

A COMPARISON OF THREE INTERACTIVE TELEVISION AD FORMATS

Steven Bellman, Anika Schweda, & Duane Varan

ABSTRACT: This study explores the effects of interacting with three current interactive television (iTV) ad formats, using an Australian audience panel. Interaction with iTV ads has positive effects on awareness and net positive thoughts, which increase purchase intentions compared with the influence of regular ads. The telescopic format represents the best format, likely because it makes the most of the entertaining possibilities of iTV by offering additional long-form video; its superior performance cannot be explained readily by self-selection effects. The results suggest that the effectiveness of iTV ads should be measured by their interaction rate rather than the much smaller response rate, and iTV advertisers should consider ways to maximize interaction and response rates.

Keywords: Interactive digital television, advertising, experiment, interactivity, self-selection, telescopic ads.

The digitization of television introduces new capabilities to television viewing experiences, including interactive formats for advertising (Cauberghe and De Pelsmacker 2006). In the United States, Canoe Ventures, a joint initiative by the six largest cable companies, including Cablevision Systems, Comcast, and Time Warner Cable, promises to roll out interactive television (iTV) ads to 38 million homes that already have two-way communication digital cable boxes installed. Viewers watching these ads can use their remote controls to request information about a product, such as a brochure or more information onscreen, or even buy the product (Arango 2008; Petrecca 2008). Interactive TV advertising services are also likely to feature on emerging platforms such as IPTV (Loughney, Eichholz, and Hagger 2008; Schechner and Kumar 2009) and mobile phones (Nasco and Bruner 2007); they are already present on some video-on-demand (VOD) and digital video recorder (DVR) services (Manly 2006). This study provides an exploratory investigation of a key question for broadcasters and marketers: How effective are these new iTV ads?

To answer this question, we test not just one but three major iTV ad formats currently in use around the world (Cauberghe and De Pelsmacker 2006). By testing three formats, we can investigate whether iTV ads are effective in general or only with the most appropriate format.

The *impulse response* (see Appendix 1) format is widely used on the British Sky Broadcasting platform in the United Kingdom, and a similar format was deployed between 1999 and 2004 on the "Wink" platform in the United States (now owned by OpenTV; <http://www.opentv.com>). Similar to other formats, these ads have an "interactivity" icon superimposed over the standard video ad. This icon is typically accompanied

by a text message that invites viewers to press a button on their remote control (i.e., the red button on Sky, the SELECT/OK button on Wink/Open TV) to take advantage of an offer, such as a brochure or "call back," or enter a sweepstake. The interactivity in impulse response ads is very limited, often involving only a second button press (e.g., the blue button on the Sky platform) to confirm "taking" the offer, which prevents accidental requests and ordering by young children. Because the interactivity is so simple, the accompanying messages fit easily on banners superimposed over the regular ad, which plays out normally underneath them. If the offer requires details such as a name or telephone number, which can take several minutes to enter, the banners will superimpose over the next content (which on Sky is always a program, because the iTV ads are always last in a break), until the interaction is complete.

Dedicated advertiser location (DAL) ads (see Appendix 2) allow much greater interactivity, because they resemble miniature Web sites ("microsites"). However, to view them, the interactor must leave his or her live video content. These pages are sub-channels, obtained by dividing the main channel's allocated bandwidth, which limits the number of pages that can be used and the type of content displayed (e.g., audio/video versus text/stills). These pages tend to resemble a PowerPoint presentation, but interactors can navigate freely (change channels) between pages by pressing buttons on the remote control. Again, this format is widely used on Sky in the United Kingdom.

Telescopic ads (see Appendix 3) also take viewers away from the program but to extended audiovisual ("long-form") content, downloaded on demand or stored in advance on the viewer's DVR. Thus, viewers can pause the program to view a

telescopic ad and not miss anything. This format is similar to TiVo's "showcase" (Harmon 2003) and was introduced in the United Kingdom by Sky as the VAL (video advertiser location) in late 2007 (McLachlan 2009). Examples of all three formats can be viewed on the Sky Media (2009) Web site.

We compare the effectiveness of these three iTV ad formats in two ways. First, we assess their interaction rates. The main benefit of iTV ads for advertisers is their ability to generate timely responses from self-qualifying prospects (Marcus 2008). Responding to TV ads is more attractive to viewers when they can do so without missing any content, so response rates tend to be higher for iTV ads than for traditional free phone call ads, which are also more expensive to implement (Harvey 2004; Schreiber 2008). Similar to previous studies (e.g., Levy and Nebenzahl 2006, 2008), we investigate how much the interaction rate may depend on involvement with the product, which is a measure of how qualified the respondent is. The performance of iTV advertising campaigns can be gauged by their ability to select a target audience for the campaign, namely, those viewers who are most interested in the advertised product (Marcus 2008).

Second, we measure the effects of iTV ads on awareness and persuasion. The ability of iTV ads to generate responses from qualified prospects may be all that advertisers consider, but just as Web banner ads do more than generate click-through actions, iTV ads might do more than more than simply "harvest" consumers already sold on the brand by other forms of advertising (cf. Loughney, Eichholz, and Hagger 2008). Intuitively, interactors should be more interested in the product but after interacting also be more aware of the advertised brand, with more favorable attitudes and intentions toward it, than non-interactors. These differences provide useful checks of how well an iTV ad selects useful respondents. However, we go beyond simple checks to explore whether any of these potential positive effects may be due to interaction with the ad. If interaction with iTV ads has positive effects on awareness and persuasion, iTV ads could be designed and tested to maximize these effects and thus occupy an even more important role in the advertising mix.

We measure awareness using ad recall and persuasion by brand purchase intentions. These important measures of effectiveness for regular TV ads are also critical for no-response iTV ads, such as those that provide information or games. One-third or more of interactions with iTV ads that make offers are no-response interactions; that is, the offer does not get accepted (Harvey 2004). Is it possible that these "failed"

interactions have a positive benefit for the advertiser? Case studies by Sky suggest that interaction with iTV ads may influence awareness and persuasion, even when the offer is not accepted. For example, half of the interactors not interested in Dulux paint prior to an interaction said afterward that they were likely to purchase the brand (Sky Media 2009). Scanner data from Sky's viewer panel, SkyView, also shows an increase in purchasing after interaction, across product categories (McLachlan 2009). Controlled lab studies also reveal that iTV ads increase awareness, brand attitude (Bellman, Pribudi, and Varan 2004; Cauberghe and De Pelsmacker 2008c), and behavioral intentions (Reading et al. 2006).

We test for the persuasive effect of iTV ads using a measure recommended for ad testing by Rossiter and Percy (1997) that conveniently combines awareness and intention in one number: weighted purchase intention, or awareness \times intention. Greater awareness increases sales only if purchase intentions are favorable, and higher purchase intentions increase sales only if consumers can remember the brand (Ehrenberg, Barnard, and Scriven 1997). Note that we measure intention to purchase rather than actual purchasing (Jensen 2005; Johnson 2006; Petrecca 2008), as others have done with iTV ads (Levy and Nebenzahl 2008). We choose this measure not only to compare iTV ads with regular ads but also because iTV purchase ads are still very rare in the field; only 1% of Wink ads, and no Sky ads at all, have been purchase ads.

In the next section, we develop research questions about why viewers might interact with iTV ads and why interaction with iTV ads generally, or some iTV ad formats rather than others, might be associated with a positive effect on purchase intentions. We also offer a brief discussion of the method we use to differentiate self-selection response effects from the potentially positive effects of interaction. We then describe our experiment and report its results. Finally, we conclude with a discussion of the implications of our study for advertisers and further research.

LITERATURE REVIEW

Cauberghe and De Pelsmacker (2006, p. 23) define interactive digital television as "a group of technologies that gives users the possibility to take control over their TV experience, enabling interactivity with the content." The key term in this definition is "interactivity." In this section, we develop seven research questions about what drives viewers to interact with iTV ads and what effects might result from interactivity.

Product Category Involvement

For advertisers, one of the most useful aspects of iTV ads is their ability to "cherry pick" the viewers most interested in buying the advertised product. Product category involvement increases the personal relevance of ads for that category (Rothschild 1979), especially when a person is "in the market" (Richins and Bloch 1986), which makes it more likely that ads will be processed more extensively (Celsi and Olson 1988; Greenwald and Leavitt 1984; Petty, Cacioppo and Schumann 1983) and that viewers will want to click on an interactive ad to find out more about the advertised brand (Mathwick and Rigdon 2004; Yang et al. 2006).

But what if iTV ads could collect responses from viewers who were not as involved with the product category? This capability would spread the potential benefits of interacting to those viewers who could be most affected by it, that is, those not already sold on the advertised brand by information they already have. Levy and Nebenzahl (2006, 2008) repeatedly find that higher product category involvement is positively associated with interacting with iTV ads, though they measure product involvement *after* the interaction, which implies it could have been an effect rather than a cause of interactivity. The effects of ad execution variables, such as the use of comparative advertising (Pechmann and Esteban 1993), are especially strong at moderate levels of involvement, at which they can function as both peripheral and central cues. The presence of interactive enhancements, which can serve as peripheral or central cues (Liu and Shrum 2009), also might have a similarly compelling effect at moderate or even lower levels of prior product category involvement. Recently, Liu and Shrum (2009) manipulated message involvement using a sample that varied in product involvement and found that even low message involvement participants interacted to some extent, though significantly less than high message involvement participants. These findings suggest that though there is undoubtedly a positive correlation between product category involvement and the extent of interactivity, minimal interactivity, such as pressing a button on a TV remote control, might occur at a low threshold of involvement. Our first research question sets out to explore this possibility:

RQ1: Can iTV ads generate interactions from viewers who are not highly involved with the advertised product category?

Effects of Interactivity on Awareness and Persuasion

Research into interactivity and its effects has been plagued by vagueness and inconsistency in the definition of what, exactly, "interactivity" is (Bucy and Tao 2007; Rafaeli and Ariel 2007). Nevertheless, various studies demonstrate that the availability of interactive features, such as hyperlinks, search engines, and messaging capabilities, give rise to perceptions of interactivity, which fully mediate the influence of objectively measured interactivity on measures of communication effects, such as evaluations of a Web site (Song and Zinkhan 2008; Wu 2005). Ratings of perceived interactivity appear to measure the distance between the current interaction and the "gold standard" for interactivity: face-to-face conversation (Rafaeli and Ariel 2007; cf. Bucy and Tao 2007). Various dimensions of perceived interactivity include active control, two-way communication, and synchronicity (Liu 2003; Liu and Shrum 2002; see also Johnson, Bruner, and Kumar 2006; Sohn and Lee 2005), though all these subdimensions are characteristic of face-to-face conversation (Rafaeli and Ariel 2007). Like a good teacher, interactive stimuli identify the points that need to be learned and can repeat them until the receiver knows them by heart (Schaffer and Hannafin 1986). Like a persuasive salesperson, interactive stimuli can identify and answer objections, increase the expected value of desired outcomes, bolster the customer's belief the outcomes are possible, and adapt goals to the stage of the behavior-change process (Cassell, Jackson, and Cheuvront 1998). Moreover, the consistency, persistence, and access to data associated with computerized applications give them the potential to be better teachers and more persuasive salespeople than human interactors (Fogg 2003).

At a minimum, the addition of interactive opportunities to a video advertisement should clarify its key points for passive, low-involvement viewers (Schaffer and Hannafin 1986), who have limited capacity to comprehend audiovisual experiences (Lang 2000). This identification of key points and goals (Janiszewski 1998) and the need to be prepared to act on them should motivate the application of extra resources to make more capacity available for encoding, storage, and retrieval of key points (Cauberghe and De Pelsmacker 2008b; Lang 2000; Lustria 2007). Similar to motivated message processors generally (MacInnis, Moorman, and Jaworski 1991), interactors should process the ad more deeply (Liu and Shrum 2002; Sundar and Kim 2005) and generate more thoughts about the ad (Celsi and Olson 1988; Sicilia, Ruiz, and Munuera 2005). The longer experiences offered by iTV ads also offer more time for elaborating on the ad's message (Cauberghe and

De Pelsmacker 2008c), similar to the thinking space created by the repetition of regular ads (Cacioppo and Petty 1979; Campbell and Keller 2003). Greater elaboration and more thoughts about the key points in the ad will offer more opportunities to rehearse them, so that they are more likely to be recalled (Cacioppo and Petty 1979; Greenwald and Leavitt 1984). Therefore, we investigate whether interactors with iTV ads generate more thoughts about the ad and therefore have a higher level of ad recall than non-interactors, as well as compared with viewers of regular TV ads.

RQ2: Can interaction with iTV ads increase thinking about the ad and ad recall?

A rule of thumb used by media planners suggests three exposures to a regular ad are necessary to communicate its message and maximize its effectiveness (Krugman 1972; Naples 1997), especially when advertising unfamiliar (Jones 1997) or low-involvement (Katz 2007) brands. With audience fragmentation and TV ad avoidance increasing, achieving this goal is more and more difficult. Previous research shows that a single interaction with a DAL iTV ad can deliver the same levels of awareness as three exposures to a regular ad (Bellman, Pribudi, and Varan 2004). In our third research question, we consider whether this new rule of thumb applies across iTV ads generally:

RQ3: Do interactors with iTV ads exhibit a level of ad recall equal to or greater than the level of ad recall associated with three exposures to a regular TV ad?

Generating more thoughts about the ad is unlikely to encourage buying if all these thoughts are negative. The overall evaluation of the advertised brand depends on how many positive thoughts get generated, relative to negative thoughts (Cacioppo and Petty 1979; Sicilia, Ruiz, and Munuera 2005). Usually, an excess of positive thoughts is summarized by a positive attitude toward the ad; in the absence of any prior information about the brand, a positive attitude toward the ad generally is predictive of a favorable brand attitude and purchase intentions (Brown and Stayman 1992; MacKenzie and Lutz 1989). Therefore, we propose the following research question:

RQ4: Does interaction with an iTV ad increase net positive thoughts about the ad?

We further consider whether interaction with iTV ads has a positive effect on sales (estimated using weighted purchase intention), which seems likely if the answers to our previous research questions are positive. That is, interactors with iTV

ads should be more aware of the advertised brand than non-interactors and generate more net positive thoughts about the brand. Then,

RQ5: Can interaction with an iTV ad increase the probability of purchasing the advertised brand?

Evidence in support of this hypothesis comes from previous studies by Cauberghe and De Pelsmacker (2008c), who find a positive effect of interactivity on attitude toward the brand, and Sundar and Kim (2005), who reveal that purchase intentions increase in line with higher levels of interactivity.

Potential Differences Between iTV Ad Formats

As well as testing for a generally positive effect of interaction with iTV ads on awareness and persuasion, we are interested in testing the relative effectiveness of the three main iTV ad formats. Previous research identifies an "interactivity paradox" (Bucy 2004), such that adding interactivity can generate negative and positive thoughts, resulting in an inverse U-shaped effect (Cauberghe and De Pelsmacker 2008b; Liu and Shrum 2009; Sundar, Kalyanaraman, and Brown 2003). At low to moderate levels, interactivity allows consumers to control the information flow; thus, "customer needs are uncovered, met, modified, and satisfied" (Bezjian-Avery, Calder, and Iacobucci 1998, p. 23). But at higher levels of available interactivity, the advantages of access to the right pieces of information may come at the cost of more time and effort (Rogers 1986), as well as the need to split resources across two tasks: comprehension and navigation (Yeung, Jin, and Sweller 1997). Therefore, when Ariely (2000) increases the demands on available processing capacity, he finds negative effects of greater control over the information flow.

Our comparisons among the three formats focus on the DAL (microsite) format, which is closest to Web site interactivity and the most expensive to buy (Sky Media 2009). We explore whether the DAL format, with its greater ability to provide a customized flow of information, enables interactors to process the content of an iTV ad more deeply and generate more thoughts about the ad. Because DAL navigators can select the pages of content they need to see, more thoughts may be positive rather than negative. Therefore, DAL ads may be more persuasive than the other two formats, as measured by weighted purchase intention.

However, interacting with the DAL format may generate more negative thoughts than interacting with the other two formats, for several reasons. First, the DAL experience is not "as engaging and genuinely interactive as web advertising"

(McLachlan 2009, p. 28). If DAL ads cannot match interactors' expectations, they may rate these interactive ads less favorably (Sohn, Ci, and Lee 2007). Second, the return delivered by DAL pages may not balance the effort required to retrieve it, especially for "lazy interactors"-a description that likely fits iTV viewers, who use a remote control to navigate rather than a mouse or a keyboard (Jensen 2005). An excess of negative over positive thoughts will generate a negative attitude to the ad and therefore a less favorable brand attitude and purchase intentions, especially if the brand is unfamiliar (Brown and Stayman 1992), as all the brands we test are. With the following research question, we investigate how DAL ads compare with the other two iTV ad formats:

RQ6: Do interactors with DAL iTV ads (a) generate more thoughts about the ad, (b) have higher levels of ad recall, (c) have more net positive thoughts, and (d) exhibit a higher probability of buying the advertised brand, compared with interactors with the two other iTV ad formats, impulse and telescopic?

Prior research suggests that telescopic ads can be more effective than regular ads (Reading et al. 2006), but we have no prior studies on which to base expectations about how they will compare with impulse response ads. Both formats offer relatively limited interactivity, which still should increase the motivation to process the key points of the ad and therefore ad memorability (Cauberghe and De Pelsmacker 2008b; Schaffer and Hannafin 1986). However, the long-format video experience delivered by telescopic ads may provide more time to process the ad (Singh and Cole 1993), allow more space to elaborate on the ad's message (Cacioppo and Petty 1979), and potentially provide "vicarious product experiences," similar to those that give long-form infomercials an edge over 30-second ads (Singh, Balasubramanian, and Chakraborty 2000). We ask, therefore, whether telescopic ads are more effective than impulse ads:

RQ7: Do interactors with telescopic iTV ads (a) generate more thoughts about the ad, (b) have higher levels of ad recall, (c) have more net positive thoughts, and (d) exhibit a higher probability of buying the advertised brand, compared with interactors with impulse iTV ads?

METHOD

We use a controlled experiment to test the effects of interaction with three currently employed iTV ad formats, using an audience panel recruited through newspaper advertisements and direct mail from the general public in an

Australian city. This study was carried out during March-May 2005 as the first of a series of proprietary studies investigating future trends in television advertising and programming, sponsored by a global consortium of companies, including television networks, media buyers, and advertisers (<http://www.beyond30.org/>). This balance of interests helps ensure the independence of the research.

SAMPLE

This study was conducted in Australia to take advantage of a well-equipped audience research laboratory with eight years of experience in developing and testing interactive TV applications. The obvious disadvantage of using an Australian panel is that it contains no U.S. consumers. But Australia is culturally similar to the United States (e.g., on Hofstede's [1980] individualism-collectivism index, Australia scores 90 [#2], and the United States scores 91 [#1]), and the main language in both countries is English. American programs fill Australian network schedules, so the cover story for the participants in our study was that they were evaluating whether a new U.S. show should be aired on Australian TV. They were told that because the show had been recorded in the United States, it included U.S. ads in the ad breaks. This story enabled us to advertise unfamiliar brands from product categories that were readily available in the local market, using finished/actually aired ads, a manipulation that can be difficult to achieve in the United States (Brasel and Gips 2008). Any effects we observe cannot be explained by prior exposure (Campbell and Keller 2003).

Participants were invited to undertake a one-hour study in return for a AUD\$20 department store voucher. The final sample ($N = 559$) contained more women than men (66% versus 34%) but ranged widely in age (18 to 84 years, $M = 37.90$, $SD = 15.61$). Only 20% were students, and only 30% had some college education or higher.

EXPERIMENTAL DESIGN

The 559 participants were randomly allocated across four conditions: (1) impulse response ($n = 140$), (2) DAL ($n = 129$), (3) telescopic ($n = 219$), and (4) control (regular versions of the test ads, $n = 71$). More participants were required for the interactive conditions to allow for non-interaction, especially in the telescopic condition, which offered just one interactive opportunity to view a long-form video lasting several minutes, in addition to the half-hour TV program.

Examples of the three interactive conditions, for three of the five test brands, appear in the Appendices. For all three iTV ad

formats, the direct response offer (the "call to action," or CTA) is a banner ad superimposed over the regular ad. For the two low-ticket products tested, the offer is a sample of the product, whereas for the two high-ticket products, the offer features a brochure. The fifth test "brand" is a TV program; for this ad, the offer involves scheduling a recording of the program. To avoid confounding interactivity with the presence of direct response offers, the same offers get superimposed over the control ads using crawling text messages (with responses to be made later, via phone or Web site). The CTA offers for the DAL and telescopic conditions differ slightly, because it is possible for these ads to provide more information on screen. A "please wait" banner ensured that participants saw the whole regular ad before the "home page" of the DAL displayed or the telescopic long-form video ran. The DAL "sites" averaged a total of three interactive screens, each of which could be viewed multiple times. This additional content amplified the brand attributes communicated by the regular ad, without adding new features (i.e., we manipulated interactivity rather than information content; Cauberghe and De Pelsmacker 2008c; Sohn, Ci, and Lee 2007; Sundar, Kalyanaraman, and Brown 2003). On exiting the DAL, interactors returned to where they had left the TV content, just like viewers in the telescopic condition, which reproduced delayed viewing with a DVR. Interaction time was optional in the DAL condition, but in the telescopic condition, interactors were forced to view the entire long-form ad (Reading et al. 2006).

In Table 1, we detail the five test ads and the 17 filler ads, as well as the duration of each long-form video used in the telescopic condition. The test ads and fillers are a representative mix of high- and low-ticket product categories, target audiences, and ad durations, all from the United States and all professionally finished, if not actually aired, to avoid highlighting the test ads (Chattopadhyay and Nedungadi 1992). Participants in all four conditions saw three test ads: two product test ads, one for a high- and one for a low-ticket product (selection and order counterbalanced), and a third test ad for the TV program. Including fillers, each participant saw a total of 20 ads, in four ad breaks, each of which contained five ads (average break duration = 2:30, which reflects the 1:2 ads-to-program ratio used on cable networks; Brasel and Gips 2008). These breaks appeared at the beginning, the end, and twice in the middle of a half-hour situation comedy. The two product test ads always appeared in the middle position in the second and third ad breaks. This middle position helps avoid serial position effects (Terry 2005). The TV program test ad always appeared in the second ad break, in the last position, which is the natural position for program promotions on Australian television, and position is less important for program promotions (Eastman, Newton, and Bolls 2003). The filler ads were edited together as blocks and always appeared in the same positions (see Table 1).

Table 1. Ads Used in the Experiment

Ad Break: Ad	Category	Ticket Price	Likely Target	Duration
Test Ads				
2:3/3:3	Cookies	Low	All Ages	:30/:60
2:3/3:3	Chocolate bars	Low	Teens	:60/2:50
2:3/3:3	Automobile (sports car)	High	Men	:60/2:05
2:3/3:3	Automobile (SUV)	High	Men/Women	:30/3:24
2:5	TV program promotion (crime/drama)	Low	Men/Women	:30/2:46
Filler Ads				
1:1	Packaged goods (instant/frozen meals)	Low	Men/Women	:30
1:2	Pharmaceutical (allergy medication)	High	Men/Women	:15
1:3	Packaged goods (canned soup)	Low	Men/Women	:30
1:4	Packaged goods (chewing gum)	Low	Kids/Teens	:30

1:5	TV program promotion (crime/drama)	Low	Men/Women	:30
2:1	Health & Beauty (lipstick)	High	Women	:15
2:2	Financial services (check card)	High	Men/Women	:30
2:3	PRODUCT TEST AD			
2:4	Clothing and Accessories (menswear)	Low	Boys/Men	:30
2:4	TV PROGRAM PROMOTION TEST AD			
3:1	Consumer electronics	High	Men/Women	:30
3:2	Insurance (automotive)	High	Men/Women	:30
3:3	PRODUCT TEST AD			
3:4	Packaged goods (steak sauce)	Low	Men/Women	:30
3:5	TV program promotion (reality)	Low	Men/Women	:30
4:1	Financial services (credit card)	High	Men/Women	:30
4:2	Packaged goods (chewing gum)	Low	Men/Women	:30
4:3	Packaged goods (mayonnaise)	Low	Men/Women	:30
4:4	Telecommunications (mobile phone)	High	Men/Women	:30
4:5	TV program promotion (crime/drama)	Low	Men/Women	:30
<i>Notes:</i> All ads were professionally produced/aired in the United States. Durations for test ads indicate short form/long form.				

PROCEDURE

All participants viewed the content in individual viewing labs designed to encourage natural viewing. Each lab had a regular TV set, a comfortable chair, pictures on the wall, and potted plants. Participants watched a half-hour U.S. sitcom and voted, using their remote controls, whether the new series of this show should air in Australia. They first saw a standard set of video instructions: "Colored buttons on the screen can be selected with the corresponding color button on your remote control. Any time you press a button it goes to the set-top box which can record shows and send requests for you." Even the control condition participants had to use their remote controls to advance through these instructions and vote electronically at the end of the show, but otherwise, interaction was not forced. Interaction was optional, because our objectives include observing viewers behaving as naturally as possible and testing differences in the attractiveness of iTV ads and therefore in their interaction rate. After the session,

participants completed a paper-and-pencil questionnaire in another room, were thanked and compensated, and, if they consented, were phoned the next day to measure their day-after recall (333 [60%] consented).

MEASURES

Thought Listings

The posttest survey asked about four of the ads participants had seen (3 test, 1 filler, except for the telescopic condition, which had 2 test, 2 fillers). Before answering any other questions on the questionnaire, participants listed all the thoughts they had while viewing these ads, using a separate line for each thought, which they self-coded as positive (+), negative (-), or neutral (N) (Rossiter and Percy 1997; agreement between self-coding and judge coding is usually high, such as 98% in Petty et al. 1993). *Total thoughts* refers to the line count, and *net positive thoughts* is the number of positive thoughts minus the number of negative thoughts.

Weighted Purchase Intention

In Table 2, we describe how we frame and weight the 11-point Juster (1966) purchase intention (PI) scale to predict purchasing, depending on whether the product is a high-ticket, planned purchase or a low-ticket, regular purchase. To assess the reliability of this single item, we combine it with two 9-point PI scales used by Bone and Ellen (1992; $\alpha = .96$ to $.98$

across five test brands). We also reveal how we estimated the percentage of buyers per cell (Rossiter and Percy 1997). For these data, both estimates of purchase incidence are practically identical, which suggests our weighted PI results are not affected by distributional anomalies (e.g., bimodal distributions).

Table 2. Weighted Purchase Probability Measure

Scale Point	High Ticket	Low Ticket
Certain or practically certain (99% chance).	.55	.99
Almost sure (90%).	.50	.76
Very probable (80%).	.45	
Probable (70%).	.40	
Good possibility (60%).	.35	
Fairly good possibility (50%).	.30	.40
Fair possibility (40%).	.25	
Some possibility (30%).	.20	
Slight possibility (20%).	.15	
Very slight possibility (10%).	.10	.06
No chance or almost no chance (0%).	.5	
Don't know.	Missing	
Brand-prompted day-after recall = 1	As above	
Brand-prompted day-after recall = 0	.0	No change
Brand-prompted day-after recall = Missing	Missing	

Notes: Bold numbers indicate purchase probabilities $\geq .50$, which we use to identify "predicted purchasers," so that the top 2 box ratings can be used for both High- and Low-Ticket products. Items for High-Ticket products are framed conditionally: "If you did need to purchase a car, *what is the probability* that you would buy a BRANDNAME car (assuming they were available)?" Items for Low-Ticket products used a regular-purchase framing: "The *next time* you purchase cookies, *what is the probability* that you will buy BRANDNAME cookies (assuming they were available)?" Because the TV program promotions attempt to encourage the viewer to make an appointment to watch the show (i.e., form an intention to watch), the purchase intention question for this category also uses conditional framing, in line with this category's level of prior involvement (crime/drama TV shows $M = 4.72$ [7-point scale], $p < .001$ versus 4 [the midpoint]; cf. cookies $M = 3.83$, chocolate bars $M = 2.82$, automobiles $M = 5.63$, all comparisons $p < .001$).

Source: Rossiter and Percy (1997).

Attitudes

The questionnaire went on to measure two attitudes, which we expected would mediate the effects of the number and valence of thoughts generated by the ad downstream to weighted PI. *Attitude toward the ad* (A_{ad}) is the mean (after reverse coding) of seven 7-point items anchored by informative-uninformative, clear-imprecise, complete-incomplete, well structured-badly structured, attractive-not attractive, interesting-boring, and agreeable-disagreeable (Perrien, Dussart, and Paul 1985; $\alpha = .91$ to $.95$). The measure of *attitude toward the brand* (A_b) uses the mean of four 7-point semantic differential items anchored by bad-good, dislike quite a lot-like quite a lot, unpleasant-pleasant, and poor quality-good quality (Gardner 1985; $\alpha = .93$ to $.96$).

Day-After Recall (DAR)

Participants telephoned the next day indicated whether they could recall the ad (Brown 1985). They were read a list of brands, including filler brands and a decoy brand that did not appear, and asked to indicate "yes" or "no" for each brand, according to whether they remembered seeing an ad for that brand during the experiment. They then were asked to describe each ad they claimed to remember. If the interviewer believed this description indicated recall of the ad, recall was coded as 1 but otherwise 0 (no contact = missing).

To measure the *product category involvement* levels for several product categories, including the four represented by the five test brands, we turn to the sign-up survey that participants completed when they joined the audience panel, an average of 10 days prior to participating in the experiment. Product involvement equals the mean (after recoding) of five 7-point items selected by Mittal (1995) from Zaichowsky's (1985) personal involvement inventory ($\alpha = .95$ to $.96$).

We also measure *demographics* according to the audience panel sign-up survey: age (date of birth), gender, education level, and occupation.

ANALYSIS

We created a repeated measures data set with one row for each test brand. Three test brands appeared in the control ($71 \times 3 = 213$), impulse response ($140 \times 3 = 420$), and DAL ($129 \times 3 = 387$) conditions, but the 219 participants in the telescopic condition had only one interaction opportunity ($N = 213 + 420 + 387 + 219 = 1,239$). In our telescopic condition, we created a within-subjects repeated-ad condition by substituting, in the "holes" left in the second and third breaks

by offering one instead of three interactive ads, the second and third repeats of a second test ad, first seen in the first ad break. The number of data points for each dependent variable varies, however, because of missing data (e.g., "don't know" responses, not being available for a DAR phone call). Data from the same participant were treated as independent, because we find no indication of serial correlation (Durbin Watson statistics: interactors 2.11, non-interactors 2.02, versus a critical value of 1.61, when $N \geq 100$, number of X predictors ≥ 3 , $p < .05$).

Controlling for Selection Bias

To test our research questions, we must identify how much of the differences between interactors and non-interactors is due to self-selection by already-persuaded participants, and how much might be due to the effects of the interaction. With the data from our control group, which saw regular, non-interactive TV ads, we can determine whether interaction with iTV ads does no more than select out the high-interest consumers from any group. If that were the case, the data from our interactors would be identical to data from an equivalent proportion of the control sample with higher product category involvement, and any differences we observe between interactors and non-interactors would be due entirely to this truncating effect of self-selection (Greene 2008). Because the average interaction rate for all three iTV ad formats is approximately 40%, we sort the data for each brand in the control condition by descending interest in the brand's category, with the top 40% in the high group and the bottom 60% in the low group (each participant contributes one row per brand, so the same participant could be in the high group for one brand and the low group for another). However, if interaction generates effects beyond those observed in the top 40% of the control group, it strongly suggests that interaction has persuasive effects beyond self-selection.

RESULTS

Descriptive Statistics

We list, in Table 3, the descriptive results for our key dependent measures across the four experimental conditions. We find no significant differences in response rates across the three iTV conditions, and the average is 41% ($422/1026$; $\chi^2(2) = 1.64$, $p = .440$; see Table 4). This interaction rate is higher than is likely in the field but low enough to dilute the effects of interactivity, so that there are no significant differences among the three iTV ad formats and regular ads when we combine interactors and non-interactors. In Table 4, we also compare interactors with non-interactors and provide the results for the

high- and low-involvement control groups. Consistent with the effects of self-selection, the high-involvement controls (the top 40%) provide a closer comparison to interactors in the iTV ad conditions. Finally, we use Table 5 to list the means, standard deviations, and correlations across all the measures we use to test our seven research questions. It also includes correlations that confirm the chain of interrelationships assumed by RQ2, RQ4, and RQ5. That is, total thoughts relate positively to DAR, which in turn relates to weighted PI. Net

positive thoughts have a positive correlation with A_{ad} , and A_{ad} has a positive correlation with A_b , which has a positive correlation with weighted PI. We find a negative correlation between product category involvement and weighted PI, aggregated across categories, which is a function of our PI weighting scheme that penalizes high-ticket items more (Table 2). Within each category, the correlation is positive (cookies $r = .11$, energy bars $r = .14$, sports cars $r = .12$, SUVs $r = .15$, crime/drama programs $r = .08$; all ns).

Table 3. Cell Means/Proportions, Combining Interactors and Non-Interactors

Dependent Variable	Regular TV (Control) ^a	Impulse iTV ^b	DAL iTV ^c	Telescopic iTV ^d	iTV (combined) ^e
Product category involvement	4.64 (1.77, 213)	4.54 (1.65, 420)	4.58 (1.79, 387)	4.75 ¹ (1.72, 219)	4.60 ² (1.72, 1026)
Total thoughts	3.36 (1.75, 202)	3.28 (1.80, 388)	3.25 (1.89, 374)	3.25 ³ (1.75, 211)	3.26 ⁴ (1.83, 973)
Net positive thoughts	.57 (2.28, 202)	.46 (2.60, 388)	.35 ^d (2.54, 374)	.94 ^{e5} (2.69, 211)	.52 ⁶ (2.60, 973)
Day-after recall	59% (69/116)	56% (148/265)	65% (162/248)	67% ⁷ (87/129)	62% ⁸ (397/642)
Purchase probability	21.48% (27.68%, 143)	20.61% (25.97%, 309)	20.78% (25.71%, 283)	25.64% ⁹ (27.44%, 153)	21.71% ¹⁰ (26.22%, 745)

Notes: Net positive thoughts = positive thoughts minus negative thoughts. Superscript letters indicate significantly different comparisons (Tukey HSD tests) ($p < .05$). Standard errors and cell numbers/proportions are in parentheses.

¹ $F(3, 1235) = .80, p = .493, \eta^2 = .002$.

² $F(1, 1237) = .11, p = .742, \eta^2 < .001$.

³ $F(3, 1171) = .18, p = .907, \eta^2 < .001$.

⁴ $F(1, 1173) = .49, p = .483, \eta^2 < .001$.

⁵ $F(3, 1171) = 2.53, p = .056, \eta^2 = .006$.

⁶ $F(1, 1173) = .06, p = .811, \eta^2 < .001$.

⁷ $\chi^2(3, N = 758) = 7.23, p = .065, \eta^2 = .01$.

⁸ $\chi^2(1, N = 758) = .23, p = .679, \eta^2 < .001$.

⁹ $F(3, 884) = 1.42, p = .234, \eta^2 = .005$.

¹⁰ $F(1, 886) = .009, p = .925, \eta^2 < .001$.

Table 4. Cell Means/Proportions, Comparing Interactors and Non-Interactors

	Regular TV (Control)		Impulse iTV		DAL iTV		Telescopic iTV		iTV (combined)	
Dependent Variable	Bottom 60% ^a	Top 40% ^b	Didn't interact ^c	Interacted ^d	Didn't interact ^e	Interacted ^f	Didn't interact ^g	Interacted ^h	Didn't interact ⁱ	Interacted ^j
Product category involvement	3.64 ^{bcdefghij} (1.50, 127)	6.13 ^{acdefghij} (.85, 86)	4.57 ^{ab} (1.63, 245)	4.49 ^{ab} (1.69, 175)	4.56 ^{ab} (1.75, 222)	4.62 ^{ab} (1.83, 165)	4.68 ^{ab} (1.75, 137)	4.87 ^{ab1} (1.68, 82)	4.59 ^{ab} (1.70, 604)	4.61 ^{ab2} (1.75, 422)
Total thoughts	3.43 (1.73, 122)	3.26 (1.79, 80)	3.26 (1.75, 227)	3.32 (1.88, 161)	3.01 ^h (1.92, 214)	3.58 (1.81, 160)	2.94 ^h (1.71, 130)	3.74 ^{eg3} (1.70, 81)	3.09 ^j (1.81, 571)	3.50 ⁱ⁴ (1.82, 402)
Net positive thoughts	.36 ^{dhi} (2.31, 122)	.89 ^{ci} (2.22, 80)	-.16 ^{bdi} (2.72, 227)	1.33 ^{aceg} (2.12, 161)	.19 ^{dh} (2.47, 214)	.58 ^h (2.62, 160)	.44 ^{dh} (2.54, 130)	1.74 ^{acefg5} (2.74, 81)	.11 ^{bj} (2.60, 571)	1.11 ^{ai6} (2.50, 402)
Day-after recall	63% (41/65)	55% ^h (28/51)	56% ^{fh} (85/152)	56% ^{fh} (63/113)	57% ^{fh} (82/145)	78% ^{cdeg} (80/103)	54% ^{fh} (42/78)	88% ^{bcdeg7} (45/51)	56% ^j (209/375)	70% ⁱ⁸ (188/267)
Purchase probability	21.71% ^h (27.34%, 86)	21.14% ^h (28.42%, 57)	14.16% ^{dfh} (21.38%, 174)	28.93% ^{ce} (28.91%, 135)	17.20% ^{dh} (24.89%, 166)	25.87% ^c (26.10%, 117)	18.62% ^h (24.29%, 90)	35.67% ^{abcde9} (28.74%, 63)	16.27% ^j (23.42%, 430)	29.14% ⁱ¹⁰ (28.00%, 315)

Notes: We sort the control sample by product category involvement and divide it into a top 40% and bottom 60% for each of the five test brands, before re-aggregating the data. Net positive thoughts = positive thoughts minus negative thoughts. Superscript letters indicate significantly different comparisons (Tukey HSD tests or χ^2 tests) ($p < .05$). Standard errors and cell numbers/proportions are in parentheses.

¹ $F(7, 1231) = 17.17, p < .001, \eta^2 = .09$.

² $F(3, 1235) = 38.93, p < .001, \eta^2 = .09$.

³ $F(7, 1167) = 2.83, p = .006, \eta^2 = .02$.

⁴ $F(3, 1171) = 4.40, p = .004, \eta^2 = .01$.

⁵ $F(7, 1167) = 8.48, p < .001, \eta^2 = .05$.

⁶ $F(3, 1171) = 13.33, p < .001, \eta^2 = .03$.

⁷ $\chi^2(7, N = 758) = 34.77, p < .001, \eta^2 = .05$.

⁸ $\chi^2(3, N = 758) = 15.22, p = .002, \eta^2 = .02$.

⁹ $F(7, 880) = 7.63, p < .001, \eta^2 = .06$.

¹⁰ $F(3, 884) = 15.05, p < .001, \eta^2 = .05$.

Table 5. Means, Standard Deviations, and Correlations

Variable	1	2	3	4	5	6	7	8
1. Product involvement	-							
2. Interacted with iTV ad	.005 ^a	-						
3. Total thoughts	-.01	.09 ^{*c}	-					
4. Net positive thoughts	.13 [*]	.16 ^{*c}	.22 [*]	-				
5. Day-after recall	.36 ^c	.14 ^{*b}	.38 ^{*a}	.18 ^{*a}	-			
6. A _{ad}	.20 [*]	.16 ^{*c}	.13 [*]	.55 [*]	.24 ^{*a}	-		
7. A _b	.24 [*]	.16 ^{*c}	.09 [*]	.57 [*]	.17 ^{*a}	.63 [*]	-	
8. Purchase probability (%)	-.20 ^{*a}	.20 ^{*a}	.28 ^{*a}	.34 ^{*a}	.70 ^{*a}	.31 ^{*a}	.39 ^{*a}	-
Mean	4.61	.34	3.11	.50	.61	4.43	4.85	21.67
Standard deviation	1.72	.47	1.91	2.49	.49	1.54	1.66	26.45
N	1239	1239	1239	1239	758	1146	1071	888
<p>Notes: Pearson's <i>r</i> correlation coefficients, unless otherwise noted. A_{ad} = attitude toward the ad, A_b = attitude toward the brand.</p> <p>^a Spearman's ρ rank correlation.</p> <p>^b Nominal by nominal ϕ correlation.</p> <p>^c Nominal by interval η correlation.</p> <p>*$p < .05$.</p>								

Research Question 1

With RQ1, we investigate whether iTV ads can generate interaction from viewers who are not highly involved with the advertised product category. The data indicate the answer to this question is yes. When we divide the three iTV ad format conditions into high and low prior involvement groups using median splits, the proportion of interactors is identical in the low- and high-involvement groups for all three formats ($\chi^2(5) = 3.30, p = .654$). Prior to interacting though, low-involvement viewers who saw iTV ads (the bottom 50%) were identical to the bottom 60% of the control group in terms of product category involvement, and high-involvement viewers of iTV ads (the top 50%) were identical to the top 40% of controls. Because the interaction rate drew equally from high- and low-involvement iTV ad viewers, there is no significant difference in prior involvement between interactors and non-interactors (Table 4) or between interactors and the control sample as a whole ($t(633) = -.20, p = .844, d = .02$, which is a very small effect size). (Tables 3 and 4 list other effect sizes, measured by partial η^2 ; small = .01, medium = .06, large = .14: Cohen 1988). Prior product involvement does not correlate with the minimal interactivity of beginning an interaction with an iTV

ad (Table 5), though it does show a familiar positive correlation with the extent of interaction. Participants who saw DAL iTV ads could explore them for as long as they wanted, and time-in-the-DAL correlates significantly with prior product category involvement ($r(158) = .39, p < .001$). These results suggest that the tests of our other research questions cannot be explained solely by self-selection, that is, the ability of iTV ads to select viewers who are already interested in the advertised product category.

Research Question 2

In RQ2, we asked whether interaction with iTV ads can increase thinking about the ad and ad recall. The answer to the first part of this question is a tentative yes: Interactors generate more thoughts than non-interactors (Table 4), but this effect might be due simply to self-selection, because we find no difference between interactors and the top 40% of the control sample (or, for that matter, the bottom 60% or the control sample as a whole; $p = .626$). Similarly, interactors indicate higher levels of ad recall (DAR) than non-interactors and than the control sample ($\chi^2(1, N = 383) = 4.38, p = .036, d = .22$) but not compared with the top 40% of the control sample. It is

more challenging, however, to use self-selection to explain differences between interactors and non-interactors with low product category involvement prior to this study. Low-involvement interactors, compared with non-interactors, list more thoughts, though the difference is not significant (3.24 versus 3.01, $t(520) = -1.30, p = .196, d = .11$), and exhibit higher DAR (66% versus 52%, $\chi^2(1, N = 315) = 5.52, p = .019, d = .27$).

Research Question 3

Our RQ3 query pertains to whether interactors with iTV ads reveal a level of ad recall equal to or greater than the level of ad recall associated with three exposures to a regular TV ad. The answer is negative for iTV ads in general, because the average recall rate for interactors (70%) is significantly lower than the rate for viewers exposed three times to a regular ad (79%, $\chi^2(1, N = 541) = 5.55, p = .019$). However, this overall negative result is due entirely to the low recall of the fleeting interactions associated with impulse ads (56%, $\chi^2(1, N = 387) = 21.98, p < .001$). For both DAL ads (78%) and telescopic ads (88%), with their longer interaction times, interaction delivers recall rates equal to if not greater than those associated with three repeat exposures to regular TV ads (DAL: $\chi^2(1, N = 377) = .10, p = .747$; telescopic: $\chi^2(1, N = 325) = 2.25, p = .134$). We do not report any data from the repeated regular ads condition in Tables 3 and 4 because, apart from DAR, the results are equivalent to those in the control condition.

Research Question 4

With RQ4, we ask whether interactions with iTV ads can increase net positive thoughts about the ad. Again, the answer is tentatively positive, because the increase associated with interaction could be due to self-selection. Interactors list more net positive thoughts than do non-interactors, as well as more than the overall control sample ($t(633) = 2.60, p = .010, d = .23$), but not more than the top 40% of the control sample. Interaction also has a positive effect on low-involvement viewers of iTV ads, which cannot be explained well by self-selection. Low-involvement interactors list more net positive thoughts than do low-involvement non-interactors (.76 versus .03, $t(520) = -3.28, p = .001, d = .28$).

Research Question 5

In response to RQ5, about whether interaction with iTV ads can increase the probability of purchasing the advertised brand, we find a positive response, though again, perhaps no more than could be explained by self-selection. Interactors have higher levels of weighted PI compared with non-

interactors and the control sample (7.66% higher, 29.14% versus 21.48%, $t(456) = 2.72, p = .007, d = .28$; sales growth of 7.66%/21.48% = 35.66%), but not compared to the top 40% of viewers in the control sample. Again, we note the difference between low-involvement interactors and non-interactors, which we cannot explain easily with self-selection. Low-involvement interactors, compared with non-interactors, exhibit a significantly higher weighted PI (31.82% versus 15.50%, $t(280.58) = -5.94, p < .001, d = .70$).

Research Question 6

Thus far, our results indicate no general positive effects of iTV ads that we cannot explain with self-selection, though it is difficult to use self-selection to explain the differences between interactors and non-interactors with low product involvement prior to the study. Do the negative effects of one format cancel out the positive effects of another? In RQ6, we ask whether interactors with DAL iTV ads might generate more thoughts about the ad, as well as have higher levels of ad recall, more net positive thoughts, and a higher probability of buying the advertised brand, compared to interactors who view the two other iTV ad formats. The DAL interactors do not generate more total thoughts than interactors with the other two formats, though they are more likely to recall the ad than impulse interactors (Table 4) and the control sample as a whole ($\chi^2(1, N = 219) = 8.30, p = .004$). This positive effect on DAR may be due to self-selection, in that it is not significantly higher than the score for the top 40% of the control group. Compared with telescopic interactors, DAL interactors generate fewer net positive thoughts, and only half as many as impulse interactors, though the latter difference is not significant. We also find no significant differences between low-involvement interactors and non-interactors who view DAL iTV ads (total thoughts 3.44 and 3.13; DAR 74% and 48%; net positive thoughts -.04 and .18; and weighted PI 25.67% and 15.32%, respectively).

Research Question 7

Finally, RQ7 asked whether interactors with telescopic iTV ads might generate more thoughts about the ad, as well as have higher levels of ad recall, more net positive thoughts, and a higher probability of buying the advertised brand than interactors with impulse iTV ads. We find a largely positive result, in that telescopic interactors exhibit higher levels of DAR and weighted PI than do impulse interactors (Table 4) or the control sample as a whole (DAR $\chi^2(1, N = 167) = 13.52, p < .001$; weighted PI $p = .005$). Although telescopic interactors generate more thoughts and more net positive thoughts than

do impulse interactors, these differences are not significant. However, telescopic interactors generate more net positive thoughts than the control sample as a whole ($p = .007$). Moreover, the telescopic format is the only one to yield results that cannot be explained by self-selection. Telescopic interactors exhibit higher levels of DAR and weighted PI than the top 40% of the control group. In particular, among viewers of telescopic iTV ads who express low product category involvement prior to this study, interactors, compared with non-interactors, list more thoughts (3.92 versus 2.85, $t(110) = 3.13$, $p = .002$, $d = .57$), are more likely to recall the ad (DAR = 88% versus 44%, $\chi^2(1, N = 65) = 11.99$, $p = .001$, $d = .87$), express more net positive thoughts (1.78 versus .19, $t(110) = 3.16$, $p = .002$, $d = .59$), and have a higher weighted PI (40.35% versus 17.36%, $t(80) = 3.80$, $p < .001$, $d = .89$).

DISCUSSION

The results of this study suggest that iTV ads can have effects that go beyond direct response: iTV ads can be persuasive as well as selective. Responses to these ads qualify leads from consumers who are highly interested in the product category, but iTV ads can also generate interactions, prior to response, from consumers less interested in the category, and increase their interest in buying the advertised brand. In our experiment, the effect of interaction with iTV ads includes an 8% increase in purchase intentions compared with the level for viewers of regular ads, which represents a 36% increase in estimated sales, based on the average level across the product categories we tested. In our study, interaction with iTV ads performs better than regular ads at generating brand awareness and is more persuasive for selling the benefits of the brand, so that interactors have many more positive than negative thoughts about the ad and therefore develop more favorable attitudes toward both the ad and the brand. The combined effects of these increases in awareness and persuasion enhance the purchase probability for the brand.

Many of our results may reflect self-selection effects, with one significant exception. Telescopic interactors indicated they were more likely to buy the advertised brand compared with the top 40% of the control group, which strongly suggests they were influenced by interacting with the ad rather than the ad simply selecting those with the highest interest in the category. If self-selection by qualified leads could explain our results, there would be no differences between interactors and this top 40% of controls, based on product category involvement prior to the experiment. Product category involvement shows the same positive correlation with extent of interaction indicated

by previous studies (Levy and Nebenzahl 2006, 2008), but we also discover it is possible to generate minimal interactivity, such as the limited interactivity offered by iTV ads, from consumers with low levels of involvement (cf. Liu and Shrum 2009). Half the interactors with telescopic ads were viewers with low product category involvement, and the significant positive difference that interaction had on their awareness and purchase intention cannot be explained by self-selection effects. Across all three of the iTV ad formats, we find identical interaction rates for low- and high-involvement viewers; for low-involvement viewers, we find significant positive effects of interaction. Low-involvement interactors note significantly higher ad recall, more net positive thoughts, and higher purchase probability than do low-involvement non-interactors.

We are particularly interested in the DAL iTV ad format, which is most similar to Web site interactivity. Because this format allows for the greatest control over information flow, we asked whether it might be more persuasive than the other two formats, but our results do not support this proposition. Rather, DAL interactivity generates more negative thoughts than the other two formats, perhaps because the interactivity that our DAL ads offer promises more than it could deliver. In focus groups conducted with randomly selected study participants, the DAL ads emerge as less visually appealing than our telescopic ads. Pressing navigation buttons on the remote was "too much work," in that these viewers preferred to watch rather than "read TV." Our results for the impulse response format fall between the results for the other two. Although focus group participants like the idea of being able to click on impulse ads to get free samples or brochures, the most preferred format was the telescopic ad, because these ads tell a story and make the most of video's capacity to demonstrate the features of a product in an entertaining way.

Implications for Advertisers

Our results suggest that iTV ads can generate leads and build purchase intentions, just as online banner ads can have branding effects beyond click-through rates (Hollis 2005). The key measure of success for iTV ads is the interaction rate rather than the much smaller response rate. We find that telescopic ads have the greatest persuasive effect, but the other two formats could be more effective if they had interaction as the key objective rather than response, such as is the case for game, quiz, or trivia ads. Gaining interaction may be a more effective method of advertising than regular 30-second ads, which consumers increasingly avoid through fast-forwarding

(Brasel and Gips 2008). We confirm prior findings that one interaction with a DAL iTV ad equals three repeat exposures to a regular ad, in terms of generating awareness (Bellman, Pribudi, and Varan 2004) and extend this new rule of thumb for media buyers to telescopic ads. Impulse ads are probably better for generating responses rather than creating awareness. The same benefits of interactivity for iTV ads, and the same implications for media buyers, likely are associated with interactive video ads for IPTV, mobile phones, and the Web as well.

Telescopic ads appear more effective than DAL ads, though DAL ads are more expensive (Sky Media 2009). Of course, this difference in expense assumes that the long-form video needed for the telescopic format is freely available. But if the production of the long-form video is planned beforehand, it may not add much to the budget for a standard 30-second commercial (e.g., it could consist of "out-takes" which would otherwise end up on the cutting room floor). The other formats may have roles, however, in some iTV ad campaigns; for example, impulse response ads could be used as follow-up insertions after telescopic ads have run. The DAL ads in our study also may have underperformed because we limited their information content to maximize their comparability with the other two formats. Case studies show that DAL ads have been very successful (Sky Media 2009); additional research to compare progressive levels of DAL information content may find that advertisers can use the highly customizable DAL format to deliver precisely targeted and highly persuasive messages. Microsites on IPTV, which users interact with through a mouse, may be especially effective (Loughney, Eichholz, and Hagger 2008).

Limitations and Suggestions for Further Research

This exploratory study contains several limitations that further research could address. First, the range of products, brands, and executions we test is restricted by the availability of long-form content for constructing telescopic ads at the time we conducted our study. Now that many more telescopic ads have run on Sky and TiVo, lab studies might test whether our findings generalize across a wider sample of ads, especially to ads from different product categories, such as search versus experience goods (Levy and Nebenzahl 2008). Our results also may reflect the quality of the iTV ad executions we used, which we devised ourselves rather than testing professionally produced iTV ads that had aired. Professional designers could create ads that test additional theories about why certain iTV ad formats might be successful.

Second, we generated interactivity among people with low product category involvement, but this finding might be due to characteristics of our study, such as demand effects or random chance; it thus needs further replication. Our low-involvement interactors may have differed from our low-involvement non-interactors on several antecedent variables, such as attitudes toward iTV advertising or iTV shopping and interest in the advertised brands. They also may differ in their cognitive responses to the use of interactive features and the steps required to access the ads. These measurement gaps represent a major weakness of this study and place severe limitations on the conclusions we can draw. Researchers should increase the number of measures they use to test iTV ads.

Third, the additional measures used in further research should include process variables, such as perceived interactivity, which we assume increases in the presence of interactive opportunities but do not measure directly (Tremayne 2005). By measuring mental effort (Yeung, Jin, and Sweller 1997), researchers could identify whether cognitive load may be responsible for the negative thoughts associated with the DAL format, or disconfirmation of expectations, or both. Attention also could be measured through pupil dilation (Brasel and Gips 2008) and arousal by skin conductance (MacInnis, Moorman, and Jaworski 1991). Mood influences impulse shopping (Adelaar et al. 2003), and by including measures of mood and automatic affective responses, such as facial EMG (Ravaja 2004), researchers may find that iTV ads alter brand evaluations through a pure affect-transfer process (e.g., Zajonc 1968; this effect is less likely for high-elaboration processing, Petty et al. 1993).

Fourth, though we use rigorous controls to rule out alternative explanations for our findings, such as primacy/recency effects, unequal offers across ad models, or differences in demographics, iTV is still a new phenomenon in Australia, and we cannot rule out novelty effects. However, the variance across the three iTV ad formats argues against a general novelty effect. Again, our results demand replication, preferably using samples with more iTV experience (Liu and Shrum 2009) and in other countries. We also cannot ignore the possibility that cultural factors, such as different preferences for the products advertised or varying experience with certain technologies (e.g., Teletext; Schweda, Bellman, and Varan 2005), may influence our results.

Fifth, a limitation common to all between-subjects designs is that though the differences between interactors and non-

interactors, and interactors versus the control group, suggest that interaction with iTV ads will boost awareness and purchase intentions for most consumers, we do not use a pretest-posttest design to measure changes in purchase probability for the same consumer. Studies that use such a within-subjects design will need to test for self-selection, just as we do, if the interaction is optional. It may be possible to force interaction by asking participants to try every interactive opportunity they see (Cauberghe and De Pelsmacker 2008c), but this procedure would be unnatural and risks backlash effects (Tremayne 2005).

Sixth, we use only one type of program, but the inclination to interact likely varies across program genres. For example, high-involvement niche programs like home improvement shows might increase the inclination to interact with relevant product ads. Likewise, reality or talent shows (e.g., *American Idol*, *Pop Idol*) that contain very overt product placements may induce higher levels of interaction. Levy and Nebenzahl (2006, 2008) show that individual differences in program involvement, for the same program, affect the interaction rate. Further research should investigate the effects of program genre on rates of interaction with iTV ads, as well as their effectiveness (Cauberghe and De Pelsmacker 2008a).

The results of this exploratory study produce some limited preliminary findings that could help inform research, especially the suggestion that interacting with iTV ads can enhance awareness and purchase intentions as well as deliver an addressed response. More research is needed, as we are unable to draw firm conclusions from this study. However, it clearly implies that advertisers should strongly consider using the new interactive ad formats made possible by the digitization of television.

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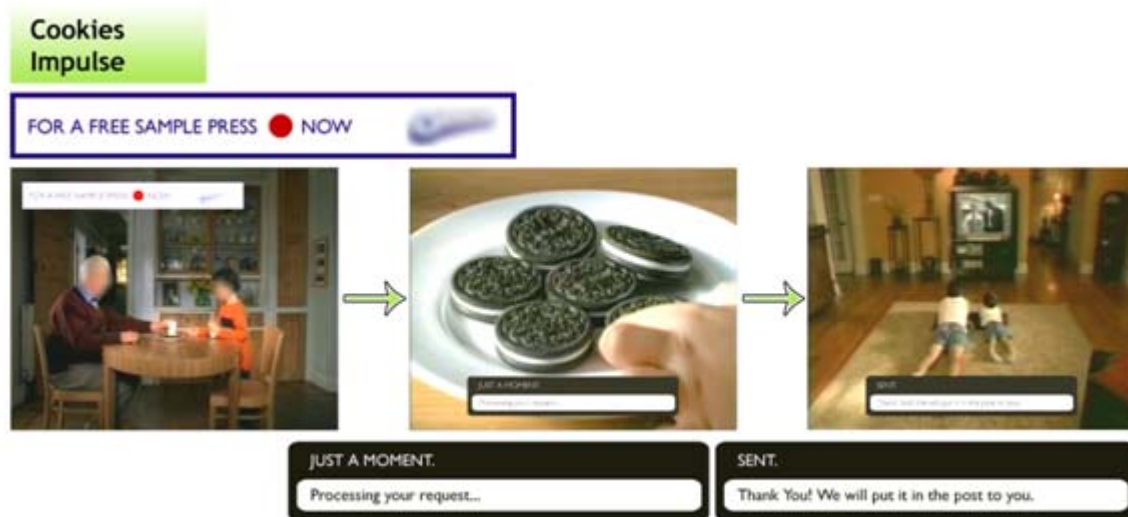
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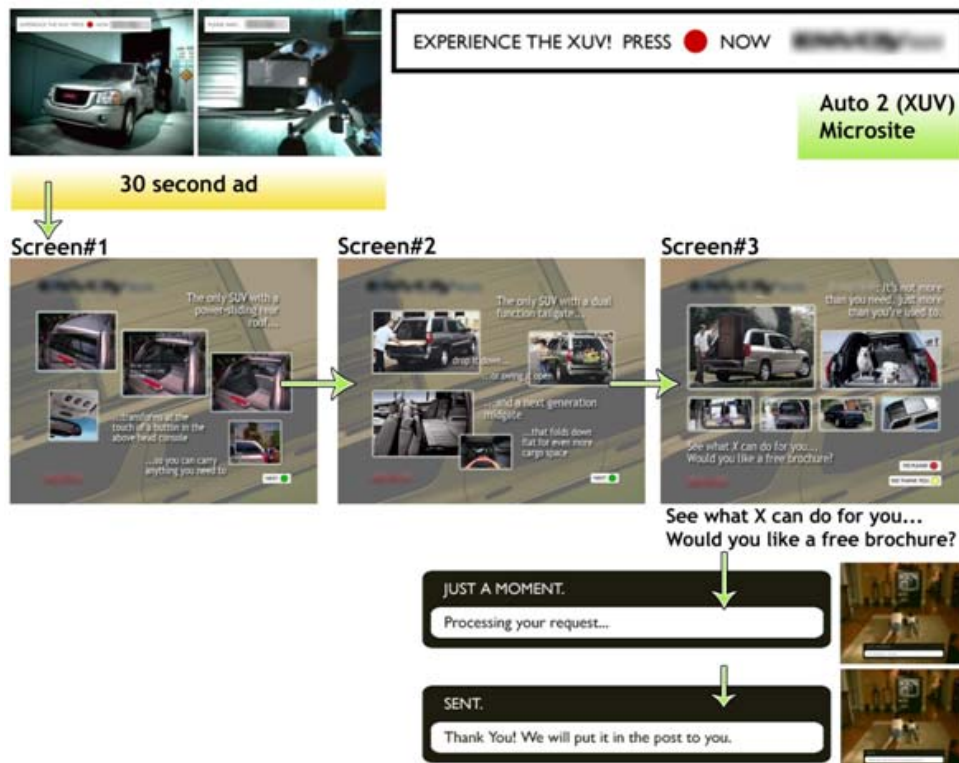
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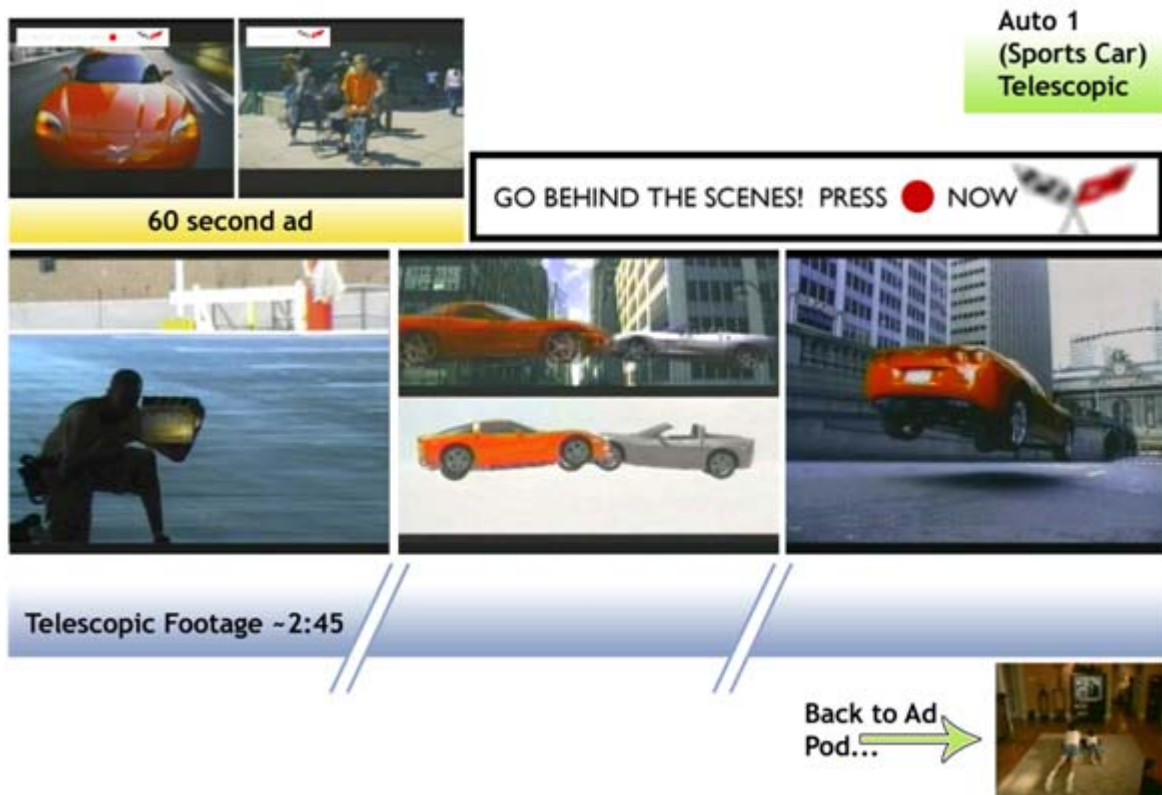
APPENDIX 1: Example Impulse Response Ad



APPENDIX 2: Example Microsite/DAL (Dedicated Advertiser Location) Ad



APPENDIX 3: Example Telescopic/VAL (Video Advertiser Location) Ad



ABOUT THE AUTHORS

Steven Bellman (Ph.D., University of New South Wales) is an Associate Professor and Deputy Director of the Interactive Television Research Institute at Murdoch University in Perth, Western Australia. E-mail: bellman@itri.tv.

Anika Schweda (Ph.D., Murdoch University) is a former ITRI Post Doctoral Research Fellow at the Interactive Television Research Institute and currently divides her time between writing papers like this one and looking after baby twins. E-mail: schweda@itri.tv

Duane Varan (Ph.D., University of Texas at Austin) is the Director of the Interactive Television Research Institute and holds the inaugural Chair in New Media at Murdoch University. He also oversees *Beyond :30*, a collaborative industry research project focused on understanding the interactive viewer and exploring emerging models for TV advertising, and is the Executive Director and Chief Research Officer for The Disney Media & Advertising Lab in Austin, Texas. E-mail: varan@itri.tv.

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