Measuring advertising's effect on mental availability

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Summary

This study shows that the impact of advertising on consumer memory can be observed using mental availability (MA) metrics.

Four MA metrics are used to measure the effect of advertising on a brand's mental availability, with the results showing that in the majority of cases, MA metrics are greater among both brand users and non-users who are aware of the brand's advertising, with a greater effect among non-users. From a practical market research perspective, adding MA metrics to existing brand health tracking will have no data collection costs where brand perceptions are already being measured.

Introduction

Current advertising effectiveness measures, such as advertising awareness and brand perception, are suitable for identifying traces of a brand's advertising in consumer memory and growth or decline in brand perceptions following advertising activity (Brown, 1985; McDonald, 2000; Romaniuk, 2013a). However, such measures are not suitable in assessing the effect of a brand's advertising on a brand's mental availability (Romaniuk, 2013b).

Mental availability is defined as the propensity of a brand to be noticed or come to mind for individuals in buying or consumption situations (Romaniuk, 2013b, Sharp, 2010). In past literature, this concept is commonly referred to as *brand salience* (Ehrenberg et al., 2002; Romaniuk & Sharp, 2004). However, the term *mental availability* has been adopted more recently to avoid confusion with the often narrower definition of brand salience (i.e., top-of-mind brand awareness) (Romaniuk, 2013b; Sharp, 2010), which is based on the strength of association with a single cue—the category (Alba & Chattopadhyay, 1986; Keller, 1993). Mental availability broadens the definition to a concept based on the presence of associations in consumer memory between the brand and a range of cues. This is appropriate as the cues customers use in purchase situations are many and varied—extending well beyond a single product category cue (Romaniuk & Sharp, 2004, 2016).

Marketers must ensure a brand creates relevant associations in consumers' minds, as existing memories determine what people notice and select when faced with a brand choice (du Plessis, 2005; Franzen & Bouwman, 2001; Nedungadi, 1990). It is argued that, probabilistically, the more relevant category cues a brand is linked to, the more likely the brand will be associated with a cue encountered in a purchase or consumption situation, and thus heighten propensity to be noticed or come to mind (Romaniuk & Sharp, 2004). This idea highlights the role that a brand's advertising/ marketing plays in working to influence consumer memory by building, refreshing, and reinforcing links between relevant cues and the brand (Bullmore, 1999; Ehrenberg et al., 1981, 1997, 2002; McDonald, 2004; Miller & Berry, 1998).

There are many views on how advertising can work to influence consumer memory, such as those discussed in the information processing literature (Vakratsas & Ambler, 1999), the elaboration likelihood theory (Petty et al., 1983), or low involvement processing (Heath, 2000, 2007). This study, however, lays its foundation on the weak theory of advertising, which states advertising works as creative publicity for the brand, by bringing the brand to public notice (Ehrenberg et al., 1998, 2002; Jones, 1990). According to this view, advertising rarely seems to persuade consumers, instead, advertising mostly functions to repetitively "nudge" consumer memory, thus affecting the "salience" of the brand (Romaniuk, 2003, cited in Ehrenberg et al., 2002) *(salience is the older term now replaced by Romaniuk and colleagues with mental availability).* Mental availability of a brand is the presence and richness of memory traces that result in the brand coming to mind in relevant choice situations, thus it concerns the "size" of the brand in one's mind. It is argued that successful advertising will affect the associations linked to the advertised brand in consumer memory (refreshing or even building new associations), thus expanding a brand's mental availability. This makes it more likely the brand will come to mind next time the consumer encounters a choice or consumption situation relevant to the advertised brand. The term "nudge" is used in the literature to reflect the gentle/weak force that advertising will exert on memory traces for the advertised brand (Ambler, 2000; Bullmore, 1999; Ehrenberg et al., 1997, 2002; Hoek, 1999; McDonald, 2004; Miller & Berry, 1998).

In presenting the creative publicity view of how advertising works, Ehrenberg and colleagues' (2002) expressed the need for better measures to identify advertisings' effect on consumer memory. With the recent introduction of the new mental availability (MA) metrics by Romaniuk (2013b), the opportunity to fulfill this measurement challenge is now possible. The set of four MA metrics consists of *mental market share* (*MMS*), *associative penetration* (*Ab*), *association rate (Aw), and share of mind (SoM)* and are calculated using brand perception data (Romaniuk, 2013b). These new metrics are akin to commonly used brand performance measures that are calculated using brand sales data (e.g., market share, penetration, purchase frequency, and share of category requirements; Romaniuk, 2013b). These metrics are defined as follows:

- *Mental market share (MMS):* this metric provides the relative size of the brand in the mind of the consumer. The mental market share for a brand is calculated as the brand's share of associations, as a percentage of the total associations between all brands and attributes in the tested set within the category. For example, a brand may receive 30% mental market share out of a possible 100%.
- *Associative penetration* (Ab): this metric refers to the percentage of people who have at least one association with the brand. This metric provides an indication of the brand's mental reach across the population of interest. The higher the metric, the greater the number of consumers who have a chance to retrieve the brand from memory.
- *Association rate (Aw):* this metric reflects the average number of mental associations consumers have with the brand and is based on those people with at least one brand association (as identified by *Ab).* This gives a comparative measure of the size of the brand's associative network. For example, if the tested set includes 12 attributes, the brand may obtain an average of five associations out of a possible 12. This means that of those people with at least one brand association they have on average five total associations with the brand.

- *Share of mind (SoM):* this metric refers to the number of mental category associations consumers have with a particular brand, versus competing brands. This metric is different to *MMS* as it is only calculated for those people with at least one brand association (*Ab*). For example, if the brand has 85% *Ab*, the *SoM* is based only on this 85% and provides context to the competing associations these people have with other brands.

The purpose of this study is to answer the call of Ehrenberg and colleagues (2002) and to explore the usefulness of the MA metrics in measuring advertising's effect on brands' mental availability. The research draws on data from two countries, six categories, and eight brands, with advertising executions from four different media platforms, to identify whether regularities and consistent patterns in MA metrics arise across varying conditions (Bass, 1995; Ehrenberg, 1995). In addition, this study accounts for the known usage bias in brand perception and advertising effectiveness measures and compares the results separately for brand users and non-users (Hammer & Riebe, 2007; Harrison, 2013; Romaniuk & Wight, 2009; Sharp et al., 2001, 2002; Vaughan et al., 2016). The results of this study contribute to the existing knowledge of how advertising affects consumer memory and produces brand new evidence on how advertising awareness affects a brand's mental availability, when examined across different consumer groups.

Background

Mental availability is underpinned by the associative network theories (ANT) of memory that describe the cognitive processes of human memory as a network of nodes connected by associative links (Anderson & Bower, 1973; Collins & Quillian, 1969). Each of the nodes in memory represents a piece of information or concept (e.g., a person's name, a place, a date, an event, a brand). These nodes are linked together with other nodes (i.e., "cat" node could be linked to the "whiskers" node), and these links are used to retrieve information from memory when a cue is encountered (Anderson & Bower, 1973). In relation to brand information, these associative links are commonly referred to as brand associations (Keller, 1993). The relevance of mental availability is therefore to ensure a brand has presence in consumer memory and is linked to many relevant category cues that are encountered in buying and consumption situations (Romaniuk, 2013b, 2015; Sharp, 2010). When faced with a brand choice occasion, whether it be standing at a supermarket shelf or choosing which fast-food restaurant to visit, consumers largely rely on their existing memories to make the decision (du Plessis, 2005).

There are many different touch points with a brand that can influence the associations linked in consumer memory such as walking past a store or seeing a branded delivery truck. This study focuses specifically on the effect of a brand's paid advertising on the associations in consumer memory, as it is one-way communication controlled by the brand itself. According to Ehrenberg and colleagues (1997, 2002), successful publicity of a brand through advertising will affect the existing memory associations linked to the brand (and may even build new links). As most advertising is designed for established brands that people are already aware of, this is also described as "nudging" consumers' buying propensities by refreshing and reinforcing the existing brand associations in consumer memory (Ehrenberg et al., 1997, 2002; Jones, 1990; Sutherland & Galloway, 1981). Importantly, though, for advertising to have any effect on consumer memory, it must be correctly associated to the advertised brand (Brown, 1988) if it is to have any opportunity of "nudging" the propensities of those exposed to the advertising. Worse still, if incorrectly linked to a competitor brand, the advertising may actually refresh or reinforce the associative links of the competitor.

A complementary view of advertising's effect on memory is the low involvement processing model of advertising (Heath, 2000), which proposes that advertising can produce effects without conscious attention, rather working via subconscious affective processing using implicit or passive learning. Heath (2000, 2007) suggests that everything our senses experience is carried unedited to our brain, even if no attention is given, as the neuronal circuits necessary for interpretation are activated when a stimulus is perceived. Semi-automatic attention or no attention can be deployed to advertising or brand stimuli in the environment, whereby the consumer is unaware of the stimuli, but learning still occurs. Thus, advertising processed at low attention can still have a positive impact on a brand's mental availability as associations between concepts are strengthened by the mere act of spreading activation in memory. Wright (2016) suggests associations can be strengthen by a stimulus even if the ads have not been noticed consciously or have been forgotten. These strengthened associations improve concept retrieval by increasing the memory activation about the relevant brand concept in response to a new stimulus, thus, slightly increasing the probability of remembering the brand.

Measuring the effect of advertising

When the goal of advertising is to influence the associative links connected to the advertised brand, it is necessary to find out whether this has really occurred in consumer memory (Franzen & Bouwman, 2001). In advertising effectiveness research, intermediate measures such as advertising awareness or brand perceptions are commonly used, as they are focused on the conscious mental process triggered by exposure to advertising (Romaniuk & Nicholls, 2006; Romaniuk & Wight, 2009; Vakratsas & Ambler, 1999; Vaughan et al., 2016). The argument for these as suitable measures is that advertising that is remembered has likely been more effectively encoded and processed into memory, and, therefore, has potential for long-term effects on consumer behavior (Romaniuk & Wight, 2009). These measures, however, fail to capture the effect of advertising where consumers are unaware of the advertising yet learning takes place nonetheless.

While common advertising awareness measures (recall or recognition) confirm whether traces of a brand's advertising can be detected in consumer memory, they do not provide any insight into how the advertising may have affected the network of associations linked to the brand. Here brand perception measures can provide more appropriate insight. Prior research has demonstrated that advertising-related changes can be detected across time, when using an approach that analyses brand perceptions (Romaniuk & Sharp, 2000). Measures are able to identify the individual brand associations connected to the brand and any shift in these, following advertising exposure, which provide greater insight than advertising awareness measures alone (Romaniuk & Nicholls, 2006). However, these measures still do not provide an overall quantification of advertising's effect across the brand's full set of associations in consumer memory in the competitive context—doing so would quantify the brand's mental availability (Romaniuk, 2013b). Aware of this deficit in existing measures, Romaniuk (2013b) continued work in this area and developed a set of MA metrics. The MA metrics use brand perception data but differ by providing quantification of the mental competition occurring in the category. Insight into the size of each brand's network of associations in consumer memory and the strength of the network relative to competitor brands can be gained (Romaniuk, 2013b).

The set of four MA metrics include the following: *mental market share* (MMS), *associative penetration (Ab)*, *association rate (Aw)*, and *share of mind (SoM)*. Considered the overarching metric, *MMS* quantifies the size of the brand in the consumers' minds reflected as the share of total memory associations, relative to competitors. The other three are underlying metrics (*Ab*, *Aw*, and *SoM)* focus on consumers with at least one association linked to the brand. *Ab* provides the percentage who has at least one memory association with the brand, *Aw* indicates the average number of associations a consumer has with a brand, and *SoM* reflects how many category associations consumers have with a particular brand, versus other brands.

How brand usage affects existing memories and response to advertising

Like any research, there are known conditions and moderating variables that need to be considered to ensure accurate results. The stream of research that acknowledges the effect of direct experience with a brand on memory processes is therefore considered in this study. People pay attention to and interpret different aspects of information they are exposed to based on their existing knowledge and established memory networks (Wyer, 2008). For example, if the information is familiar or has personal relevance, the level of processing in memory will be greater, than when information is unfamiliar or not relevant (Celsi & Olson, 1988; Wyer, 2008). This applies to all stimuli encountered in consumers' daily lives, but in relation to a brand's advertising it means consumers with existing brand knowledge in memory (such as a brand's users), that they will likely pay attention to and interpret the advertised information differently to those with no or limited knowledge of the same brand (such as a brand's non-users) (Celsi & Olson, 1988; Craik & Lockhart, 1972; Vaughan et al., 2016; Wyer, 2008).

In the literature, this known usage bias is evident in many metrics including those most related to this study: brand associations and advertising awareness. Extant research shows that prior brand usage influences a respondent's propensity to give brand associations such that users are more likely to provide more brand associations than non-users (Bird et al., 1970; Romaniuk et al., 2012). Due to a brand user's direct exposure with the brand through purchase and/or consumption, they have a greater number of existing links in memory between the brand node and the relevant category cues, compared with that of a non-user who has fewer direct exposures to the brand (Bird et al., 1970; Castleberry & Ehrenberg, 1990; Romaniuk et al., 2012). The same bias also effects how consumers process advertising, with studies consistently demonstrating brand users are more likely to remember seeing advertising for brands they use, compared with non-users, regardless of the advertising awareness measure used (Hammer & Riebe, 2007; Harrison, 2013; Romaniuk & Wight, 2009; Sharp et al., 2001, 2002; Vaughan et al., 2016).

In summary, the aim of this article is to answer the call of Ehrenberg and colleagues (2002) to find a suitable measure to identify the creative publicity effect of advertising on consumer memory. In line with this view (Ehrenberg et al., 2002), it is argued that brand advertising that is remembered by category buyers and correctly linked to the advertised brand will have an influence on the brand's mental availability. Advertising processed at lower levels of consciousness may also still have a positive effect (Heath, 2000) on a brand's mental availability; however, exploring this effect is outside the scope of this study. With the recent introduction of new MA metrics, the opportunity to measure this effect is now possible. To the authors' knowledge, there is minimal research to date that specifically uses the MA metrics (Stocchi et al., 2015, 2017, 2020; Stocchi & Fuller, 2017; Wright et al., 2014), and none of which that has documented the effect of advertising awareness on mental availability. Given the strong empirical evidence noted on the differences in memory networks for brand users versus non-users, any impact on mental availability will likely differ across the two consumer groups. Therefore, the focus will be to identify any effect from advertising separately for a brand's users and non-users. To do so, the following research questions are posed:

RQ1: How does a brand's mental availability differ between brand *non-users aware* of a brand's advertising, compared with brand *non-users who are not aware*?

RQ2: How does a brand's mental availability differ between brand *users aware* of a brand's advertising, compared with brand *users who are not aware*?

Research method

While there is substantial prior knowledge in the area of advertising and its effect on consumer memory, it is not known what impact a brand's advertising has on mental availability for a brand's users and non-users. This research is, therefore, both exploratory and descriptive in nature. Exploratory, as it takes the first steps in using the MA metrics to identify the effect of a brand's advertising on a brand's mental availability. Descriptive, as it aims to document how the MA metrics differ for brand users and non-users who are aware of the brands advertising to those who are not.

To answer the research questions, it is necessary to classify respondents in two ways: (1) whether they are a brand user or non-user; (2) whether they are aware of the brand's advertising or not. In line with previous studies, a self-report brand usage measure allows a brand user to be identified as someone who bought or used the brand in a time period relevant to the category (Bird et al., 1970; Vaughan et al., 2016). Specifically, a period of 3 weeks for Soft & Energy Drinks is used, 3 months for Bottled Water and Cordial, and 6 months for Bottled Sauces and Fast Food. For Financial Services, brand users are current customers of the institution. Respondents who have not used the brand (or are not a current customer) in the specified time period are categorized as "non-users."

An advertising awareness measure is used to classify respondents who are aware of the brand's advertising, from those not aware. Advertising recognition is chosen as the most suitable, as the rich visual execution cue makes it an easier memory task for all respondents (i.e., both users and nonusers), than compared with an unprompted recall measure (Craik & Tulving, 1975; Singh & Rothschild, 1983; Vaughan et al., 2016). The question asked to calculate advertising recognition was "Below are some images of an advertisement. Do you remember seeing an advertisement like this recently?" To ensure the advertisement is associated to the correct brand, those respondents who recognized the advertising are asked an additional question: "Which brand is the advertising for?" Respondents who recognized the ad and correctly named the advertised brand are coded as "aware [of the advertising]." Those who claimed to remember the advertising but did not name the correct brand are categorized as "not aware [of the advertising]," along with all other respondents who did not remember seeing the advertising at all. Hence, it is only those respondents with a correctly branded awareness of the advertising who are classified as "aware" as it is only this group that the advertising can have an impact on the advertised brands' mental availability. The other group aware has a non-branded or incorrectly branded memory for the advertising; hence, the ad will not have affected the brand's mental availability as the link was not made to the brand's node in memory.

The final classification creates four groups: (1) users aware of the brand's advertising; (2) users *not aware* of the brand's advertising; (3) non-users aware of the brand's advertising; and (4) nonusers *not aware* of the brand's advertising.

Mental availability metrics

To calculate each brand's mental availability, brand perception data, collected using the recommended free choice "pick-any" technique, is used (Romaniuk, 2013b). This approach presents respondents with each attribute individually and a list of the brands from the category (name and logo shown). An example of the questioning technique for the Bottled Water category is as follows: "Which of these bottled water brands, if any, do you associate with 'Tastes Great.' Please select as many brands as apply." The free choice "pick-any" technique aligns with the concept of mental availability as it allows respondents to record all available links between the brands and the attributes, rather than focusing on the rank or the rating of the association (Romaniuk, 2013b). In addition, a free choice "pick-any" approach avoids any bias in the results from the different response a brand's

users and non-users provide for ranking and rating. At brand level, the three different approaches of rating, ranking, or sorting provide equivalent results (Driesener & Romaniuk, 2006). However, asking non-users to rank or rate brands can be problematic due to their lesser knowledge or experience with brands they do not use. In this sense, the free choice "pick-any" approach more accurately captures the true perceptions of a brand's non-users (Driesener & Romaniuk, 2006).

To generate the MA metrics, the calculations and quality control checks suggested by Romaniuk (2013b) are followed. The data are first split into sub-groups and the MA metrics calculations made allowing results to be compared within each usage group (i.e., brand users *aware* of the brand's advertising are compared with the sub-group of brand users *not aware).* To indicate the size of the difference between the sub-groups, a ratio difference is reported. If, for example, the *MMS* ratio difference for non-users aware of the advertising is 1.5, it means that MMS is 50% greater than compared with the non-users not aware of the advertising.

Sample

Secondary data sets collected as part of real-world brand health trackers are used to ensure the implications of this research are applicable to marketers. Data are from two countries (Australia and UK) spanning six different product categories (Bottled Sauces, Bottled Water, Cordial, Fast Food, Financial Services, Soft & Energy Drinks) and eight brands with advertising executions from four different media platforms (TV, online, outdoor, and radio). The data sets were collected at various time periods from 2012 through to 2015. The sampling frame for each data set used focused on a nationally representative sample of category users. The different characteristics of each data set are outlined in Table 1. All surveys are conducted online, thus providing greater reach with no geographical boundaries (Wydra, 1999), and reduced social desirability bias from interviewer effects (Nancarrow et al., 2001). Screening questions were asked at the beginning of each study to determine whether the respondent met this criterion before they progressed with the survey. The samples were collected via professional research agencies, which randomly recruited respondents from their panel. All attempts were made to disguise the overall purpose of the survey and the order of survey questions were carefully considered to eliminate any potential priming effects (Neuman, 2006). For example, brand perception questions in all data sets were asked, prior to any advertising effectiveness questions being asked. This is to avoid the advertising campaign message, such as "great taste," priming respondents to make this association when answering the brand perception questions.

Each data set has at least one focal brand with confirmed advertising activity, with Financial Services having advertising measures for two different brands. For Bottled Water, there is only one focal brand, but two measures due to the same campaign being measured at two different times (8 months apart). To distinguish results between the two different time periods, the results for the brand are indicated as follows: Brand D (1) and Brand (2). The brands in the study vary in size with the smallest brand of 4% market penetration and the largest brand of 81%. Due to the fact that smaller brands have fewer brand users, sample size is taken into consideration to ensure an appropriate amount of cases are available in each sub-group to conduct the required analysis. Only those brands with a minimum of five cases in each cell are deemed suitable for use in this research (Field, 2009).

Table 1. Description of varied conditions across the sample.

Product category	Country	Brand #	Market penetration (%)	Data collection	Sample size (*n*)	Advertising variables			Campaign effectiveness		
						Advertising active *x* weeks	# Ads	Media type (execution)	Advertising recognition (%)	Branded recall (%)	Correct branding (as % of advertising recognition)
Fast Food	Australia	A	35	February 2015	598	4	2	TV (x2)	27	24	89
				February 2015			8	Radio (x1)			
Bottled Sauce	Australia	B	45	October 2013	679	4	3	online (x1)	25	18	71
				October 2013		2		outdoor (x1)			
Cordial	Australia	C	42	September 2015	132	3	1	TV	36	35	96
Bottled Water	Australia	D (1)	35	October 2014	617	3	6	TV (x3)	20	10	48
Bottled Water	Australia	D (2)	42	June 2015	456	2		Outdoor (x3)	16	8	47
Financial Services	UK	E	25	August 2012	771	4	1	TV	31	18	58
Financial Services	UK	F	3	August 2012	771	4	1	Outdoor	47	32	69
Soft & Energy Drinks	UK	G	26	August 2012	771	4	3	TV (x1) and outdoor (x2)	30	21	70
Soft & Energy Drinks	UK	H	4	August 2012	771	4	5	TV (x2) and outdoor (x3)	31	16	50

Advertising recognition ranged from 16% to 47%, with correct branding among those who recognized the advertising between 47% and 96%. For some brands, there is one execution measured, such as Brand C in the Cordial category where only one TV advertisement is available. For others, multiple executions are available for the same brand across different media. For example, Brand B in the Bottled Sauce category has radio, online, and outdoor executions from the same campaign. In these instances, respondents only saw one of the executions (i.e., either just radio or just online), which meant combining responses for all three executions for Brand B provided a recognition measure of the overall campaign. The advertising creative from the brands were examined to ensure that executions run in different media types formed a cohesive campaign, communicating the same advertising style and messages regardless of media type. Hence, aggregating the ads from different media types was deemed appropriate as their effect on memory associations should be similar. In most cases, the length of time between advertising activity commencing and data collection is 2 weeks; however, for some brands, it is up to 8 weeks. For example, a campaign may include executions across different media, and TV may have been released prior to the outdoor executions, extending the length of time to 8 weeks.

Results

In line with the research questions, results are reported separately for brand users and non-users. The first section addresses RQ1 and presents results for the brand's *non-users,* with the results for RQ2 and *brand users* following. Within each section, the first table provides a comparison of the MA metrics for those non-users (or users) who are *aware* of the brand's advertising, compared with those *not aware* of the advertising. For example, a result of *MMS* 10% for those aware of advertising can be easily compared with 8% for those not aware. The data in all tables are ordered by the *MMS* metric for those aware of the advertising, from the largest to the smallest.

RQ1: How does a brand's mental availability differ between brand *non-users aware* of a brand's advertising, compared with brand *non-users who are not aware*?

The results show that mental availability is on average greater for the brand's non-users who are aware of the brand's advertising, with all four MA metrics greater than those who are not aware (see Table 2). More specifically, of the 36 observations, 32 are in favor of non-users aware, and 15 were statistically significant ($p < .05$). Independent *t*-tests are used to test significance of the observations for *MMS* and analysis of variance

(ANOVA) for the *Ab*, *Aw*, and *SOM* metrics. The nonusers aware of the advertising have more associations with the advertised brand on average, as can be seen for *MMS* (9.8% for aware vs. 7.9% for not aware), *Aw* (4.9 vs. 4.1), and *SoM* (13.1% vs. 11.8%). There are also more non-users who can make at least one association with the brand (Ab) among those aware of the advertising (67.7% vs. 50.6% for not aware).

In response to RQ1, the pattern of the results demonstrates that when non-users are aware of a brand's advertising, the mental availability of the brands tends to be higher (when compared with non-users who are not aware of the advertising).

RQ2: How does a brand's mental availability differ between brand *users aware* of a brand's advertising, compared with brand *users who are not aware*?

On average, for the brand users, all four MA metrics are greater for those users aware of the brand's advertising, compared with those who are not aware (see Table 3). Of the 36 observations, 28 are in favor of brand users aware and nine were statistically significant ($p < .05$). As above, independent *t-tests* are used to test the significance of the observations for *MMS* and ANOVA for the *Ab*, *Aw*, and *SoM* metrics. More users aware of the advertising have at least one association with the advertised brand (*Ab* is 91% compared with 80.8% of those not aware) and could provide more associations as seen for the *MMS* (19.4% vs. 17.7%) and *Aw* (8.1 vs. 6.8) metrics. However, *SoM* is slightly greater for those users not aware of the advertising (25.2% vs. 25.1% for those aware).

Table 2. Mental availability metrics for brand non-users aware of the brand's advertising and not aware.

Brand	Product category	Country	Sample size (*n*)		Mental market share (*MMS*), %		Associative penetration (*Ab*), %		Association rate (*Aw*), #		Share of mind (*SoM*), %	
			Non-users aware (NU/A)	Non-users not aware (NU/NA)	NU/A	NU/NA	NU/A	NU/NA	NU/A	NU/NA	NU/A	NU/NA
Brand D (1)	Bottled Water	Australia	39	477	16.3***	11.2	89.7***	64.8	9.4	6.8	15.1	8.7
Brand D (2)	Bottled Water	Australia	21	353	14.6	11.8	85.7***	68.6	6.9	6.6	12.5	9.3
Brand C	Cordial	Australia	21	59	12.2	12.0	81.0**	66.1	3.8	3.1	14.4	18
Brand G	Soft & Energy Drinks	UK	89	483	9.9***	9.0	79.8***	61.9	5.3	4.4	14.2	13.6
Brand B	Bottled Sauce	Australia	53	323	9.8	9.3	66.0	62.8	5.3	4.6	14.1	12.7
Brand F	Financial Services	UK	174	404	7.9***	4.0	28.2***	14.1	3.0	2.2	15.5*	12.3
Brand E	Financial Services	UK	98	496	6.9	5.7	24.5**	17.9	3.1	2.5	18.5***	18.7
Brand H	Soft & Energy Drinks	UK	99	642	5.6***	3.5	82.8***	43.9	4.0***	2.5	7.2	6.5
Brand A	Fast Food	Australia	72	320	4.8	4.7	72.0***	55.3	3.7	3.9	6.0	6.8
Average across brands					9.8	7.9	67.7	50.6	4.9	4.1	13.1	11.8
MAD					1.4		6.7		0.5		1.7	
MAPE					19.2		26.7		18.8		16.9	

NU/A: non-users aware; NU/NA: non-users not aware; MAD: Mean Absolute Deviation; MAPE: Mean Absolute Percentage Error.

*$p < .05$; **$p < .01$; ***$p < .001$—statistical significance report for each MA metric and for each brand comparing non-users aware versus non-users not aware.

Table 3. Mental availability metrics for brand users aware of the brand's advertising and not aware.

Brand	Product category	Country	Sample size (*n*)		Mental market share (*MMS*), %		Associative penetration (*Ab*), %		Association Rate (*Aw*), #		Share of mind (*SoM*), %	
			Users aware (U/A)	Users not aware (U/NA)	U/A	U/NA	U/A	U/NA	U/A	U/NA	U/A	U/NA
Brand E	Financial Services	UK	40	137	29.6	21.5	67.5	60.6	4.3	4.3	43.2	42.6
Brand F	Financial Services	UK	83	110	29.6***	27.2	78.3***	45.5	5.2	4.7	47.2	47.5
Brand D (2)	Bottled Eater	Australia	12	70	22.4**	19.2	100	94.3	14.9	10.6	22.1	20.3
Brand C	Cordial	Australia	24	28	21.4	21.9	100***	85.7	5.6	5.1	26.9	29.0
Brand D (1)	Bottled Water	Australia	19	82	21.3	19.4	94.7	93.9	14.5	11.2	23.1	20.7
Brand B	Bottled Sauce	Australia	69	234	17.1*	17.4	100***	94.9	8.6	7.3	19.5	20.3
Brand G	Soft & Energy Drinks	UK	71	128	14.4*	13.7	97.2	86.7	7.7	6.9	23.0	21.5
Brand A	Fast Food	Australia	73	133	9.8	9.5	90.7	87.5	6.9*	6.3	11.0	11.7
Brand H	Soft & Energy Drinks	UK	21	9	9.2	9.8	90.5	77.8	5.4	4.7	10.6	12.3
Average across brands					19.4	17.7	91.0	80.8	8.1	6.8	25.2	25.1
MAD					1.7		6.5		1.1		0.6	
MAPE					8.6		11.8		13.0		6.8	

U/A: users aware; U/NA: users not aware; MAD: Mean Absolute Deviation; MAPE: Mean Absolute Percentage Error.

*p < .05; < .01; < .001—statistical significance report for each MA metric and for each brand comparing users aware versus users not aware.

In response to RQ2, the results pattern demonstrates that when users are aware of a brand's advertising, the mental availability of the brands tends to be higher, when compared with users who are not aware of the advertising.

Discussion

The purpose of this study is to explore the usefulness of the MA metrics in answering the call of Ehrenberg and colleagues (2002) to find a suitable measure to identify the creative publicity (or the weak "nudging" force of advertising) effect of advertising on consumer memory. It is argued that brand advertising that is remembered by category buyers and correctly linked to the advertised brand will have a "nudging" influence on the brand's mental availability.

Using a self-reported recognition measure to capture advertising awareness, this study documents that those brand users and non-users who have recently noticed a brand's advertising and encoded information into memory (enabling them to recognize and correctly link the brand to the advertising) have greater mental availability for the brand, than those who did not notice recent advertising. Or, in other words, the propensity of the brand being noticed or coming to mind in buying and consumption situations has been positively affected (Bullmore, 1999; Ehrenberg et al., 1981, 1997, 2002; McDonald, 2004; Miller & Berry, 1998).

When considering how a brand's advertising affects memory for brand users and non-users, the results suggest that advertising's greatest effect is when it reaches the brains of category buyers who do not buy the brand. Considering brand users have a greater number of associative links in memory, than brand's non-users (Bird et al., 1970), this result suggests the smaller starting base for non-users allows for greater impact from advertising awareness. Of the 36 observations for nonusers, 89% (32 out of 36) is greater for the non-users aware of the brand's advertising, compared with those not aware. Of these, 15 were statistically significant (p < .05). The pattern is still positive for brand users but to a lesser extent, with 78% of observations (28 out of 36) greater for those brand users aware of the advertising and nine statistically significant (p < .05).

These considerations are also reflected numerically in the distribution of values across the four metrics. Among the brand non-users, the effect of advertising awareness is currently most evident for the *Ab* metric, with those aware being on average 1.6 times more likely to have an association with the advertised brand. This compares to 1.2 times among brand users. The *MMS* and *Aw* metrics for non-users are also on average greater for the sub-group aware at 1.4 and 1.3 times, respectively. This compares to a lesser, but still positive, difference for the aware brand's users of 1.0 and 1.1 times for the same metrics. This demonstrates for both users and non-users that, those aware of the advertising can provide more links to the advertised brand, compared with those not aware. *SoM* is on average slightly greater for those users not aware of the brand's advertising at 1.0 time, which is only marginally different to the 1.1 times observed for the aware non-users. For this metric, it suggests that awareness of advertising for both users and non-users has minimal effect on the number of category associations linked to the advertised brand, compared with other brands.

This study has important implications when considering the many empirical studies showing that brand growth comes from attracting new customers (see, for example, Anschuetz, 2002; Baldinger et al., 2002; Romaniuk et al., 2014). The results highlight the importance of reaching non-users with brand advertising as those aware have greater mental availability, or in other words greater propensity of the brand being noticed or coming to mind in buying and consumption situations. As the proportion of non-users for most brands is much bigger than the proportion of users (Ehrenberg, 1959, 1972), and this non-user group has fewer existing memory structures linked to the brand (than compared with brand users), it is imperative that advertising be created with this harder-to-reach group in mind. This will provide greater chance that any opportunity-to-see among non-users has the potential to positively affect the brand's mental availability.

Implications for practice

The results of this study contribute to marketing practice by demonstrating that the impact of advertising awareness on consumer memory can be observed, when using the newly developed MA metrics. For marketers willing to add the MA metrics to existing brand health tracking projects, the impact on data collection costs will be minimal (if any) where brand perceptions are already being measured. As recommended by Romaniuk (2013b), it is encouraged that a free choice "pick-any" approach is used to collect the brand perception data.

As conducted in this study, it is strongly recommended that analysis be separated for brand users and non-users to provide a more accurate measure of mental availability. Past literature shows the usage bias is evident in many other brand equity and advertising effectiveness measures (Bird et al., 1970; Hammer & Riebe, 2007; Harrison, 2013; Romaniuk & Wight, 2009; Sharp et al., 2001,2002; Vaughan et al., 2016), and the same bias is reflected in the results of this study. In addition, to ensure the impact of a brand's advertising is accurately captured; consumers allocated to the advertising aware sub-group must also be able to correctly identify the brand being advertised. Doing so will add certainty to the results, that any advertising impact has affected the mental availability for the advertised brand, and more importantly not been misat- tributed to a competitor brand.

Limitations and future research

It is acknowledged that for repertoire categories, light users may be categorized under the non-user group. For example, a respondent may be a user of a brand, but has not purchased the brand within the past 6 weeks. This may mean the distinction of users and non-users is, instead, more a reflection of heavy versus light/non-users. Due to insufficient sample sizes, the distinction between non-, light-, medium-, and heavy users could not be made in this study. It is recommended that any future research control for this potential limitation, where sample size allows.

It is also acknowledged that some respondents who were unable to recognize the adverting may have been exposed and processed it at a low level of involvement (Heath, 2000). Heath proposes that advertising works through subconscious affective processing using passive or implicit learning and that an increase in brand preference could occur despite a lack of memory of the exposure. Hence, those who were unable to recognize the advertising used in this study may well have been exposed and processed the advertising at a low level and the mental availability of the brand enhanced for these respondents, this is a limitation of the method used in this study. It is recommended that future research test whether the MA metrics can detect the effect of advertising that is not recognized but was processed at low levels by respondents. An alternate method would be required to capture whether respondents had an exposure to the advertising, even if they were unable to recognize the creative stimuli.

Another avenue for further research is to examine the effect of advertising from different media platforms on mental availability. Herein the study aggregates advertising for a brand from different media types that formed a cohesive campaign; however, future research could examine the relative strength of advertisings' effect on mental availability when advertising exposure is delivered in different media platforms. Media types have different characteristics: radio with audio only, print with static images, and video with dynamic sight and sound—the MA metrics may be able to capture the relative strength of the impression asserted by these different sources of advertising.

As this research is exploratory, it is strongly encouraged that this study be replicated across the same and varied conditions, such as different countries, categories, and brands to see if there are consistencies or differences in the findings. Further research could even explore the difference between new versus established brands, big versus small brands, and brands in emerging markets. A successful replication confirms that despite the differences in the data conditions, the results hold and are generalizable beyond the conditions of the original study (Lindsay & Ehrenberg, 1993). Differences to previous results would alternatively begin to identify boundary conditions to the expected pattern.

While six categories are used in this research, conducting research that spotlights changes in individual categories would provide beneficial insights for marketers. For example, having multiple observations for different brands in the same category will begin to provide expected benchmarks for marketers and aid development of strategies to build a brand's mental availability under conditions specific to the category. As mental availability is a competitive process and the advertising activity of competitors will also have an impact on memory, comparing brands in the same category will also provide important extension to the current study.

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Topics
Brand equity & strength (http://www.warc.com//search/Brand-equity_strength?l3=Brand%20equity%20%26%20strength) |
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