

Impact of Media Context On Advertising Memory A Meta-Analysis Of Advertising Effectiveness

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Media professionals and scholars have examined the influence of media context on advertising effectiveness for more than 50 years, but clarity regarding media-context effects remains lacking, amid an abundance of mixed results. This study used meta-analysis to investigate the relationship between media context and advertising memory in quantitative studies up to 2013. Effect sizes were significant by media-context factors, advertising-memory measures, and study characteristics, although these were correlated weakly or moderately. The findings strongly reinforce the decision rule that media professionals should consider media context when making media decisions.

INTRODUCTION

Advertising professionals and academics remain greatly interested in the impact of the media context in which advertisements are placed—also known as the media environment—on advertising effects. Media context is thought to play an important role in determining advertising effectiveness because media vehicles and media content influence or engage media users differently, subsequently leveraging users' advertising experiences (Weilbacher, 1960). Past research has indicated that some media contexts are more appropriate for different types of advertising than others (Bushman and Bonacci, 2002; Mundorf, Zillmann, and Drew, 1991; Nyilasy, King, and Reid, 2011).

The importance of media engagement as an indicator of advertising effectiveness has been acknowledged by various segments of the advertising-research community. The Advertising Research Foundation (2006), which defined media engagement as "turning on a prospect to a brand idea enhanced by the surrounding context," has called for more research on the subject. In 2006, the *Journal of Advertising Research* dedicated an issue to the topic, and the Marketing Science Institute listed engagement (*i.e.*, its conceptualization, definition, and measurement) as a Tier 1 research priority for 2014–2016 (Marketing Science Institute, 2016). One source has noted that the media are the "gatekeepers" or "doormen" of engagement

Management Slant

- Mixed results are abundant in the literature on how media context influences advertising effectiveness.
- Increased consumer media involvement, media-advertising-context congruency, and higher program liking are media-context factors that more likely will improve advertising memory. Programs with violent, sexual, and suspenseful content and ones that are humorous and induce higher consumer arousal will more likely inhibit advertising memory.
- Because advertising effectiveness is enhanced if media-context factors positively influence media users' advertising memory beyond exposure indicators (e.g., ratings), influencing factors should be given serious consideration in media decision making.

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as a psychological condition, which is the product of media characteristics that effectively attract media users and then keep those users attentive to, interested in, and behaviorally responsive to placed advertisements (Ephron 2006).

Additional support for the importance of the relationship between media context and its impact on placed advertising can be found in scholarly research on advertising media. One study reviewed the scholarly media-planning literature from 1992 to 2007 (Cheong and Kim, 2012) and compared the results with those of an earlier study that analyzed the literature from 1962 to 1991 (Pasadeos, Barban, Yi, and Kim, 1997). The researchers found that qualitative media-selection factors, a category that includes media context, were the third most frequently studied topic in media-planning articles between 1992 and 2007. The study of qualitative factors drastically increased over time, growing from an average of 3.6 percent between 1962 and 1991 (Pasadeos *et al.*, 1997) to 10.5 percent in the 1992–2007 period.

Despite industry and research recognition, clarity and understanding are lacking with regard to the roles that media context and media engagement play in contributing to or detracting from advertising effectiveness. The authors could find only one study that comprehensively reviewed the literature on the subject. That study systematically reviewed 66 empirical studies published from 1963 to 2002 on the impact of media context on advertising-effectiveness outcomes (Moorman, 2003). A number of media-context factors were identified in the research (*e.g.*, vehicle types; congruence among context, attitudes toward the medium, gratifications obtained from the medium, involvement with the medium, and mood states; types of advertising effectiveness measures, including recall, attitude toward the advertisement,

attitude toward the brand or product, and purchase intention).

Even though the literature-review study (Moorman, 2003) provided meaningful insights into the impact of media context on advertising effectiveness, the analysis was limited to studies published before 2003 and did not include online and interactive media, one of today's most important and fastest growing media options. In addition, rather than using more rigorous meta-analytic techniques, the author used vote-counting analysis to tally systematically the number of studies that reported either significant positive, significant negative, or no significant relationships.

As a later study noted, even though five factors—attitudes toward the medium, uses of the medium, involvement while using the medium, mood states affecting media usage, and interactivity of the medium—received considerable attention in empirical research and theory development of this research area, media-context effects on advertising effectiveness “were, and are today, relegated to the subjective judgment of media influences” (Stewart and Pavlou, 2009, p. 365). Media planners have tried to capture these effects through the use of subjective judgments, but subjective media judgments have not proven very reliable. There is debate about how to characterize different media across various dimensions, and little is known about how people interact with different media (Stewart and Pavlou, 2009). The research on qualitative differences among media has not brought with it substantial skill and insights into identifying and accommodating these differences (Stewart and Pavlou, 2009).

In light of the later study's observations (Stewart and Pavlou, 2009) and the limitations of the literature review (Moorman, 2003), the research reported in the present study used meta-analysis, which integrates the statistical results of scientific studies to

help clarify mixed results, to extend and advance knowledge on the relationship between media context and advertising effectiveness. This study specifically focused on the relationship between media context and advertising memory. Even though various advertising-effectiveness measures have been examined in the media-engagement literature, including advertising memory, attitudinal measures, and behavioral-intention measures (Moorman, 2003), most meta-analyses work with either one dependent or one independent variable (Eisend, 2017), and advertising memory is the most frequently examined advertising-processing measure in this literature (Moorman, 2003).

In addition, memory is deemed an important initial step in predicting advertising success by hierarchy-of-effects models such as the attention, interest, desire, and action model and the Advertising Research Foundation (ARF) model (Harvey, 1997; Lavidge and Steiner, 1961). Cognition influences attitude formation; preference; and, ultimately, brand choice. A special section of the *Journal of Advertising Research* (56, 3) dedicated to recall in advertising also emphasized the importance of advertising memory. The editor noted that “if a target audience cannot remember a marketer's message, advertising largely wastes time, money, and resources. That is why recall measures are critical tools in marketing research and have become as important as the creation, placement, and viewing of a marketing message” (Precourt, 2016, p. 229). Because publication space prohibits full reporting of all data on different responses, the current study specifically focused on advertisement memory as the first meta-analytic investigation to assess this relationship between media context and advertising effectiveness.

The goal of the current research was to identify more comprehensively which

media-context factors are associated either positively, neutrally, or negatively with advertising memory, on the basis of a rigorous analysis of the publicly available research studies. Even though the importance of media context is acknowledged by the advertising community, quantitatively synthesized evidence on the relationship between media context and advertising memory will

- reconcile discrepancies in the 48 years of research;
- provide media planners with insight regarding the influence of specific media-context factors on advertising memory;
- offer researchers future directions for investigating the effects of particular context variables.

The difficulty of the task and resulting limitations are worth noting up front. Media context as a construct is multidimensional, and, as a result, the studies encountered were rather fragmented. The authors have made a significant effort to balance the need to understand the effect of media context generally with the need to capture the diversity of unique media-context factors studied individually, having identified more than 50 of them. With fragmentation comes complexity and lower reliability as a result of limited subgroup sizes. The primary contribution of the study is to uncover structure and systematic evidence in a field that has been compared to one of “scattered bones.”¹ The authors hope their research starts to put the bones together to offer a glimpse of the living, breathing animal.

RESEARCH QUESTIONS

As previously noted, it is important for media planners to understand media-context dynamics to make better and more

effective media decisions. Media context is a set of factors rather than a simple construct. This is probably one reason why many past studies have reported mixed results—some presenting positive relationships between media context and advertising memory (Clancy and Kwestin, 1971; Herrewijn and Poels, 2013; Lloyd and Clancy, 1991a; Wang, 2006), and others concluding that there are negative relationships between the two (Bushman and Bonacci, 2002; Mattes and Cantor, 1982; Mundorf *et al.*, 1991; Norris and Colman, 1992, 1993).

Depending on the specific media-context factors used to operationalize the multidimensional media-context construct, there could be stronger or weaker associations between media context and advertising memory, which indicates that some media contexts are more impactful than others. Because of the mixed findings, the first questions posed for investigation were as follows:

RQ1a: What are the specific factors within media context whose influence on advertising memory has been tested?

RQ1b: What kind of influence do these specific factors within media context exert on advertising memory?

Another critical issue is how the dependent variable—advertising memory—was measured. In advertising studies, memory often is operationalized as recall (*i.e.*, verbal experience; participants describe the stimulus) or recognition (*i.e.*, visual experience; participants indicate having seen or heard the stimulus previously; Bettman, 1979; Du Plessis, 1994) and assessed in terms of advertising-content types, brand names, and product categories (Norris and Colman, 1992). Because measuring techniques and sources of

advertising memory vary, the authors put forth the next question:

RQ2: How does relationship strength vary by advertising-memory measures?

Finally, results may vary by miscellaneous characteristics of individual studies (Eisend, 2017). The following discrepancy in findings illustrates this phenomenon, often observed in meta-analytic studies (Eisend and Tarrahi, 2016). One study that looked at the impact of media context on advertising effectiveness using a survey design found that there was not a significant relationship between advertising memory and either affect induced by magazines or involvement with magazines (Moorman, Neijens, and Smit, 2002). Findings of this study, however, were inconsistent with previous literature (Norris and Colman, 1992) that employed laboratory experiments with artificial stimuli. The authors attributed the difference to the fact that the different methods limited the manifestation of the same or similar involvement levels in consumer processing conditions (Moorman *et al.*, 2002).

Because the miscellaneous characteristics of individual studies may be associated with the relationship between media context and advertising memory, the third question proposed for investigation was as follows:

RQ3: How are the characteristics of studies (*e.g.*, publication time interval, publication type, research method used, research participant type, advertising media type, brand types, advertising types, and advertised product categories) associated with the relationship strength between media context and advertising memory?

¹ We thank an anonymous reviewer for the metaphor.

METHOD

To answer the research questions systematically and most appropriately, the authors performed a meta-analysis on publicly available research findings. They structured this meta-analysis in accordance with the meta-analysis reporting standards offered by the American Psychological Association Publications and Communications Board's Working Group on Journal Article Reporting Standards (2008).

Data Sources and Literature Search

The authors located journal articles, conference proceedings, and dissertations examining the relationship between media context and advertising memory (*i.e.*, recall or recognition) published before December 31, 2013, by searching databases such as EBSCOhost, ProQuest, Web of Science, and JSTOR. In addition, they examined articles from the Print and Digital Research Forum (formerly known as the Worldwide Readership Research Symposium), which publishes proceedings from conferences attended by media and audience researchers and other professionals from around the world.

The keywords used in the database searches included "engagement," "context effects," "vehicle effects," "(vehicle) source effects," "program involvement," "involvement," and "priming." These terms were selected because, generally, they are used to indicate the media-engagement effect defined as "turning on a prospect to a brand idea enhanced by the surrounding context" (Advertising Research Foundation, 2006). Because some of the keywords yielded more than several thousand results (*e.g.*, "engagement"), the authors refined the search by adding the keyword "media." They perused the titles and abstracts of the articles to identify media-engagement studies focusing on recall and recognition related to such subjects as advertising message, advertised

brands, and product categories in advertisements. Additionally, they manually reviewed reference lists from retrieved articles to identify further relevant studies.

The search was limited to English-language manuscripts that provided sufficient information for meta-analysis—that is, studies that used quantitative data and reported univariate or bivariate analyses. In other words, the authors included articles that provided means and standard deviations, percentages or proportions, zero-order correlations, *t* ratios from post-hoc tests, *F* ratios from separate univariate analyses of variance (ANOVAs) and retrieved effect sizes.

Articles that did not report bivariate analyses or univariate analyses (*i.e.*, studies that only reported multivariate analysis, *e.g.*, partial and canonical correlations, multiway ANOVA, analysis of covariance, multiple regression, discriminant analysis, factor analysis, and structural equation modeling) were excluded. Effect sizes were not retrieved from these studies, because effect sizes were adjusted by one or more variables (Lipsey and Wilson, 2001). When an article did not provide sufficient information for direct calculations (*e.g.*, only means reported or only *p* values reported), the study was excluded also. As a result, 497 effect sizes from 70 studies were retrieved for analysis (See Table 1).

Coding Procedures

Development of coding scheme. Coding variables included the following:

- **Publication type:** This categorical variable was adopted from previous research (Lipsey and Wilson, 2001).
- **Types of research method:** This coding category was adopted from previous research (Kim, Hayes, Avant, and Reid, 2014).

- **Location of data collection:** Coders were instructed to write in the country or countries where data collection was conducted. When location was not reported, coders left the response space blank.

- **Types of research participants:** Research participants were coded as children (below age 18 years), college students only, adults (18 and older, not college students), women only (18 and older), and men only (18 and older). Because several types of research participants can be included in a study, coders were required to choose all that applied.

- **Types and names of advertising media:** The authors used categories of advertising media drawn from another study (Potter and Riddle, 2007). Because different media can appear in the same study, coders were asked to choose all that applied.

- **Product names or categories advertised:** Coders were instructed to write in product names or categories appearing in advertisements.

- **Types of advertisements and brands:** The coding categories for types of advertisements were adopted from prior work (Eisend, 2009), and the categories were revised for types of brands. The criterion of explicit mention was applied, and coders were asked to search for mentions of such things as the use of real advertisements or brands or the use of specially created or modified real advertisements featuring fictitious brands. When authors did not mention types of advertisements or brands, the coders were instructed to mark the space "unclear and not specified."

- **Media-context variables and advertising-memory measures:** Media

TABLE 1
List of Studies Analyzed

Author(s) (Year), Publication	Location of Data Collection	Research Method	Research Participants	Advertising Media
1. Aiken & Malkewitz (2010), <i>JCIRA</i>	USA	Experiment	College students only	TV
2. Barclay et al. (1965), <i>JAR</i>	USA	Telephone interview	Women only	TV
3. Bhatnager & Wan (2011), <i>JA</i>	Canada	Experiment	College students only	Magazines
4. Braun & Pfeleiderer (2003), <i>WRRS</i>	Germany	Survey	Adults	Magazines
5. Bushman (1998, study 1), <i>JEPA</i>	USA	Experiment	College students only	TV
6. Bushman (1998, study 2), <i>JEPA</i>	USA	Experiment	College students only	TV
7. Bushman (1998, study 3), <i>JEPA</i>	USA	Experiment	College students only	TV
8. Bushman (2005), <i>PS</i>	USA	Experiment	Adults	TV
9. Bushman & Bonacci (2002), <i>JAP</i>	USA	Experiment	Adults	TV
10. Cantor & Venus (1980), <i>JB</i>	USA	Experiment	College students only	Radio
11. Clancy & Kweskin (1971), <i>JAR</i>	Not specified	Survey	Adults	TV
12. Cunningham et al. (2006), <i>JAR</i>	Not specified	Survey	Adults	TV, websites
13. De Pelsmacker et al. (2002), <i>JA</i>	Belgium	Experiment	Adults	TV, magazines
14. Eadie (2007), <i>WRRS</i>	Not specified	Interview	Adults	Magazines
15. Finch (1987), dissertation	USA	Experiment	College students only	Magazines
16. Furnham et al. (1998), <i>ACP</i>	UK	Experiment	Children	TV
17. Gallagher et al. (2001), <i>JAR</i>	Canada	Experiment	College students only	Websites, print
18. Grigorovici & Constantin (2004), <i>JIA</i>	USA	Experiment	College students only	Online games
19. Gunter et al. (1994), <i>PR</i>	UK	Experiment	Children	TV
20. Gunter et al. (1997), <i>JP</i>	UK	Experiment	College students only	TV
21. Gunter et al. (2002), <i>ACP</i>	UK	Experiment	Children	TV
22. Gunter et al. (2005), <i>JASP</i>	UK	Experiment	College students only	Film
23. Herrewijn & Poels (2013), <i>IJA</i>	Not specified	Experiment	Adults	PC games
24. Horn & McEwen (1977), <i>JA</i>	USA	Experiment	College students only	TV
25. Hyun et al. (2006), <i>JCIRA</i>	South Korea	Survey	Adults	Newspaper
26. Jeong (2007), dissertation	USA	Experiment	College students only	TV
27. Jeong et al. (2011), <i>JA</i>	USA	Experiment	College students only	Video games
28. Jun et al. (2003), <i>JCIRA</i>	South Korea	Experiment	College students only	Magazines
29. Kline et al. (2011), <i>PDRF</i>	Not specified	Survey	Adults	TV, radio, newspaper, magazines, film, video games, websites, circulars
30. Krugman et al. (1995), <i>JA</i>	USA	In-home observation	Children, Adults	TV
31. Lee & Thorson (2009), <i>JBP</i>	USA	Experiment	College students only	Websites
32. Lloyd & Clancy (1991a), <i>JAR</i>	USA	Experiment	Women only	TV
33. Lloyd & Clancy (1991b), <i>JCM</i>	USA	Experiment	Women only	TV
34. Mathur & Chattopadhyay (1991), <i>P&M</i>	USA	Experiment	College students only	TV
35. McConnell (1970), <i>JAR</i>	Australia	Experiment	College students only	TV, radio, newspaper
36. McGrath & Mahood (2004), <i>JCIRA</i>	USA	Experiment	College students only	TV
37. Moorman (2003, study 1), dissertation	Netherlands	Face-to-face interview	Adults	Magazines
38. Moorman (2003, study 2), dissertation	Netherlands	Telephone interview	Adults	TV
39. Moorman et al. (2002), <i>JA</i>	Netherlands	Survey (interview)	Women only	Magazines
40. Moorman et al. 2005), <i>JAR</i>	Netherlands	Survey	Adults	TV
41. Moorman et al. (2007), <i>JA</i>	Netherlands	Interview	Adults	TV
42. Moorman et al. (2009), <i>ICA</i>	Netherlands	Survey	Adults	TV
43. Moorman et al. (2012), <i>JA</i>	Netherlands	Survey	Adults	TV
44. Mundorf et al. (1991), <i>JA</i>	USA	Experiment	College students only	TV
45. Murphy et al. (1979), <i>JA</i>	USA	Experiment	College students only	TV
46. Nelson et al. (2006), <i>JA</i>	USA	Experiment	Adults	Video games
47. Newell et al. (2001), <i>P&M</i>	USA	Survey	College students only	TV
48. Norris & Colman (1992), <i>JA</i>	UK	Experiment	College students only	Magazines
49. Norris & Colman (1993), <i>SBP</i>	UK	Experiment	Adults	TV
50. Norris & Colman (1994), <i>SBP</i>	UK	Experiment	Adults	TV
51. Norris et al. (2001), <i>SPR</i>	UK	Experiment	College students only	TV
52. Norris et al. (2003), <i>ACP</i>	UK	Experiment	Adults	TV

(continued)

TABLE 1

List of Studies Analyzed (continued)

Author(s) (Year), Publication	Location of Data Collection	Research Method	Research Participants	Advertising Media
53. Parker & Furnham (2007), <i>ACP</i>	UK	Experiment	College students only	TV
54. Pavelchak et al. (1988), <i>JCR</i>	USA	Survey	College students only	TV
55. Perry et al. (1997), <i>JC</i>	USA	Experiment	College students only	TV
56. Prasad & Smith (1994), <i>JAMS</i>	USA	Experiment	Children	TV
57. Russell et al. (2004), <i>JCR</i>	USA	Experiment	College students only	TV
58. Sharma (2000), <i>JGP</i>	USA	Experiment	College students only	TV
59. Shen & Prinsen (1999), <i>AAA</i>	USA	Experiment	College students only	TV, magazines
60. Starr & Lowe (1995), <i>ACR</i>	USA	Experiment	College students only	TV
61. Sullivan (1990), <i>P&M</i>	Not specified	Experiment	Adults	Radio
62. Terry (2005, study 2), <i>JGP</i>	USA	Experiment	College students only	TV
63. Terry (2005, study 3), <i>JGP</i>	USA	Experiment	College students only	TV
64. van Reijmersdal et al. (2010), <i>IJA</i>	Netherlands	Survey	Online panel	TV
65. Wang (2006), <i>JAR</i>	USA	Experiment	College students only	Video games
66. Wang & Lang (2012), <i>MP</i>	USA	Experiment	College students only	TV
67. Ware (2003), <i>WRRS</i>	USA	Survey	Adults	Magazines
68. Wilson & Isaac (1995), <i>WRRS</i>	Not specified	Experiment	Adults	Magazines
69. Wise et al. (1975), <i>JA</i>	USA	Interview	Adults	TV
70. Zanjani et al. (2011), <i>JA</i>	USA	Experiment	College students only	Online magazines

Note: AAA = Proceedings of the Conference of the American Academy of Advertising; ACP = Applied Cognitive Psychology; ACR = Advances in Consumer Research; ICA = International Communication Association; IJA = International Journal of Advertising; JA = Journal of Advertising; JAMS = Journal of the Academy of Marketing Science; JAP = Journal of Applied Psychology; JAR = Journal of Advertising Research; JASP = Journal of Applied Social Psychology; JB = Journal of Broadcasting; JBP = Journal of Business and Psychology; JC = Journal of Communication; JCIRA = Journal of Current Issues & Research in Advertising; JCM = Journal of Consumer Marketing; JCR = Journal of Consumer Research; JEP = Journal of Experimental Psychology: Applied; JGP = Journal of General Psychology; IIA = Journal of Interactive Advertising; JP = Journal of Psychology; MP = Media Psychology; P&M = Psychology & Marketing; PDRF = Print and Digital Research Forum; PR = Psychological Reports; PS = Psychological Science; SBP = Social Behavior & Personality: An International Journal; SPR = Social Psychological Review; WRRS = Worldwide Readership Research Symposium.

context was operationalized by differences among media types, media genres, or media vehicles; by impact of media content on media users (e.g., attention, involvement, entertainment, arousal); and by fit between media content and advertisements. Advertising memory included two levels: advertising recall and recognition, and memory contents. Advertisement, brand name, and product categories were coded. Coders were instructed to write in the variable name first, followed by type of variable (e.g., independent variable, moderator, or dependent variable), reliability (e.g., Cronbach’s alpha) for continuous variables, and levels for dichotomous variables (e.g., television versus print).

- **Sample sizes:** Coders were instructed to write in the total sample size (i.e., final

sample size) reported in a study as well as sample sizes for each subgroup for experiments.

- **Reported statistics:** Statistical results were coded as follows: correlation, *t* statistic, *F* statistic, degrees of freedom (*df1* and *df2*), β coefficient, mean and standard deviation, and other (e.g., frequency, proportions; See Table 1).

Coder Training and Intercoder Reliability

Two graduate students with a background in advertising and quantitative research methods were trained to code the data. Coding variables were explained to the coders, and multiple training sessions were conducted with journal articles and conference proceedings not included in the main study. Discussions were held to resolve ambiguities or difficulties with the coding material. The discussions resulted

in the coding scheme being refined prior to the actual coding.

Intercoder reliability was assessed by the Perreault and Leigh index (Perreault and Leigh, 1989) and by percentage agreement. The acceptable level of reliability for the Perreault and Leigh index was set at .75, on the basis of the suggestion that the acceptable level is .75 for two categories and two coders and .66 for three categories and two coders (cf. Cronbach’s $\alpha = .70$; Rust and Cooil, 1994). For open-ended variables, percentage agreement was used. When there was an agreement between coders, 1 point was given to the variable; when there was a disagreement, 0 was given. Seventy-five percent (.75 in ratio) was set as the cutoff value for overall intercoder reliability. The intercoder reliabilities for the coded variables of the study ranged from .86 to 1.00 (See Table 2).

TABLE 2

Characteristics of the Studies

	Categories	Frequency	%
Publication year (IR = 1.00)	1960s	1	1.43
	1970s	5	7.14
	1980s	3	4.29
	1990s	20	28.57
	2000s	32	45.71
	2010–2013	9	12.86
Publication type (IR = .93)	Journals	58	82.86
	Full published conference proceedings	8	11.43
	Doctoral dissertations	4	5.71
Publications	<i>Journal of Advertising</i>	14	20.00
	<i>Journal of Advertising Research</i>	8	11.43
	<i>Print & Digital Research Forum/Worldwide Readership Research Symposium</i> (conference proceedings)	5	7.14
	<i>Applied Cognitive Psychology</i>	4	5.71
	<i>Journal of Current Issues & Research in Advertising</i>	4	5.71
	<i>Journal of Experimental Psychology: Applied</i>	3	4.29
	<i>Journal of General Psychology</i>	3	4.29
	<i>Psychology & Marketing</i>	3	4.29
	<i>International Journal of Advertising</i>	2	2.86
	<i>Journal of Consumer Research</i>	2	2.86
	<i>Social Behavior & Personality</i>	2	2.86
	University of Amsterdam (dissertation)	2	2.86
	<i>Advances in Consumer Research</i> (conference proceedings)	1	1.43
	American Academy of Advertising (conference proceedings)	1	1.43
	International Communication Association (conference proceedings)	1	1.43
	<i>Journal of Applied Social Psychology</i>	1	1.43
	<i>Journal of Applied Psychology</i>	1	1.43
	<i>Journal of Broadcasting</i>	1	1.43
	<i>Journal of Business and Psychology</i>	1	1.43
	<i>Journal of Communication</i>	1	1.43
	<i>Journal of Consumer Marketing</i>	1	1.43
	<i>Journal of Interactive Advertising</i>	1	1.43
	<i>Journal of Psychology</i>	1	1.43
	<i>Journal of the Academy of Marketing Science</i>	1	1.43
	<i>Media Psychology</i>	1	1.43
	Ohio State University (dissertation)	1	1.43
<i>Psychological Reports</i>	1	1.43	
<i>Psychological Science</i>	1	1.43	
<i>Social Psychological Review</i>	1	1.43	
University of North Carolina at Chapel Hill (dissertation)	1	1.43	
Data collected countries (IR = .88)	United States	37	52.86
	United Kingdom	11	15.71
	The Netherlands	8	11.43
	Canada	2	2.86
	South Korea	2	2.86
	Australia	1	1.43
	Belgium	1	1.43
	Germany	1	1.43
Not specified	7	10.00	
Research method	Experiment (IR = .94)	50	71.43
	Survey (IR = .92)	19	27.14
	In-home observation (IR = .99)	1	1.43
Research participants ^a	College students only (IR = .96)	36	51.43
	Adults (18 and older, not college students; IR = .92)	26	37.14

(continued)

TABLE 2
 Characteristics of the Studies (continued)

	Categories	Frequency	%
Advertising media ^a	Children (younger than 18; IR = .97)	6	8.57
	Women only (18 and older; IR = 1.00)	4	5.71
	Television (IR = .93)	48	68.57
	Magazines (and online magazines; IR = .96)	13	18.57
	Video, PC, and online games (IR = 1.00)	6	8.57
	Radio (IR = .98)	4	5.71
	Internet and websites (IR = .99)	4	5.71
	Film (IR = .98)	3	4.29
	Newspaper (IR = .99)	3	4.29
	Print (not specifically newspaper or magazine; IR = .96)	1	1.43

Note: Intercoder reliabilities (IR) not reported in this table are brand type (.86), advertisement type (.88), product category (.88), variable information (variable names = .89; types of variable = .90; reliability for continuous variables = .91; levels for nominal variables = .92), sample sizes (.87), and reported statistics (.87).

^aBecause several types of research participants and advertising media were used, the sum of the frequencies for these variables was greater than 70 (the total number of studies examined in this study).

Data Extraction

The effect size metric selected for the analysis was the correlation coefficient (*r*). If correlation coefficients were not reported, other information to compute effect sizes was coded. When *t* or *F* ratios or means and standard deviations were reported, point-biserial correlation (*pbs r*) coefficients were calculated (Rosenthal, 1991) and then adjusted to biserial correlation (*r_b*) coefficients. In instances in which two dichotomous independent and dependent variables using proportions and frequencies were reported, tetrachoric correlation coefficients were calculated. Both biserial correlation and tetrachoric correlation are the best approximation of Pearson *r* (MacCallum, Zhang, Preacher, and Rucker, 2002).

Effect-Size Integration And Data Analysis

The authors used the Hunter-Schmidt approach (in particular, the Windows-Based Meta-Analysis Software Package Version 2.0; Schmidt and Hunter, 2015) for integrating effect sizes and conducting subgroup analyses. Following prior (Hunter and Schmidt, 2004) suggestions, the authors corrected the attenuation of

effect sizes, because measurement error in independent or dependent variables can reduce the magnitude of the effect sizes compared with the magnitude that would have been observed if the variables had been measured without error (Borenstein, Hedges, Higgins, and Rothstein, 2010).

In addition, the authors did not conduct tests of significance (*p* values) because of the low statistical power in significance testing between subgroups such as *t* tests and ANOVAs (Schmidt and Hunter, 2015). Instead, to determine whether a correlation was significant, they used 95 percent confidence intervals. When correlations included zero in the 95 percent confidence intervals, these were deemed to be not significant. Effect sizes (*i.e.*, correlations) were evaluated in keeping with previous (Cohen, 1988) guidelines (large $r \geq |0.37|$, medium $r \geq |0.24|$, small $r \geq |0.10|$; Becker, 2000).

Publication Bias

The authors used a cumulative meta-analysis to detect publication bias (*i.e.*, bias related to selection of results showing significant results over nonsignificant results), in keeping with a previous suggestion (Schmidt and Hunter, 2015).

They ran the meta-analysis first with the effect size from the study with the largest sample size, then repeated it with the effect sizes from the next largest sample sizes added in one at a time (Borenstein, Hedges, Higgins, and Rothstein, 2009). The increase in cumulative mean effect sizes shows the presence of publication bias, because publication bias should be concentrated in the small sample studies, if it exists (Borenstein *et al.*, 2009).

Homogeneity Test

Because differences attributed to methodological variation in studies or unknown factors might cause statistical heterogeneity, a homogeneity test followed that used percentage variance. A percentage variance above 75 percent indicates that moderators, if they exist, are not important. When the percentage variance goes below 75 percent, however, a moderator analysis (*i.e.*, a subgroup analysis) is recommended (Schmidt and Hunter, 2015).

RESULTS

Sample Characteristics

As previously noted, 70 studies (66 articles; a total of 497 effect sizes) were identified. These exhibited an upward trajectory

in research on the relationship between media context and advertising memory over time. The majority of the studies (83 percent; 58 studies) were published in academic journals (See Table 2). The remaining 17 percent were found in conference proceedings (12 percent; 8 studies) or were unpublished doctoral dissertations (6 percent; 4 studies).

More than half of the studies used laboratory experiment methods (50 studies; 71 percent). Survey methods were used in 27 percent (19 studies), and observation was used in 1 percent (1 study). College students were the most frequently studied participants (36 studies; 51 percent), followed by adults (26 studies; 37 percent), children (6 studies; 9 percent), and adult women (4 studies; 6 percent). Of the different advertising media, television was researched in 69 percent of the studies (48 studies). Magazines were studied in 19 percent (13 studies); video, PC, and online games were studied in 9 percent (6 studies); radio was studied in 6 percent (4 studies); and Internet and websites were studied in 6 percent (4 studies).

As noted above, a total of 497 effect sizes investigating the relationships between factors within media context and advertising memory (*i.e.*, recall, recognition) were identified. A cumulative meta-analysis, which was used to assess publication bias of the articles included in this study, exhibited the downward trend as effect sizes with smaller sample size were added (See the Appendix). This trend indicated that publication bias was less likely an issue in this study. Overall, the mean correlation was .15, with 5.52 percent variance (See Table 3). This weak correlation and low percentage variance might have been caused by the number of different media-context factors included in the analysis. The authors thus conducted analyses to address the research questions.

RQs 1a and 1b: Media-Context Factors' Impact on Advertising Memory

RQs 1a and 1b concern the factors within media context and their influence on advertising memory. More than 50 specific media-context factors were examined in relation to advertising memory (See Table 3); involvement, arousal, entertainment and enjoyment, attention, humor, transportation, and violence were the most frequent. Factors generating positive impact on advertising memory were involvement with media ($r = .21$), congruency between media contexts and advertisements ($r = .19$), and programs viewers liked ($r = .17$). Ineffective media-context factors were programs with violent ($r = -.25$), sexual ($r = -.45$), and suspenseful content ($r = -.13$) and ones that were humorous ($r = -.10$) and induced higher arousal ($r = -.05$).

These findings indicate that media users will more likely recognize and recall advertisements when they are placed in media contexts associated with higher media involvement, higher program liking, and greater media context–advertisement congruency. Media users will less likely recognize or recall advertisements placed in violent, sexual, or suspenseful contexts or in content that is humorous or highly arousing.

RQs 2 and 3: Relationship Strength By Advertising-Memory Measures And Study Characteristics

RQs 2 and 3 investigated how the relationship strengths between specific media-context factors and advertising memory varied by advertising-memory measure used (RQ 2) and by miscellaneous study characteristics, such as publication time interval, publication type, research method used, research participant type, advertising media type, brand and advertising types, and advertised product categories (RQ 3). To address RQs 2

and 3, the authors conducted analyses on media-context factors only with more than 20 effect sizes, because subgroups of the factors with a lower number of effect sizes were not balanced and accordingly were not appropriate for analyses. These included

- involvement with media;
- arousal induced by media content;
- entertainment or enjoyment induced by media content;
- attention to media content;
- humor in media content;
- media transportation;
- violence in media content.

Involvement with media and advertising memory. The overall relationship between media involvement and advertising memory was .21 (RQ 2). The effect size of recall was slightly higher than that of recognition (recall, $r = .23$; recognition, $r = .16$), and the impact was higher for advertising content (recall, $r = .24$; recognition, $r = .16$) than for the brand or product categories (*e.g.*, correlations for brand recall and recognition were not significant).

The media involvement–advertising memory relationship was stronger among the studies published in the 2000s ($r = .22$) than among studies published in the 1990s ($r = .09$) or 2010–2013 ($r = .10$; RQ 3). Published works ($r = .23$) yielded higher correlations than did unpublished works ($r = .14$), and nonexperimental studies ($r = .21$) generated higher correlations than experimental studies ($r = .09$). The effect was stronger when children ($r = .23$) or adults ($r = .21$) were sampled than when only women ($r = .14$) or college students (ns) were participants. The advertisement–memory effect was stronger for advertisements placed in newspapers ($r = .24$) than for magazine ($r = .15$) or television ($r = .10$) advertisements. As for product categories,

TABLE 3
Effect Sizes by Specific Media-Context Factors

Moderators	K_{effects}^a	N	r	95% CI	SD	% Var
Overall impact of media-context factors on advertising memory	497	221,532	.15	(.13, .17)	.19	5.52
Media Context Generating Positive Impact on Advertising Memory						
Involvement with media	69	127,281	.21	(.17, .24)	.16	1.89
Media context–advertisement congruency	17	23,271	.19	(.15, .23)	.08	10.86
Program liking	7	13,166	.17	(.11, .23)	.08	6.86
Dominance and competence	6	594	.31	(.27, .36)	.00	100.00
Noncartoon versus cartoon program ^b	6	168	.36	(.04, .68)	.36	16.96
Documentary versus action/adventure ^b	4	133	.25	(.01, .50)	.18	44.14
Television versus radio ^b	3	270	.27	(.01, .53)	.21	17.89
General interest versus specialty magazine ^b	3	1,299	.47	(.28, .66)	.16	5.15
Sexual versus violent program ^b	3	639	.11	(.08, .14)	.00	100.00
Task-related: hard versus easy ^b	3	198	.62	(.56, .68)	.00	100.00
Task-related: hard versus medium ^b	3	198	.34	(.31, .37)	.00	100.00
Task-related: medium versus easy ^b	3	198	.31	(.28, .34)	.00	100.00
Serial versus sitcom ^b	2	512	.14	(.13, .15)	.00	100.00
Sitcom versus quiz/audience participation ^b	2	670	.09	(.07, .11)	.00	100.00
Serial versus quiz/audience participation ^b	2	822	.05	(.02, .08)	.00	100.00
Within versus between the programs (interrupting versus shoulder block) ^b	2	4,258	.20	(.20, .21)	.00	100.00
Media Context Generating Negative Impact on Advertising Memory						
Arousal	40	6,112	-.05	(-.10, -.01)	.13	27.54
Humor	29	2,483	-.10	(-.17, -.02)	.17	28.50
Nonviolent versus violent program ^b	23	3,382	-.25	(-.29, -.20)	.07	57.70
First part versus rest of the program ^b	13	1,282	-.54	(-.62, -.45)	.14	20.88
Low versus high suspense	10	866	-.13	(-.23, -.03)	.11	47.18
Impact and personal impact	10	852	-.06	(-.11, -.01)	.00	100.00
Nonsexual versus sexual program ^b	9	881	-.45	(-.54, -.37)	.11	36.55
Thought-provoking	8	720	-.11	(-.14, -.07)	.00	100.00
Neutral versus violent or sexual program ^b	2	672	-.32	(-.42, -.22)	.06	43.12
Learned a great deal	2	146	-.04	(-.05, -.03)	.00	100.00
General quality very high	2	146	-.05	(-.10, -.01)	.00	100.00
Sitcom versus drama ^b	2	88	-.31	(-.55, -.07)	.10	63.36
Sitcom versus news ^b	2	88	-.15	(-.20, -.10)	.00	100.00
Type of task: watch versus play ^b	2	124	-.76	(-.81, -.70)	.00	100.00
Type of task: surfers versus seekers ^b	2	280	-.50	(-.59, -.41)	.01	95.03
Nonsignificant Impact on Advertising Memory						
Entertainment and enjoyment	37	3,341	.05	(.00, .10)	.12	41.99
Attention to media content	34	6,985	.01	(-.03, .05)	.10	35.11
Media transportation	24	2,934	.04	(-.06, .13)	.22	14.69
Program interest	18	1,586	-.03	(-.11, .06)	.15	34.00
Negative versus positive affect ^b	14	3,652	.04	(-.03, .11)	.12	22.83
Trust and credibility	12	1,950	-.01	(-.06, .05)	.05	72.11
Print versus web ^b	12	192	-.02	(-.16, .12)	.00	100.00
Challenging	11	1,017	-.08	(-.16, .00)	.08	64.35
Cognitive versus affective ^b	8	514	.36	(.13, .85)	.70	2.53
Worth remembering	8	720	-.04	(-.15, .07)	.12	44.30
Action/adventure versus sitcom ^b	4	150	.00	(-.30, .30)	.26	29.08
Contemporary	4	390	-.04	(-.17, .10)	.10	52.26
Print versus television ^b	3	270	.14	(-.15, .43)	.23	16.76
Print versus radio ^b	3	270	-.08	(-.59, .42)	.43	5.53
Hostility induced by program	3	120	-.11	(-.59, .36)	.39	14.15
Neutral versus disturbing news ^b	3	144	-.17	(-.36, .02)	.09	70.80
Appealing	2	132	-.10	(-.19, .00)	.00	100.00
Daytime versus nighttime programs ^b	2	4,258	-.02	(-.03, .00)	.00	100.00
Games vs. drama ^b	1	130	.01			
Advertisement position: right versus left ^b	1	326	.13			
Advertisement position: right versus spread ^b	1	326	.47			
Advertisement position: left versus spread ^b	1	326	.37			

Note: K_{effects} = number of effect sizes; N = cumulative sample size; r = reliability-corrected correlation; 95% CI = 95 percent confidence interval; SD = standard deviation; % Var = percentage variance. ^aMedia-context factors were listed by K_{effects} . ^bThe measures are dichotomous; interpreting the latter case is more (less) effective than the former when correlations are positive (negative).

the only significant correlation was for services ($r = .11$; See Figure 1 and Table 4).

Arousal induced by media content and advertising memory. Arousal induced by media content was correlated very weakly with advertising memory ($r = -.05$), which resulted in more negative impact on recognition ($r = -.09$) while generating nonsignificant impact on recall (RQ 2). The negative effect was stronger for advertising-content recognition ($r = -.22$) than for brand ($r = -.12$) or product recognition ($r = -.12$; See Figure 2 and Table 5).

The effect was not significant among studies published before 2010, but studies published in 2010–2013 presented negative correlations between arousal induced by media content and advertising memory ($r = -.11$; RQ 3). Published works reported negative correlations ($r = -.09$), but unpublished works presented positive correlations ($r = .31$). Negative impact on advertising memory was stronger for advertisements placed in online and PC games ($r = -.13$) than for those in other media platforms, and the effect was negative when electronics ($r = -.13$), automobiles ($r = -.10$), clothing and fashion ($r = -.12$), and pharmaceutical products ($r = -.10$) were used. Arousal enhanced advertising memory for personal care products ($r = .11$), however.

Entertainment or Enjoyment Induced by Media Content and Advertising Memory

Media content with an entertainment or enjoyment factor only affected advertising content recall ($r = .14$); it did not have a significant influence on other types of advertising memory (RQ 2). With respect to RQ 3, the effect was negative in the 1990s ($r = -.10$), but it became positive and improved over time (2000s, $r = .12$; 2010–2013, $r = .29$). There was a negative impact on advertising memory when advertisements were placed in magazines

($r = -.33$) but a positive impact when advertisements were inserted in online and PC games ($r = .29$). This influence was stronger when a fictitious brand was used ($r = .29$), but the relationship disappeared when a real brand was used. The effect was significant when electronics ($r = .29$), retail stores ($r = .15$), services ($r = .10$), household products ($r = .07$), or food products ($r = .06$) were used (See Figure 3 and Table 6).

Attention to Media Content And Advertising Memory

The relationship between attention to media content and advertising memory was not significant, regardless of advertising memory type (RQ 2). Attention was correlated negatively with brand recognition ($r = -.11$) but positively with advertising content recall ($r = .06$) and product recall ($r = .25$).

The influence of attention became positive and improved in the 2000s ($r = .04$) compared with the 1990s ($r = -.11$; RQ 3). As for advertising media, when television and magazines were examined, and advertising memory was correlated negatively with the attention for advertisements placed in magazines ($r = -.42$). The effect was negative when clothing and fashion ($r = -.42$) and beverages ($r = -.16$) were used (See Figure 4 and Table 7).

Humor in Media Content And Advertising Memory

The overall relationship between humor in media content and advertising memory was $-.10$, but when recognition was singled out, the effect was $-.14$, whereas the negative effect disappeared for recall (RQ 2). The effect of humor in media content on advertising memory was only significant for the studies in the 1990s ($r = -.24$). No significant results were found with college student samples, but there were negative effects with other sample types (children, $r = -.40$; adults, $r = -.11$). The

effect was negative when electronics ($r = -.40$); beverages ($r = -.24$); or food, personal care, and household products ($r = -.09$) were used (RQ 3; See Figure 5 and Table 8).

Media Transportation Induced by Media Content and Advertising Memory

The overall relationship between media transportation and advertising memory was not significant, even after advertising memory type was contrasted (RQ 2). Media transportation, however, improved advertising-content recall ($r = .05$) and advertising-content recognition ($r = .23$) but hurt overall advertising recall ($r = -.19$) and product recognition ($r = -.16$). No significant impact on brand recall or recognition was found (See Figure 6 and Table 9).

The effect was negative among studies published in the 1990s ($r = -.22$); it was positive in the 2000s ($r = .18$; RQ 3). Negative effects were stronger for fictitious brands ($r = -.19$) than for real brands ($r = -.11$). The effect was negative when beverages ($r = -.22$), food ($r = -.07$), or clothing and fashion products ($r = -.29$) were used. Transportation, in contrast, enhanced advertising memory for service-related products, albeit very weakly ($r = .04$).

Violence in Media Content And Advertising Memory

Violence in media content influenced advertising memory negatively ($r = -.25$) regardless of advertising-memory types (recall, $r = -.25$; recognition, $r = -.23$) or memory content (e.g., advertising content recall, $r = -.25$; brand recall, $r = -.27$; advertising-content recognition, $r = -.26$; brand recognition, $r = -.22$; See Figure 7 and Table 10).

The negative influence on advertising memory became stronger among studies published in the 2000s ($r = -.34$) than those in the 1990s ($r = -.20$; RQ 3). Published works reported higher negative

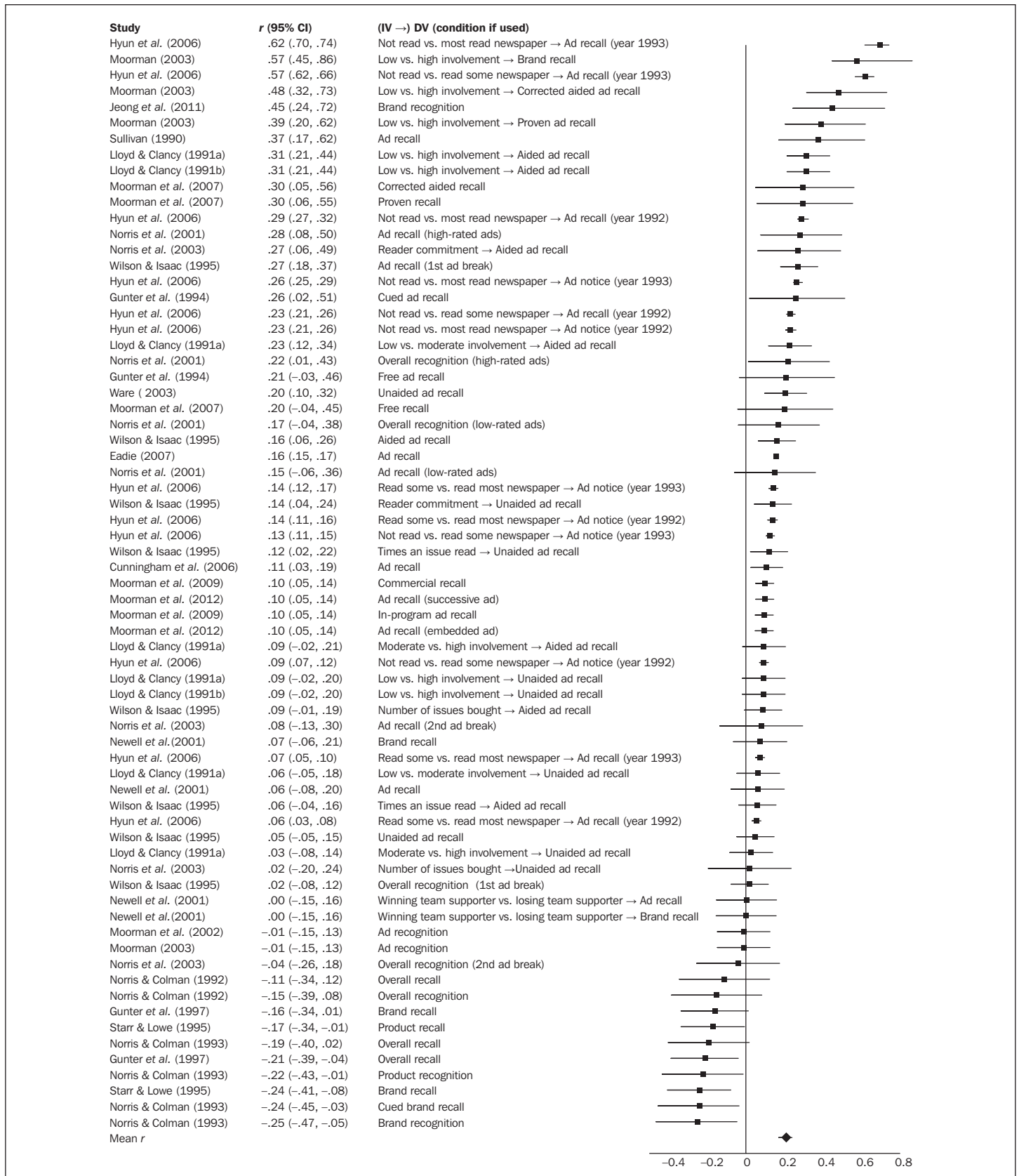


Figure 1 Forest Plot: Involvement with Media and Advertising Memory

TABLE 4
Involvement with Media and Advertising Memory

Moderators	K_{effects}	N	r	95% CI	SD	% Var
Involvement with Media → Advertising Memory	69	127,281	.21	(.17, .24)	.16	1.89
Recall	53	85,032	.23	(.18, .28)	.19	1.58
Recognition	16	42,249	.16	(.12, .19)	.07	7.32
Recall—overall	11	2,796	.12	(.03, .20)	.13	18.79
Recall—advertisement content	35	81,271	.24	(.17, .30)	.19	1.11
Recall—brand	6	820	-.01	(-.20, .18)	.22	12.83
Recall—product	1	145	-.17			
Recognition—overall	5	425	.05	(-.06, .17)	.07	67.94
Recognition—advertisement content	8	41,564	.16	(.12, .21)	.06	4.66
Recognition—brand	2	170	.06	(-.42, .53)	.32	10.69
Recognition—product	1	90	-.22			
Publication Time Interval						
1990s	29	7,082	.09	(.03, .14)	.13	18.71
2000s	37	116,215	.22	(.16, .27)	.16	1.10
2010–2013	3	3,984	.10	(.05, .16)	.04	35.85
Publication Type						
Journal article	51	93,910	.23	(.18, .28)	.18	1.49
Conference presentation/dissertation	18	33,371	.14	(.12, .17)	.05	16.35
Research Method						
Experimental	38	7,866	.09	(.05, .14)	.13	21.82
Nonexperimental	31	119,415	.21	(.16, .27)	.16	0.92
Research Participants						
Children	2	132	.23	(.20, .27)	.00	100.00
College students	15	1,862	.00	(-.08, .09)	.15	27.65
Adults	43	122,520	.21	(.16, .26)	.16	1.24
Women only	9	2,767	.14	(.07, .21)	.10	25.95
Advertising Medium						
Television	41	13,894	.10	(.06, .13)	.10	22.34
Not television	28	113,387	.22	(.16, .28)	.16	0.84
Newspaper	12	83,917	.24	(.14, .34)	.18	0.38
Not newspaper	57	43,364	.13	(.11, .15)	.07	21.16
Magazines	14	29,310	.15	(.13, .17)	.03	28.97
Not magazines	55	97,971	.22	(.17, .27)	.18	1.56
Brand Type						
Real brand	38	111,602	.22	(.16, .27)	.17	1.11
Not specific	31	15,679	.12	(.09, .15)	.07	27.60
Advertisement Type						
Real advertisement	38	111,602	.22	(.16, .27)	.17	1.11
Fictitious advertisement	1	80	.37			
Not specific	30	15,599	.12	(0.09, .15)	.07	28.00
Product Category						
Beverages	19	1,799	-.06	(-.14, .03)	.16	30.13
Not beverages	50	125,482	.21	(.16, .25)	.16	1.44
Food	13	1,190	.00	(-.12, .13)	.20	21.70
Not food	56	126,091	.21	(.17, .25)	.16	1.58
Personal care	18	2,056	.00	(-.08, .08)	.13	34.20
Not personal care	51	125,225	.21	(.16, .25)	.16	1.45
Services	15	1,363	.11	(.02, .20)	.13	39.65
Not services	54	125,918	.21	(.16, .25)	.16	1.50
Clothing/fashion	11	1,285	.05	(-.03, .13)	.09	55.21
Not clothing/fashion	58	125,996	.21	(.16, .25)	.16	1.61

Note: K_{effects} = number of effect sizes; N = cumulative sample size; r = reliability-corrected correlation; 95% CI = 95 percent confidence interval; SD = standard deviation; % Var = percentage variance.

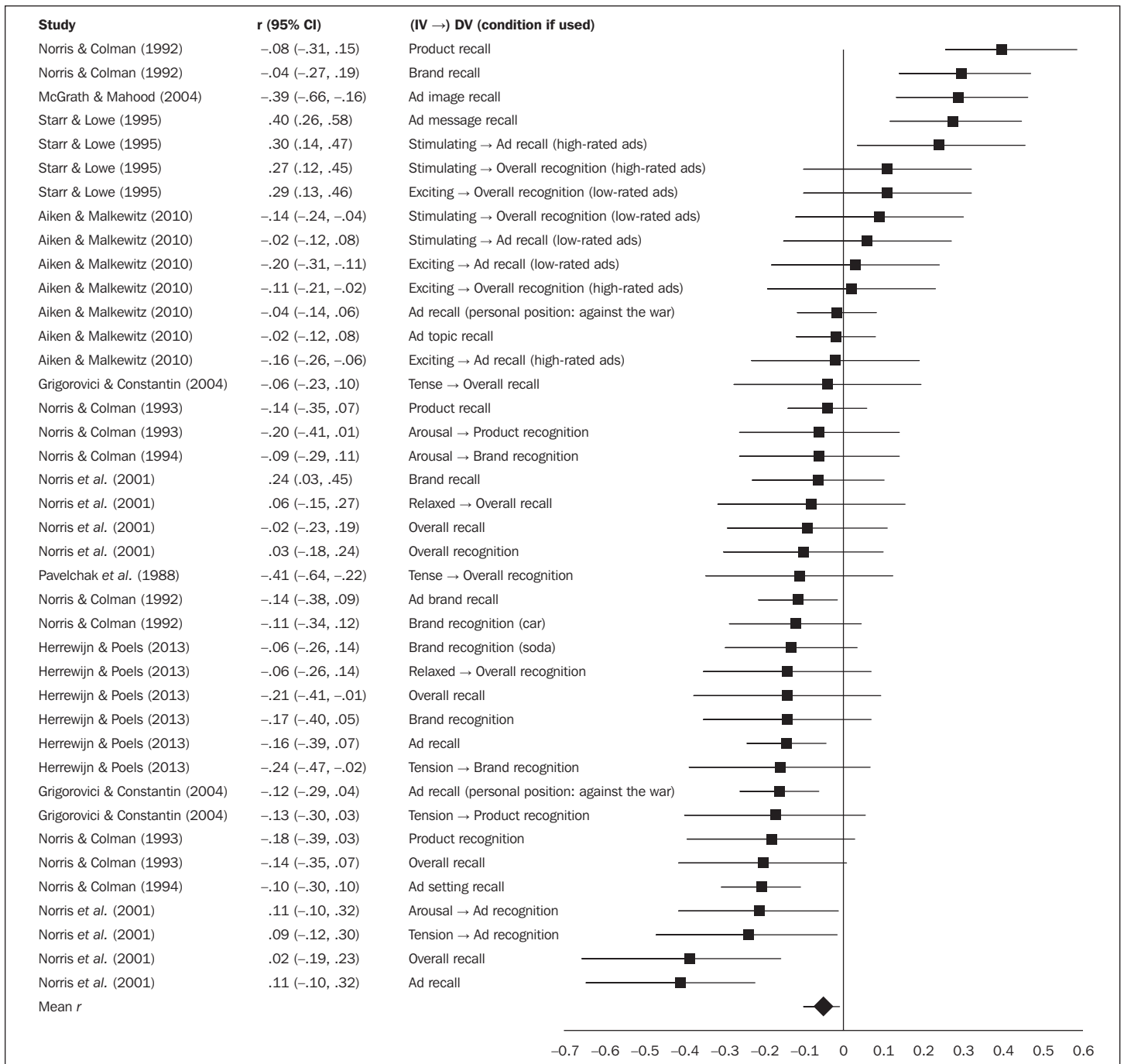


Figure 2 Forest Plot: Arousal Induced by Media Content and Advertising Memory

correlation between violence and advertising memory ($r = -.25$) than unpublished works ($r = -.16$). Nonstudent adult samples generated a higher negative advertising-memory effect ($r = -.33$) than other samples (college students, $r = -.23$; children, $r = -.22$). The effect was stronger

for beverages ($r = -.33$), food ($r = -.32$), and electronics ($r = -.35$) than for other product categories.

DISCUSSION

The authors conducted this research using meta-analysis to reconcile discrepancies

in findings over nearly 50 years and to provide structured empirical evidence on the relationship between media-context factors and the important advertising-effectiveness indicator, advertising memory. The study’s purpose also was to provide media planners with useful

TABLE 5

Arousal Induced by Media Content and Advertising Memory

Moderators	K_{effects}	N	r	95% CI	SD	% Var
Arousal Induced by Media → Advertising Memory	40	6,112	-.05	(-.10, -.01)	.13	27.54
Recall	23	4,445	-.04	(-.11, .03)	.15	18.22
Recognition	17	1,667	-.09	(-.13, -.04)	.00	100.00
Recall—overall	5	410	-.14	(-.23, -.04)	.02	97.90
Recall—advertising content	12	2,719	-.05	(-.14, .04)	.15	17.21
Recall—brand	4	775	-.04	(-.20, .12)	.15	19.57
Recall—product	2	541	.08	(-.19, .34)	.18	9.90
Recognition—overall	7	605	.00	(-.07, .08)	.00	100.00
Recognition—advertising content	2	198	-.22	(-.24, -.20)	.00	100.00
Recognition—brand	5	576	-.12	(-.15, -.09)	.00	100.00
Recognition—product	3	288	-.13	(-.19, -.07)	.00	100.00
Publication Time Interval						
1980s	1	89	-.41			
1990s	14	1,430	.05	(-.06, .17)	.19	20.70
2000s	12	1,227	-.01	(-.09, .07)	.09	53.71
2010–2013	13	3,366	-.11	(-.14, -.07)	.03	77.44
Publication Type						
Journal articles	36	5,532	-.09	(-.13, -.06)	.07	60.58
Conference presentations and dissertations	4	580	.31	(.26, .36)	.00	100.00
Research Participants						
College students	28	4,960	-.03	(-.09, .03)	.14	21.32
Adults	12	1,152	-.14	(-.17, -.11)	.00	100.00
Advertising Medium						
Television	27	4,794	-.04	(-.10, .03)	.15	20.07
Not television	13	1,318	-.12	(-.15, -.09)	.00	100.00
Magazines	4	292	-.09	(-.13, -.06)	.00	100.00
Not magazines	36	5,820	-.05	(-.10, .00)	.14	24.93
Online/PC games	9	1,026	-.13	(-.16, -.09)	.00	100.00
Not online/PC games	31	5,086	-.04	(-.10, .02)	.14	22.85
Brand/Advertisement Type						
Real brand	30	4,997	-.03	(-.09, .02)	.14	24.26
Fictitious brand	6	594	-.14	(-.20, -.09)	.00	100.00
Not specific	4	521	-.15	(-.27, -.04)	.08	54.85
Product Category						
Beverages	23	2,456	-.02	(-.10, .06)	.17	25.90
Not beverages	17	3,656	-.08	(-.13, -.02)	.10	33.04
Food	15	1,353	-.03	(-.11, .04)	.10	54.51
Not food	25	4,759	-.06	(-.12, .00)	.14	21.33
Personal care	18	1,790	.11	(.03, .18)	.13	35.58
Not personal care	22	4,322	-.12	(-.16, -.09)	.04	71.60
Electronics	9	1,026	-.13	(-.16, -.09)	.00	100.00
Not electronics	31	5,086	-.04	(-.10, .02)	.14	22.85
Services	15	3,492	-.06	(-.11, -.01)	.08	42.73
Not services	25	2,620	-.04	(-.12, .04)	.18	22.89
Automobiles	11	3,279	-.10	(-.15, -.06)	.05	58.50
Not automobiles	29	2,833	.01	(-.06, .08)	.17	27.12
Clothing/fashion	10	886	-.12	(-.16, -.08)	.00	100.00
Not clothing/fashion	30	5,226	-.04	(-.10, .02)	.14	21.93
Household	18	1,858	.09	(.00, .17)	.16	28.07
Not household	22	4,254	-.12	(-.15, -.08)	.04	72.73
Pharmaceuticals	7	2,772	-.10	(-.15, -.05)	.05	52.44
Not pharmaceuticals	33	3,340	-.01	(-.08, .05)	.16	27.34

Note: K_{effects} = number of effect sizes; N = cumulative sample size; r = reliability-corrected correlation; 95% CI = 95 percent confidence interval; SD = standard deviation; % Var = percentage variance.

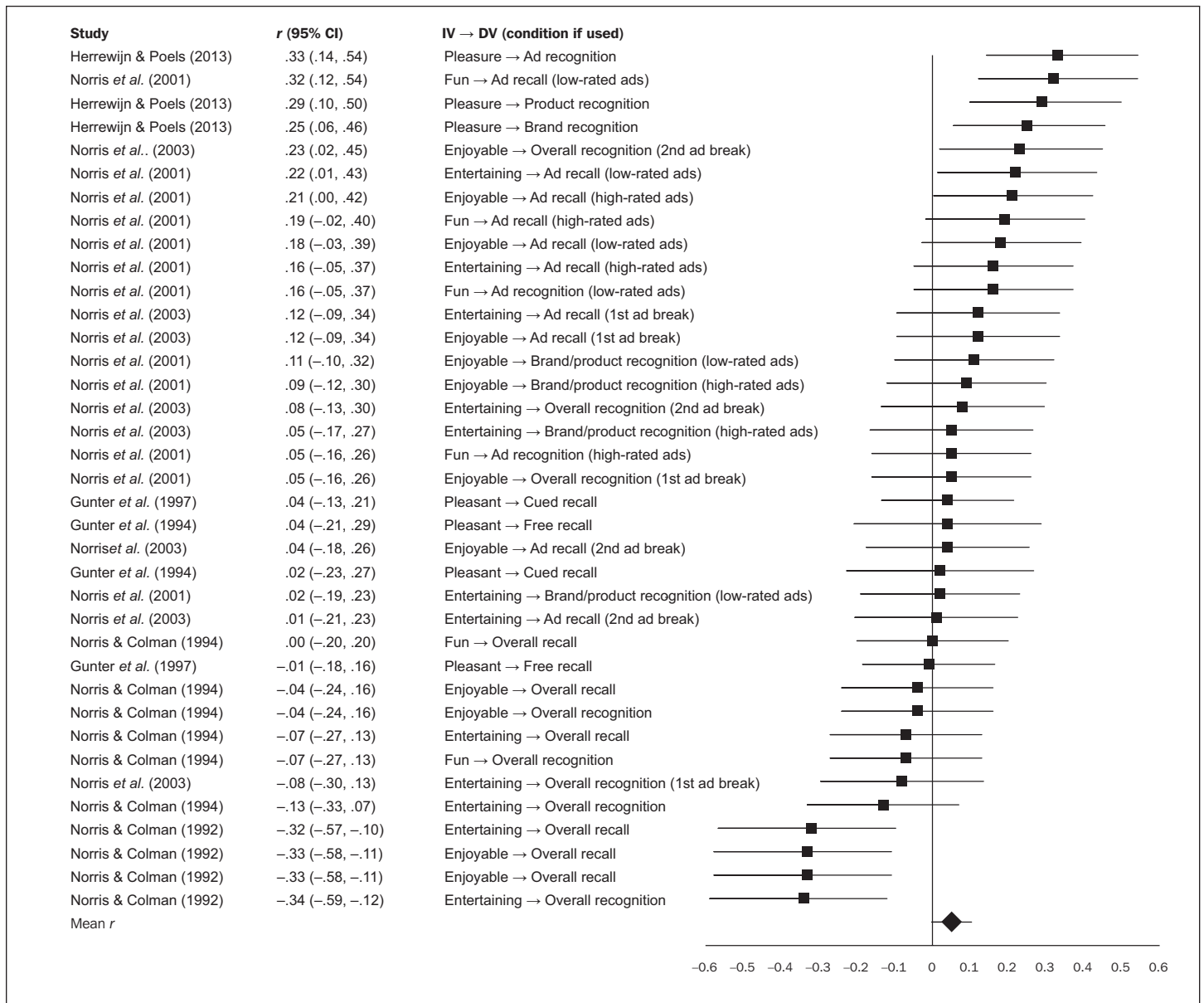


Figure 3 Forest Plot: Entertainment or Enjoyment Induced by Media Content and Ad Memory

information regarding the influence of specific media-context factors on advertising memory and to provide media researchers with directives regarding particular context–effectiveness relationships in need of focused investigation. As reported, the overall correlation between media context and advertising memory was weak. The impact of media context on advertising memory varied by media-context factors and advertising-memory measures as well as by study characteristics.

Media Context Effects Research Over Time

Since Weilbacher first discussed the importance of media context in advertising effectiveness in a 1960 journal article, the idea of media engagement has continued to develop and expand through several decades. As identified in this research, researchers have examined more than 50 different media-context factors in the literature to model media-context effects on advertising memory. This wide array of media-context

factors has been examined not only in terms of characteristics of the medium, media genre, or vehicle itself (Barclay, Doub, and McMurtrey, 1965; McConnell, 1970; Wise, Brown, and Cox, 1975) but also in terms of changes in the media users’ memory processes as a result of interaction with media or media content. For example, researchers have investigated involvement with media and willingness to pay attention to media content (Lloyd and Clancy, 1991a; Norris and Colman, 1992; Pavelchak, Antil, and

TABLE 6

Entertainment or Enjoyment Induced by Media Content and Ad Memory

Moderators	K_{effects}	N	r	95% CI	SD	% Var
Entertainment/Enjoyment Induced by Media → Advertising Memory	37	3,341	.05	(.00, .10)	.12	41.99
Recall	19	1,717	.05	(-.02, .12)	.11	48.55
Recognition	18	1,624	.05	(-.03, .13)	.14	36.76
Recall—overall	6	572	-.09	(.00, .00)	.09	53.99
Recall—advertising content	12	1,016	.14	(.09, .19)	.00	100.00
Recall—brand	1	129	-.01			
Recognition—overall	15	1,327	.00	(-.08, .07)	.10	53.39
Recognition—advertising content	1	99	.33			
Recognition—brand	1	99	.25			
Recognition—product	1	99	.29			
Publication Time Interval						
1990s	14	1,276	-.10	(-.16, -.03)	.08	61.47
2000s	20	1,768	.12	(.08, .16)	.00	100.00
2010–2013	3	297	.29	(.25, .32)	.00	100.00
Research Participants						
Children	2	132	.03	(.02, .04)	.00	100.00
College students	18	1,630	.04	(-.05, .13)	.16	31.04
Adults	17	1,579	.06	(.00, .13)	.09	57.40
Advertising Media						
Television	30	2,752	.06	(.03, .10)	.00	100.00
Not television	7	589	-.02	(-.24, .21)	.29	12.75
Magazines	4	292	-.33	(-.33, -.32)	.00	100.00
Not magazines	30	3,049	.09	(.05, .13)	.06	75.69
Online/PC games	3	297	.29	(.25, .32)	.00	100.00
Not online/PC games	34	3,044	.03	(-.02, .08)	.11	48.98
Brand/Advertisement Type						
Real brand	34	3,044	.03	(-.02, .08)	.11	48.98
Fictitious brand	3	297	.29	(.25, .32)	.00	100.00
Product Category						
Beverages	25	2,261	.01	(-.06, .07)	.14	37.64
Retail store	12	1,080	.15	(.10, .19)	.00	100.00
Food	22	2,064	.06	(.02, .11)	.04	88.36
Clothing/fashion	15	1,277	.03	(-.08, .14)	.19	24.11
Personal care	34	3,044	.03	(-.02, .08)	.11	48.98
Electronics	3	297	.29	(.25, .32)	.00	100.00
Services	24	2,158	.10	(.06, .13)	.00	100.00
Not services	13	1,183	-.04	(-.16, .08)	.19	23.01
Household	26	2,362	.07	(.03, .11)	.03	90.43
Not household	11	979	.00	(-.14, .14)	.21	19.86
Leisure	4	390	.02	(.00, .04)	.00	100.00
Not leisure	33	2,951	.05	(.00, .11)	.14	37.68

Note: K_{effects} = number of effect sizes; N = cumulative sample size; r = reliability-corrected correlation; 95% CI = 95 percent confidence interval; SD = standard deviation; % Var = percentage variance.

Munch, 1988) as well as similarity and relevance of media context and advertisements (De Pelsmacker, Geuens, and Anckaert, 2002; Jeong and King, 2010; Wang, 2006). These studied media-context factors have been found to positively affect, negatively affect, and neither positively nor negatively affect advertising memory.

The differential impact of media-context factors is thought to occur mainly because media users' thoughts and feelings do not immediately cease when media content suddenly is interrupted by advertising content, such as a commercial break (Krugman, 1983). As shown by past studies, affect or mood induced by media content or media

users' interest can be transferred or carried over when audiences process and evaluate advertisements (France and Park, 1997; Krugman, 1983). Media content may work as a cue for media users to retrieve associated thoughts, memory, or mood from past experiences (Forgas and Moylan, 1987; Kamins, Marks, and Skinner, 1991; Mathur

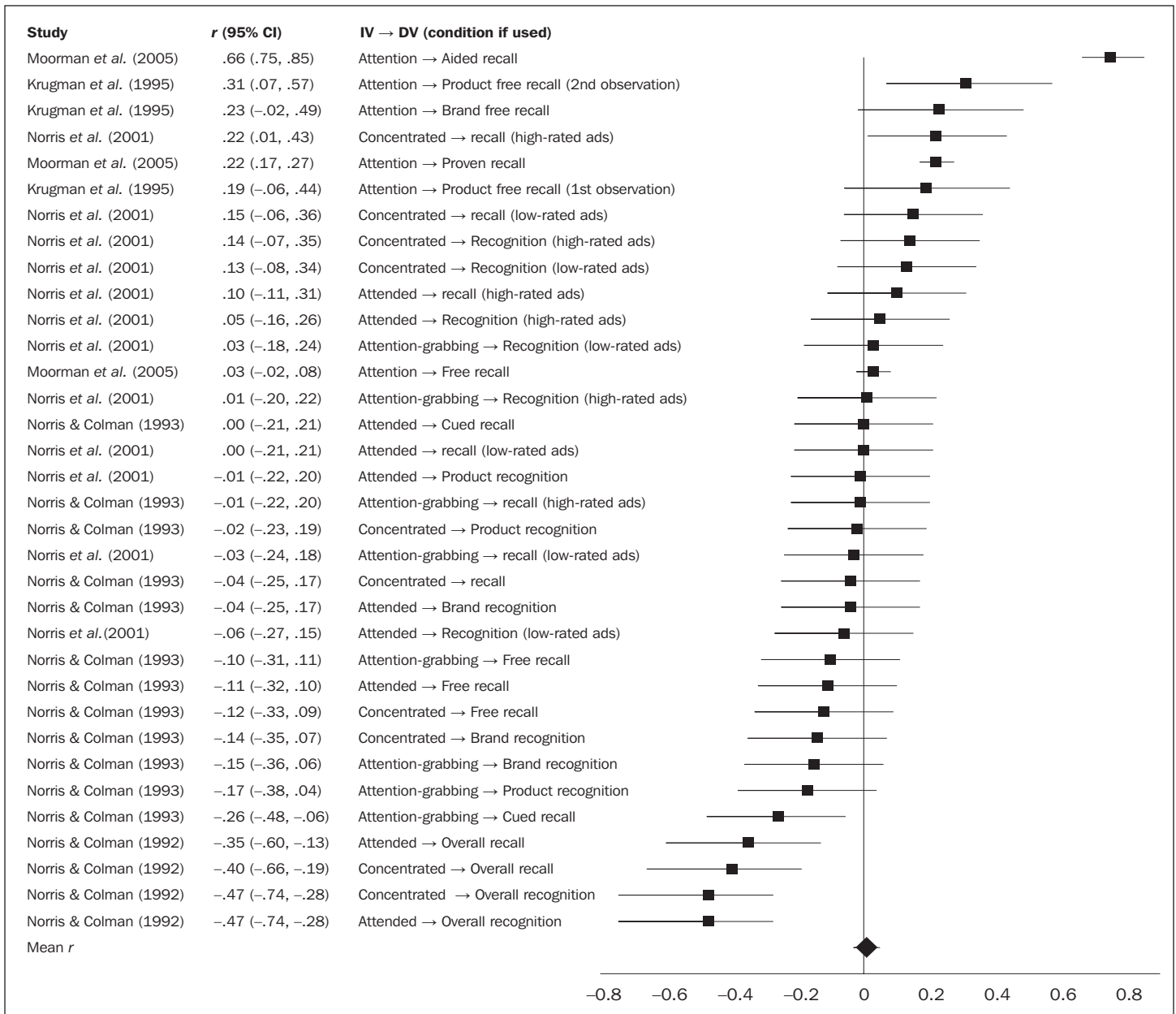


Figure 4 Forest Plot: Attention to Media Content and Ad Memory

and Chattopadhyay, 1991), influencing users when they process an advertisement. When media users are engaged cognitively and emotionally with media content, however, they may limit their attention to advertisements or have a limited capacity for the information processing of advertisements (Norris and Colman, 1993).

Taken together, the past research findings and the results of this research

suggest that measuring mere opportunity to see might not be sufficient to determine media effectiveness. The longstanding tenet of media planning is true—it is important for media professionals to consider media context when making media decisions. This study provides specific and useful information on positive, negative, and neutral context influences on advertising memory as well as

insights regarding general characteristics of research on the subject.

As described previously, studies examining media-context factors on advertising memory increased over time, especially in the 1990s and the 2000s. The overall media-context effect improved over time: .09 for the 1960s, .17 for the 1970s, -.09 for the 1980s, -.05 for the 1990s, .18 for the 2000s, and .16 for 2010–2013. The current

TABLE 7

Attention to Media Content and Advertising Memory

Moderators	K_{effects}	N	r	95% CI	SD	% Var
Attention toward Media Content → Advertising Memory	34	6,985	.01	(-.03, .05)	.10	35.11
Recall	20	5,759	.03	(-.02, .07)	.08	38.19
Recognition	14	1,226	-.07	(-.16, .02)	.13	39.70
Recall—overall	5	416	-.20	(-.31, -.09)	.07	70.90
Recall—advertising content	8	3,434	.06	(.03, .08)	.00	100.00
Recall—brand	5	1,781	.01	(-.06, .07)	.05	52.24
Recall—product	2	128	.25	(.16, .33)	.00	100.00
Recognition—overall	8	686	-.06	(-.21, .09)	.19	24.54
Recognition—brand	3	270	-.11	(-.16, -.05)	.00	100.00
Recognition—product	3	270	-.07	(-.15, .02)	.00	100.00
Publication Time Interval						
1990s	19	1,564	-.11	(-.20, -.03)	.16	32.19
2000s	15	5,421	.04	(.02, .07)	.00	100.00
Research Participants						
College students	16	1,372	-.04	(-.14, .06)	.18	26.83
Adults	18	5,613	.02	(-.01, .06)	.05	54.32
Advertising Medium						
Television	30	6,693	.03	(.00, .06)	.04	72.19
Magazines	4	292	-.42	(-.47, -.37)	.00	100.00
Brand/Advertisement Type						
Real brand	31	2,644	-.04	(-.11, .02)	.14	36.87
Not specific	3	4,341	.04	(.02, .06)	.00	100.00
Product Category						
Beverages	16	1,372	-.16	(-.24, -.09)	.10	50.50
Not beverages	18	5,613	.05	(.03, .08)	.00	100.00
Food/household	24	2,160	-.02	(-.06, .03)	.03	92.91
Not food	10	4,825	.02	(-.05, .10)	.11	14.51
Personal care/services	16	1,372	-.04	(-.14, .06)	.18	26.83
Not personal care	18	5,613	.02	(-.01, .06)	.05	54.32
Clothing/fashion	4	292	-.42	(-.47, -.37)	.00	100.00
Not clothing/fashion	30	6,693	.03	(.00, .06)	.04	72.19
Retail store	12	1,080	.06	(.01, .11)	.00	100.00
Not retail store	22	5,905	.00	(-.05, .05)	.11	25.43

Note: K_{effects} = number of effect sizes; N = cumulative sample size; r = reliability-corrected correlation; 95% CI = 95 percent confidence interval; SD = standard deviation; % Var = percentage variance.

analyses conducted to address RQs 2 and 3 showed that correlations for the 1990s were, overall, weak and negative, whereas studies conducted since the 2000s produced more positive correlations, except for violent media context. The difference between the time periods might be explained by use of nonexperimental research methods and the rise in use of online media.

Experimental and Nonexperimental Study Designs

In the 1960s and 1970s, three of the studies used experimental designs, and the

other three studies used nonexperimental designs. Experiments were used frequently both in the 1990s (19 studies) and in the 2000s (20 studies), but most of the nonexperimental studies were conducted since the 2000s (15 out of 20 studies). Of the media-context factors analyzed for RQs 2 and 3, most studies used experimental designs, except for involvement with media content. As noted above, correlations between involvement and advertising memory were higher when they were examined in nonexperimental studies (which were all conducted since the 2000s). It is unclear whether the results

from nonexperimental studies or experimental studies correctly reflect the reality.

Many experimental studies, however, used laboratory settings employing college student samples, who often were not the actual media or media-vehicle users. Most nonexperimental studies, in contrast, sampled adults, who often were the actual media users. Consistent with the interpretation reached by previous work (Moorman *et al.*, 2002) as well as with the reported findings on sample-participant differences, the impact of media context on advertising memory might be greater in nonexperimental studies because such

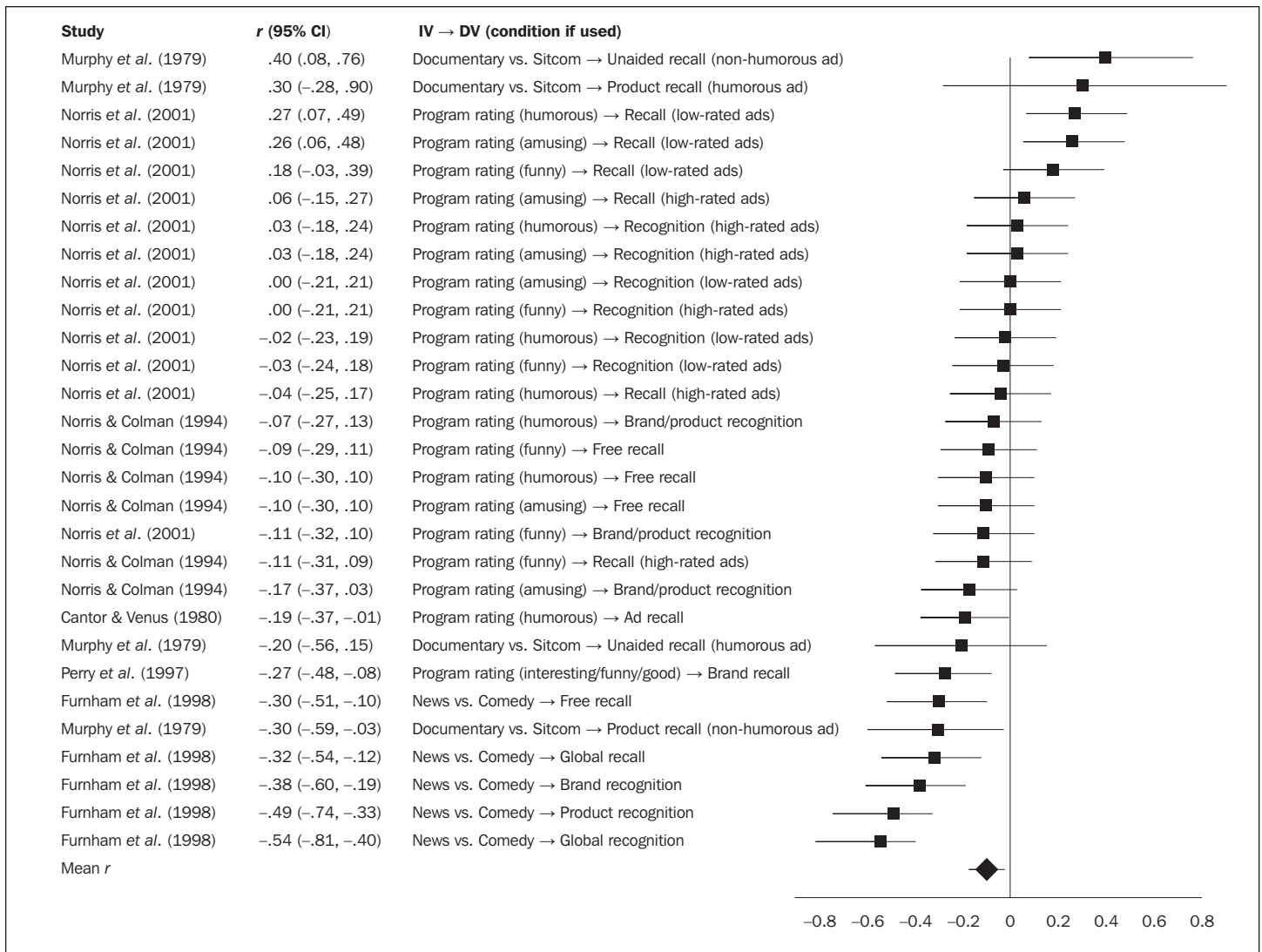


Figure 5 Forest Plot: Humor in Media Content and Advertising Memory

impact is the product of actual media users who have consumed media in a more natural environment, rather than among students in laboratory settings. It is entirely possible that research participants' level of involvement and attitude toward media is lower in laboratory settings than natural settings (Moorman et al., 2002; Norris and Colman, 1992), which results in weaker impact. To generate the most useful and actionable information, researchers thus should be encouraged to conduct media-context research in real-world situations using real media users.

As for online media, media-context effects have been explored in websites and digital-gaming contexts mainly since the 2000s. The stronger impact on advertising memory compared with traditional media probably occurred because the vivid, interactive, and immersive characteristics of online media enhance media users' experiences—their entertainment or enjoyment. At this point in time, however, online media contexts have been the subject of limited research, even though today's media professionals work with the reality of decreasing expenditures directed toward traditional media, such

as newspapers, magazines, and radio, and increasing dollars directed toward online media. There is a great need for research focusing specifically on the media-context effects of digital media and hybrids such as online newspaper, magazine, and radio formats.

LIMITATIONS AND FUTURE RESEARCH

The comprehensiveness of the reported findings is restricted because the determination of advertising effectiveness was limited to the relationship between media-context factors and one type of media engagement effect, advertising memory.

TABLE 8

Humor in Media Content and Advertising Memory

Moderators	K_{effects}	N	r	95% CI	SD	% Var
Humor → Advertising Memory	29	2,483	-.10	(-.17, -.02)	.17	28.50
Recall	17	1,370	-.06	(-.15, .04)	.17	31.24
Recognition	12	1,113	-.14	(-.25, -.03)	.16	27.79
Recall—overall	5	481	-.18	(-.26, -.09)	.02	95.92
Recall—advertising content	9	726	.06	(-.07, .18)	.15	36.14
Recall—brand	1	98	-.27			
Recall—product	2	65	-.17	(-.50, .16)	.16	54.60
Recognition—overall	10	929	-.09	(-.19, .01)	.12	42.06
Recognition—brand	1	92	-.38			
Recognition—product	1	92	-.49			
Publication Time Interval						
1970s	4	134	-.03	(-.32, .27)	.24	34.39
1980s	1	117	-.19			
1990s	12	1,152	-.24	(-.32, -.15)	.12	39.80
2000s	12	1,080	.05	(-.01, .12)	.04	85.71
Research Participants						
Children	5	460	-.40	(-.48, -.32)	.03	87.05
College students	18	1,429	.00	(-.07, .08)	.12	45.43
Adults	6	594	-.11	(-.13, -.08)	.00	100.00
Brand/Advertising Type						
Real brand	23	1,906	-.02	(-.08, .04)	.10	54.60
Not specific	6	577	-.36	(-.45, -.26)	.08	55.27
Product Category						
Beverages	12	1,152	-.24	(-.32, -.15)	.12	39.80
Not beverages	17	1,331	.02	(-.05, .10)	.11	53.15
Food/personal care/household	23	2,134	-.09	(-.17, -.01)	.17	27.04
Not food	6	349	-.15	(-.32, .02)	.17	37.84
Electronics	5	460	-.40	(-.48, -.32)	.03	87.05
Not electronics	24	2,023	-.03	(-.09, .03)	.10	53.11
Services	13	1,178	.03	(-.05, .10)	.09	56.23
Not services	16	1,305	-.21	(-.30, -.12)	.15	33.71
Retail store	12	1,080	.05	(-.01, .12)	.04	85.71
Not retail store	17	1,403	-.21	(-.30, -.13)	.14	35.39

Note: K_{effects} = number of effect sizes; N = cumulative sample size; r = reliability-corrected correlation; 95% CI = 95 percent confidence interval; SD = standard deviation; % Var = percentage variance.

As a previous researcher (Moorman, 2003) noted, other advertising-effectiveness measures, such as attitude toward the advertisement, attitude toward the brand or product, and purchase intention, appear in the media-engagement literature. It is possible that the media-context factors that positively or negatively leveraged advertising memory (See Table 3) are different for other effect measures.

One study (McGrath and Mahood, 2004), for example, examined the impact of arousal induced by media context on advertising effectiveness. In that study, arousal negatively influenced advertising

memory but was positively correlated with attitude toward the advertisement. Another study (Norris and Colman, 1993) also reported similar findings— involvement with media negatively correlated with advertising memory but positively correlated with attitude toward the advertisement.

It is important to note that advertising memory is only a proximal measure of advertising success that needs to be understood and studied in the context of more distal and enduring measures, such as persuasion or sales (Ross, 1982). Future research on the relationship

between media-context factors and other types of advertising-effectiveness measures—in particular, behavioral measures and return on investment—is needed. A 2011 meta-analysis on advertising elasticities (Sethuraman, Tellis, and Briesch, 2011) may serve as a conceptual path for such research. Although the authors of the meta-analysis did not discuss media-engagement variables as such, their study found that television (in contrast with print) resulted in higher behavioral outcomes (advertising elasticities). This contrasts with the present study's findings reporting negative or nonsignificant

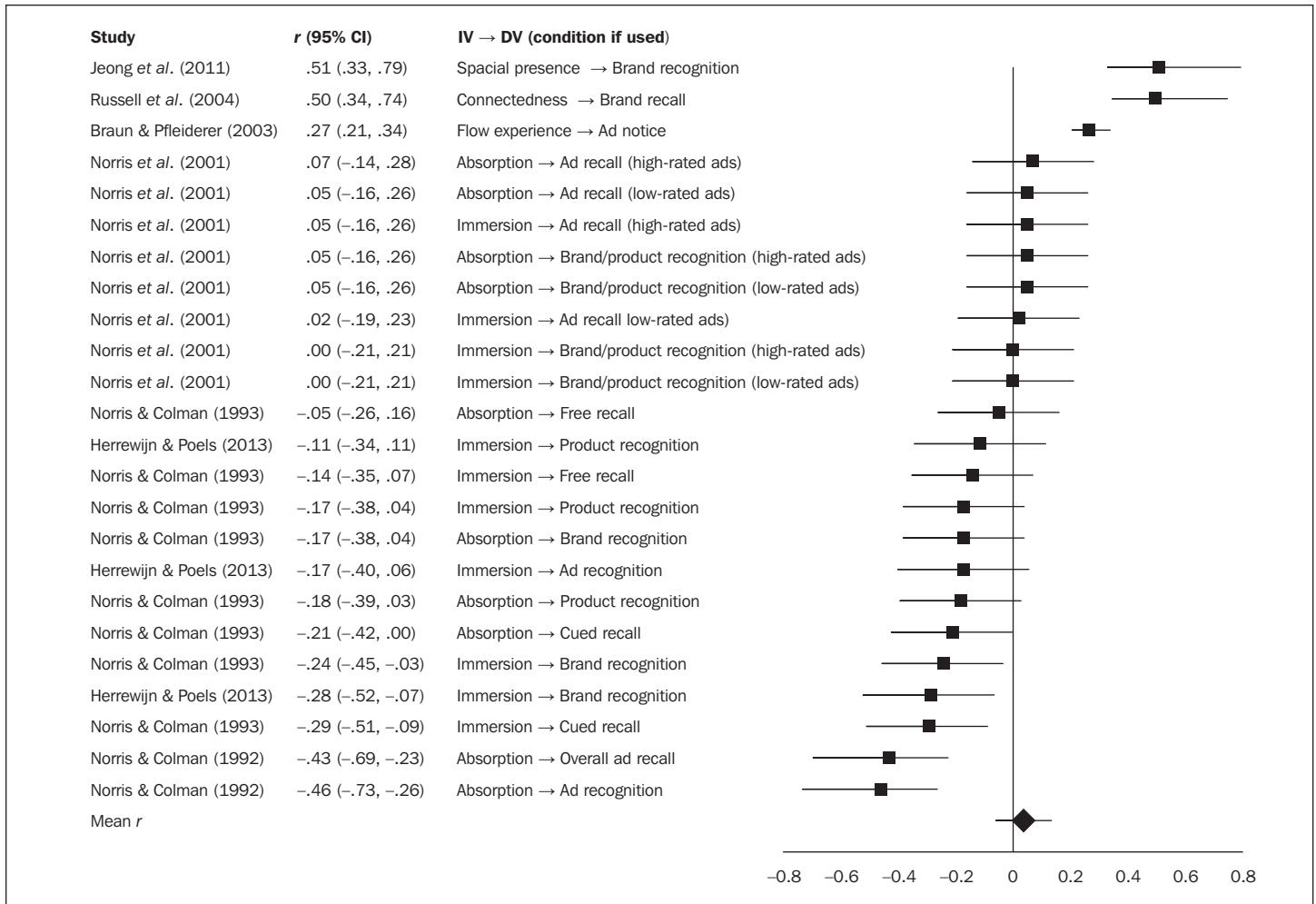


Figure 6 Forest Plot: Media Transportation Induced by Media Content and Advertising Memory

moderating effects of television (versus not television) on the media engagement → advertising memory link. Future research, by mapping mediating mechanisms, should clarify what lies between advertising memory and actual purchases, as moderated by media context and other structural variables, such as product category.

A second limitation of the study is that effect sizes retrieved for meta-analysis could lack independence and be correlated with study characteristics (e.g., research methods, sample types, advertising types, and product categories) retrieved at the per-study level. As noted in the literature (Lipsey and Wilson,

2001; Schmidt and Hunter, 2015), multiple items are used to measure independent and dependent variables and moderators in social science, and for this reason, the meta-analyses of marketing and advertising research studies tend to retrieve more than one effect size (e.g., 324 effect sizes from 44 studies, Eisend and Tarrahi, 2016; 751 effect sizes from 56 studies, Sethuraman et al., 2011). The ratio of test relationships to the number of studies in this investigation was about 7:1. For this reason, the source of variations might not have been identified accurately.

Furthermore, results might have been skewed. As noted in the Results section,

more than half of the studies were laboratory experiments, college students were the most frequently studied participants, and television was the medium most frequently researched. Even though the authors did subgroup analyses, the results might not have captured reality fully, because the effect sizes for the cases using other research methods, samples, and media platforms were small or not found. Involvement with media was not examined in online media; just two effect sizes were used to examine the impact on children. Readers thus should be cautious in interpreting these results. Again, this speaks to the need for more research on this phenomenon using different and

TABLE 9

Media Transportation Induced by Media Content and Advertising Memory

Moderators	K_{effects}	N	r	95% CI	SD	% Var
Media Transportation → Advertising Memory	24	2,934	.04	(-.06, .13)	.22	14.69
Recall	10	892	-.03	(-.18, .12)	.21	20.05
Recognition	14	2,042	.07	(-.06, .19)	.22	12.94
Recall—overall	3	253	-.19	(-.36, -.01)	.11	46.84
Recall—advertisement content	4	360	.05	(.03, .06)	.00	100.00
Recall—brand	3	279	.01	(-.39, .42)	.34	8.63
Recognition—overall	5	433	-.06	(-.21, .10)	.14	35.58
Recognition—advertisement content	2	971	.23	(.07, .39)	.11	13.75
Recognition—brand	4	359	-.06	(-.36, .24)	.29	12.90
Recognition—product	3	279	-.16	(-.19, -.12)	.00	100.00
Publication Time Interval						
1990s	10	866	-.22	(-.29, -.15)	.05	80.52
2000s	10	1,691	.18	(.10, .26)	.11	30.28
2010–2013	4	377	-.02	(-.32, .28)	.28	14.51
Research Participants						
College students	12	1,045	.05	(-.10, .19)	.24	17.29
Adults	12	1,889	.03	(-.10, .16)	.21	12.78
Advertising Medium						
Television	17	1,539	-.04	(-.12, .05)	.15	34.59
Not television	7	1,395	.12	(-.08, .32)	.26	7.07
Online/PC games	4	377	-.02	(-.32, .28)	.28	14.51
Not online/PC games	20	2,557	.04	(-.06, .15)	.21	14.82
Brand/Advertising Type						
Real brand	18	1,586	-.11	(-.18, -.03)	.11	46.69
Fictitious brand	3	297	-.19	(-.27, -.11)	.00	100.00
Not specific	3	1,051	.30	(.21, .40)	.07	32.27
Product Category						
Beverages	13	1,163	-.22	(-.27, -.16)	.02	94.77
Not beverages	11	1,771	.19	(.11, .28)	.13	26.68
Food	16	1,440	-.07	(-.13, -.01)	.05	79.25
Not food	8	1,494	.15	(-.05, .34)	.27	7.06
Personal care	10	866	-.04	(-.16, .07)	.14	36.22
Not personal care	14	2,068	.07	(-.06, .21)	.24	10.89
Services	7	720	.04	(.02, .05)	.00	100.00
Not services	16	2,214	.04	(-.10, .17)	.26	9.82
Clothing/fashion	5	443	-.29	(-.40, -.17)	.08	65.08
Not clothing/fashion	19	2,491	.09	(-.01, .18)	.19	16.74

Note: K_{effects} = number of effect sizes; N = cumulative sample size; r = reliability-corrected correlation; 95% CI = 95 percent confidence interval; SD = standard deviation; % Var = percentage of variance.

diverse methods, research participants, and media.

Finally, the finding that some media-context factors were less effective than others is suggestive but certainly not definitive. On the basis of this synthesis of quantitative research findings, advertisements placed in violent, sexual, or humorous media contexts, which induced higher levels of arousal, negatively affected media users' advertising memory. One might ask, however, "Do

these media-context factors always negatively affect advertising memory? Should advertisers avoid them?" Future research should explore further why these media-context factors are related negatively to advertising memory. Researchers also should assess how and whether one might reverse the negative correlational relationships by pairing the problematic context factors with other elements of advertising planning, especially different creative and message characteristics.

CONCLUSIONS AND IMPLICATIONS

Despite the current study's limitations, the findings are useful and have a number of managerial implications for how advertising memory is influenced by some media-context factors but not by others.

Consideration of media-context factors in media planning. High media involvement, greater media-advertising-content congruency, and program liking positively affected advertising memory, whereas

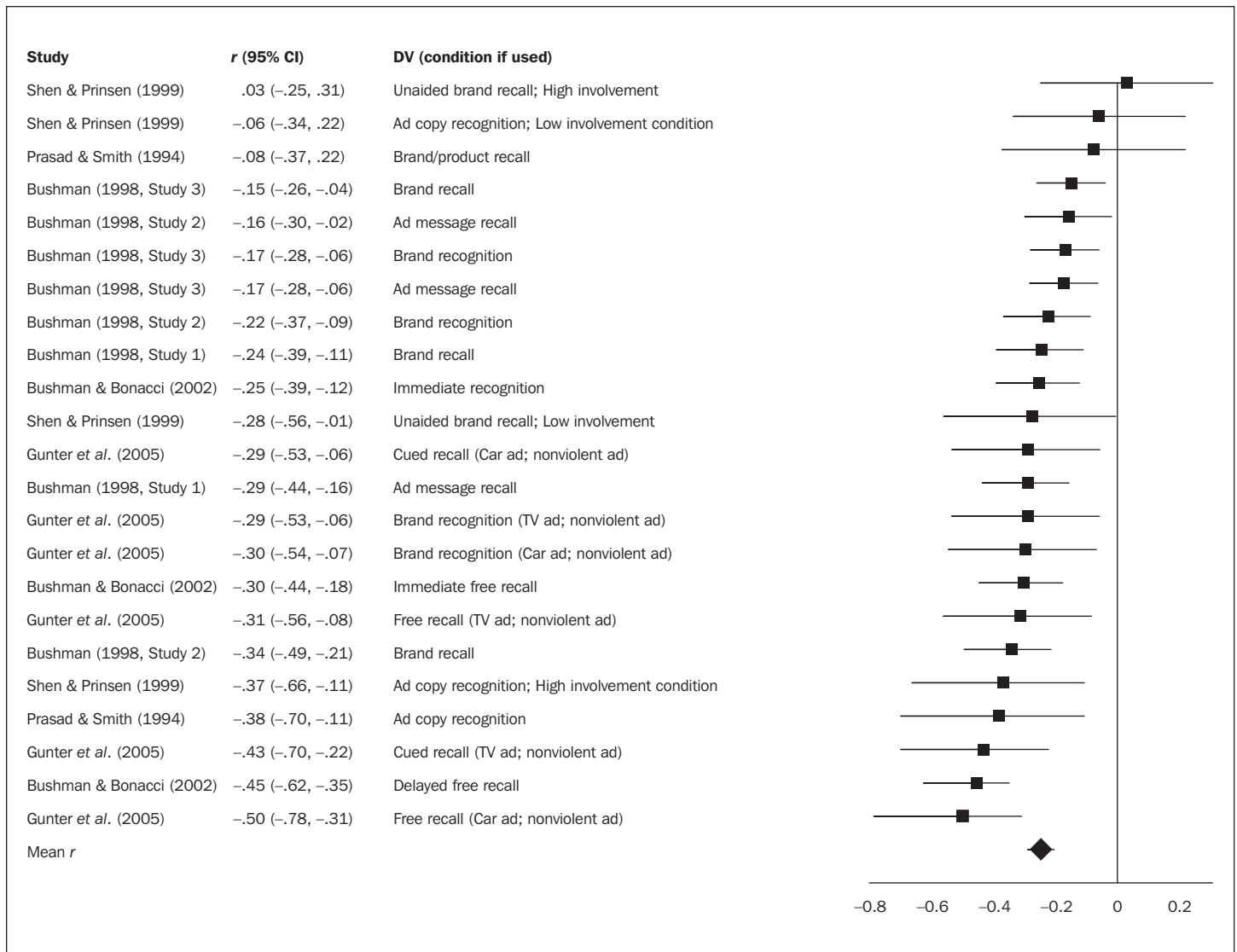


Figure 7 Forest Plot: Violence in Media Content and Advertisement Memory

highly arousing, humorous, violent, sexual, and suspenseful content negatively affected advertising memory. This underscores the notion that media vehicles influence advertising beyond just providing exposure effects.

Advertisers accordingly should rely not only on information such as ratings, reach, or readership but also on specific media-context factors that exert positive, negative, or neutral influence on memory for the placed advertisements. This is especially relevant for programmatic buying—the data-driven, audience-based,

automatic media-buying process that has been employed in the digital sphere in the last few years—as well as for more traditional media recently. The approach generally relies on audiences reached, ratings, and price to determine desirable audiences for advertisement placement, to the exclusion of media-context factors.

Given the increase in use of programmatic buying, many advertisers might not be aware of the exact websites on which their advertising is carried. In the fall of 2016, for example, several advertisers

were surprised to learn that their advertisements were running on the populist and sometimes controversial website Breitbart News Network. Similarly, Facebook encountered criticism for not blocking and not allowing apps to block fake news content, which could be problematic from the media-engagement standpoint for advertisers (Constine, 2016). Through programmatic algorithms, audience members are identified and targeted with messages. Although advertisers actively can block certain websites, with so many possible website options available, it can be

TABLE 10
Violence in Media Content and Advertisement Memory

Moderators	K_{effects}	N	r	95% CI	SD	% Var
Violence in Media Content → Advertising Memory	23	3,382	-.25	(-.29, -.20)	.07	57.70
Recall	15	2,333	-.25	(-.31, -.20)	.08	44.60
Recognition	8	1,049	-.23	(-.27, -.18)	.00	100.00
Recall—overall	1	47	-.08			
Recall—advertising content	7	1,040	-.25	(-.32, -.17)	.07	58.71
Recall—brand	7	1,246	-.27	(-.35, -.18)	.10	35.09
Recognition—advertising content	3	153	-.26	(-.43, -.09)	.07	80.00
Recognition—brand	5	896	-.22	(-.26, -.18)	.00	100.00
Publication Time Interval						
1990s	14	2,266	-.20	(-.25, -.16)	.03	85.20
2000s	9	1,116	-.34	(-.39, -.28)	.01	98.21
Publication Type						
Journal articles	19	3,170	-.25	(-.29, -.21)	.06	58.35
Conference presentations and dissertations	4	212	-.16	(-.32, -.01)	.08	73.95
Research Participants						
Children	2	94	-.22	(-.43, -.02)	.05	87.47
College students	18	2,652	-.23	(-.27, -.18)	.05	70.20
Adults	3	636	-.33	(-.43, -.24)	.06	53.17
Advertising Media						
Television	17	2,902	-.23	(-.28, -.18)	.07	55.28
Not television	6	480	-.35	(-.41, -.28)	.00	100.00
Film	10	692	-.29	(-.37, -.20)	.08	67.78
Not film	13	2,690	-.24	(-.28, -.19)	.06	54.07
Brand/Advertising Type						
Real brand	17	1,786	-.26	(-.31, -.21)	.05	77.90
Not specific	6	1,596	-.23	(-.31, -.15)	.08	34.91
Product Category						
Beverages	3	636	-.33	(-.43, -.24)	.06	53.17
Not beverages	20	2,746	-.23	(-.27, -.18)	.05	71.63
Food	5	730	-.32	(-.41, -.23)	.07	54.33
Not food	18	2,652	-.23	(-.27, -.18)	.05	70.20
Personal care	3	960	-.16	(-.17, -.15)	.00	100.00
Not personal care	20	2,422	-.28	(-.33, -.23)	.06	66.37
Electronics	6	480	-.35	(-.41, -.28)	.00	100.00
Not electronics	17	2,902	-.23	(-.28, -.18)	.07	55.28
Household	11	2,596	-.24	(-.29, -.19)	.06	50.57
Not household	12	786	-.28	(-.36, -.20)	.08	68.95

Note: K_{effects} = number of effect sizes; N = cumulative sample size; r = reliability-corrected correlation; 95% CI = 95 percent confidence interval; SD = standard deviation; % Var = percentage variance.

difficult for advertisers to block all of the sites they wish to exclude (Marshall and Vranica, 2016).

The current study, however, confirms the long-recognized notion that media context matters and, as such, should be a consideration in the media-planning process. Otherwise, the advertising effort could be ineffective or even backfire. Thus armed with the knowledge, advertisers and media strategists should be better

equipped to make effective media decisions. Academics should have information from which to prioritize questions about the media-context–memory relationship in need of investigation as well as a better idea of what precise knowledge they should pass on to students studying media planning. In addition, the media may be better equipped to charge prices for advertising space that take into account the value of an exposure in their

vehicles beyond just numbers of audience members delivered.

Memory of advertising content versus brand. A second important finding is that, although the conceptual and measurement difference between recognition and recall does not seem to matter in the media context, media-context factors seem to elicit higher recall and recognition for advertising than for brand (e.g., involvement,

arousal, attention, transportation). The finding should be troubling for advertising professionals, given that it is memory for advertised brands, not memory for the advertising content itself, that media-placed advertising should be achieving. The implication of the advertising-memory discrepancy is that advertisements are not fulfilling their primary communication task under varying media-context conditions.

One plausible explanation for the communication problem is that the advertising is drowning out the brand messaging in the studied conditions. Given the role of advertising in affecting memory, the problem is worthy not only of mention but also of investigation in future research on media-context effects and on other matters involving advertising effectiveness.

Fictitious brands versus real brands.

A third noteworthy finding is that fictitious brands tended to yield a stronger impact on advertising memory than real brands (e.g., involvement, entertainment and enjoyment, transportation media-context factor) in the research context. One explanation for the larger effect sizes of fictitious brands over real brands is that media users will more likely use media-context factors as cues to evaluate unfamiliar advertised brands, whereas they will less likely rely on media-context factors to evaluate familiar advertised brands. The findings suggest that media professionals should consider media contexts especially when they are launching a new brand and trying to reach new, non-user target audiences lacking in brand awareness. In the context of the research findings, however, “real brand” does not necessarily translate into a well-known or familiar brand, even though most studies used well-known brands as stimuli (e.g., Sony, Charmin, McDonald’s, Cheerios, Pepsi). More research is needed on the relationship among context factors,

advertised brand factors, and advertising-effectiveness criteria.

Given the body of research on the influence of media context on advertising effectiveness as well as the importance of the consideration for media planning, the authors believe knowledge of the impact of media context on advertising memory is advanced substantially by this meta-analytic analysis, despite the noted limitations of the research. Within these findings, there is useful information for both the practice and the study of advertising media that the authors hope will serve to move thought and research on the subject forward. **JAR**

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APPENDIX: Cumulative Meta-Analysis

