females or males

* $p < .05$. ** $p < .01$. *** $p < .001$

variable compared to males. In particular, the odds that females:

- are presented visually/not speaking (vs. voice over) is almost four times the odds for males,
- are presented as product user (vs. authority) is more than three times the odds for males,
- are presented in a dependent role/relative to others (vs. an autonomous role/independent from others) is four times the odds for males,
- are presented at home/in a domestic environment (vs. at work) is about 3.5 times the odds for males,
- are younger is more than three times the odds for males,
- give an opinion or a non-scientific argument (vs. giving a factual/scientific argument) on behalf of a product is almost 1.5 times the odds for males,
- are associated with domestic products (body, home, food) is more than two times the odds for males,
- do not give their voice for the end comment is about 2.5 the odds for males, and
- are presented against a background of mostly females (vs. mostly males) is more than three times the odds for males.

The odds that females are presented in the second category are given by the reciprocal of the average odds ratio. For example, the odds that females are presented as authority (and not as product user) is less than a third of the odds for males ($1/3.2 = .31$). The table also presents the results of the combined $\ln(o)$ and odds ratio after each effect size has been corrected for measurement error. Not surprisingly, the values of the corrected odds ratio increase, with the highest increase for the gender role variables having the lowest interrater agreement/reliability (i.e., age and role).

Considering the stereotyping components, the magnitude of stereotyping is highest for occupational status. The combined $\ln(o)$ of occupational status is significantly higher than that of role behavior ($t=3.74$, $p<.01$) and that of physical characteristics ($t=2.22$, $p = .03$). There is no significant difference between physical characteristics and role behavior.

Regression analysis

The log odds for each gender role variable show considerable variance. Besides for location, the Q -statistics

(homogeneity statistic) do indeed indicate that the total variance of the log odds of each variable is significantly higher ($p < .01$) than the within-study variances, supporting the need to take a random-effects perspective and the appropriateness to apply moderating variables in a second step (Hunter and Schmidt 2000; Raudenbush 1994). The moderator variables are used as predictors in a regression model in order to explain the heterogeneity of the log odds of the gender role variables (besides location) that are based on a sample of at least thirty effect sizes (i.e., credibility, role, age, argument, and product type). Following recommendations in the literature (Schmidt et al. 1988) the log odds were not converted into z transformed values since the distribution already meets the normality assumption of regression. Three out of five regression models (credibility, role, and age) explain significant variance ($p < .05$). Only these subsets were analyzed in the following. They are the subsets with the highest number of effect sizes, whereas the other subsets were too small to apply the regression model or did not provide significant results, presumably due to low statistical power. The results of the models are presented in Table 4.

In order to control for overlaps of nonlinear terms with product terms (interaction of variables), squared terms were used as covariates. Product terms can become significant, even when there is no true interaction, due to shared variance of product terms and nonlinear terms when the main effect variables are correlated (Ganzach 1997). Following the recommendations by Cortina (1993), the first model includes only main effect predictors (and control variables), the second model adds quadratic terms for the main effect predictors masculinity and year, and the third model (full model) adds an interaction term between masculinity and year. As the sample size compared to the number of predictors is rather small, which also reduces statistical power of single predictors, a fourth regression was computed that is based on only those predictors that turned out to be significant in the full model, except for the main effect predictors when a significant interaction term appears and except for the quadratic terms of the corresponding main effect predictors. In order to avoid collinearity problems, the predictors involved with the interaction term were centered around the mean. Although the values of the variable year do not represent a continuous series, the regression models were checked for autocorrelation. The Durbin-Watson-statistics do not indicate any problems with autocorrelation for any of the regression models.

After controlling for method and coding effects, sampling year and masculinity show main effects for credibility and role. These effects are, however, qualified by an interaction effect. Although the interaction effect in the full model for credibility is only marginally significant, it becomes significant in the final model where non-contributing predictors were dropped. For the purpose of

interpretation, the coefficients of the regression model of the log odds on year were compared between the group of low masculinity and high masculinity countries that were separated by a median split. The results show that in low masculinity countries, the effect of year is not significant, while in high masculinity countries, year has a significant (credibility: $p < .05$) or at least a marginally significant (role: $p = .077$) negative effect on gender stereotyping variables. The results indicate that gender stereotyping has decreased over the years, but this decrease has occurred primarily in high masculinity cultures. For the variable age, there is a main effect of year, indicating that gender role differences regarding age have decreased over time.

In order to see whether the effects in the models are indeed substantial and not only due to the three subsets (credibility, role, and age) being retained, an additional regression model with all effect sizes as dependent variables was performed. The same predictors as in the full model (model 3) except for the predictors related to the particular codings of credibility, role, and age were used. The results remain stable with a significant negative effect of year ($b = -.02$, $se = .02$, $p = .01$) and a marginal significant effect of the interaction term ($b = -.01$, $se = .01$, $p = .068$). Both effects become significant ($p < .05$) after dropping all non contributing variables (model 4).

Correlation analysis and simultaneous equation analysis

Table 5 shows the correlations of the Gender Empowerment Measure (GEM) index with gender stereotyping in advertising (GSA). Since an overall gender stereotyping value that describes the degree of stereotyping in a country at a particular period in time is of interest, the log odds over all gender role variables from each study were averaged to obtain GSA, following the definition of stereotyping as provided above. To take the varying number of log odds from a study into account, frequency weights reflecting the frequency of effect sizes per study were applied. As can be seen from the reduced number of studies k in Table 5, the indices for all 64 studies are not completely available since the GEM is not available before 1992.

GSA is significantly correlated with the GEM from the past but not with index values from the present and the future. The correlations of GSA with the past GEM of 3 years and 2 years are significantly different from all three correlations with GEM values from the future ($p < .05$). The correlation coefficients are negative due to the coding of the variables (high GEM scores indicate high gender equality values in society, whereas high GSA values indicate a high degree of gender stereotyping in advertising in a country at a given year). The results show that gender-related values in society precede the stereotyping patterns in advertising.

Table 4 Regression analysis

Predictor (moderator variables)	Credibility ^a				Role ^a				Age ^a			
	1	2	3	4	1	2	3	4	1	2	3	4
Constant	.756 ^b (.633)	.593 (.644)	.559 (.631)	1.186*** (.160)	.870 (.685)	.697 (.682)	.596 (.630)	.556 (.514)	1.648*** (.218)	1.571*** (.227)	1.574*** (.230)	1.306*** (.108)
Masculinity index ^c	.009 (.008)	.027* (.011)	.025* (.011)	.019 [#] (.011)	.005 (.008)	.008 (.011)	.004 (.011)	.001 (.010)	-.007 (.006)	.003 (.009)	.003 (.009)	–
Year ^c	-.039*** (.013)	-.027 [#] (.016)	-.025* (.016)	-.028 [#] (.016)	-.041* (.016)	-.028 (.017)	-.025 (.016)	-.027 [#] (.015)	-.048** (.014)	-.053*** (.017)	-.053*** (.017)	-.055*** (.017)
Masculinity index, quadratic term ^c	–	.001* (.001)	.001 (.001)	.001 (.001)	–	.001 (.001)	-.001 (.001)	-.001 (.001)	–	.001 (.001)	.001 (.001)	–
Year, quadratic term ^c	–	.001 (.001)	.001 (.001)	.001 (.001)	–	.004 [#] (.002)	.003 (.002)	.003 (.002)	–	-.001 (.002)	-.001 (.002)	-.002 (.002)
Interaction masculinity index X year ^c	–	–	-.003 [#] (.001)	-.003* (.001)	–	–	-.004*** (.001)	-.005*** (.001)	–	–	-.001 (.001)	–
TV vs. radio	.239 (.443)	.172 (.432)	.228 (.424)	–	1.016 [#] (.548)	.912 (.542)	1.072* (.502)	1.076* (.493)	–	–	–	–
Time of day	.305 (.221)	.379 [#] (.218)	.277 (.221)	–	.358 (.231)	.373 (.232)	.243 (.218)	–	.017 (.185)	.090 (.191)	.079 (.195)	–
Total sample vs. sub-sample of central figures	-.326 (.319)	-.287 (.314)	-.325 (.308)	–	-.618 [#] (.353)	-.567 (.349)	-.677* (.324)	-.717* (.301)	-.517 (.332)	-.537 (.339)	-.545 (.344)	–
Central figures per ad	.319 (.336)	.298 (.330)	.336 (.324)	–	-.275 (.328)	-.264 (.323)	-.189 (.299)	–	-.347 (.280)	-.388 (.286)	-.362 (.294)	–
Duplicates	-.507* (.237)	-.445 (.244)	-.482* (.240)	-.508* (.203)	-.946*** (.238)	-.873*** (.238)	-.936*** (.221)	–	.129 (.243)	-.007 (.264)	-.032 (.272)	–
Credibility coding	.308 (.382)	.351 (.389)	.358 (.381)	–	–	–	–	–	–	–	–	–
Role coding	–	–	–	–	-.026 (.329)	-.014 (.324)	-.012 (.298)	–	–	–	–	–
Age coding	–	–	–	–	–	–	–	–	-.289 (.254)	-.106 (.280)	-.115 (.284)	–
Model summary												
QR (explained)	34.336**	40.783**	44.726**	36.661***	52.492***	57.218***	67.491***	65.551***	19.069***	21.852*	22.075*	11.101**
QE (residual)	70.586	64.139	60.196	68.261	65.764	61.038	50.765	52.705	32.117	29.334	29.111	40.158
R ²	.327	.389	.426	.349	.444	.484	.571	.554	.373	.427	.431	.217
k ^e	60	60	60	60	58	58	58	58	43	43	43	43

WLS Regression analysis predicting log odds ratios of gender role variables from moderator variables as described in the section “Coding of moderator variables”. Model 1 is a regression model with main effect predictors (masculinity and year) and control variables only, model 2 additionally includes a quadratic term for the main effect predictors, model 3 (full model) includes quadratic terms and an interaction term between the main effect predictors in addition, and model 4 drops all non-contributing predictors from model 2 except for main effect predictors when an interaction term is included and the corresponding quadratic terms for main effect predictors, respectively

^a Dependent variables as measured by the reliability weighted log odds ratios

^b The unstandardized regression coefficient with the standard error in brackets is given

^c The predictors are centered around the mean

^d The moderator variable is a constant for the particular subset of variables

^e k is the number of log odds ratios (i.e., the number of studies) included in the regression model. One case is missing because no masculinity index is available for data from Zimbabwe (Furnham et al. 2001)

[#] $p < .10$ * $p < .05$. ** $p < .01$. *** $p < .001$

Table 5 Correlation analysis

	Correlations with GEM							
	Full data set ^a					Reduced data set		
	r	k ^b	n ^c	R ² -linear ^d	R ² -non-linear ^d	r	k	n
minus 3 years	-.286***	30	186	.082	.098	-.217*	20	124
minus 2 years	-.258***	29	177	.066	.082	-.184*	20	124
minus 1 year	-.196**	30	180	.038	.054	-.176*	20	124
same year	-.131 [#]	33	190	.017	.036	-.161 ⁺	20	124
plus 1 year	-.027	32	180	.001	.008	-.168 ⁺	20	124
plus 2 years	-.014	29	171	.001	.001	-.130	20	124
plus 3 years	-.023	27	159	.001	.009	-.128	20	124

Correlations between GSA (average log odds ratios of all gender role variables per study) and GEM index values. To take into account the varying number of log odds from a study, frequency weights were applied

^a The full data set considers all available GEM indices, whereas the reduced data set considers only data when index values are available for all 7 years

^b k refers to the number of studies

^c n refers to the frequency of log odds

^d Non-linear relationships were tested by a quadratic curve

[#] $p < .10$ * $p < .05$. ** $p < .01$. *** $p < .001$

Figure 1 shows the scatter diagrams of the correlations of GSA values with the GEM index over all 7 years. A regression line is fitted to the data. The slope of the line shows that the relationship becomes continuously weaker as we move from the relationship with past GEM index values to the relationship with present and future GEM index values.

The figures seem to exhibit the possibility of non-linearity. Correlation analysis is based on the assumption of linear relationships, though. Therefore, a quadratic curve was fitted to the data. The explained variance (R^2) of both the linear and the non-linear relationship is shown in Table 5. As expected the non-linear relationship explains more variance, but the explained variance does not differ

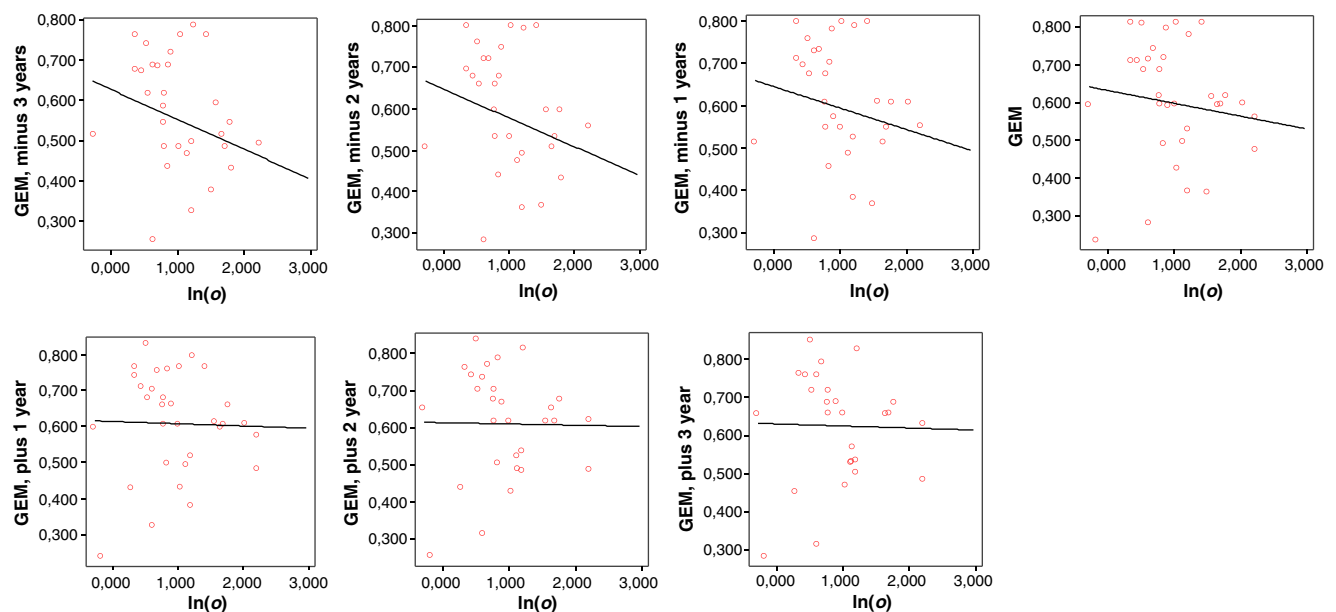


Fig. 1 Relationship between Stereotyping in Advertising and GEM. Correlations between GSA (average log odds ratios of all gender role variables per study) and GEM index values from 3 years before the

data collection up to 3 years after the data collection year of a gender roles study were computed. To take into account the varying number of log odds from a study, frequency weights were applied

Table 6 Simultaneous equation model

Variables	Regression coefficient (standard error)	z	Chi ²	k ^a	n ^b
Dependent variable: GSA			29.76***	32	181
Constant	1.780 (.255)	6.98***			
GEM	−1.340 (.472)	2.97**			
MASC	.001 (.004)	.34			
YEAR	.022 (.015)	1.45			
MASCxYEAR	−.002 (.001)	2.29*			
Dependent variable: GEM			289.79***	32	181
Constant	−.340 (.151)	2.26*			
GSA	.082 (.053)	1.56			
HDI	.822 (.053)	6.34***			
ADSPEND	.001 (.001)	7.41***			

3SLS-regression with GSA (average log odds ratios of all gender role variables per study) and GEM as endogenous variables. To take into account the varying number of log odds from a study, frequency weights were applied

^a k refers to the number of studies

^b n refers to the frequency of log odds

* $p < .05$. ** $p < .01$. *** $p < .001$

significantly from the explained variance revealed by a linear relationship. Therefore, a linear relationship as indicated by the correlation analysis can be assumed.

The figures also indicate the possibility of outlier effects—stemming from the variation in the number of studies—since GEM index values were not available over all 7 years for each gender role study (i.e., from 3 years before up to 3 years following the data collection of the study). For instance, one outlier appears for which no data are available for GEM index values from the past, but from the present and the future, and where GEM is below .3 and GSA is below 0. This outlier refers to GSA from a 1992 data set from Turkey (with a low GEM index), for which GEM indices are only available from 1992 on, but not before. In order to control for effects of such incomplete data sets, the same analysis was performed for a reduced data set where only studies that receive GEM index values over all 7 years are included. The sample is thus reduced to only 20 studies for correlations of GSA with GEM. The results for the reduced data set in Table 5 show that the difference between the correlation coefficients becomes weaker, but the pattern of decreasing correlations remains the same as in the full data set. Hence, outliers appear not to confound the results of the correlation analysis.

Table 6 shows the results of the simultaneous equation model that was estimated with the 3SLS-regression procedure in Stata. The endogenous and exogenous variable are uncorrelated except for the exogenous variable YEAR that is correlated with the endogenous variable GEM; after dropping the variable from the equation, the results remain stable.

The results support the influence of the GEM on gender stereotyping in advertising (GSA), but the reverse effect of

GSA on GEM is not significant. The results remain stable when lagged effects are considered, that is, when GEM (gender-related values in society) precedes GSA (stereotyping in advertising); using a GEM_{t-1} value from the past (i.e., using the GEM as well as the HDI and ADSPEND one year before the data of the study were collected), GEM_{t-1} impacts GSA ($z = 3.03$, $p < .01$). However, when the GEM_{t+1} in the future is predicted from the present GSA (i.e., using the GEM, HDI, and ADSPEND one year after the data of the study were collected), the effect is not significant: GSA does not impact GEM_{t+1} ($z = .09$, $p = .93$).

Discussion

Contribution and implications

The main contribution of this study to the research stream on gender roles in advertising lies in providing a quantitative review of previous studies. The results provide information about the degree of stereotyping in advertising, explain the development of gender stereotyping over the years more thoroughly, and try to answer the question of whether gender stereotyping in advertisings molds or mirrors gender-related values of societies.

The integration of log odds of several gender role variables taken from 64 studies shows that gender stereotyping is prevalent in advertising, with the odds of females presented in a particular category being between 1.5 to almost four times the odds for males. The results may be considered particularly significant, since a random effects perspective was taken that comes

up with rather conservative estimates (Raudenbush 1994). Of all stereotyping components, occupational status is the component with the highest degree of stereotyping in advertising. Occupational status is an important category, as the most significant changes in gender equality development can be observed in this area, and gender equality in this area is a major concern of gender-related policy. Great strides have been made by women in the workplace and in education over the years, and it is somewhat surprising that the depiction in advertising deviates substantially from what is a widely accepted social goal and what is happening in the real world; for instance, the gap between women and men in adult literacy and school enrollment were down by half between 1970 and 1990 (United Nations Development Program 1995) and women were earning 48% of bachelor's degrees by 2001 (National Science Foundation 2007).

While these results may be disappointing from a gender equality policy point of view, the moderator model suggests that the degree of stereotyping has decreased over the years. The decrease, however, is mostly due to developments in high masculinity countries (e.g., Japan), while the results indicate no substantial decrease in countries with low masculinity indices (e.g., Denmark, Sweden). Gender issues are already resolved to a great extent in low masculinity countries, and thus there might be less room for improvement over the years regarding stereotypical depictions of gender roles in advertising.

The study further provides empirical results on the nature of the relationship between gender stereotyping in advertising and gender-related values in society. The findings of a correlation analysis and a simultaneous equation model suggest that gender stereotyping in advertising depends on developments related to gender equality in society rather than the other way around. From a theoretical point of view, the results of the study do not support the idea of aggregated long-term cultivation effects, at least when it comes to the cultivation of gender roles. Since cultivation studies actually argue with the amount of TV viewing as independent variable, data on average TV viewing that were available for 33 out of 64 studies (from Eurodata TVworldwide) were used, but the correlation between these figures and the mean gender stereotyping variable were not significant ($p > .7$). The results do not, however, contradict the short-term effects of learning of gender roles as has been shown by previous research (McGhee and Frueh 1980). They also do not contradict the proof of causality of cultivation effects via experimental studies. However, they indicate the need to investigate cultivation effects from different perspectives using varying methodological approaches.

Overall, the results support the mirror argument over the mold argument in the long-standing debate about advertis-

ing's consequences for society. Criticisms regarding gender stereotyping in advertising may be questioned and carefully revised in the face of this study's results. The results also put the value of public policy measures against gender stereotyping in advertising into perspective. As a matter of fact, the European Parliament has just recently issued a resolution on gender stereotyping in the media and has asked the membership countries to take actions to avoid stereotypical depictions of women and men on TV (European Parliament 2008). The findings of this study suggest that these measures may be rather directed to other areas where stereotypical gender roles can arise (e.g., kindergartens, elementary schools). On the other hand, they might be useful for the practice of advertising when being confronted with public policy concerns or plans for government regulations of advertising practice regarding gender stereotyping in advertisement.

The results show that marketers apparently react to gender-related developments in society and use existing values in a society to promote their brands rather than trying to alter these values. The findings of the study support the recommendation that international marketers should be aware of the time- and culture-dependent variations of gender-related values since gender depictions in advertising that deviate from gender-related values in society can have negative effects on consumers. They may disbelieve the portrayal of central figures and reject the message, which could negatively impact their purchase decisions (Kilbourne 1986; Lundstrom and Sciglimpaglia 1977). Some consumers may even be offended by inappropriate gender roles and publicly criticize the ad or organize movements against the advertiser.

The study attempts to measure the degree of stereotyping in advertising and find supportive evidence for the mold over the mirror argument based on this data. Odds ratios provide a quantitative measure by which results over different studies could be compared and tested similar to what has been done in this meta-analysis. It is important to note that the odds ratio uses a comparison against a baseline, which is equality in the case of gender roles. As discussed above, this might be appropriate for occupational roles and some role behavior variables, where equality is a widely accepted social goal. The comparison baseline for physical characteristics, however, might be the actual distribution in society rather than an equality distribution in order to avoid stereotyped depictions. To illustrate, body height is by nature not equally distributed between men and women and an equal distribution is not a social goal. An unbiased depiction that prevents stereotyping might therefore be the actual distribution values that can be used as comparison baseline. The same might apply to trait descriptors (e.g., self-assertion, sense for community).

By using meta-analytic odds ratios and by applying a simultaneous equation approach that includes exogenous

variables that are inferred from the study context rather the study itself (HDI, masculinity index, ad spendings), the study provides a further methodological contribution showing how to test such relationships on a macro level. Nevertheless, the approach is not without limitations that are discussed in the following.

Limitations and future research

The study has several limitations that mainly stem from the unique characteristics of a content-analysis based meta-analysis. They should be taken into account and may possibly be addressed in future studies.

Regarding the coding scheme, the literature search revealed that 47 out of 84 studies have used the coding scheme this meta-analysis is based on. Other studies have investigated gender stereotypes in advertising using different coding categories (e.g., the scheme by Goffman (1979)). These coding categories are not only used less often than the categories by McArthur and Resko (1975), but also underlie more variation (i.e., categories are applied less consistently). Still, the exclusion of studies in this meta-analysis is not at random rather than systematic, which can cause bias. Further variables from other content analysis could have been included, but the underlying number of effect sizes would then be rather small. Also, there is no reason to assume that choosing further variables would lead to different results in terms of stereotyping, since the variables from the McArthur/Resko coding scheme already cover a broad range of different stereotyping variables across different stereotyping components. Future research may compare these results with the results of other stereotyping variables taken from studies that rely on different coding schemes. Due to the small number of effect sizes underlying these variables and the lack of comparability of some variable categories, such an approach requires a narrative review rather than a quantitative analysis.

Although it is not uncommon that a meta-analysis on a particular topic includes several studies by the same researcher or research team (who are experts in the particular field), the research group around Adrian Furnham is clearly dominating the study sample of this meta-analysis. A comparison of effect sizes that come from a study where Adrian Furnham was one of the authors with the remaining effect sizes reveals no significant difference, though. Since content analytic methods are based on standardized coding categories and data were coded by independent coders, not by the main authors, the problem seems less severe, except for cases of high inconsistencies among coders, where authors were resolving inconsistent codings. The high intercoder reliability of the studies included in the meta-analysis show that such problems might be negligible.

The same content coding scheme developed in one country at one particular time period is applied to other stimuli resulting from and mirroring a different and unique culture at different periods in time. Is such a coding scheme sufficiently robust and sensitive to interpret many subtle nuances, particularly in the area of gender stereotyping (Furnham and Mak 1999, p. 415)? Cross-cultural and longitudinal comparisons require consistent data at the expense of the adjustment of codings to cultural and temporal conditions. The analysis would certainly profit from an additional emic approach that focuses on gender stereotyping peculiarities in different cultures at different periods in time.

Neither McArthur and Resko (1975) nor other authors who have applied their coding scheme provide a conceptual framework or a theoretical justification of the categories. The application of the coding scheme in this meta-analysis is merely based on its wide application in the majority of gender role studies in advertising research, while the concept of stereotyping components in this study is provided post hoc.

The selection of channels in the content analyses may not necessarily reflect the value of a society as a whole, but rather the values of the audience of a particular channel. Especially in most Western societies, the TV audience is less representative of society of today as it was about 40 years ago due to the fragmentation created by cable channels. Most of the content analyses have therefore tried to select one or more channels that comprise an audience that is somewhat representative of the country (the description refers to “general audience, not segmented, most popular and representative channels, highest market share, most popular channel”), whereas a few studies indeed choose a particular channel that seems not necessarily representative. An additional analysis shows that the size of the log odds between both groups of studies does not differ ($t=1.48$, $p=.14$), and that the correlation between year and stereotyping variables remains negative and significant after controlling for both groups ($r=-.23$, $p<.01$). Hence, the effects do not depend on the fact that the TV/radio audience is broad or somewhat segmented in the content analyses that were used for the meta-analysis. Nevertheless, it should be considered that although TV is still the medium that reaches the highest percentage of the overall population, the TV audience has become less representative of the society as a whole over the years—also due to the new media such as the Internet.

As for the data sources, all data used for the regression model and the simultaneous equation model are data from a particular country in a particular year, except for the masculinity index by Hofstede. This index has been shown to be quite stable over time (Linghui and Koveos 2008) and can be considered quite resilient; therefore, a bias due to

different data sources seems negligible. The simultaneous equation model used an index of gender equality development as an indicator for the current gender-related values in a country at different periods in time. Although GEM incorporates more than one attribute, it certainly is not a fully comprehensive list of human development indicators that represent how gender-related values manifest themselves in everyday life. The addition of extra attributes would be desirable, but this would introduce new complications with respect to the assignment of weights or the costs of obtaining information on all attributes. In fact, more indicators are not necessarily better in the sense that there may be an overlap among some indicators (e.g., UNDP 1994, p. 91); using the GEM seems to be a pragmatic way of measuring gender-related values, although improvements remain a challenge for future research. Since GEM index values are available only from 1992 on, the results of the analysis are restricted to the more recent time frame, and therefore the relationship between the values in society and gender stereotyping in advertising in the 1970s and 1980s remains unexplored. This should be considered when interpreting the data. Furthermore, the two equations are far from complete and other variables could be included in order to provide a more complete framework. The primary idea of the model was to provide stronger evidence of the relationship between gender stereotyping and gender-related values beyond a simple correlation analysis. Quasi-experimental data using gender development indices of a few countries that are correlated with gender stereotyping in advertisements that are randomly sampled and coded over a continuous series of years would be the next step to validate the results of this meta-analysis.

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