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How humor in advertising works: A meta-analytic test of alternative models

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Abstract This study tests a cognitive and an affective model based on extant explanations of the effects of humor along with a new affective–cognitive model. Results are derived from meta-analytic data and show how previous explanations may be integrated in order to explain how humor in advertising works. Humor reduces negative cognitions related to the ad because it serves as a distraction from counter-argumentation. In order to maintain positive affect, humor reduces cognitive efforts, in particular those related to brand-related cognitions, thus supporting a vampire effect; that is, humor distracts from processing central benefits of the brand. Humor exerts its strongest impact along affective paths, supporting the dominance of affective mechanisms. Affect and cognition do interplay in line with a congruency effect where the impact of positive affect on attitudes towards the ad is mediated by positive cognitions. The models differ when they are performed based on data from studies using either real or fictitious stimuli. Depending on the type of stimuli, slight changes occur that can be explained by the lack or existence of prior brand experience. Overall, the integration of affect and cognitions into one model provides a better explanation than the previous solely cognitive or solely affective models.

Keywords Humor · Advertising · Meta-analysis · Structural equation modeling

The use of humor has become common practice in advertising. About one out of five television ads contains humor appeals (Beard 2005). Quite an effort has been made to investigate the impact of humor in advertising. The literature provides different explanations and models, which can be broadly categorized into cognitive and affective models to explain how humor in advertising works. Previous research is far from unambiguously supporting either model (Gulas and Weinberger 2006), and some of the underlying mechanisms even assume contradictory effects. The present study uses meta-analytic data on advertising effects in order to test these models and

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to integrate cognitive and affective processes into one model that provides a more thorough understanding of how humor in advertising works.

The results contribute to the literature on humor effects in advertising. A recent meta-analysis (Eisend 2009) has shown that humor enhances attitudes towards the ad (A_{AD}), attitudes toward the brand (A_{BR}), and positive affect. Furthermore, humor reduces negative affect. This meta-analysis, though, does not reveal a significant integrative effect related to cognitions, contributing to the conclusion that humor effects are primarily based on affective processes. Cognitions have been treated as positive and negative but have not been further differentiated into brand-related and ad-related cognitions. The effect of humor on both kinds of cognitions can have opposite signs, which might explain the overall nonsignificant effect on cognitions. The present study, therefore, contributes to the findings of the recent meta-analysis by examining the effects of humor on positive and negative ad-related cognitions and brand-related cognitions, respectively. Furthermore, this study uses effect sizes from different meta-analyses (including the meta-analysis by Eisend 2009) in order to test different models that explain the effect of humor in advertising; by this, the findings go beyond direct effects of humor in advertising, since they are modeled as chain of effects along the underlying cognitive or affective processes, and they show the relationship between both processes, which has not been considered in previous humor studies.

1 Explaining how humor in advertising works

The literature on the mechanisms underlying humor's influence on consumers comprises several theoretical explanations, which can be categorized into cognitive and affective models, as well as be integrated into an affective–cognitive model.

1.1 Cognitive model

There are several explanations for the cognitive model. One of them is based on an information processing approach (McGuire 1978). When exposed to advertising, a consumer pays more or less attention. Humor in advertising has a high attention-attracting ability (Eisend 2009). Attention leads the consumer to elaborate more on the message, enhancing cognitive responses. Provided that the message offers positive information, which applies to most advertisements, positive cognitions related to the ad and to the brand outweigh negative ones. As a result, consumers develop more favorable A_{AD} and A_{BR}.

Another cognitive explanation is based on the insight that humor can distract consumers from processing counterarguments. Consumers may generate counter-arguments when they face a persuasion attempt, which is usually the case when they are exposed to advertising (Krishnan and Chakravarti 2003; Nelson et al. 1985). Reduction of counterarguments positively influences A_{AD} and A_{BR}.

A different interpretation of the distraction effect refers to the idea that the humorous part of the ad distracts consumers from processing the central benefits of the brand. Although consumers generate cognitive responses regarding the humorous part of the message, they do not necessarily generate cognitive responses

that refer to the brand. This has been termed as the "vampire effect" by practitioners, where creative advertising sucks the life-blood of the brand dry (Evans 1988). The effect finds support in education research where Zillmann et al. (1980) have shown that respondents occupied with the humor in the message are less attentive to other parts of the message.

Hence, there are three ways by which humor can affect cognitive responses of consumers:

1. Humor enhances cognitions in general, whereby positive cognitions outweigh negative ones (information processing approach)
2. Humor reduces negative cognitions (distraction effect)
3. Humor enhances ad-related cognitions but reduces brand-related cognitions (vampire effect)

These cognitive responses, in turn, have impacts on A_{AD} and A_{BR} such that positive cognitions enhance, whereas negative cognitions reduce attitudes.

1.2 Affective model

Gulas and Weinberger (2006) have suggested that an immediate effect of humor is a generic affective response which includes happiness, fun, pleasure, etc. Affect triggered by humor is a so-called integral affect, which is elicited by features of an object and is directly linked to this object. Integral affect has a direct influence on evaluations.

A direct effect of humor on evaluations has also been supported in previous studies (Gelb and Pickett 1983; Strick et al. 2009). The mechanism underlying this effect can be explained by processes of simple evaluative conditioning (De Houwer et al. 2001): a close proximity between the target (the brand) and an affect experience (triggered by humor) results in the valence of feelings being transferred to the target. To put it simply, an "affect transfer" occurs such that humor evokes affect, which is then carried over to the ad and the brand. Another explanation for a direct effect of humor on evaluations builds on the idea that affective experiences are associated with particular action tendencies such as approach or avoidance (Frijda et al. 1989). These tendencies relate to actual behavior and can also be translated spontaneously into evaluations. Both mechanisms imply an automatic and direct effect of humor-triggered affect on evaluations.

Affective reactions can be broadly categorized as either positive or negative. Both reactions are moderately negatively correlated (Diener et al. 1995). They are commonly treated as separate constructs. Humor enhances positive affect and suppresses negative affect (Eisend 2009; Hampes 2005). Both kinds of affective reactions have impacts on liking of the ad (A_{AD}) and of the advertised brand (A_{BR}).

1.3 Integrative affective–cognitive model

Affective responses triggered by humor can shape responses on different cognitive levels, such as perceptions, thoughts, and decisions. While integral affect has a direct influence on evaluations as discussed above, it may also lead to indirect effects such that affective responses have an impact on evaluations by changing a person's

perceptions of and thoughts about a target (e.g., Fishbein and Middlestadt 1995). For instance, feelings of pleasure may reinforce thoughts related to positive experiences. This mechanism is consistent with the explanation of congruency effects of incidental affect on evaluation: evaluations are assimilated toward affective states because these states cue mood-consistent materials in memory, which then color perceptions of and thoughts about a target (Cline and Kellaris 2007; Isen et al. 1978). That is, people who experience negative affect provide less positive evaluations than people who experience positive affect. An alternative explanation for this effect is given by the "affect-as-information" hypothesis (Schwarz and Clore 1983): people tend to inspect how they feel about objects they are about to evaluate. Although this "how-do-I-feel-about-it?" heuristic was originally proposed as an explanation of incidental mood effects on judgment, there is evidence that shows that the heuristic is used with integral affect as well (Pham et al. 2001). Unlike the direct affect–transfer described above, the heuristic is based on inferences and is not automatic: when people make judgments, they do not automatically rely on their feelings but rather reflect on them.

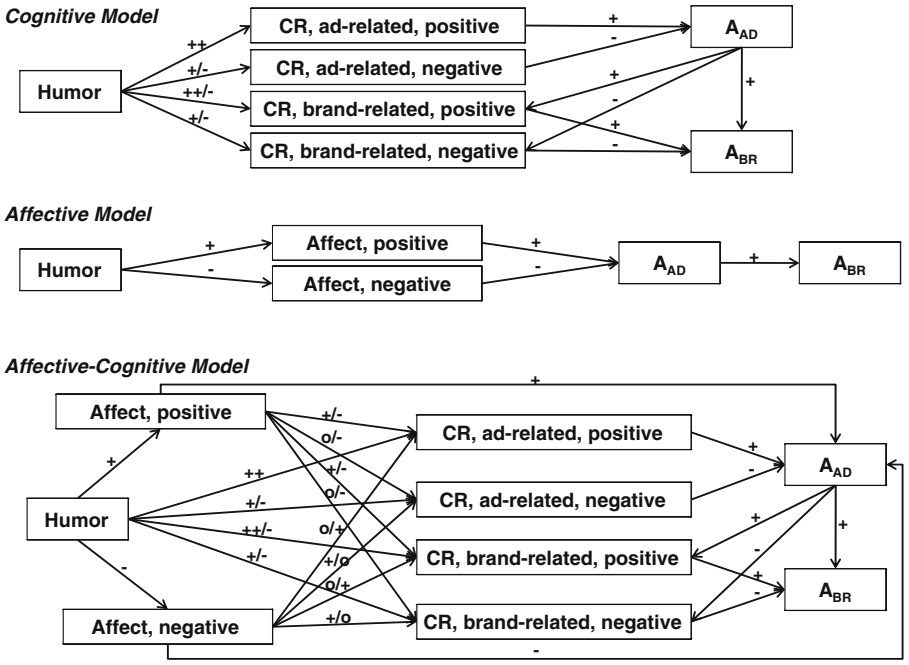
Another mechanism based on affect regulation models assumes that people who are in a positive affective state avoid what is bad in order to protect their positive state and even approach what is good in order to maintain it (Andrade 2005; Gross 1998). Detailed cognitive processing requires effort and can disrupt positive affective states (Batra and Stayman 1990). Therefore, positive affect evoked by humor may lead to a reduction of cognitions. As for negative affect, consumers may actively engage in regulation activities by seeking positive information and enhancing positive thoughts.

Hence, there are two main explanations about how humor-induced affect influences cognitions:

1. Humor enhances positive affect, which leads consumers to process congruent information by enhancing positive cognitions; humor reduces negative affect and hence negative cognitions (congruency effect).
2. Humor enhances positive affect, which in turn reduces processing of cognitions, whereas negative affect enhances processing of positive cognitions (affect regulation).

Figure 1 illustrates the affective and cognitive model and an integrative affective–cognitive model. The affective and the cognitive model are nested within the integrative model. The models distinguish between ad-related and brand-related cognitions. The relationship between ad cognitions, brand cognitions, A_{AD}, and A_{BR} fits into the widely accepted dual mediation hypothesis (Homer 1990; MacKenzie et al. 1986). To explain it briefly, exposure to advertising produces an effect on ad and brand cognitions. Brand cognitions have an impact on A_{BR} whereas ad cognitions have an impact on A_{AD}. A_{AD} has impacts on both brand cognitions and A_{BR}. Some paths from humor to cognitions and from affect to cognitions in the model show alternative signs according to the alternative explanations provided above.

Previous research has shown that the effects of humor depend on several moderating variables. The following analysis applies three moderating variables that are commonly used in meta-analyses dealing with advertising effects: fictitious versus real brands, student versus non-student samples, print versus broadcast media. The models are tested



Note: + refers to positive effects, - refers to negative effects, o refers to null effects

Fig. 1 Models that explain cognitive and affective affects of humor in advertising

and compared within these subgroups in order to see whether the suggested models still hold or differ for different subgroups of humor studies.

2 Method

2.1 Meta-analytic correlations

The suggested models include nine variables in total. That is, 36 off-diagonal cells have to be filled in order to produce the input of the correlation matrix for structural equation modeling. For this purpose, integrated effect sizes from three meta-analyses are used (i.e., mean correlations, further on referred to as meta-analytic correlations); that is, the data that are used for the analysis are not results from individual studies but are aggregated results over individual studies as commonly provided by meta-analytic studies. Combining meta-analytically derived correlation matrices with structural equation modeling for theory testing has been advocated by Becker and Schram (1994), Viswesvaran and Ones (1995), and Shadish (1996) and has become a common practice in management research (e.g., Harrison et al. 2006; Lapierre and Hackett 2007; Zhao et al. 2007).

A recent meta-analysis on humor in advertising (Eisend 2009) provides meta-analytic correlations for the relationship between humor and advertising outcome

measures. The data for this meta-analysis are retrieved from studies published in marketing, consumer research, psychology, and communication journals; and dissertations, proceedings, and books dating from 1980 until 2003. Since access to the whole dataset of the meta-analysis is available, not only meta-analytic correlations but also effect sizes from each study can be used. These individual effect sizes are used to recode the correlations between humor and cognitions by referring to variable information given in the respective studies. This way, meta-analytic correlations for the relationship between humor and positive/negative ad-related cognitions, as well as for the relationship between humor and positive/negative brand-related cognitions, are computed.

As a next step, meta-analytic correlations of two other meta-analyses dealing with advertising effects are included. Brown and Stayman (1992) investigate antecedents and consequences of attitude towards the ad. The studies in their meta-analysis are published between 1981 and 1991 in marketing and consumer research journals. Brown et al. (1998) investigate the relationship between ad-evoked feelings and advertising responses (cognitions, attitudes, and purchase intentions). Their meta-analysis is based on articles published in marketing and consumer research journals between 1986 and 1995.

If more than one meta-analysis reports on the same relationship, the meta-analytic correlation reflecting the greatest amount of data (in terms of cumulative sample size) is used for the initial analysis. To identify remaining correlations which are not provided in any of the three meta-analyses (such as the correlation between positive ad-related cognitions and negative affect), all studies included in the meta-analysis by Eisend (2009) are searched. Then, studies that have been identified by Eisend (2009) but have been excluded due to lack of statistical information are searched. A minimum of two correlations for each cell of the matrix is included in the correlation matrix. The use of only two estimates for such relationships is common in meta-analytic structural equation modeling studies (e.g., Geyskens et al. 1999; Zhao et al. 2007). The correlation matrix in Table 1 shows the meta-analytic correlations, the underlying number of correlations (i.e., individual studies), and the cumulative sample size.

Meta-analyses apply various correction procedures. To provide consistent estimates, a fixed model approach with sample-size weighted correlations is applied, since this approach has been used in two of the meta-analyses (Brown et al. 1998; Brown and Stayman 1992). The meta-analysis by Eisend (2009) applies a random-effects approach with sample-size weights as well as correction procedures for measurement errors and artificial dichotomization of the independent variable. Since the whole dataset of this meta-analysis is available, effect sizes for a fixed model approach with sample size weights only are newly computed for this study. In all meta-analyses, the integration of correlations is based on independent observations; that is, a mean value is used when more than one correlation per sample has been reported.

2.2 Structural equation model

Structural equation model software packages assume correlation matrices as input. The input matrix consists of meta-analytic correlations, which are retrieved

Table 1 Meta-analytic correlations among constructs in the models

		Humor	CR, brand-rel., positive	CR, brand-rel., negative	CR ad-related, positive	CR, ad-related, negative	Affect, positive	Affect, negative	A_{AD}	A_{BR}
Humor		.798[a]								
CR, brand-related, positive	*r*	.013								
	k	8	.838							
	N	320								
CR, brand-related, negative	*r*	−.058	−.015							
	k	6	2	.800						
	N	240	498							
CR ad-related, positive	*r*	.067	.016	−.103						
	k	8	2	2	.838					
	N	320	498	498						
CR, ad-related, negative	*r*	−.110	−.274	.081	−.070					
	k	6	2	2	2	.800				
	N	240	498	498	498					
Affect, positive	*r*	.135	.027	−.031	.112	−.075				
	k	6	4	4	4	4	.800			
	N	1,153	496	794	496	496				
Affect, negative	*r*	−.167	−.097	.018	−.028	.091	−.229[b]			
	k	3	2	2	2	2	16	.781		
	N	400	497	497	497	497	3,788			
A_{AD}	*r*	.192	.235	−.107	.258	−.309	.482[b]	−.428[b]		
	k	87	2	2	5	2	25	17	.810	
	N	18,314	495	495	606	495	3,762	3,068		

Table 1 (continued)

		Humor	CR, brand-rel., positive	CR, brand-rel., negative	CR ad-related, positive	CR, ad-related, negative	Affect, positive	Affect, negative	A_{AD}	A_{BR}
A_{BR}	*r*	.098	.123	−.075	.071	−.120	.330[b]	−.342[b]	.600[c]	
	k	49	4	4	4	4	19	14	33	.840
	N	4,298	834	835	835	834	3,062	2,739	4,613	

k number of correlations/individual studies, *N* cumulative sample size with harmonic mean=601

[a] Entries in the diagonal are sample size weighted average reliability coefficients (meta-analytic reliabilities)

[b] Meta-analytic correlations taken from Brown et al. (1998)

[c] Meta-analytic correlations taken from Brown and Stayman (1992)

All other meta-analytic correlations are either taken from Eisend (2009) or taken from studies that were found in the literature review by Eisend (2009) but were excluded due to lack of statistical information on the relationship between humor and advertising outcomes

from previous studies as described above. The software package further needs the sample size to compute fit measures and test statistics. The harmonic mean of the cumulative sample size underlying each meta-analytic correlation is used for the analysis, as it is commonly practiced in meta-analytic structural equation modeling studies (and recommended by Viswesvaran and Ones 1995). The harmonic mean gives less weight to substantially large cumulative sample sizes and, therefore, enables more conservative testing than the arithmetic mean would in the case cumulative sample sizes show substantial variation (as it is the case in the present study).

As described above, all meta-analytic correlations are sample size weighted, but no other correction procedures have been applied. In order to account for measurement error, weighted average reliability coefficients (i.e., meta-analytic reliabilities) that are provided in the meta-analysis by Eisend (2009) are considered in order to compute error terms in the structural equation model. The meta-analytic reliabilities are shown in the diagonal of the matrix in Table 1. Following recommendations in the literature, a conservative 0.8 reliability estimate is applied to objective measures (Dalton et al. 2003; Hunter and Schmidt 2004). All of the constructs in the models are measured by a single indicator and error variances for the indicators are fixed $(1-\alpha)$, where α is the meta-analytic reliability coefficient.

For the final analysis, fit indices are provided in addition to chi-square test statistics, namely: GFI, AGFI, and RMR (root mean square residual). Chi-square difference tests are used to assess the difference in fit between the full model and the nested models, as well as for testing mediation effects.

Whether the models hold for different subgroups of humor studies (real versus fictitious ad/brand stimuli, student versus non-student sample, and print versus broadcasting media) is tested by a multiple group analysis. Six input matrices based on meta-analytic correlations that were available for these subgroups are computed. That is, some of the meta-analytic correlations in Table 1 are replaced by meta-analytic correlations that were derived from the particular subgroup sample: the meta-analysis by Eisend (2009) provides effects of humor on dependent variables for each of the subgroups; the meta-analysis by Brown and Stayman (1992) provides meta-analytic correlations between A_{AD} and A_{BR} for each of the subgroups; the meta-analysis by Brown et al. (1998) provides meta-analytic correlations for positive/negative affect with A_{AD} and A_{BR} for two subgroups: print versus TV and novel versus familiar products. If no correlation coefficient for subgroups is available, the meta-analytic correlation from Table 1 is kept. Model differences are tested by chi-square-difference tests.

3 Results

The path estimates of the models and model statistics are provided in Table 2. The results of the cognitive model show that humor reduces negative ad-related cognitions but does not affect brand-related cognitions directly. Positive ad cognitions enhance A_{AD}, and negative ad cognitions reduce A_{AD}, which enhances positive brand-related cognitions and A_{BR} and reduces negative brand-related cognitions. However, brand-related cognitions do not influence A_{BR}. While the

Table 2 Path estimates and fit indices of structural equation models

Relationship	Overall (n=601)			Fictitious stimuli (n=478)			Real stimuli (n=410)		
	Cognitive model	Affective model	Affective–cognitive model	Cognitive model	Affective model	Affective–cognitive model	Cognitive model	Affective model	Affective–cognitive model
Humor → CR, ad-related, positive	.094		.066	.148**		.126*	−.067		−.112
Humor → CR, ad-related, negative	−.151**		−.115*	−.149**		−.104	−.146*		−.108
Humor → CR, brand-related, positive	−.039		−.031	−.020		−.004	−.207***		−.204***
Humor → CR, brand-related, negative	−.050		−.059	−.053		−.072	−.046		−.053
Humor → Affect, positive		.188***	.182***		.178**	.170**		.182**	.181**
Humor → Affect, negative		−.229***	−.223***		−.304***	−.293***		−.206***	−.204***
Affect, positive → CR, ad-related, positive			.131**			.127*			.167**
Affect, positive → CR, ad-related, negative			−.047			−.053			−.052
Affect, positive → CR, brand-related, positive			−.241***			−.264***			−.525***
Affect, positive → CR, brand-related, negative			.083			.097			.232
Affect, negative → CR, ad-related, positive			.010			.029			−.034
Affect, negative → CR, ad-related, negative			.073			.064			.074

Affect, negative → CR, brand-related, positive			.096			.175*			.446**
Affect, negative → CR, brand-related, negative			−.091			−.147			−.277
Affect, positive → A_{AD}		.510***	.467***		.487***	.444***		.651***	.583***
Affect, negative → A_{AD}		−.444***	−.416***		−.537***	−.511***		−.725***	−.661***
CR, ad-related, positive → A_{AD}	.259***		.189***	.255***		.181***	.276***		.152***
CR, ad-related, negative → A_{AD}	−.360***		−.294***	−.354***		−.283***	−.388***		−.281***
A_{AD} → CR, brand-related, positive	.304***		.478***	.300***		.537***	.336***		.926***
A_{AD} → CR, brand-related, negative	−.129**		−.215**	−.129*		−.255**	−.131*		−.436**
CR, brand-related, positive → A_{BR}	−.073		−.072	−.080		−.084	.011		.042
CR, brand−related, negative → A_{BR}	.008		.008	.011		.012	−.029		−.040
A_{AD} → A_{BR}	.730***	.715***	.713***	.757***	.744***	.745***	.444***	.461***	.471***
Model statistics									
χ^2	72.874	31.091	81.630	55.247	20.700	66.720	48.630	28.862	76.263
df	10	5	13	10	5	13	10	5	13
GFI	.967	.980	.971	.969	.983	.971	.969	.974	.964
AGFI	.908	.940	.901	.912	.950	.898	.912	.922	.875
RMR	.055	.064	.051	.053	.065	.052	.057	.079	.056

N=601

*p<.05; **p<.01; ***p<.001

effect sizes of the direct effect of humor are rather low, the effect sizes related to cognitions can be considered as middle according to Cohen (1988).

The affective model provides results that support all of the assumed effects. Humor enhances positive affect and decreases negative affect. Affect has a positive impact on A_{AD}, which increases A_{BR}. Given the strong relationship between the outcome variables that sometimes are almost tautological (e.g., affect and A_{AD}), the effect sizes in the affective model are all quite high.

The integrative affective-cognitive model supports further paths. Humor has a direct and negative impact on negative ad-related cognitions, enhances positive, and reduces negative affective states. Positive affect increases, whereas negative affect decreases A_{AD}. Positive affect enhances positive ad cognitions and reduces positive brand cognitions. These significant effects are considered small, though. Positive ad cognitions enhance A_{AD} and negative ad cognitions reduce A_{AD}, which enhances positive brand-related cognitions and A_{BR}, and reduces negative brand-related cognitions. Brand cognitions do not impact A_{BR}.

The mediation effect of ad-related positive cognitive responses is tested by means of comparing the fit of a model with direct and mediating paths from positive affect towards A_{AD} to a model with only a direct path (restricting the mediating path over ad-related cognitions to be zero) (Shrout and Bolger 2002). As for ad-related positive cognitions, the model fit of the restricted model reveals χ^2=114.361, *df*=15. The χ^2 difference is 32.731 and for *df*=2 significant with $p<.001$. Hence, the mediating path significantly enhances model fit, which means that the path from positive affect towards A_{AD} is mediated by positive ad-related cognitions. As for brand-related positive cognitive responses, there is no mediation of the direct effect of positive affect on A_{BR}, because the path from brand cognitions to A_{BR} is not significant. When the effect sizes of the affect-A_{AD} paths in the affective model and in the affective-cognitive model are compared, the difference between them is small. This shows that the overall mediation by cognitions, though for some paths significant, contributes only to a minor part to the explanation of the effects of humor on attitudes while affect remains to have the strongest mediating effect.

In order to find out whether the integrative model provides a substantial explanation, the nested models of the affective and the cognitive model are compared with the full model (i.e., the integrative affective–cognitive model). When all cognitive paths in the affective–cognitive model are restricted to be zero (i.e., only paths from the parsimonious affective model are free), χ^2 increases to 240.073 with *df*=31. The χ^2 difference is 158.443 and for *df*=18 significant with $p<.001$. That is, the model fit significantly worsens when a null effect of the additional cognitive paths is assumed. When all of the affective paths are restricted to be zero (i.e., only paths from the cognitive model are free), χ^2 increases to 385.797 with *df*= 25. The χ^2 difference is 304.167 and for *df*=12 significant with $p<.001$. That is, the model fit significantly worsens when a null effect of the affective paths is assumed. Hence, the full model provides a better fit than each of the nested models. Since the weak negative cognitive paths in the model seem to hinder the fit of the integrative model, the model is additionally tested without any of these paths. χ^2 decreases to 47.331 with *df*=7. The χ^2 difference is 34.299 and for *df*=5 significant with $p<.001$; that is, the integrative model provides a significantly better fit when the negative cognitive paths are dropped.

The database of the three meta-analyses is somewhat different, and this may confound the results. For some of the relationships, more than one meta-analysis has reported the same effect. The meta-analytic correlation reflecting the greatest amount of data is used for the initial correlation matrix. In addition, the models are run based on an alternative correlation matrix where the correlations for which more than one meta-analysis provided an estimate were replaced with the second estimate. The three meta-analyses provide a second estimate (given in brackets) for: positive affect—negative affect (r=−.044), positive affect—A_{AD} (r=.382), positive affect—A_{BR} (r=.275), negative affect—A_{AD} (r=−.285), negative affect—A_{BR} (r=−.241), A_{AD}–A_{BR} (r=.498). Running a structural equation model based on a matrix with these meta-analytic correlations and a newly computed harmonic mean of 525 neither changes the signs nor the significance of the path coefficients; it even leads to a slightly better fit for all three models.

Table 3 provides the results of the multiple group analysis for the moderator variables. For each moderator variable, the models are computed as models with free paths and with paths that are restricted to be equal over both subgroups. The chi-square difference between both models is used to test whether the models hold for the subgroups. Only the moderator differentiating between fictitious and real stimuli reveals a significant difference in model fit. The path coefficients of the models for the corresponding subgroups are presented in Table 2. They show several differences regarding the significance of the effects. In particular, humor enhances positive ad-related cognitions for fictitious stimuli but reduces brand-related cognitions for real stimuli. As for the strength of the effects, the relationship between A_{AD} and A_{BR} is stronger for fictitious stimuli than for real stimuli for all models, whereas the relationship between A_{AD} and brand cognitions is stronger for real stimuli than for fictitious stimuli. These differences between fictitious and real brands are similar to that reported earlier by Brown and Stayman (1992).

Table 3 Multiple group analysis for moderator variables

Moderator/model	Cognitive model		Affective model		Affective–cognitive model	
	χ^2	*df*	χ^2	*df*	χ^2	*df*
Fictitious vs. real stimuli						
Free	103.877	20	49.564	10	142.987	26
Restricted	132.431	31	76.570	15	187.037	49
Difference	28.554**	11	27.006***	5	44.050***	23
Student vs. non-student sample						
Free	130.853	20	61.603	10	155.488	26
Restricted	131.573	31	62.935	15	157.315	49
Difference	.720	11	1.332	5	1.827	23
Print vs. broadcast media						
Free	110.550	20	52.639	10	127.695	26
Restricted	123.547	31	57.347	15	147.003	49
Difference	12.997	11	4.708	5	19.308	23

4 Discussion

The results of a recent meta-analysis (Eisend 2009) show that humor enhances attitudes towards the ad, attitudes toward the brand, and positive affect and reduces negative affect. The meta-analysis, therefore, concludes that humor effects are primarily based on affective processes. The results do not support humor effects on cognitions, which have been treated as either positive or negative. Since the effect of humor on both kinds of cognitions can have opposite signs, this might explain the overall nonsignificant effect on cognitions in the recent meta-analysis. The present study therefore distinguishes between brand-related and ad-related cognitions and examines a cognitive, an affective and an integrative affective–cognitive model in order to explain how humor in advertising works.

Two of the three models fit the data quite well, with the cognitive model being a rather inferior representation of the data. The affective model fits the results the best. However, when all cognitive paths are constrained to zero in the integrative model, the affective model is rejected, even though the statistically significant cognitive paths are typically quite small. The primary reason for the superiority of the affective model over the integrative affective-cognitive model seems to be the small, nonsignificant relationship of humor with negative cognitive outcome variables, and the paths between those variables and subsequent outcome measures of A_{AD} and A_{BR}. Therefore, various results of both the affective model and then the integrative affective–cognitive model will be discussed.

The results of the affective model replicate earlier findings in the literature (e.g., Gelb and Pickett 1983) and support the mechanisms of an automatic and direct humor effect as suggested by mechanisms of affect transfer or the idea of spontaneous action tendencies linked to affective experiences.

As for the information processing approach, the results of the integrative model show that humor can enhance ad-related cognitions but reduces brand-related cognitions. These results specify the conditions for the applicability of the information processing approach. Although the underlying data come from forced-exposure studies and do not allow testing the attention-getting effect of humor on the ad as a whole, the results suggest that the attention-attracting ability of humor results in increased processing of ad-related cognitions at the expense of brand-related cognitions.

The integrative affective–cognitive model further reveals some additional results regarding the interplay between affect and cognitions. While the findings of the affective and the cognitive model both hold in the integrative model, additional paths from positive affect to positive ad-related cognitions emerge. These results are consistent with a congruency affect of affective states or the application of an affect-as-information heuristic. At the same time, positive affect reduces brand-related cognitions, which can be explained by affect regulation and the need to avoid cognitive efforts. Cognitive capacity is already devoted to enhanced processing of ad-related cognitions.

The overall effect on cognitions shows that consumers in positive affective states tend to reduce cognitive efforts, as can be seen when the effect sizes are compared; there is a stronger effect on reduction than on increase of cognitions. However, the model does not support any effect of negative affective states on cognitions. This can

be explained by the fact that thoughts are more easily accessible only in the case of positive affective states, while memory accessibility remains constant in the case of negative affective states (Isen et al. 1978).

The direct effect of humor on negative ad-related cognitions in the integrative model is explained by the reduction of counter-argumentation. This path is not mediated by affect and supports the mere cognitive nature of the distraction hypothesis. That is, humor does not trigger affect but works as an attention-getting feature that reduces negative thoughts, possibly by reducing the fluency of negative thoughts when being confronted with a positive stimulus such as humor. Humor indirectly reduces positive brand cognitions via positive affect, providing support and a more thorough explanation for the vampire effect. The opposite signs of both paths (positive effect from humor on positive affect, negative effect of positive affect on positive brand cognitions) lead to a nonsignificant direct effect from humor on brand cognitions (suppressor effect), explaining why previous studies applying path models without considering affective states have failed to support a vampire effect (Geuens and De Pelsmacker 2002).

The cognitive and the integrative model show that humor effects brand attitude by enhancing attitude towards the ad but not by influencing brand cognitions. The nonsignificant paths from brand cognitions to brand attitudes may be somewhat surprising but are consistent with previous findings by MacKenzie et al. (1986) and MacKenzie and Lutz (1989). There might be two explanations, a methodological one and a substantive one. Authors of studies supporting the dual mediation model note that data pooled across conditions generate varying cognitions that weaken the effect from brand cognitions to A_{BR} (Dröge 1989; Homer 1990). Pooling of cognitions also underlies the meta-analytic effects. A more substantive explanation refers to the idea that a dominant ad execution leads to low message involvement where consumers process ad's content in less detail, thus weakening the impact of brand perceptions on A_{BR}. Peripheral processing is so heavily at work that the role of brand-related cognitions is diminished while the link between attitude towards the ad and attitude towards the brand becomes very strong. Indeed, if the path between A_{AD} and A_{BR} is restricted to zero in the model, both paths from cognitions to A_{BR} become significant. Peripheral processing is very likely to occur in most of the humor studies and has been shown to be the very condition where humor in advertising is most effective (Zhang and Zinkhan 2006). The assumption of peripheral processing is further in line with the strong effects of affective states on evaluations in the models, since the reliance on feelings in judgment is conceived as a low-involvement, simplifying strategy (Petty et al. 1993).

The models differ somewhat when real and fictitious stimuli are compared. For fictitious stimuli, consumers infer all information about the brand from the ad. For real stimuli, consumers have some prior experience with and some knowledge about a brand. This becomes obvious from the differences in the relationship between A_{AD} and A_{BR}; it is much stronger for fictitious stimuli where the ad is all the respondents know about the brand. Therefore, both measures are highly correlated. The relationship between A_{AD} and brand cognitions is much stronger for real stimuli than for fictitious ones, since the brand perceptions are held with more confidence due to prior experience (MacKenzie et al. 1986). Humor directly impacts brand cognitions for real stimuli, whereas it directly affects ad cognitions but not brand cognitions for fictitious stimuli where brand cognitions have to be inferred later from ad-related information.

Some caveats are in order regarding the meta-analytic structural equation model approach. The correlations that were used for this analysis come from different studies with different ads, contexts, etc. In particular, the database of the meta-analysis by Eisend (2009) is broader and 35% of the studies included in this meta-analysis were not (yet) published in journals, whereas the other meta-analyses include only published studies. This might lead to a somewhat lower quality and validity of the results coming from the first meta-analysis, since some of the papers in the sample may have not undergone a rigorous peer review process. However, the additional analysis with some of the meta-analytic correlations in the matrix replaced by estimates from other meta-analyses leaves the model results unchanged. The results support the assumption that the findings are comparable across estimates from different meta-analyses.

Using meta-analytic structural equation modeling, the proposed models are tested with less sampling error and more statistical power; less weight is given to the unique research procedure or particularities associated with a single sample or research setting. Since most of the studies included in the meta-analyses are based on experimental designs, there is even some evidence for causality, which is usually a weakness of structural equation models. Nevertheless, combining findings of various meta-analyses requires a careful examination of methods and procedures applied in each meta-analysis, and a careful look at the studies included in each meta-analysis in order to warrant comparability of effect sizes.

The models should be tested for further moderators than the ones used in this study, especially for different product types (functional/hedonic, low/high risk). In order to consider product type moderators, more than just two subgroups are recommended (Eisend 2009). However, the number of available meta-analytic correlations then becomes too small, which explains the reason to why product type moderators could not be considered in this study. In fact, the present moderator test is based on correlation matrices that provide only some correlations for each subgroup, whereas some correlations were simply kept from the general correlation matrix. This increases the probability that the fit of the models with either free or restricted paths do not differ. That is, no differences are found between subgroups although they might exist. On the one hand, this further supports the difference between the models for fictitious and real stimuli, since the actual difference might even be bigger. On the other hand, there might be differences for the other moderators (student versus non-student sample, print versus broadcast media) that were not found in this study. Hence, the moderator test provides an approximate result at best and more data are necessary for more accurate tests. For this purpose, additional primary data need to be collected.

To summarize, the results are in line with previous results on dual mediation and the interplay between affect and transfer. The findings provide some new insights on how the interplay between affect and cognition shows some peculiarities for humor in advertising, where the differentiation between ad-related and brand-related cognitions comes into play. By this, the findings integrate previous mechanisms on how humor works in advertising, which are as follows:

1. The classical distraction effect (i.e., reduction of counterarguments) applies to negative cognitions that are ad-related.

2. The vampire effect is due to positive affective reactions that let consumers avoid extensive processing but still seek congruent information. Congruent information is easier to be accessed from humorous elements in the ad than from brand-related information. Hence, while cognitive effort is devoted to processing ad-related elements, processing efforts are reduced at the expense of brand-related cognitions.
3. Humor exerts its strongest impact along the affective paths that interact with cognitive paths.

The integration of the affective and cognitive model provides a substantial improvement as well as a better explanation of either the cognitive or the affective model alone, as supported by the decreasing fit when the full model is restricted to either of the nested models.

The results have some practical implications as well. They show that affective reactions triggered by humor can increase positive cognitions related to the ad, but reduce brand-related cognitions. By this, humor may help overcome weaknesses in advertising messages such as weak brand arguments (e.g., Cline and Kellaris 1999), or even negative information such as those provided in two-sided messages. Further research is needed to provide a more detailed account on these phenomena.

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