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Angell, R., Gorton, M., Sauer, J., Bottomley, P., & White, J. (2016). Don't Distract Me When I'm Media Multitasking: Towards a Theory for Raising Advertising Recall and Recognition. *Journal of Advertising*. doi: 10.1080/00913367.2015.1130665

Title Page

Don't Distract Me When I'm Media Multitasking: Towards a Theory for Raising Advertising Recall and Recognition

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Don't Distract Me When I'm Media Multitasking:

Towards a Theory for Raising Advertising Recall and Recognition

Abstract

Media multitasking, such as using handheld devices like smartphones and tablets while watching TV, has become prevalent but its effect on the recall and recognition of advertising subject to limited academic research. We contend that the context in which multitasking takes place affects consumer memory for advertising delivered via the primary activity (e.g., watching television). Specifically, we identify the importance of the degree of (a) congruence between the primary and second screen activity and (b) social accountability of second screen activities. We test our typology empirically by examining the determinants of next day recall and recognition for billboard advertisers (perimeter board advertisements) of a televised football (soccer) match. In line with our theory, in most cases media multitasking leads to worse recall and recognition, however, in situations where there is congruence between primary and second screen activities and secondary activities have a higher level of social accountability attached to them, then advertising recall and recognition improves.

INTRODUCTION

Advertising practitioners and scholars consider consumer attention a scarce and precious resource that is difficult to obtain and easily lost. For example, Kover (1995) details how advertising follows a two-step process of "breaking through" followed by "dialog" with deep, undistracted discourse providing the basis for persuasion to occur. Understanding the environmental constraint of advertising clutter and competitive interference is a perennial issue (Kent 1995; Brown and Rothschild 1993; Jeong, Kim and Zhao 2011; Riebe and Dawes 2006), with "noise" in the viewing environment a major concern (Choi, Lee and Li 2013; Jayasinghe and Ritson 2013; Pilotta et al. 2004). The rise of social media has added further complexity to this situation (Goode and Mortensen 2013; IAB 2012; Microsoft Advertising 2014). This is particularly the case in the era of *media multitasking*, whereby consumers "simultaneously" engage in multiple tasks (e.g., watching a film on television whilst checking email on a laptop), since distraction is rarely any more than an arm's length away. Indeed, a recent report by Microsoft Advertising (2014) found that the use of multiple devices (television, cellphone, tablet, laptop) simultaneously, is increasingly the default mode for modern media consumers, with seven in ten people multitasking whilst also watching television.

Scholars have increasingly paid attention to media multitasking and its consequences for advertising effectiveness (Bellman et al. 2014; Bellman et al. 2012; Varan et al. 2013). For the most part, multitasking has a negative impact. Media multitaskers tend to perform worse in memory tests of advertising *recall* and *recognition* than those exposed to the same advertisements uninterrupted (Voorveld

2011). The predominant explanation for this is capacity limitation theory (Zhang, Jeong and Fishbein 2010; Lang 2000), as well as the theory of attention and effort developed by Kahneman (1973). Both theories suggest that humans only have a limited cognitive capacity to process information from their environment. Attention is a finite resource in which its division by multitasking always diminishes a person's *opportunity* to process and later recall advertising content. It would appear evident that advertising is becoming increasingly less effective in this era of media multitasking (Jayasinghe and Ritson 2013). This begs the following question: is multitasking and divided attention *always* detrimental for advertisers?

The concept of "divided attention" has its roots in the conveyance of persuasive messaging whereby recipients are often mistakenly viewed as empty vessels to be filled with information advertisers wish to convey (Yeshin 2006; Semenik et al. 2012). This viewpoint ignores the fact that audiences consume media for their own purposes and actively regulate their level of attention, selectively paying more attention to some ads and less attention to others, in order to get what they need, and that persuasion is not actually part of this agenda. As early as the 1950s and 1960s selective attention was recognized in the literature on media uses and gratifications (Rubin 1994; Pilotta and Schultz 2005), and has been more recently captured in the Elaboration Likelihood Model (Petty and Cacioppo 1986) and the Motivation, Opportunity and Ability (MOA) framework (MacInnis, Moorman and Jaworski 1991). In essence, consumer *motivation, opportunity* and *ability* to process information are central to the message encoding, retrieval and persuasion process, and whilst media multitasking might necessarily reduce consumers' opportunity to attend to advertising, there is no *a priori* reason to believe that multitasking always results in poorer advertising recall and recognition. In particular, researchers should look beyond source monitoring errors and recognize the

role of motivation and ability as determinants of advertising processing in multitasking situations (Srivastava 2013; LaTour, LaTour and Brainerd 2014; Duff et al. 2014).

In this fashion, a recent study by Duff and Sar (2015) found that advertising recall was contingent upon cognitive styles of processing. The authors showed that holistic processors (i.e. people who tend to process information in totality rather than as independent components) were more adept at recognizing ads, to the extent that multitasking actually had no detrimental impact on memory - unlike their analytic counterparts. While Duff and Sar (2015) provided evidence that ability can moderate the detrimental influence that lower opportunity affords, the outstanding question remains whether *motivation* can play a similar role?

We contend that the *context* in which multitasking takes place affects consumer memory for advertising delivered via the primary activity (e.g., watching television). We argue that in certain multitasking contexts, consumers are motivated to process information more than in others, and when they are motivated, recall and recognition should not decline (Srivastava 2013). Specifically, when the secondary activity (e.g., texting about a football match) is both *congruent* with the primary activity (e.g., watching a televised football match) *and* represents an active display of *social accountability* – defined here as social activities instigated and therefore traceable to the individual – then recall and recognition will improve. In addition, unlike most studies in this area, we focus on multitasking when the advertising is *incidental* rather than *explicit.* Our research therefore has important implications for scenarios involving *embedded* advertising, including billboard advertising, product placements, covert sponsorships and advergaming, amongst others. This is an important endeavor in itself,

since memory effects for incidental advertising remain poorly understood (Moorman et al. 2012).

We base our empirical work in sports advertising. In total, 179 respondents reported their between-media multitasking activities (i.e. on two or more devices) while watching a televised England international soccer match. The following day, we tested respondents for their recall and recognition of adverts embedded in the broadcast via billboards around the stadium. Using an econometric model we evaluate our hypothesis that multitasking *context* (e.g., congruence, social accountability) influences recall and recognition for the ads.

LITERATURE REVIEW

Limited Capacity Theories & Media Multitasking

The Limited Capacity Model (Lang 2000) is frequently used as a framework for explaining why people perform poorly in memory tests. Alongside Kahneman's (1973) theory of attention, Lang's model (2000) asserts that humans possess limited cognitive resources to spend on encoding, understanding and then retrieving information processed from the world around them. In this sense, encoding represents the selection of stimuli that will later be stored as mental representations of the environment, whilst retrieval concerns mental activation of this information. When cognitive resources are put under strain; for example, because of limited *motivation, opportunity* or *ability* to process information, then encoding and retrieval suffers (Lang 2006).

Multitasking is a situation under which having fewer cognitive resources can cause restrictions in processing, since attention is divided between several tasks

simultaneously (Rubinstein, Meyer and Evans 2001). Performance has consequently been shown to suffer in a myriad of activities, including driving whilst using a cellphone (Strayer and Johnston 2001), doing homework or reading with background television noise (Pool et al. 2000; Armstrong and Chung 2000), listening to a lecture whilst using a laptop (Sana, Weston and Cepeda 2013) and attempting a Sudoku exercise while also solving word puzzles (Adler and Benbunan-Fich 2015).

Similarly, performance on memory tasks is not immune. *Memory* for information delivered via the primary activity is also affected (Brasel and Gips 2011), particularly when the secondary task is (i) more demanding (Adler and Benbunan-Fich 2015), or (ii) requires similar systems for encoding (e.g., two auditory tasks, such as listening to the radio and talking to a friend on the telephone) (Navon and Miller 1987). In his study of recall and recognition for an online news story about a college football team, Srivastava (2013) asked subjects to listen to a podcast outlining aspects of the university's history. He found that both types of memory were negatively affected in the multitasking condition when compared against the task (reading) completed in isolation.

In advertising research, studies have also found that recall and recognition are lower when multiple tasks are attended simultaneously (Table 1). For instance, in a study requiring respondents to simultaneously browse the internet and listen to the radio, Voorveld (2011) found that recall and recognition for brands appearing on internet banner-advertising was lower when the radio was playing than switched-off. Similarly, Bellman et al. (2012) found that those exposed to television advertisements whilst also talking to another person (co-viewing), recalled fewer ads than those watching alone. These findings are consistent with the majority of studies in the area

(Adler and Benbunan-Fich 2015; Zhang, Jeong and Fishbein 2010). On balance, prior literature suggests that media multitasking is *always* detrimental on memory for advertising. However, we contend this need not always be the case. The MOA perspective provides a useful framework for identifying the context or circumstances under which detrimental ad memory effects are likely to occur.

PLACE TABLE 1 ABOUT HERE

Since multitasking naturally leads to division in attention (Kahneman 1973), it necessarily results in a lower opportunity to attend and process new information. Following this logic, multitasking outcomes (e.g., memory) should also be improved if a greater ability (Duff and Sar 2015) and / or motivation to process related information exists. We propose that recall and recognition of advertising delivered via the primary activity, will be higher if the consumer is more strongly motivated to multitask. This logic is in keeping with the *limited capacity* perspective (Lang 2000) and elaboration likelihood model (Petty and Cacioppo 1986), which suggest that encoding efficiency tends to improve when involvement is higher (Srivastava 2013).

We argue that the *context* of media multitasking influences a consumer's motivation to process new information. Specifically, we propose that the level of congruity between multitasking activities is a necessary determinant of this - in other words, when there is content alignment between the primary and secondary activities. Examples might include: electronically voting (secondary activity) for a favorite singer whilst simultaneously watching American Idol (primary activity), or texting friends live score updates from a televised soccer match. Although congruence is a necessary condition, we also propose that the *type* of secondary activity influences subsequent advertising recall and recognition. Here, the type of activity refers to *how* the consumer

engages in multitasking via the secondary activity and, specifically, its level of *social accountability*. In this sense, sending a message to others, or tweeting personal followers would entail greater social accountability, than simply browsing the internet for related information, or reading an SMS message, since the former have a higher level of traceability to the sender/poster (Araujo, Neijens and Vliegenthart 2015; Microsoft Advertising 2014). Figure 1 depicts our conceptualization of this.

PLACE FIGURE 1 ABOUT HERE

Congruence between Media Multitasking Activities

Congruence, also referred to as relatedness or fit, signifies the degree of similarity between two objects or activities (Olson and Thjømøe 2011). It has frequently been used to explain why consumers have better memory for related stimuli. Notable examples include celebrity endorsements whereby an overlap between the celebrity and brand exists (Fleck, Korchia and Le Roy 2012); when a brand sponsors a sports team or event sharing a notable connection (Cornwell et al. 2006); or when two (or more) media are used to advertise a synonymous message (Voorveld 2011). Congruent stimuli aid consumer *motivation* and *ability* to decode new information. This is consistent with network perspectives of consumer memory, whereby congruent nodes and memory traces are more easily retained and pathways strengthened (Cornwell, Weeks and Roy 2005). However, this may not always be the case, as novelty can sometimes stimulate intrigue, and with it cognitive elaboration (Stangor and McMillan 1992).

With regard to media multitasking we follow the marketing convention (see Cornwell et al. 2006) proposing that contextual congruence – that is, the level of similarity between two activities - determines how successfully advertising embedded in the primary activity (i.e. television viewing) is processed and remembered. Consider

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the popular US reality show American Idol. Viewers are exposed to a plethora of embedded product placements during the show; most notably Coca-Cola cups displayed on the judges' desk. As the competition is broadcast, chat forums and Twitter buzz with American Idol-related content. It is this relationship, between the content of the primary (i.e. the show) and secondary activities (e.g., tweeting about the show), that contextual congruency refers. Other examples might include searching for the name and career history of an actor while simultaneously watching a film (Jayasinghe and Ritson 2013), or sending a cake recipe by SMS to a friend while viewing a cookery program.

In prior media multitasking studies the degree of congruence between the two activities has not been explicitly considered as a factor influencing advertising effectiveness. This is surprising given the findings of a recent international study by Microsoft Advertising (2014). Using data from 3,586 consumers, the researchers evaluated *how* and *why* consumers multitasked. Two broad types of media multitasker emerged. *Grazers,* considered the most common group, initiated a secondary activity to access content unrelated (e.g., checking emails or weather reports) to the primary activity (e.g., watching television). Borne out of habit, and motivated by staying up-to-date with work, social or current affairs, this type of multitasking is distracting, and impedes content delivery via the primary activity. In contrast, *spider-webbers* use the secondary activity as a launch pad for greater engagement with the primary activity. It requires both activities to be congruent, and tends to increase attention and stimulate cognitive elaboration (e.g. searching for an actor's career history whilst watching one of her films). Similarly, an analysis of TV viewers' conversations reveals that *content and context* based comments focus attention on the broadcast, while unrelated (*non-sequitur*) side conversations tend to act as a distraction (Ducheneaut et al. 2008). Whilst

neither Microsoft Advertising (2014) nor Ducheneaut et al. (2008) explicitly tested consumer memory for advertising, by implication we expect that congruity, between the primary and secondary activity, is necessary for recall and recognition to improve but, in isolation, is insufficient to improve advertising *recall* and *recognition.*

Socially Accountable Activities and Media Multitasking

As Table 1 details, secondary activities are traditionally perceived as the source of distraction*,* but we argue that the type of secondary activity, and its associated level of social accountability is actually a key determinant of memory for advertising.

The concept of social accountability is well studied in both the psychology and communications literatures (Leary 1995; DeAndrea, Shaw and Levine 2010). Conceptually, it refers to the extent to which people are held accountable for what they communicate to others. In this regard, social accountability and desirability are inextricably linked since most people worry about ostracism when others fail to share the same views (Ridings, Gefen and Arinze 2006). For example, in the domain of online product reviews, consumers are well known to adapt their ratings so not to appear too harsh or too lenient to other posters (Sridhar and Srinivasan 2012; Eisingerich et al. 2015). Indeed, research suggests that website forum *posters* tend to be much more influenced in their behavior by the prospect of negative appraisals than *lurkers* (Schlosser 2005). As Araujo, Neijens and Vliegenthart (2015) note, the traceability of social media makes people more conscious of information they pass on, which can often carry greater risk than non-social media communication (Eisingerich et al. 2015). Likewise, Puntoni and Tavassoli (2007) suggested that people are normally conscious of appearing socially desirable to others, and when the case, tend to be more attentive to identity expressive advertising. They found that simply being in the presence of or

engaging with other people stimulates a greater allocation of cognitive resources to processing and later *recognition* of impression relevant advertising.

In a media multitasking context, this was also captured in the Microsoft Advertising (2014) study. For instance, S*pider-Webbing* can take two forms depending on the *type* of secondary activity someone engages in. The first, *Investigative Spider-Webbing*, refers to a situation in which the consumer uses a second device to research content related to the primary activity. In contrast, *Social Spider-Webbing* represents the process of taking content from the primary activity and using it to generate a dialogue via the second. For example, tweeting about a primetime television series as it airs live. It requires congruency between activities but also that the consumer is accountable for instigating and sharing information with other people, of a nature which is ultimately traceable to them.

Bellman et al. (2014) conducted the only media multi-tasking study, to our knowledge, that indirectly explores the influence of social accountability for different secondary activities. Using a lab experiment, participants watched 60 minutes of television that included four 'test' ads embedded within the commercial breaks. Pairs of participants watched the programs: (i) in separate rooms (control), (ii) together on a sofa (talking allowed) or (iii) on a 'social' TV which enabled communication via text message between the two separate rooms. Interestingly, texting another viewer actually enhanced brand attitude and unaided recall, although not to a statistically significant level, for the latter.

While these results suggest that multitasking need not always inhibit memory for advertising, there are certain features of this study's design which might limit the generalizability of its findings. First, two of the four 'test' ads were unusually long (60-

second duration), highly creative (award-winning) and unfamiliar (UK) to an American audience, all factors likely to encourage attention. Second, texts appeared in a 'chat-window' at the bottom of the television screen (like sub-titles of foreign-language films), thus lessening the distraction associated with switching to a keyboard for these touch-typing proficient participants. Third, responses were averaged across each pair of participants, so the role of sending and receiving text messages, given their differential social accountability, is confounded.

Consequently, we propose that multitasking involving secondary activities that require and encourage consumers to exercise a concern for their social accountability should result in a greater allocation of cognitive resources, attention, and ultimately memory for advertising. Such activities require consumers to open a dialog with others, for instance, by texting or tweeting information congruent with the primary activity. Memory for advertising, however, will not be improved if: (1) the secondary activity does not require any social accountability, for example, receiving and reading (but not composing) messages or web browsing, or (2) for any type of activity that is incongruent with the primary one (i.e. watching television). Accordingly, we test the hypothesis (also depicted graphically in Figure 1), namely that:

H_1: *Media multitasking activities that are (i) congruent and (ii) high in social accountability result in better recall and recognition for embedded advertisements.*

METHOD

Participants and Design

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Data collection took place on the 20th November 2013, when 620 students at three UK Universities (Cardiff, Plymouth and Newcastle) received an email invitation to participate in an online survey. The sampling frame consisted of those studying on a module delivered in each of the universities by one of the study's coauthors. On opening a link to the Qualtrics hosted questionnaire, recipients were presented with an initial filter question; "did you watch any of last night's broadcast of the match between England and Germany?" The match was screened live on terrestrial (i.e. free to air) television by the most popular commercial channel (ITV). Those responding 'no' (n=229) were thanked for their time, with no further questions. Those responding 'yes' (n=236) were invited to answer additional questions about their viewing of the match. In total, 179 respondents fully completed the questionnaire. The sample comprised 164 men and 15 women, who were predominantly (88%) aged between 18-22 years old. To encourage participation, all respondents, regardless of their answer to the initial filter question were entered into a prize draw for a £50 (circa $85) gift card. As only university email addresses were accepted, 'double-counting' of cases was not problematic.

Respondents were not informed of the study in advance so not to prime their responses or artificially inflate their performance (Baddeley, Eysenck and Anderson 2009; Jeong, Kim and Zhao 2011; Wakefield, Becker-Olsen and Cornwell 2007). While laboratory studies afford greater control over materials and manipulations, they also typically suffer from minimal time lags between exposure and measurement and cannot replicate the arousal and involvement of watching a live sports broadcast (Wakefield, Becker-Olsen and Cornwell 2007).

Study Measures & Procedure

After a respondent answered "yes" to the initial filter question, they were next asked about their memory for advertisements displayed on perimeter billboards during the match. Memory was captured via measures of both recall and recognition.

For *recall*, respondents were asked: "when you think of the England versus Germany match, which advertisers did you see on perimeter boards around the playing area? Please list all that come to mind". To aid understanding of the question, an accompanying picture included examples of billboard advertisers (but none of the examples pictured coincided with those of the England versus Germany match). Next, on a separate page, recognition was measured. The specific question was: "While watching the match between England and Germany, did you see any of the following advertisers on perimeter boards around the playing area? Please tick the relevant box for <u>all</u> advertisers you remember seeing". To minimize intelligent guesses (Lardinoit and Derbaix 2001; Wakefield, Becker-Olsen and Cornwell 2007), the list included all actual billboard advertisers plus those of non-advertising leading competitors in the same product category. For instance, William Hill (betting) was an advertiser for the match, so Ladbrokes, a rival bookmaker, was also included in the list. For the *recall* question, respondents' answers were coded into the following categories to reflect the number of correct responses: (i) zero billboard advertisers recalled, (ii.) one, (iii.) two or more. For recognition this was: (i.) zero, (ii.) one, (iii.) two, (iv.) three, (v) four or more.

Next, respondents were asked a series of questions to capture their media multitasking behavior during the game. These were organized into activities to reflect (i.) congruence / incongruence with the primary activity (i.e. soccer match related /

unrelated) and (ii.) the degree of social accountability attributed to the secondary activity. We measured social accountability via proxy variables using the *types* of activity viewers undertook during the live broadcast. As such, respondents estimated the number of texts and tweets *sent* during the game (high social accountability), as well as the number of texts read and proportion of the game spent surfing the internet (low social accountability). Unfortunately, owing to a data collection oversight, we did not record information on number of non-soccer text messages read (incongruent / low social accountability).

Control Variables

Since a myriad of factors have been found to influence recall and recognition for advertising, we included a theoretically derived selection of *control* variables, including involvement and arousal (LaTour and LaTour 2009; Moorman, Neijens and Smit 2007), as a strategy for ruling out alternative explanations for the results.

Higher program connectedness encourages viewers to process information via the central processing route of the brain (De Pelsmacker, Geuens and Anckaert (2002). This results in better encoding and retrieval of memories. We measure connectedness via fan involvement, using the four item scale for involvement of Laurent and Kapferer (1985) adapted for soccer by Lardinoit and Derbaix (2001).

With regard to *arousal* during the broadcast, the processing intensity principle emphasizes that intensity narrows attention to the stimuli responsible for the emotional experience. This works to inhibit recall of peripheral stimuli such as billboard advertisements. The processing intensity principle thus posits that higher levels of

arousal generated by a broadcast program will negatively affect recall of advertisements (Newell, Henderson and Wu 2001; Gardner 1985). Arousal was captured using the six item scale of Mehrabian and Russell (1974).

Respondents also reported how and where they watched the match (social setting). Questions included the percentage of the game they watched, how many people they watched with, and whether they watched on a "big screen", commonly found in British bars and public houses. Watching sport on 'out of the home', larger screens, with crowds of fellow viewers, generate stronger feelings of presence (Lombard et al. 1997; Grabe et al. 1999). Viewers are less likely to dissociate advertisements from their environment since they adopt a holistic processing mode (Lombard et al. 1997; Carrillat et al. 2015; Grabe et al. 1999). In this case the efficiency principle suggests that both focal (the match) and peripheral (the billboards) stimuli are centrally processed, leading to improved memory for embedded advertisements. A final batch of questions elicited information about nationality, age, gender, and university of study.

Modelling

We estimate mixed-effects ordered logit models to investigate the determinants of recall and recognition. Table 2 defines the dependent and independent variables. As some of the covariates are grouped according to one or more characteristics (i.e. representing clustered, and therefore dependent data with respect to student status, age and gender) we apply a multi-level modeling approach commonly referred to as mixed-effects or hierarchical modeling (Agresti 2010; Rabe-Hesketh and Skrondal 2012). Such a mixed model is characterized as containing both fixed and random effects. The fixed effects are analogous to standard regression coefficients and are estimated directly.

The random effects are not directly estimated but are summarized according to their estimated variances and covariances. Random effects may take the form of either random intercepts or random slope coefficients, and the grouping structure of the data may consist of multiple levels of nested groups. We specify a four level model by incorporating random effects for the student's status (2nd level), their age (3rd level), and gender (4th level). The actual observations (the students) comprise the first level of the nested structure. The dependent variables take the form of a qualitative response that is categorical and ordered (as outlined earlier).

PLACE TABLE 2 ABOUT HERE.

RESULTS

Table 3 displays the rates of recall and recognition for embedded advertisements. The majority of participants could not recall, unaided, any of the billboard advertisers. Approximately one-quarter could correctly recall one advertiser while only 15% could correctly name two or more advertisers. Recognition was higher – although approximately one quarter could not correctly recognize any of the billboard advertisers with a similar number able to recognize just one. About one in five participants could recognize correctly three or more advertisers. The low level of recall, and relatively higher rate for recognition, mirrors the findings of previous studies of embedded advertising in televised sports (Lardinoit and Derbaix 2001; Dekhil and Desbordes 2013).

PLACE TABLE 3 ABOUT HERE

The mixed-effects ordered logit models for *recall* and *recognition* are displayed in Table 4. The coefficients for each independent variable are organized into four overarching categories (i.e. blocks) in line with the theoretical model in Figure 1. They are: *Incongruent / Low Social Accountability; Incongruent / High Social Accountability Congruent / Low Social Accountability; Congruent / High Social Accountability*. Broadly speaking the coefficients for both recall and recognition are consistent in terms of direction (sign) and statistical significance, and so are discussed together.

PLACE TABLE 4 ABOUT HERE

Consistent with the study's central hypothesis, the coefficients for all secondary activities in Block 4 (congruent / high social accountability) have a positive effect on memory for the advertisements. Of the four coefficients fitting these criteria, three are statistically significant. This is evidence that not all media multitasking detrimentally affects advertising effectiveness. Indeed, under the "right" conditions, multitasking can have a very positive effect on advertising outcomes.

In terms of all other types of media multitasking activity (Blocks 1-3), we find that every coefficient with the exception of one (i.e. NGAMETWEETREAD) are negative and therefore reflects the detrimental effect that media multitasking normally has on advertising effectiveness. Of these eleven coefficients, eight are statistically significant. This is consistent with previous research which has found that multitasking ultimately detracts from a person's ability to process advertising messages. Of these activities, posting online about incongruent (non-match related) issues has the most detrimental effect (*recall = -.027; recognition = -.090*).

To rule out alternative sources of variation in our two dependent variables, we included control variables in Block 5. As expected, more highly connected viewers (fan

identification), those with lower levels of arousal, those viewing on a big screen, and in smaller groups, tended to have better memory for the advertisements. In addition, the more coverage of the game the respondent saw, the higher their recognition. These results are both intuitive and in line with previous research, which acts as a further check for the validity of the study's main model effects.

DISCUSSION

This paper investigates whether media multitasking need *always* be detrimental to consumer memory for advertising. From a Motivation, Opportunity and Ability perspective (MacInnis, Moorman and Jaworski 1991), we argue that when motivation is high, memory for advertising delivered via the medium of the primary activity, will be better recalled and recognized. To test this proposition, we used naturalistic stimuli – a televised international soccer match between England and Germany, and assessed consumer memory for embedded advertising in the form of perimeter billboards located around the stadium. Consistent with our central hypothesis, we find that when the multitasking is congruent, and the secondary activity entails a higher level of social accountability (i.e. sending tweets or SMS texts) then recall and recognition for ads actually increases, compared to the other three quadrants as illustrated in Figure 1.

From both an advertising *and* media multitasking perspective our study makes a significant contribution to understanding how advertising effectiveness changes as people undertake more than one task at a time. Our typology for improving recall and recognition through pairing activities that are both congruent and high in social accountability is the first in the advertising multitasking literature to investigate how

the secondary activity can *motivate* greater elaboration of information delivered via the primary activity. Our motivation processing account, and findings, therefore compliments the work of Duff and Sar (2015) on processing *ability*, which similarly found that multitasking need not automatically lead to poorer recognition, as has often found to be the case in prior research. Thus, the advertising information processing framework (MacInnis, Moorman and Jaworski 1991) offers a useful lens for identifying the context or circumstances under which detrimental advertising memory are likely to occur, or not.

Whilst our study identifies a context whereby multitasking proves to be beneficial, it is also consistent with the prior studies detailed in Table 1. In fact, our results fully support the notion that, in most cases, media multitasking will lead to worse recall and recognition (Voorveld 2011; Bellman et al. 2014; Bellman et al. 2012). For all situations, or combinations of activities where multitasking was 'unrelated' to soccer or involved receiving messages, reading web content or tweets (as opposed to sending or posting) then memory was found to be worse. This supports the notion that undertaking more than one activity at a time is normally detrimental (Srivastava 2013; Brasel and Gips 2011).

Researchers, particularly those working in the domain of advertising, should pay careful attention to the *type* of activities they use to operationalize multitasking behavior. Whilst prior studies have operationalized multitasking via a variety of research designs (see Table 1), little to no attention has been afforded to *how* and *why* different secondary tasks might improve or worsen advertising encoding and retrieval. Since our study estimates the effect for a variety of secondary activities, we are able to

distinguish between each activity in terms of advertising recall and recognition. Our results indicate that this selection of task matters, and that memory will differ substantially as a consequence of the type of activity used. Moreover, we find differential effects even within broad classes of activity – not all soccer related posting activities were equally memorable – as discussed below.

To date, we are not aware of any academic research that has considered fit between multitasking activities to be a determinant of advertising effectiveness. Our work therefore provides an additional thread of marketing theory in which congruity plays an important role. The data shows that without fit between activities – in our case, where the secondary task is unrelated to soccer - then recall and recognition is generally lower. This is supportive of the notion that congruent stimuli are more easily encoded, fluently processed, and remembered (Cornwell et al. 2006). Past research has suggested that incongruity might be a better determinant of *recall* and *recognition* (Stangor and McMillan 1992), whereby novelty is thought to stimulate elaboration and result in more deeply encoded and efficiently retrieved memories. Whilst there may be many applications in advertising where this is the case, regarding multitasking, we do not find evidence of this from our data. Nonetheless, it is worth drawing attention to one result where we do not observe the expected result for a congruent variable. In our theory, non-game related "reading" of tweets should, through virtue of being incongruent, result in lower recall and recognition. Whilst this relationship was observed for the recall measure, we found it to be positively associated with recognition. A potential explanation for this might be found in the way the variable was measured. Although most people are able to recount the number of tweets they *sent* in a given timeframe (which can be easily validated), ambiguity exists around how many tweets someone

correspondingly reads from their message feed. As the number increases, estimation inaccuracies similarly rise, particularly without guidance from others (as anchors) (Surowiecki 2005). Notwithstanding a potential Hawthorne effect, validation methods such as eye-tracking would be useful for generating more accurate data for this variable.

Central to our theory, we propose that secondary activities with a higher level of social accountability attached are related to improved advertising recall and recognition. As expected, we find support for this assertion, but only in situations where there is also congruence between tasks. This supports the notion that social accountability stimulates increased attention and with posting or sending (congruent) messages greater motivation exists to pay closer attention to the primary activity (i.e. watching the match). Our logic relies on the fact that *posters* and *senders* are more reluctant to share information they are unsure of, or that might question their expertise, which could result in a negative appraisal by others (Schlosser 2005). In this regard, an interesting finding is the comparison between game-related (congruent) tweets and text messages sent. Although both activities are determinants of improved memory, tweeting has a much larger influence. This is consistent with our theory for social accountability – typically Twitter has a more extensive *reach* compared to SMS text messaging. As one of the most important motivations for those on Twitter is to have their posts noticed, and ideally "passed along" (i.e. retweeted) to a wider audience (Araujo, Neijens and Vliegenthart 2015), it is logical to also assume that tweeting carries a greater level of social accountability compared with text messaging.

LIMITATIONS

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The analysis presented in this paper focuses on the number of billboard advertisers recalled and recognized, rather than considering *explicit* advertisements *per se*. We thus focus on two measures of *memory* (recall and recognition), while studies of specific advertisements typically also consider changes in brand attitude and purchase intentions. While incidental advertising is an important aspect of marketing practice, it is not completely clear to what extent our theory is relevant for explicit advertisements. A memory task for different types of ad would therefore test the generalizability of the theory to wider contexts. Moreover, whilst this study is based on a single televised soccer match, where the set of advertisements were relatively consistent in their display, it should be remembered that not all embedded advertising (e.g. product placements, billboards, etc.) are standardized. Future studies should investigate design formats in greater depth, considering whether differential effects exist, for example, between heavily worded and pictorial approaches in a media multitasking environment.

The study draws on a respondent completed survey, capturing important aspects of media multitasking activities. However, given the nature of the method it is not possible to independently verify responses (Duff et al. 2014). In contrast, some studies use a video-graphic approach (Ducheneaut et al. 2008; Jayasinghe and Ritson 2013) which allows for a more detailed analysis of the influence of the spatial context (layout of living rooms, distance from screens) and social interaction (specific conversations) on advertising responses. However, pursuing this approach for (larger sample) quantitative studies is more difficult, given access constraints, when seeking to model outcomes for advertising embedded within a single, specific program.

IMPLICATIONS FOR PRACTICE

This research should be reassuring to television and advertising executives in that they need not be overly pessimistic about the increasing trend of media multitasking. Whilst certain multitasking activities result in distraction and lower advertising effectiveness, others, if harnessed properly, may even be beneficial. From our results, the most effective way of achieving this is to encourage viewers into a dialogue about the show while it is broadcast. There are some excellent examples of good practice in this regard. For example, executives of US drama series *Bones,* actively works to build a tight knit online community. The show's Twitter account is highly interactive – with actors and writers participating in the discussion as the show airs. Moderators offer advice to fans, who know that if they ask a question or leave a comment, they are likely to get a quick reply. This type of commitment to second-screen engagement represents the type of show advertisers should prioritize when considering product placements and other forms of embedded advertising.

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TABLE 1
PRIOR STUDIES ON THE EFFECT OF MEDIA MULTITASKING FOR ADVERTISING MEMORY

		Multitasking Activity					
Authors (year)	Context	Primary Activity	Secondary Activity	Congruent Multitasking?	Socially Accountable Multitasking?	Dependent Variable (DV)	Effect on DV?
Armstrong & Chung (2000)	The effect of background television on reading memory	Reading	Background television	No	No	Recall Recognition	Background television has a negative effect on unaided recall Background had no significant effect on recognition
Zhang et al. (2010)	The effect of multitasking and sexually explicit content on recognition	Watching television	Doing online homework	No	No	Recognition	Multitasking leads to negative recognition on TV content. Higher levels of sexual content in TV shows improves recognition when multitasking.
Voorveld (2011)	The effect of combining online and radio advertising on cognitive responses	Using the internet	Listening to the radio	Yes	No	Recall	Auditory information (radio) had a negative influence on both type of recall.
Bellman et al. (2012)	The effect of coviewing on delayed recall	Watching television commercials	(i.) Talking to another viewer	Yes	No	Recognition	Communicating with a coviewer was negatively associated with recall.

Bellman et al. (2014)	Effect of social television versus solo viewing on ad recall and brand attitude	Watching television commercials	(i) Talking to another viewer, (ii) messaging another viewer	Yes	Partially	Recall	Multitasking through a coviewer (versus solo viewing) leads to lower recall. Texting with a partner leads to positive (but non-significant) improvements in recall.
Duff and Sar (2015)	The role of holistic and analytic processing styles on ad memories when multitasking	Watch commercials on a computer (in the top section of the page)	View and note shape patterns (slashes & backlashes) displayed at the bottom section of the computer page.	No	No	Recognition (and recollection recognition)	Multitasking led to negative recognition in the wider sample, but is moderated by processing style. Holistic processors are just as able to recollect advertisements (in fact better) when multitasking as those people simply watching the ads (no multitasking).

TABLE 2
DESCRIPTION OF VARIABLES

Dependent variables

Recall   No. of field sponsors recalled unprompted (categorical: 1 = 0; 2 = 1; 3 = 2+)

Recognition   No. of field sponsors recognised aided (categorical: 1=0; 2 =1; 3= 2; 4 = 3; 5 = 4+)

Independent variables
Football related (Congruent) multitasking

GAMETEXTSEND   During match, number of match related texts (SMS messages) sent

GAMETEXTREAD   During match, number of match related texts (SMS messages) read

GAMETWEETPOST   During match, number of match related tweets posted

GAMESURFAPP   Percentage of the match spent surfing the web / using mobile apps for match related activities

Non-football related (incongruent) multitasking

NGAMETWEETPOST   During match, number of non-match related tweets posted

NGAMESURFAPP   Percentage of the match spent surfing the web / using mobile apps for non-match related activities

Controls
Programme
Connectedness
FANINV   Composite for fan involvement scale

Emotional context
MOODAROU   Composite for arousal scale

Social setting
BIGSCREEN   Watch on big screen (e.g. public house / bar)

NUMBERWATCH   Number of other people watched match with

%WATCH   Percentage of the match watched

WELSH   Nationality – Welsh

OTHERNAT   Nationality other than English or Welsh

UNINEW   Newcastle University student

UNIPLY   Plymouth University student

TABLE 3
RATE OF RECALL AND RECOGNITION

	Number	%
Unaided recall		
Zero billboard advertisers recalled	104	58.1
One	49	27.4
2 or More	26	14.5
Total	179	100.0
Recognition (number of correct responses)		
Zero	51	28.5
One	50	27.9
Two	40	22.3
Three	21	11.7
Four or more	17	9.5

TABLE 4:
MIXED-EFFECTS ORDERED LOGIT MODEL FOR RECALL AND RECOGNITION

| | Dependent Variable | | | | | |
| | Recall | | | Recognition | | |
	Coefficient (St. Error)	Z	Sig	Coefficient (St. Error)	Z	Sig
Block 1: Incongruent / Low Social Accountability						
NGAMETWEETREAD	-.001 (.00)	-3.180	**	.001 (.00)	7.710	**
NGAMESURFAPP	-.004 (.00)	-5.800	**	-.004 (.00)	-.201	*
Block 2: Incongruent / High Social Accountability						
NGAMETWEETPOST	-.027 (.05)	-.570	NS	-.090 (.00)	-12.260	**
Block 3: Congruent / Low Social Accountability						
GAMETEXTREAD	-.001 (.01)	-.670	NS	-.004 (.01)	-1.540	NS
GAMETWEETREAD	-.007 (.00)	-28.280	**	-.000 (.00)	-16.840	**
GAMESURFAPP	-.004 (.00)	-4.510	**	-.009 (.00)	-3.020	**
Block 4: Congruent / High Social Accountability						
GAMETEXTSEND	.012 (.02)	.550	NS	.087 (.00)	10.710	**
GAMETWEETPOST	.504 (.02)	20.610	**	.289 (.01)	23.120	**
Block 5: Control Variables						
FANINV	.395 (.03)	15.230	**	.382 (.11)	3.560	**
MOODAROU	-.104 (.05)	-2.250	*	-.140 (.00)	-15.150	**
BIGSCREEN	.247 (.03)	7.630	**	.261 (.10)	2.680	**
NUMBERWATCH	-.240 (.13)	-1.860	*	-.458 (.06)	-7.270	**
%WATCH	.007 (.00)	1.630	NS	.005 (.00)	2.650	**
WELSH	.116 (.08)	1.400	NS	.382 (.02)	14.770	**
OTHERNAT	-1.136 (.29)	-3.990	**	.248 (.27)	.920	NS
UNINEW	2.42 (.23)	10.690	**	1.496 (.34)	4.360	**
UNIPLY	.814 (.09)	8.850	**	.833 (.03)	25.120	**
Random Effects						
Student	.114 (.05)	-	-	.105 (.06)	-	-
Age	.060 (.038)	-	-	.259 (.05)	-	-
Gender	.028 (.03)	-	-	6.11E-30 (1.57E-29)	-	-
Model Fit						
Log pseudolikelihood	-147.134			247.378		
AIC	300.268			499.884		
BIC	309.831			503.071		

Note: Standard Errors (St. Errors) are adjusted for clustering on Students. Total Observationsn = 179.
** p<.01; * p<.05; NS = Not Significant

FIGURE 1:
MEMORY OUTCOMES FOR EMBEDDED ADVERTISING WHEN MULTITASKING