An analysis of the role of liking on the memorial response to advertising

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Abstract: *After the publication of the results of the Advertising Research Foundation's Copy Research Validity Project, ad liking has been extensively used as copy test predictor of campaign's performance. Less favourable findings have been recently presented on the basis of its delayed effects. This paper addresses the question of carryover effects of ad liking on the recall, jointly modelling the patterns of recall, ad pressure and ad liking, by means of the specification of a vector autoregressive model with GRPs acting as exogenous variable. The approach is innovative since literature has mainly investigated until now only the simultaneous relationship between advertising, recall and liking. The analysis is carried out for the markets of small automobiles, deodorants and shampoos. Main empirical findings for the analysed categories highlight that: 1) carryover effects of ad liking on the recall measures may be detected*

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but not systematically, and 2) the ad liking role of ad likeability on memorial responses varies among product categories. Moreover 3) a further finding shows that, whereas positive influences are thoroughly retrievable (in the small car category), ad likeability influences more advertising than brand awareness and more total than unaided awareness.

1. Introduction

Advertising is considered to influence consumer behaviour on a number of levels, cognitive-affective-conative, either in sequential order (Lavidge & Steiner, 1961) or not (Heath & Feldwick, 2008 and the references therein). The present paper focuses on the two major intermediate advertising effects (Vakratsas & Ambler, 1999), cognition and affect, and aims to analyse the way the advertising influences memorial response by means of the emotions. This is obtained modelling the dynamical relation of recall with advertising liking, which measures how much the consumers like or dislike the commercials. The standard Zielske model (1959, 1980) is generalized into the vector autoregressive specification, obtained by jointly modelling the dynamical response patterns of recall and liking to ad pressure with advertising pressures acting as exogenous variables. Afterwards a synthesis of evidences on the brands is performed.

In particular the main questions the paper addresses to answer are:

Q1: does a significant role of ad liking on the memorial response to advertising exist?

Q2: which role does ad liking play on the memorial response?

Q3: do the effects entail the whole or a part of the cognitive awareness?

To this purpose, the paper is organised as follows: in Section 2 the positioning within the literature is briefly discussed. In Section 3 data and methodology are traced; in Section 4 the empirical results are presented and analysed. Finally some concluding remarks are given.

2. Research on advertising likeability and recall relationship

Recall is one of the primary evaluative measures with an extensive research demonstrating its validity in predicting future market performance. Recall works efficiently when central information processes are generated, while its contribute is debated if peripheral information processing acts (Hansen, 2004). In this context, positive and significant effects of ad on emotional responses are detected, which in turn may or may not implicitly or explicitly -throughout information processing itself- influence consumers. Ad liking is an overall reaction to the commercial, which reflects attitudes and emotions mediating the message effects. Of course ad liking does not contain the whole hidden emotional power that advertising undoubtedly has, but it constitutes a quite available measurable construct linked to the amount of emotion flowing through an ad message. It is a complex construct which is hypothesised to act in many ways (Biel & Bridgwater, 1990): among others, as commercial liking increases, consumers are supposed to get better exposures, give more mental processing, engender trust and transfer affect to the advertised brand.

On ad liking and recall relationship there is some literature; it mainly originates from the 1990 ARF Copy Research Validity Project (Haley & Baldinger, 1991) which emphasized liking as strong predictor of sales, and from the pioneering paper on the more general construct "Attitude toward the ad" (Madden, Allen & Twible, 1988) as mediator of consumer response. Significant positive correlations between liking and recall were detected into the copy testing framework (Haley & Baldinger, 1991; Walker

& Dubitsky, 1994) and this correlation is found to significantly vary among product categories classified as approach/avoidance/utilitarian (Youn, Soun, Wells & Zhao, 2001). On the opposite side, Kastenholz and Young (2003) achieve a strong negative correlation between recall and liking, which instead shows a strong positive correlation with attention and purchase intent.

As a whole, empirical evidences regarding memories and ad liking are usually taken contemporary by simultaneous correlations, so that the important part of the information in advertisements, which is the delayed effect, is missed by these research procedures. Only recently in Bergkvist and Rossiter (2008) delayed effects of ad likeability are tracked over a two times span for the same individuals in simulated campaigns and analysed, with the conclusion that ad likeability in pre-test fails to predict brand attitude after the campaign. The present work focuses on ad liking delayed effects too, with the purpose of answering the question of how liking mediate carryover effects of advertising on recall measures. Compared to the previous literature and the experimental research in Bergkvist and Rossiter, in this paper the perspective is different since a pure dynamical framework is exploited by means of the specification of Vector AutoRegressive models (VARX) on time series of campaign tracking measures. Multiple times series, such the VARX, have been often applied in marketing literature to capture dynamical relationships between marketing instruments and performance (Dekimpe & Hanssens, 1995a, 1995b, 1999; Freo, 2005; Nijs, Dekimpe, Seenkemp & Hanssens, 2001; Srinivasan, Popkowski & Bass, 2000). The use of these

models has the advantage, with respect to experiments, to employ objective secondary data and, with respect to simultaneous correlations, to follow advertising carryover effects, that is to produce ex-post effectiveness measures in order to complete the ex-ante ones obtained by copy tests.

Moreover, the relation between liking and recall is investigated for three different product categories which are paradigmatic of approach versus avoidance (Wells, 1986). Approach products are products that most consumers enjoy using, like good food, new cars, entertainment; for these products the relationship is attended to be positive. Avoidance products are products that most consumers would not purchase unless the product helped the user avoid something unpleasant consequence (medicines, deodorants, insurance policies) and the liking-recall relationship may be zero or even negative.

3. Data and methodology

The relationship between recall and ad liking is investigated for the leading product brands of three quite different categories of goods (small automobiles, deodorants and shampoos). The small automobiles are approach products requiring high information process for which all media are exploited by manufacturers for many weeks a year. The avoidance products categories, deodorants and shampoo, are personal care packaged goods for which television is the predominant advertising media.

Advertising tracking data of the leading product brands of the three above mentioned categories have been composed on a weekly basis for the year 2006 from the two sources GFK-Eurisko and Nielsen Media Research. Relating to advertising pressure, GRPs and ad investments have been monitored, while the most used memorial and liking indicators in commercial setting have been collected over a sample of 250 respondents every week. Particularly for each brand, as regard as memorial responses, top of the mind (TOM); unaided awareness (UA); total awareness, unaided plus aided (TA); unaided advertising awareness (UAA) and total advertising awareness, unaided plus aided (TAA), have been considered. The ad liking construct was measured with reference to all respondents who recalled one of the selected brand ads, for brands with at least 2% of unaided advertising awareness. More specifically the respondents were asked if they like or dislike the advertising recalled for the specified brand in a five-points Likert scale. The analysed data derived from the intersection of the two sources entail 8 brands for small car category which represent the 48.5% of the total advertising investment of the category, and 6 brands for deodorants and shampoos which represent about 90% of the category ad investment (see Table 1).

Table 1: Product categories

Category	Number of brands	Ad investment % of category	Ad investment euro (mio)
Small cars	8	48.5	120
Deodorants	6	94.2	37
Shampoos	6	87.1	17

In the first step graphics inspection and univariate unit root tests did not reject stationarity of the series; moreover for the one year span of the dataset it appeared reasonable to assume ad pressure (a_t) as an exogenous variable. Then we have chosen to extend the Zielske model specifying a vector autoregressive model, jointly for recall (r_t) and ad liking (l_t) series. Thus, posing $X_t = (r_t, l_t)'$, the VAR(p) specification is:

$$C(L)X_t = \mathbf{\Phi} d_t + \varepsilon_t,$$ (1)

where $C(L) = I_2 - C_1 L - \cdots - C_p L^p$ is the matrix polynomial in the lag operator L, C_j, $j=1,\ldots,p$ are 2×2 parameter matrices, d_t is the s×1 vector of the deterministic components (constant and exogenous), $\mathbf{\Phi}$ is the 2×s matrix of the deterministic components' parameters, while ε_t is a white noise vector ($VWN(0,\mathbf{\Sigma})$) and we assume that $|C(L)| \neq 0$ for $|L| \leq 1$ (i.e. stationarity condition). The classical Zielske model is obtained from the equation (1) posing $X_t = r_t$, $p=1$, that is $C(L) = 1 - c_1 L$, $d_t = a_t$ and $\mathbf{\Phi} = \phi_1$, as follows:

$$r_t = c_1 r_{t-1} + \phi_1 a_t + \varepsilon_t.$$ (2)

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So far, the VARX model describes a joint generation process of the endogenous variables, both recall and liking, which are supposed to be determined within the system and influenced by the exogenous advertising pressure.

Many VARX models were specified to detect the pattern of relationships between recall, liking and ad pressure. Memorial response was analysed in all the five available variables (TOM, UA, TA, UAA, TAA) to detect the different impact in terms of recall or recognition and brand or advertising awareness. Ad likeability was specified in terms of top-two-points ratings (percent answering "like very much" or "like somewhat") or, to detect an effect of disliking too, extreme degrees of liking (percent answering "like very much" or "like somewhat" or "like not at all"); total GRPs and television GRPs are chosen as ad pressure indicators. For each VARX, as brand product and recall-liking-ad pressure measures combination changes, the order has been set basing on the Schwartz Criterion.

In order to investigate the liking recall relationship, this setting enables to identify if liking causes recall, by testing the null hypothesis that liking does not Granger-cause recall[1], where a variable x is said to 'Granger cause' another variable y, if future values of y can be predicted better using past values of x and y than using the past of y alone. Ad liking is intended to cause recall if it improves the prediction of or anticipates the recall itself. Moreover the VARX approach permits to measure the response of recall to an impulse arising from liking some time before, describing the dynamical pattern of

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[1] Instantaneous causality, albeit of interest, can not be investigated on these data since it is not known if interviews, within each week, are collected before or after expositions to the commercials.

the relationship. Impulse response functions for stationary VAR are derived by the structural estimations of the Vector Moving Average representation (see Lutkepohl, 1991; Amisano & Giannini, 1997).

4. Results

In the empirical analysis, for each product brand in the three categories (6 for deodorants and shampoos and 8 for automobiles) twenty specifications were estimated combining the recall, liking and ad pressure measures (5×2×2), whose analysis provides some useful hints and practical managerial implications to answer the question on the effectiveness of single commercial campaigns and the way the messages act.

In Table 2 the percentage of rejections of the no causation hypothesis with 90% and 95% confidence levels are shown. As a general result the null hypothesis that liking does not cause recall is rejected with 90% of confidence for the 34.2% of the models in the deodorant category, the 21.9% in the small car category and the 15.8% in shampoo. It is worthy to note that what is relevant here is not the proportion of positive findings but the positive value of the proportion itself. In fact this is not to be intended as a measure of success since it is not built on a representative sample of observations or products but on the set of available recall-ad pressure-ad liking measures combinations. Positive values for the proportion mean that at least some combinations of measures or some situations exist in which ad liking has a significant impact on the dynamical response pattern of recall.
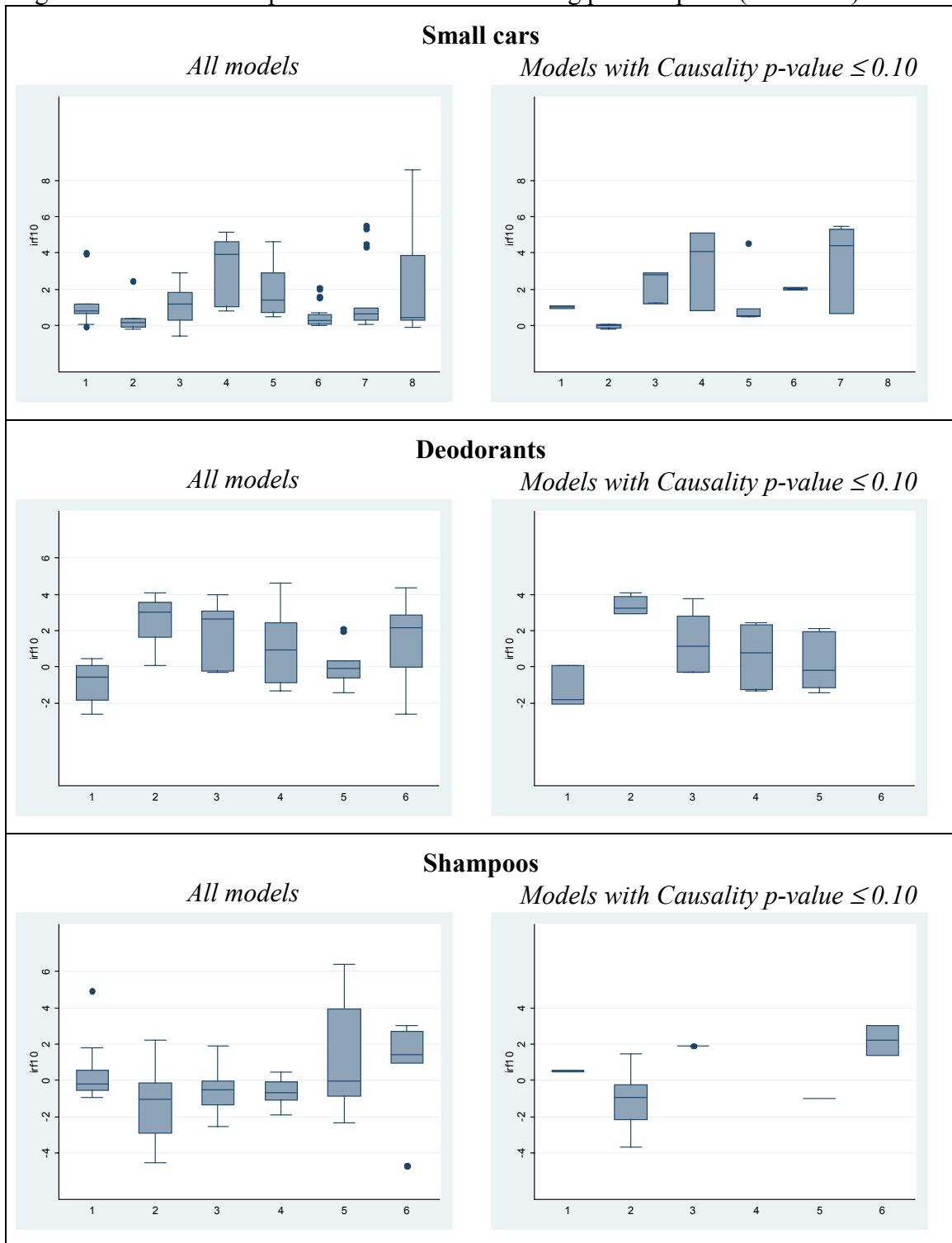
In general, an impulse on liking does not guaranty an effect on recall, notwithstanding this may happen in some circumstances with high heterogeneity between and within the categories and it is worthy to know which type of effect has the liking on the recall and in which conditions.

Table 2. Null hypothesis of no causation of liking to recall p-values

	Small cars			Deodorants			Shampoos	
	% ≤0.05	% ≤0.10		% ≤0.05	% ≤0.10		% ≤0.05	% ≤0.10
Ca1	20	20	De1	10.0	15.0	Sh1	0.0	15.0
Ca2	20	20	De2	25.0	35.0	Sh2	45.0	45.0
Ca3	20	30	De3	20.0	60.0	Sh3	20.0	20.0
Ca4	20	30	De4	35.0	40.0	Sh4	0.0	0.0
Ca5	25	35	De5	50.0	55.0	Sh5	0.0	5.0
Ca6	5	10	De6	0.0	0.0	Sh6	10.0	10.0
Ca7	10	30						
Ca8	0	0						
Tot 8	**15.0**	**21.9**	**Tot 6**	**23.3**	**34.2**	**Tot 6**	**12.5**	**15.8**

Delayed effects on the memorial responses are traced by the cumulated responses up to the tenth week to an impulse arising from the liking at week 0 and presented by brand in the box plots of Figure 1. Impulse response functions are derived by the structural estimations of the Vector Moving Average representation where restrictions to zero of long run responses of ad liking to recall have been imposed. Cumulated impulses are obtained by summing up over several periods the simple effects of ad liking.

Figure 1. Cumulated responses of recall to 1 ad liking point impulse (week +10)

A large extent of heterogeneity between and within the categories is found in this framework too. In the automobile category cumulated responses are positive considering either all the models or only the significant ones. Otherwise, in the deodorants and shampoos categories the cumulated responses are more often zero and sometimes negative. The positive responses of recall to liking for small automobiles confirm a positive relationship between liking and recall for an approach product and extend to delayed time the evidence of the empirical literature based on simultaneous correlations performed in copy tests. The findings on zero and negative delayed effects for avoidance products like deodorants and shampoos were expected by a priori considerations (Wells; 1986), but only partially retrieved from instantaneous correlations-based evidences in literature (see Youn, Soun, Wells & Zhao, 2001).

Table 3. Results of regression models

	cars	deodorants	shampoos
Advertising awareness measures dummy	1.688**	0.617 *	0.263
	0.247	0.346	0.420
Total awareness measures dummy	0.820**	-1.026**	-0.231
	0.247	0.346	0.420
Constant	0.502**	1.234**	-0.002
	0.175	0.244	0.2973
R^2	0.299	0.082	0.005
Adjusted R^2	0.290	0.067	0.000
Number of observations	160	120	120
F(6,113)	33.53	5.26	0.30
Prob > F	0.000	0.006	0.740
RMSE	1.510	1.829	2.225

*** significant at 95%; * significant at 90%;*

To obtain generalizations beyond the individual brand results, we perform a synthesis across the models within each of the three categories, with the aim to explain the main feature of recall and ad liking relation. To this purpose, for each category, three regression models have been estimated with the rationale to retrieve the measures better explaining the influence of liking on the recall. As dependent variables cumulated responses at the tenth week have been regressed on the different recall measures (Table 3). For the small cars category a very high part, about one third, of the variability of impulse responses of recall to ad liking is explained by the recall measures. The impulse responses of recall to liking increase when advertising awareness or recognition are involved. In the other categories only a residual part of the variability of impulse responses are explained by the previous factors.

Of course, for all the categories, the most of impulse responses variability is not, neither may be, accounted by measures of memorial response but rather by other environmental factors that might reflect differences in strength of category competition, brand life cycle, marketing mix and especially by idiosyncratic campaigns characteristics.

5. A synthesis

Since the early 1990's ad likeability has been widely used by practitioners as copy-test measure to accept or reject advertising for campaigns. Recently it has been questioned as diagnostic measure because it failed to predict post-campaign brand communication

effects. This study may contribute to the literature since it emphasises a different aspect analysing the relation between liking and recall in a pure dynamical setting. The paper presents a twofold findings. First of all, it originally provides a methodology to assess ad likeability ex post effectiveness on recall. In fact, overcoming the usual limitations of measures based on immediately following exposure to the ad, the proposed method enables delayed measurements of ad likeability effects.

Then, major key findings are presented, answering the Introductions' questions.

Q1: *Does a significant role of ad liking on the memorial response to advertising exist?*

For the analysed categories, the empirical evidence does not deny support to the hypothesis that ad likeability significantly anticipates recall. There are detectable situations in which liking and recall appear linked by a causal relationship in a dynamical setting and the strength of relation varies among categories and brands.

Q2: *Which role does ad liking play on the memorial response?*

The product category is a moderator of the way the relationship develops and the role the ad liking acts, which is positive for the approach product small car and positive or zero and also negative for the avoidance products deodorants and shampoos; high heterogeneity in responses within the categories is retrievable.

Q3: *Does the ad liking effect entail the whole or a part of the cognitive awareness?*

For the approach product automobile the ad likeability influences more advertising than brand awareness and more recognition than unaided recall. No significant differences are detected for the two other categories.

In summary, carryover effects of ad liking on the memorial responses are detected, but not systematically. The effects strongly vary among product categories classified as approach or avoidance. Positive effects are thoroughly retrieved only in the approach category small car, but in this category there is a significant evidence that they involve the less noble awareness measures, advertising and total recall. Altogether the role of ad likeability on the recall is not null neither favourable as in most previous literature.

Of course, since relationships between ad likeability and recall vary sharply by product, to study other products and categories will make conclusions more generalizable.

For the practitioners the main implication is that investment in quality of ad messages may be - but not necessarily- effective and profitable. Moreover the proposed methodology seems a suitable instrument to establish the effectiveness of ad campaigns, in order to rely not only on copy test but also on ex post assessment of the dynamical effects of ad likeability on cognitive response.

References

Amisano G., Giannini C. (1997) Topics in structural VAR econometrics, 2nd edn., Sprinterc.

Bergkvist L., Rossiter J.R. (2008), The role of ad likability in predicting an ads' campaign performance, Journal of advertising, 37:85-97.

Biel A.L., Bridgwater C.A. (1990), Attributes of likable television commercials, Journal of advertising research, 30:38-44.

Dekimpe M.G., Hanssens D.M. (1995a), Empirical generalizations about market evolution and stationarity, Marketing science, 14: 109-121.

Dekimpe M.G., Hanssens D.M. (1995b), The persistence of marketing effects on sales, Marketing science, 14: 1-21.

Dekimpe M.G., Hanssens D.M. (2000), Time-series models in marketing: past, present and futurer, International journal of research in marketing, 17:.

Freo M. (2005), The impact of sales promotions on store performance: a structural vector autoregressive approach, Statistical methods and applications, 14:271-281.

Hansen F. (2004), Distinguishing between feelings and emotions in understanding communication effects, Journal of business research, 58: 1426-1436.

Haley R.I., Baldinger A.L. (1991), The ARF copy research validity project, Journal of advertising research, 41:11-32.

Heath R., Feldwick P. (2008) Fifty years using the wrong model of advertising, International journal of market research, 50: 29-59.

Kastenholz J., Young C. (2003), How recall misses the emotions in advertising that builds brands, Transcript proceedings. New York, ARF.

Lavidge R.J., Steiner G.A. (1961), A model for predicting measurements of advertising effectiveness, Journal of marketing, 25: 59-62.

Lutkepohl H. (1991), Introduction to multiple time series analysis, Springer-Verlag , Berlin.

Madden T.J., Allen C.T., Twible J.L. (1988), Attitude toward the ad: an assessment of diverse measurement indices under different processing steps, Journal of marketing research, 25:242-252.

Nijs V.R., Dekimpe M.G., Seenkemp J-B.E.M., Hanssens D.M. (2001), The category dmand effects of price promotions, Marketing science, 20: 1-22.

Srinivasan S., Popkowski Leszczyc P.T.L., Bass F.M. (2000), Market share response and competitive interaction: the impact of temporary, permanent and structural changes in prices, International journal of research in marketing, 17: 281-305.

Vakratsas D., Ambler T (1999), How advertising works: what do we really know?, Journal of marketing, 63:26-43.

Walker D., Dubitsky T.M. (1994), Why liking matters, Journal of advertising research, 41:9-18.

Wells W.D. (1986), Three useful ides, Advances in Consumer research, 13:9-11.

Youn S., Soun T., Wells W., Zhao X. (2001), Commercial liking and memory: moderating effects of product categories, Journal of advertising research, 41: 7-13.

Zielske H.A. (1959), The remembering and forgetting of advertising, Journal of marketing, 23:239-243.

Zielske H.A., Henry W.A. (1980), Remembering and forgetting television ads, Journal of advertising research, 20(2):7-13.