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Parents' Presumed Persuasion Knowledge of Children's Advergmes: The Influence of Advertising Disclosure Modality and Cognitive Load

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ABSTRACT

Research indicates that parents have a limited understanding of advergmes. This study examines the effects of advertising disclosures and cognitive load on parents' activation of persuasion knowledge for a children's advergme. While parents exposed to any advertising disclosure reported higher levels of persuasion knowledge, a single-modality disclosure resulted in more persuasion knowledge activation than a dual-modality disclosure. Additionally, parents who experienced more cognitive load during advergme play reported less persuasion knowledge than parents who experienced less cognitive load. In support of and in contrast to extant literature, our findings offer both theoretical and managerial implications.

Advergmes embed products and/or product advertising into already existing media platforms or vehicles (Petty and Andrews 2008) and do not delineate between the commercial and program content. As such, advergmes may be viewed as a form and extension of covert marketing whereby consumers are exposed "to brands by embedding them into outlets not typically considered advertising terrain" (Wei, Fischer, and Main 2008, 35). Such tactics may inhibit consumer skepticism toward the communication's persuasive intent and serve as an attempt to overcome potential distrust of the message source (Tanaka 1994/1999; Kaikati and Kaikati 2004).

With the trend of children ages 6 to 12 years favoring online gaming, it is no surprise that parents' attitudes toward the use of digital technologies, which include the Internet and Internet-capable devices, are seen as positives for family connectedness (eMarketer.com 2013). However, children aren't always under their parents' supervision when online. Children frequently encounter and engage with commercial content found in advergmes, which are distinctly different from traditional television advertising and in-game advertising due to their immersive nature (Evans, Carlson, and Hoy 2013).

Existing research has demonstrated that children have difficulty understanding the commercial nature of advergmes (Mallinckrodt and Mizerski 2007; An and Stern 2011; Owens, Lewis, Auty and Buijzen 2013). However, given the highly integrated commercial and entertainment content in advergmes, Evans et al. (2013) state that "adults' recognition of and defense against the persuasive intent in these immersive forms of advertising may also be hindered by the integrated and hidden nature therein" (229). While parents may more closely supervise their child's online time (Eagle 2007) and overestimate their control over such activities online (Livingstone and Bober 2006), "it is unclear how much oversight parents actually give to their children's activities in commercial websites" (Moore and Rideout 2007, 213).

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Even if parents think they know and understand what their children are doing online, research indicates that children are spending far more time on such sites than parents really know (Nowak 2010). As evidenced by parents' inability to accurately identify advergames even when given examples and a definition, they too may not fully understand this more covert form of advertising (Evans et al. 2013).

Research on persuasion recognition in advergames, and the resultant focus on children as a population of interest, is fueled by the cognitive discrepancies and variations in marketplace experience that exist between children and adults (Friestad and Wright 1994; John 1999; Wright, Friestad, and Boush 2005). While such cognitive discrepancies undoubtedly exist, "research on persuasion recognition in interactive environments assumes that adults, and parents for that matter, have the ability to recognize persuasive intent in advergames" (Evans et al. 2013, 237). Unlike children, parents are faced with a multitude of daily ubiquitous tasks (Gilbert and Osborne 1989) that require cognitive capacity (Lang 2000). Attending to these everyday tasks while experiencing advertising can result in cognitive load, which may subsequently influence parents' ability to recognize persuasion in advergames. Examining and understanding parents' level of persuasion knowledge about children's advergames is an area that both deserves exploration and is central to this study.

Given that parents have demonstrated a limited understanding of adver gaming and concurrently desire to remain the key socialization agents in their children's lives, the current study investigates parents' capacity for understanding the commercial nature and persuasive intent of children's advergames. This study uses the Persuasion Knowledge Model (PKM) (Friestad and Wright 1994) and the theory of limited cognitive capacity (Lang 2000) to experimentally test the effects of advertising disclosures and cognitive load on parents' activation of persuasion knowledge while engaged with children's advergames and subsequent attitudes toward children's advergames.

Theoretical background and hypotheses

The development of persuasion knowledge

Friestad and Wright's (1994) Persuasion Knowledge Model (PKM) defines persuasion knowledge as the confidence a consumer has in his or her ability to understand marketers' motives and tactics. Persuasion knowledge aids the consumer in identifying how, when, and why marketers attempt to influence them (Friestad and Wright 1994). As consumers gain marketplace experience, the ability to access persuasion knowledge from memory, recognize the occurrence of persuasive attempts, note specific advertising tactics and goals, formulate and carry out appropriate coping skills, and store in memory such tactics for future persuasive attempts becomes automatic and effortless (Wright et al. 2005). Over time, "consumers develop knowledge about persuasion and use this knowledge to cope with persuasion episodes" (Campbell and Kirmani 2000, 1). PKM proposes that as consumers gain more experience with marketers' persuasive attempts they will become more knowledgeable of the marketplace, be better able to use coping skills, and use those coping skills to aid in guiding the most appropriate response to the persuasive episode (Shrum, Liu, and Mespoli 2012).

Parents' understanding of selling and persuasive intent in advergames

In contrast to nontraditional advertising formats such as advergames, in-game advertising, and product placement in movies, research indicates that children have a significantly better understanding of advertising in television (Owens et al. 2013). Because adults have more experience with the variety and context of advertisers' persuasive attempts, and have more cognitive ability compared to children, it has been assumed that they, more so than children, have better developed persuasion knowledge and are better able to infer the persuasive and selling intent of most forms of advertising (Friestad and Wright 1994; John 1999; Wright et al. 2005). This study conceptualizes persuasion knowledge as parents' recognition of advertising's selling and persuasive intent within the nontraditional format of children's advergames (Rozendaal, Buijzen, and Valkenburg 2010, 80).

Recent research assumes that the adult–child discrepancy in persuasion knowledge applies to both traditional and immersive advertising formats (Kinard and Hartman 2013). For example, while there is evidence to suggest a relationship between negative attitudes toward advergames and the degree of brand–game integration, that relationship is predicated on the assumption that adults possess adequate persuasion knowledge to correctly identify and form valid attitudes toward advergames as a form of marketer persuasion efforts. However, as Evans et al. (2013) found, parents’ understanding of children’s advergames as an advertising practice was lacking. Given the continued discourse of adult–child persuasion knowledge discrepancy and lack of empirical data that explore adults’ persuasion knowledge of nontraditional advertising formats, it is possible that “parents’ ability to recognize the persuasive intent in advergames ... may be just that: an assumption” (Evans et al. 2013, 237).

Persuasion knowledge activation and attitudes toward advertising

The recognition of advertisers’ persuasive and selling intent is contingent upon parents’ experience with advertiser tactics and a general understanding of the marketplace (Friestad and Wright 1994; Wright et al. 2005). The more readily accessible or easily recognized an advertiser’s persuasive and selling intent, the more likely it is to lead to persuasion knowledge activation (Campbell and Kirmani 2000; Tutaj and van Reijmersdal 2012). Advertising containing information that highlights the persuasive motives of the advertiser has a greater chance of being recognized as advertising, which leads to an inference of persuasive and selling intent (Friestad and Wright 1994). For example, Campbell and Kirmani (2000) provided participants with two versions of a script containing differing amounts of information describing a salesperson–consumer interaction and were asked to imagine that they were observing the interaction. Their results indicated that participants who received the script with more information were better able to recognize and report the salesperson’s persuasive and selling intent than the participants who received the script with less information (Campbell and Kirmani 2000). This finding supports a central tenet of the PKM: When consumers are provided with additional advertiser information it positively influences their ability to recognize the presence of selling and persuasive motives.

In support of this tenet, research indicates that more recognizable advertising formats (online banner ads compared to online sponsored product placement) result in a better recognition of advertising, a better understanding of the selling and persuasive intent, and less favorable attitudes toward the advertising (Tutaj and van Reijmersdal 2012). Furthermore, a study by Wei et al. (2008) revealed that participants with activated persuasion knowledge evaluated brands in a sponsored radio show more negatively than participants who did not have their persuasion knowledge activated. Their findings support the notion that “consumers will lower brand evaluations when they know that covert marketing is at work” (Wei et al. 2008, 42).

In general, PKM proposes that persuasion knowledge activation typically leads to more negative evaluation of the ad, product, or brand (Shrum et al. 2012). As evidenced by previous research, persuasion knowledge activation can be differentially affected depending on the advertising format (Tutaj and van Reijmersdal 2012) and presence of disclosures (Boerman, van Reijmersdal, and Neijens 2012). Furthermore, when persuasion knowledge is activated, such activation tends to negatively affect attitudes (Wei et al. 2008; Boermen et al. 2012; Tutaj and van Reijmersdal 2012).

Disclosures in advergames

Marketers do not typically disclose or bring attention to the promotional or commercial nature of advergames directed toward children (Moore and Rideout 2006; Weber, Story, and Harnack 2006; Henry and Story 2009). Yet advertising disclosures are envisioned as a means of providing necessary information to prevent consumers from being deceived by marketing communications (Hoy and Andrews 2004). One would argue that the first step in preventing such potential deception is for consumers to be fully cognizant that the information to which they are exposed is of a persuasive nature. Indeed, research on the presence and length of disclosures in televised product placement demonstrates that the presence of

a 3- or 6-second disclosure that highlights the relationship between the sponsor and the product, compared to no disclosure at all, has a positive effect on persuasion knowledge and brand memory, and a negative effect on attitudes toward the brand (Boerman et al. 2012).

As one of several guidelines within the Clear and Conspicuous Standard (CCS), the Federal Trade Commission (FTC 1970) states “disclosures should be presented simultaneously in both audio and video portions of the advertisement.” Based on Pavio’s (1971) dual-code theory, the presentation of material in more than one modality (i.e., audio and visual) predicts better memory of that material compared to information appearing in just one modality. The use of both audio and video formats in the context of advertising disclosures is known as dual modality and is superior to single modality (i.e., print or audio only) (Andrews 2011). Numerous studies support this superiority in terms of disclosure awareness and knowledge (Morris, Mazis and Brinberg 1989), recall (Smith 1990; Barlow and Wogalter 1993), and comprehension (Murray, Manrai and Manrai 1998). Given the effectiveness of dual-modality disclosures, the following hypotheses are generated to test the effects of advertising disclosures (i.e., identification of the advergame as an advertisement) in children’s advergames on parents’ activation of persuasion knowledge and attitudes toward advergames.

H1: Parents exposed to an advertising disclosure will report higher levels of persuasion knowledge than parents not exposed to an advertising disclosure.

H2: Parents exposed to a dual-modality ad-disclosure treatment will report higher levels of persuasion knowledge than parents exposed to a single-modality ad-disclosure treatment.

H3: Parents exposed to a single-modality ad-disclosure treatment will report higher levels of persuasion knowledge than parents exposed to a no-ad-disclosure treatment.

H4: Parents exposed to an advertising disclosure will report more negative attitudes toward children’s advergames than parents not exposed to an advertising disclosure.

H5: Parents exposed to a dual-modality ad-disclosure treatment will report more negative attitudes toward children’s advergames than parents exposed to a single-modality ad-disclosure treatment.

H6: Parents exposed to a single-modality ad-disclosure treatment will report more negative attitudes toward children’s advergames than parents exposed to a no-ad-disclosure treatment.

Cognitive capacity

Situated in information processing theory, cognitive capacity is defined as the amount of mental resources one can devote to any given stimulus or activity. Lang’s (2000) limited cognitive capacity theory states that “one’s total cognitive capacity at any one point in time is limited and the capacity being used to perform one task cannot be used to perform another task” (Yun 2009, 405). Thus, multitasking is not possible (Lang 2000). While our attention and mental resources can shift very quickly from one task to another, we can never focus simultaneously on two tasks at a given point in time. In other words, cognitive capacity is finite and undividable.

The ability to recognize advertising and understand its persuasive and selling intent requires cognitive capacity (Friestad and Wright 1994; Campbell and Kirmani 2000; Panic, Cauberghe, Verolien, and De Pelsmacker 2013). Our mental resources are constantly shifting from task to task during any given day. When individuals’ perform such tasks, no matter how mundane, while simultaneously exposed to a persuasive attempt, their cognitive capacity can shift toward task completion and away from determining the persuasive and selling intent of an advertisement (Friestad and Wright 1994; Campbell and Kirmani 2000). Gilbert and Osborne (1989) refer to these commonplace tasks as ubiquitous features of everyday life. For example, when a mother is watching her child play an advergame and the phone rings, her attention is drawn to the task at hand (i.e., answering the phone) and away from the persuasive episode (i.e., the advergame). The cognitive demands required to answer the phone theoretically detracts from her ability to determine the persuasive and selling intent within a children’s advergame. Campbell and Kirmani (2000) conceive that “using persuasion knowledge would seem to require cognitive capacity

in most circumstances ... persuasion knowledge is less likely to be used in forming an impression of a salesperson when the consumer has competing cognitive demands” (71).

Cognitive load

When individuals perform tasks during simultaneous exposure to an advertising episode, they can become cognitively loaded (Yoon, Choi and Song 2011). Because cognitive capacity is finite and unavoidable, full mental resources cannot be devoted to determining the persuasive and selling intent of advertising episodes. Cognitive load (CL) has been defined as “the mental load imposed on the cognitive system of the learner by a certain task” (Camp, Paas, Rikers and van Merriënboer 2001, 576) and the perceived effort invested by an individual during task completion (Yin, Chen, Ruiz and Ambikairajah 2008). For the purposes of this study, CL is defined as the relationship between an individual’s perceived mental effort and task performance. Paas and van Merriënboer (1993) refer to this relationship as mental efficiency, where high efficiency is reflected by lower mental effort and better task performance and low efficiency is reflected by higher mental effort and poorer task performance. CL is operationalized as the inverse of mental efficiency, in that high mental efficiency denotes low CL and low mental efficiency denotes high CL.

The effects of cognitive loading on persuasion knowledge and attitudes

As Gilbert and Osborne (1989) suggest, it seems plausible that an increase in cognitive load not only can affect the ability to recognize persuasion in advertising but also can distort individuals’ impression of others. By extending this logic to a sales interaction, Campbell and Kirmani (2000) tested how variations in cognitive load affected perceptions of salespersons’ underlying motives. The results indicated that cognitively loaded participants rated the salesperson as more sincere when that salesperson’s motives were made less obvious in the scenario. The findings imply that the use of persuasion knowledge and the recognition of less obvious persuasion motives require cognitive capacity (Campbell and Kirmani 2000). In other words, “in situations that are not strongly linked to high-pressure persuasion, the use of persuasion knowledge may be contingent upon the consumer’s cognitive capacity” (81).

Research indicates that variations in individuals’ cognitive load can differently affect attitudes toward advertising. Yoon et al. (2011) examined the influence of cognitive load on brand attitudes in a well-integrated versus an intrusive-integrated product placement environment. Among the cognitively loaded participants, a well-integrated product placement resulted in more negative attitudes toward the ad, whereas the intrusive-integrated product placement resulted in more positive attitudes toward the ad (Yoon et al. 2011). Consumers experiencing cognitive load were forced to rely on the prominence of the brand placement in forming attitudes because they maintained difficulty in processing the advertising information. Following the same logic, because advergames are an immersive, integrated, and entertaining form of advertising, cognitive loading (Panic et al. 2013) may prevent parents from recognizing the game’s persuasive motives and possibly result in more positive attitudes toward advergames and the sponsoring brand (Evans et al. 2013). As Schrader and Bastiaens (2012) posit, successful navigation and processing of an online game require substantial working memory and cognitive resources, which detracts from a player’s ability to search for separately presented information within the game environment. Therefore, it follows that a player’s recognition of a separately presented advertising disclosure requires unavailable cognitive resources because the resources are shifted to information processing and navigation of the advergame. Thus, persuasion knowledge activation may not manifest within an advergaming environment.

Overall, existing research suggests that increases in cognitive load may make persuasive intent more difficult to recognize (Campbell and Kirmani 2000) in advergames and can positively influence brand attitudes in product placement environments (Yoon et al. 2011) such as advergames. Given this evidence, the following hypotheses are generated to test the effects of cognitive load on parents’ activation of persuasion knowledge and attitudes toward the advergame.

H7: Parents' cognitive loading will be negatively associated with parents' persuasion knowledge of children's advergames.

H8: Parents' cognitive loading will be positively associated with parents' positive attitudes toward children's advergames.

Method

Design and participants

A 3 (advertising disclosures: no disclosure vs. single modality vs. dual modality) \times 2 (cognitive loading: loaded vs. unloaded) between-subjects factorial design was employed to address the study's hypotheses. The advergame that served as the stimulus for manipulating the two factors (Pop-Tarts Toasty-Turvy) was appropriated from an existing child-targeted gaming website, <http://www.poptarts.com/games>, which is owned and operated by Kellogg's of North America. There were no manipulation or changes made to the Pop-Tarts advergame, which currently has no ad disclosures. All stimuli manipulations were made within an overlaid HTML environment that surrounded it.

An external market research company (Research Now) recruited, administered, and hosted the online experiment. Two hundred and seven parents with children between the ages of 7 and 11 years agreed to participate. Parents of children in this age group were selected because research indicates that children typically develop the ability to recognize and defend against advertising around the age of 8 years (John 1999). While we use the term "parent" throughout this article, participants were allowed to further clarify if they were a nonparent guardian in the demographic portion on the questionnaire. The sample resulted in a relatively even distribution of 109 fathers (53.9%) and 89 mothers (44.1%). Four parents (2%) did not indicate their sex; 92.6% of the parents reported having at least some form of college education or higher. Demographic characteristics for children revealed that there were 103 males (51%) and 99 females (41%). Children were distributed as follows in terms of their ages: 21.8 percent were 7 years old, 20.3 percent were 8 years old, 26.2 percent were 9 years old, 20.3 percent were 10 years old, and 11.4 percent were 11 years old. Five participants were excluded from the study for failing to follow the directions. The final sample for analysis consisted of 202 parents.

Independent variables

Advertising disclosures. The no-disclosure condition (control) featured the advergame as it appeared online (i.e., with no advertising disclosures). The single-modality (print only) ad-disclosure treatment featured a text "crawl" in an HTML environment below the game-play screen, which stated, "Hi kids! This game is an advertisement" (cf. WGAW 2008). The disclosure statement was tested for age readability level, as per the Clear and Conspicuous Standard (cf. FTC 1970), using the Flesch-Kincaid Grade Level test in Microsoft Word. The disclosure statement returned a 4.3 Flesch-Kincaid Grade Level score, which indicated a suitable reading level for children between the ages of 7 and 11 years. The dual-modality (print and audio) ad disclosure had an audio clip simultaneously restating what appeared in the text crawl. Once the parent linked to the Pop-Tarts Toasty Turvy advergame website, the audio clip began after 4 seconds and repeated every 10 seconds until the participant was directed to the questionnaire. This ensured that parents in the advertising dual-modality disclosure condition would have the opportunity to hear the audio disclosure 18 times.

The disclosures were created in the form of an overlay, which was separate from the Pop-Tarts advergame found on the website. This HTML environment was created as separate from the Pop-Tarts advergame to avoid any conflicting trademark or copyright statutes. Prior to linking to the Pop-Tarts Toasty Turvy advergame website, parents were instructed to keep their computer sound on, in order to ensure the successful induction of this particular experimental treatment.

Cognitive loading pretests. In order to demonstrate the suitability of a task that induces cognitive load among parents, cognitive load (CL) was pretested by creating several short online surveys that contained variations of a memory and recall task that instructed participants to remember and recall one of three different number sequences (cf. Campbell and Kirmani 2000; Yoon et al. 2011) that were 8 digits, 11 digits, or 13 digits in length. Two rounds of pretesting were conducted. The first round recruited convenience samples of 54 college students and 49 noncollege students all 18 years or older. Participants in both samples were randomly assigned to one of the three number sequence recall pretests. The results of the first round of pretesting indicated that the 8-digit number sequence was unsuitable for inducing cognitive load as evidenced by the average percent of correctly recalled numbers in sequence ($n = 37$, average percent correctly recalled = 84.46%) among a combined sample. Using the same procedure, a second round of pretesting for the 11-digit and 13-digit conditions was conducted among thirty participants. Findings from the second round of pretesting indicated that a 13-digit number was more difficult to correctly recall than an 11-digit number (46% vs. 73%, respectively). Thus, the recall of a randomly generated 13-digit number served as the operationalization of cognitive loading.

Cognitive load measures. Parents who received the cognitive load treatment were assigned the task of remembering and later recalling a randomly generated 13-digit number sequence (5746983219412). This number appeared on a screen for 60 seconds after clicking on their randomly assigned URL (cf. Rienhard and Sporer 2008). The cognitive load treatment occurred before participants were routed to the Pop-Tarts Toasty Turvy advergame website. Prior to game exposure, the onscreen instructions told participants not to write the number sequence down and that they would be asked to recall the number sequence after playing a game.

Based on Paas and van Merriënboer's (1993) computational measurement of mental efficiency, a multidimensional construct of cognitive load was created by combining measures of perceived mental effort and task recall performance (see Appendix 1). Task recall performance was measured by asking the participant to recall the number sequence. A percentage correct was computed by dividing the number of digits correctly recalled in sequence by the total number of digits. According to Paas and van Merriënboer's (1993) computational approach, scores for perceived mental effort and task recall performance were standardized. Z scores for each measure were produced having potential range from -3 to $+3$.

Cognitive load assessment. In total, 110 parents received the CL treatment. Five parents were excluded from subsequent analysis because they reported they wrote the number down, resulting in a final CL treatment subgroup of $N = 105$. Using the formula in Appendix 1, a range of CL scores was computed for the CL treatment subgroup. CL scores ranged from -2.59 to $+2.24$ ($M = .00$, $SD = 1.18$) with median value of .2058. In order to conduct hypotheses tests a median split was performed on the CL treatment subgroup (cf. Chu and Kamal 2011; Evans et al. 2013).

Dependent variables

Persuasion knowledge. We measured persuasion knowledge by adapting six items from the Rozendaal et al. (2010) persuasion knowledge scale. This scale has been used to examine and compare children's and adults' television advertising competencies and recognition (Rozendaal et al. 2010), as well as the effects of advertising format on persuasion knowledge activation (Tutaj and van Reijmersdal 2012). Six additional distracter questions, which examined attitudes about the game's entertainment and educational purposes, were included in the scale in order to prevent response bias (see Appendix 2). All questions were randomized and measured using a 7-point Likert scale ranging from strongly agree to strongly disagree. PCA with varimax rotation revealed three components explaining 74.80 percent of the total variance in persuasion knowledge measures. Component three, *selling and persuasion knowledge*, accounted for 12.73% of the variance (eigenvalue = 1.026). Two items loaded on the *selling and persuasion knowledge* component with factor loadings of .815 and .847 (see Table 1). The two items were aggregated ($M = 8.69$; $SD = 3.22$).

Table 1. Dependent variables and component factor loadings.

Items (* = reverse coded)	Components and Loadings				α
	Informational knowledge	Entertainment knowledge	Selling and persuasion knowledge	Negative perceptions of advergames	
This game provides information about pop tarts	.898				.853
This game makes people like pop tarts	.776				
This game lets people know more about pop tarts	.908				
This game is a good way to pass the time		.795			.788
This game provides entertainment		.851			
This game helps develop cognitive skills		.809			
This game is not meant to sell pop tarts*			.815		.586
This game does not influence my opinions about pop tarts*			.847		
Games like this make children want things they don't really need				.731	.841
Games like this lead children to make unreasonable purchase demands on their parents				.862	
Games like this directed at children lead to family conflict				.676	
Games like this don't take advantage of children*				.751	
Games like this use tricks and gimmicks to get children to buy their products				.838	

Attitudes toward advergames. Six items were adapted from the Evans et al. (2013) research on parental attitudes toward children's advergames (cf. Crosby and Grossbart 1984; Wolin, Korgaonkar and Lund 2002; see Appendix 2). Several of these items were reverse coded to counter possible response bias. PCA revealed one component, *negative perceptions of advergames*, accounting for 54.90% of variance in attitude measures with an eigenvalue of 3.29. All six items loaded on *negative perceptions of advergames* with factor loadings ranging from .731 to .862 (see Table 1). The six items were aggregated ($M = 23.29$; $SD = 7.05$).

Procedure

Participants who consented to take part in the study were directed to a separate page containing study directions and a randomly assigned URL reflecting one of the six experimental treatments and allowing for even distribution (see Appendix 3). Once clicked, the URLs for the three cognitively loaded treatments first directed participants to a screen whereby they were given the memory and recall task (i.e., cognitive load treatment). Following the task, participants were routed directly to the Pop-Tarts Toasty Turvy advergame website. In contrast, the URLs for the three treatment combinations with no cognitive load treatment directly routed participants to the Pop-Tarts Toasty Turvy advergame website.

Each participant was allowed 3 minutes of game play or exposure. On average, the completion of the overall study took 11.5 minutes. To ensure an equal amount of advergame exposure, once participants were routed to the Pop-Tarts Toasty Turvy advergame website, they had precisely 3 minutes to read the game directions and play the game. After the 3 minutes expired, participants were routed to the postgame

questionnaire. Parents were instructed to complete the questionnaire with respect to their youngest child between the ages of 7 and 11 years. This procedure was used to avoid multiple responses from parents of more than one child within this age range (see Carlson and Grossbart 1988; Evans et al. 2013).

Results

Advertising disclosure modality hypotheses tests

H1 predicted that parents who were exposed to an advertising disclosure would report more persuasion knowledge of children's advergames compared to parents not exposed to an advertising disclosure. An independent samples *t*-test revealed a significant difference in persuasion knowledge scores for the advertising disclosure ($M = 9.0$, $SD = 3.1$) and no advertising disclosure ($M = 8.1$, $SD = 3.4$) conditions; $t(200) = 1.98$, $p = .049$. H1 is supported.

H2 predicted that parents who were exposed to the dual-modality advertising disclosure condition would report more persuasion knowledge than parents exposed to the single-modality advertising disclosure condition. A one-way analysis of variance (ANOVA) for selling and persuasion knowledge revealed no statistically significant differences across the three advertising disclosure modality conditions, $F(2, 199) = 2.204$, $p = .113$. H2 is not supported.

H3 predicted that parents who were exposed to the single-modality advertising disclosure condition would report more persuasion knowledge than parents exposed to the no advertising disclosure condition. A 2×2 ANOVA was used to examine parents' selling and persuasion knowledge by advertising disclosure modality (none/single) and CL treatment (yes/no). There was a significant main effect for advertising disclosure modality ($F(1, 129) = 4.05$, $p = .046$). Parents exposed to a single-modality advertising disclosure had a higher mean, that is, exhibiting greater persuasion knowledge ($M = 9.21$, $SD = 2.77$), than did parents exposed to no advertising disclosure ($M = 8.07$, $SD = 3.37$). Therefore, H3 is supported (see Figure 1).

H4 predicted that parents who were exposed to any advertising disclosure would report more negative attitudes toward advergames compared to parents not exposed to an advertising disclosure. An independent samples *t*-test revealed no significant difference in negative attitudes toward advergames

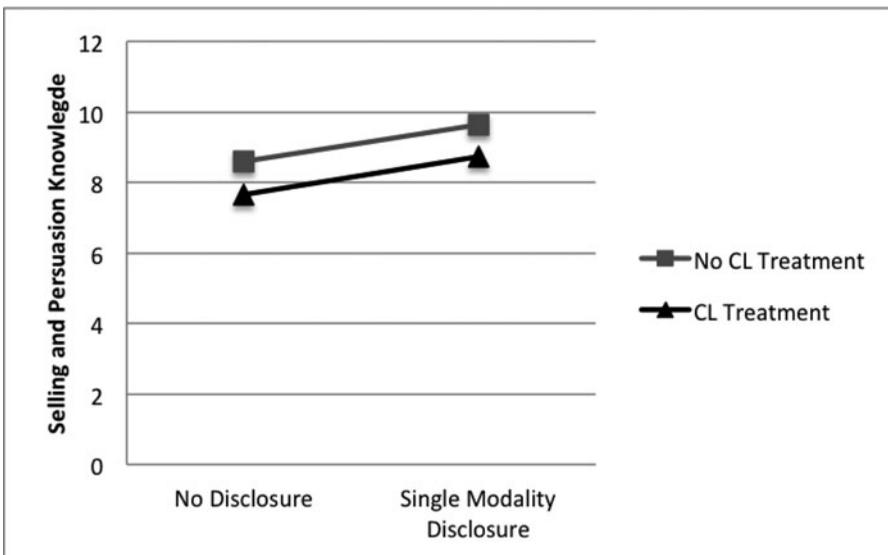


Figure 1. Main effect of advertising disclosure modality on selling and persuasion knowledge.

scores for the advertising disclosure ($M = 18.3$, $SD = 6.1$) and no advertising disclosure ($M = 18.2$, $SD = 6.7$) conditions; $t(200) = 1.01$, $p = .313$. H4 is not supported.

H5 predicted that parents who were exposed to the dual-modality advertising disclosure condition would report more negative attitudes toward children's' advergmes than parents exposed to the single-modality advertising disclosure condition. H6 predicted that parents who were exposed to the single-modality advertising disclosure condition would report more negative attitudes toward children's' advergmes than parents exposed to the no advertising disclosure condition. A one-way ANOVA for negative perceptions of advergmes indicate no statistically significant differences across advertising disclosure conditions, $F(2, 199) = .462$, $p > .05$. Using the CL treatment subgroup ($N = 105$), one-way ANOVA for negative perceptions of advergmes indicated no significant differences across advertising disclosure conditions, $F(2, 102) = 2.46$, $p = .091$. H5 and H6 are not supported.

Cognitive load hypotheses tests

Median split versus simple slopes analysis. In order to test the cognitive load hypotheses we performed a median split on the cognitive load measure. While a median split approach has been criticized (MacCallum, Zhang, Preacher, and Rucker 2002) in favor of a simple slopes approach (Aiken and West 1991), we applied the median split for two reasons. First, the basis of a simple slopes difference test is to determine the influence of an additional independent variable (IV) when there is already a relationship present among an existing continuous IV and a continuous dependent variable (DV). Our hypotheses do not make predictions about potential interactions; therefore, we felt it inappropriate to conduct such analyses. Second, as Gangestad and Snyder (1985) suggest, a dichotomization of an independent variable is appropriate when it is believed that there are inherent class traits.

As such, we believe it is incorrect to assume that all adults experience the imposed mental load of an additional task request in the same manner. There exist variations in working memory and tolerance for increased mental performance, which has been demonstrably the case when one looks at the differences between adults and children (John 1999). Furthermore, there is evidence indicating that when introduced with a learning task, individuals' existing mental capabilities (i.e., working memory, required mental effort) and resultant performance on the task are in essence a result of inherent mental facilities or traits (Camp et al. 2001).

Unlike past research that has examined the influence of cognitive load on persuasion knowledge, our approach allows an examination of the potential differences (or class traits) that exist within a treatment group. In other words, past research using cognitive load as an independent variable (Campbell and Kirmani 2000; Yoon et al. 2011) has (1) examined differences between cognitive load treatment/nontreatment groups and (2) conceptualized correct memorization and recall of a random number (i.e., high task performance measures) as an indicator of cognitive load. This particular approach is conceptually flawed because it assumes that all adults possess similar mental facilities that result in similar mental load when faced with task completion.

We acknowledge the possibility that because of existing learner traits and abilities, there are in all likelihood potential differences that exist within a treatment group when it comes to their tolerance for increased cognitive demands. This tolerance for increased cognitive load can be reflected by high performance measures or low mental effort measures. However, either measure alone does not accurately reflect the imposed mental load on a learner. Therefore, we felt it appropriate and conceptually superior to create groups through a median split (i.e., those who experience high cognitive load and those who experienced low cognitive load) based on a multiconstruct of cognitive load to compare the potential differences such existing mental facilities might exert on adults' attitudes and capability to report persuasion knowledge.

H7 predicted that parents' cognitive loading would be negatively associated with their reports of persuasion knowledge. Two 2×2 ANOVAs were used to examine parents' selling and persuasion knowledge. The first ANOVA examined advertising disclosure modality (none/single) and CL median split (high/low). There was a significant main effect for CL median split ($F(1, 64) = 8.2$, $p = .006$). Parents in the high CL median split group had a lower mean ($M = 7.13$, $SD = 2.71$) than did parents in the low CL

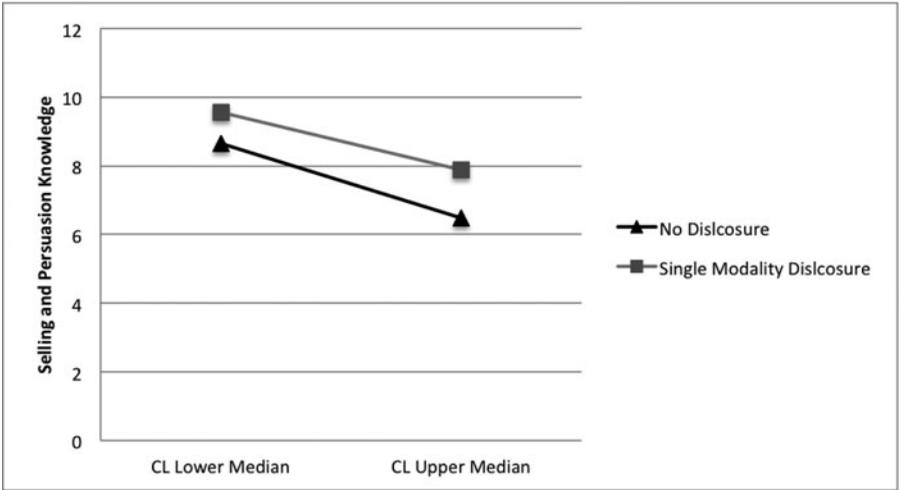


Figure 2. Main effect of cognitive load on selling and persuasion knowledge.

median split group ($M = 9.06, SD = 2.88$) (see Figure 2). The second 2×2 ANOVA was used to examine parents' selling and persuasion knowledge by advertising disclosure modality (none/single) and CL (top 50%/no CL treatment). There was a significant main effect for CL ($F(1, 93) = 8.25, p = .005$). Parents who experienced high cognitive load (i.e., those in the top 50%) had a lower mean ($M = 7.13, SD = 2.88$) than did parents who were not assigned to the CL treatment ($M = 9.14, SD = 3.28$) (see Figure 3). These findings support H7.

H8 predicted that that parents' cognitive loading would be positively associated with their attitudes toward children's advergames. A 2×2 ANOVA was used to examine parents' negative perceptions of advergames by advertising disclosure modality (none/single) and CL median split (high/low). There was no significant main effect for CL ($F(1, 64) = 1.16, p > .05$). H8 is not supported.

Summary of results

As predicted, parents who were exposed to an advertising disclosure in an advergame reported more persuasion knowledge compared to parents not exposed to an advertising disclosure. Additionally, parents

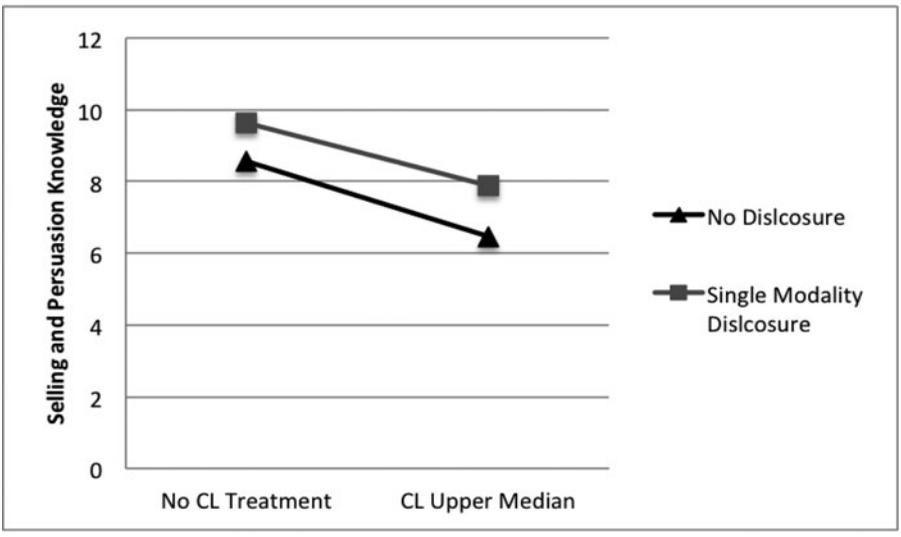


Figure 3. Main effect of cognitive load on selling and persuasion knowledge.

who experienced higher levels of cognitive load during advergence play tended to report lower levels of persuasion knowledge compared to parents experiencing relatively less cognitive load. However, in contrast to what was predicted, the presence of a dual-modality advertising disclosure was less effective at promoting persuasion knowledge of advergaming than was a single-modality advertising disclosure. Furthermore, while we predicted that attitudes would be negatively affected by the presence of disclosures and positively affected by the influence of cognitive load, our results did not support our predictions.

Discussion

Extant literature has made three assumptions that underpin the current study. First, PKM as it is currently conceptualized applies to any form of persuasive communication. Second, disclosures that simultaneously appear in both auditory and visual formats (i.e., dual) are superior to single modality in regard to memory, comprehension, and recall. Third, adults possess both the necessary marketplace knowledge and cognitive ability to identify any form of persuasive communication as advertising regardless of its immersive or covert nature. These abilities, in turn, make adults more adept than children at recognizing persuasive and selling intent in all forms of advertising. The current study's findings offer both theoretical and managerial implications that call into question all three of these assumptions.

The applicability of PKM to immersive advertising contexts

Our findings support a main theoretical contention of PKM: Parents better recognize and report an advertisement's selling and persuasive intent as a result of additional advertiser, agent, or topical information (Friestad and Wright 1994; Campbell and Kirmani 2000). We found that parents who were exposed to any form of an advertising disclosure, which highlighted the advergence as an advertising strategy/tactic, reported higher levels of selling and persuasion knowledge than did parents who were not exposed to an advertising disclosure.

However, we question the applicability of PKM to all forms of persuasive communication. While PKM assumes a positive relationship between persuasive understanding of advertising and the presence of additional advertiser, agent, or topical information, our findings indicate that this relationship is not consistent in an advergaming context. For example, an increase in advertising information in the form of a dual-modality disclosure did not lead to increased selling and persuasion knowledge scores. While both single- and dual-modality advertising disclosures are more effective at promoting selling and persuasion knowledge compared to the no-disclosure condition, the dual-modality advertising disclosure was actually less effective than the single-modality advertising disclosure at promoting selling and persuasion knowledge.

We assert that advergaming, because they require significant cognitive resources to effectively process and navigate game play, impose upon players a lack of cognitive resources to allocate to the processing of additional information presented in the form of a disclosure. Therefore, whether the player is a child or a parent, advergaming naturally result in cognitively loaded players. In support of this argument, parents reported higher than average scores on a question that asked how hard they concentrated on advergence play. In fact, nearly 70 percent of the parent sample had scores falling above the measure's midpoint (4 out of 7 on a Likert scale), indicating a high level of concentration.

Our findings present a distinctive theoretical dilemma for PKM as applied to advergaming. One theoretical assumption underlying PKM is that consumers maintain sufficient cognitive resources that allow for the successful inference of persuasive intent across all forms of advertising and marketing communications. However, unlike traditional advertising, advergaming are uniquely more complex and require more cognitive resources. By their very nature, advergaming create cognitively loaded players, who have reduced cognitive resources to devote to the inference of persuasive intent.

The assumed superiority of dual modality

Previous disclosure research indicates that dual-modality disclosures are more effective than single-modality disclosures in promoting greater awareness, knowledge (Morris et al. 1989), recall (Smith 1990;

Barlow and Wogalter 1993), and comprehension (Murray et al. 1998). While previous studies examined the effectiveness of single- and dual-modality advertising disclosures in traditional advertising formats, the current study examined the effectiveness of advertising disclosure modality within an immersive advertising environment.

Surprisingly, this study found, contrary to the extant literature, that single modality was superior to dual modality in terms of a disclosure that identified the children's advergaming as a form of advertising. We speculate on a potential explanation. Because advergaming conceal their commercial nature (Tanaka [1994] 1999) through immersion and interactivity (Evans et al. 2013), it is probable that these defining elements of advergaming, which delineate them from more traditional formats, prevented parents from accurately reporting the selling and persuasive intent of the advergaming (Evans et al. 2013). Additionally, the ineffectiveness of the dual modality disclosure may be a result of the distraction caused by gameplay and sound effects. Our findings corroborate those of Thomas, Fowler, and Kolbe (2011), which demonstrated the superiority of single-modality disclosures over dual-modality disclosures on measures of understanding, memory, and attention when there were distractions present. Furthermore, in the context of immersive Pop-Tarts Toasty Turvy game play, parents were focused on attaining the game objective while hearing music and sound effects as part of the game experience. As such, the audio disclosure was not "clear and conspicuous" in this environment. We acknowledge the possibility that parents were tuning out all sound while trying to successfully play the game. Indeed, this finding supports the FTC's (1970) CCS guideline: No other sounds should air during the audio disclosure.

However, recent Dotcom disclosure recommendations (FTC 2013a) suggest the use of disclosures that align with the modality of the environment in which they appear. Based on our findings, we caution against the use of this strategy in advergaming. Disclosures that possess the same modality as the environment in which they appear may interfere with one another (cf. Simon et al 2001; Choi, Lee and Li 2013). We align our recommendation for caution with the recent concern expressed for consumers' ability to successfully differentiate advertising content from regular content and what can be done to effectively aid in that differentiation (FTC 2013b). If advergaming elect to incorporate dual modality, then game sound should be suspended while the audio disclosure is delivered. However, this interruption may circumvent the intended purpose of advergaming, which is to enhance attitude toward the brand (Nelson, Keum and Yaros 2004; Grimes and Shade 2005; Cauberghe and De Pelsmacker 2010; Hernandez 2011). We recommend that the disclosure, or signal, that identifies the advergaming as advertising should be in the modality that is most distinctive or different from the advergaming environment.

While previous research has utilized product-related disclosures (cf. Thomas et al. 2011), our study utilized disclosures that highlighted the nature of the communication as advertising. Given that these two forms of dual modality advertising disclosures appear to be less effective at promoting understanding (related both to the product and to the communication form), we question the superiority and use of dual modality disclosures in covert, immersive, and interactive advertising formats, which lend themselves to increased levels of potential distraction.

An emphasis on making disclosures clear and conspicuous emphasizes message traits. This "top-down" approach is designed to gain attention and motivate information processing (Griffin et al. 1999; Cohen et al 2006). In contrast, the "bottom-up" approach to disclosure processing "focuses on understanding the evaluative behaviors" of the individual (Griffin et al. 1999, S231). We found that the traditional top-down approach where dual modality disclosures should be superior was not supported in an advergaming environment. Indeed, our findings underscore that bottom-up factors such as how persuasion knowledge is influenced by the inherent cognitive load generated by game play may have more impact than advertising disclosure format.

Managerial implications

Previous persuasion knowledge research has operated on the general assumption that adults, because they have more marketplace experience and cognitive ability, are more adept at inferring persuasive intent in all forms of advertising and marketing communication. This pervasive assumption has cemented examinations of persuasion recognition and advertising literacy on children rather than adults.

While it is undoubtedly the case that children are of interest, especially when one considers their vulnerability as a consumer audience, adults may too have difficulty determining persuasive intent in immersive and covert advertising formats (Evans et al. 2013). In acknowledgement of this possibility, the FTC (2013b) recently held a workshop on native advertising, which specifically aimed to discuss whether (adult) consumers recognized and understood covert advertisements—namely, native ads.

Our findings indicate that parents' understanding of the persuasive intent within children's advergames varies depending on the presence and modality of the disclosure, which identifies the communication as a form of advertising. This finding is especially meaningful for advertising practitioners if they consider the important socialization role parents play in regards to educating and informing their children about immersive or covert advertising. While growing emphasis has been placed on educating children about the persuasive nature of immersive and covert advertising (which includes advergames), our findings indicate that such initiatives should pertain to their parental counterparts as well (Owens et al. 2013).

However, even if advertising practitioners take steps to ensure parents' successful understanding of persuasive intent within covert advertising formats like advergames, they too should acknowledge the potential negative influence that parental multitasking may have on the inference of persuasive intent. This study's findings indicate that among parents that experienced relatively higher levels of cognitive load, simultaneous task exposure and completion during advergence play significantly reduced reports of selling and persuasion knowledge. Our findings indicate that in more covert advertising formats, where the advertising and entertainment content are intertwined, increased cognitive load may translate into an inability to see past the entertainment content to recognize the advertising therein. Because games naturally induce cognitive load (Schrader and Bastian 2012), it is critical that the inclusion of a disclosure specifically underscore the persuasive nature of the advergence. Based on this study's findings, the most effective way to emphasize the persuasive nature is in a textual form.

Considering the basic nature of the task used in the current study, practitioners should acknowledge the potential detracting effects that basic memory or recall tasks exert on persuasion recognition during an advertising episode. Given the inherent cognitive loading in gameplay, coupled with the immersive and interactive nature in an online environment that tends to blur persuasive from entertainment content, it is not surprising that persuasion knowledge of advergames is diminished. Furthermore, if a memory and recall task like the one used in the current study can produce enough cognitive load such that reports of selling and persuasion knowledge are influenced, what is to prevent other numerous and mundane tasks of everyday life from inducing similar cognitive load among parents or adults who are exposed to covert, immersive, or native advertising content?

Limitations and future research

While the current study provides valuable insights into the role that cognitive load and disclosures play in regard to parents' ability to report a persuasive understanding of children's advergames, we acknowledge the presence of certain limitations. First, given the percentage of parents with some form of college education, it is possible that the current online sample of parents was uniquely different from any other parent sample. However, previous research that focused on parents and advergames found no evidence to suggest parents' responses to questionnaire items were influenced by online panel recruitment (Evans et al. 2013). In a similar fashion, the current study found no significant relationships among a shortened version of Crown and Marlow's (1964) social desirability scale and dependent measures.

Second, it is possible that the use of a food advergence with a familiar product (i.e., Pop-Tarts) may have influenced parents' responses. The posttest questionnaire did not include items that measured parents' attitudes toward health in general, their child's health, or their attitudes about high-sugar food like Pop-Tarts. It is possible that attitudes concerning any of these questions may have influenced subsequent responses to the dependent measures. However, given the limited monetary resources for stimuli development, the creation of a fictitious branded advergence was beyond the scope of this study. Furthermore, given that Pop-Tarts is a well-known brand with advertising in various traditional formats, the study's

findings reiterate the notion that advergames' selling and persuasive intent are difficult to recognize not only for children but for parents as well.

Our findings offer several avenues for future research. For one, future research could explore the potential for dual modality ad disclosures in games to identify what format is "clear and conspicuous" in a particular game. Indeed, this study's findings suggest that whether or not a disclosure is "clear and conspicuous" is contextual. Future research also should investigate how cognitive load differs between adver gaming and other forms of online advertising and the subsequent information processing. It may be that pursuing a bottom-up rather than top-down perspective provides better insight into enhancing consumer persuasion knowledge in an adver gaming environment.

Additionally, a content analysis of children's adver games could investigate the use of sound and text in gameplay. It is possible that children's adver games have limited text, especially those that target younger children, to accommodate diverse literacy skills. Future research should explore how one can effectively disclose the game as advertising if the player is tuning out the non-game-play sound or doesn't have the literacy skills to read text.

Given that increases in advertiser, agent, and topical information do not appear to uniformly influence reports of persuasion knowledge in an adver gaming context, future research should examine whether this relationship between disclosures and reports of persuasion knowledge exhibit variability in other covert, immersive, or native advertising formats. Because native advertising is designed to be "cohesive with the page content, assimilated into the design, and consistent with the platform behavior" (IAB 2013, 3), future research should examine the effects disclosures have on consumers' activation of persuasion knowledge in native advertising. Research attempting to unearth this potential relationship would offer important theoretical and regulatory implications. Furthermore, future research should examine how covert marketing communications, and the potential distractions that accompany them, influence the effectiveness of disclosure modality.

Given the theoretical and managerial implications offered by our findings, we believe this study offers a significant contribution to existing persuasion knowledge and advertising disclosure literature. While "today's parents have the digital knowledge to impart wisdom and set rules" (eMarketer.com 2013), children's increased usage of mobile devices, tablets, and gaming means that parents are less likely to oversee and interact with their child. Understanding what parents know and don't know is going to gain in importance. This study identified three previously held assumptions that need to be questioned as advertisers targeting children employ increasingly covert tactics. As adver gaming continues to permeate most advertising and marketing arenas, the focus on children, while most assuredly warranted, should be extended to their adult counterparts as well. In light of this study's findings, the evidence suggests that parents, and perhaps adults, may not be aware of the persuasive nature inherent within adver games. The inherent cognitive loading generated by this advertising format's gameplay highlights a unique feature that warrants special consideration.

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Appendix 1: Cognitive load calculation formula

$$CL = \left\{ \frac{Z_{Performance} - Z_{Mental\ Effort}}{\sqrt{2}} \right\}^{*-1}$$

Appendix 2: Dependent variable items on study questionnaire

Persuasion Knowledge Items:

- This game provides information about pop tarts.
- This game is educational in nature.**
- This game makes people like pop tarts.
- This game is a good way to pass the time.**
- This game lets people know more about pop tarts.
- *This game is not meant to sell pop tarts.
- This game provides entertainment.**
- This game is meant to be fun.**
- This game helps develop cognitive skills.**
- This game stimulates the sales of pop tarts.
- This game is a waste of time.**
- *This game does not influence opinions about pop tarts.

Attitudes Toward Advergaming Items:

- Games like this make children want things they don't really need.
- Games like this lead children to make unreasonable purchase demands on their parents.
- Games like this directed at children lead to family conflict.
- Games like this don't take advantage of children.*
- There aren't enough games like this directed at children.*
- Games like this use tricks and gimmicks to get children to buy their products.
- *Reverse scored items; **filler items.

Appendix 3: Experimental treatment example: Cognitive load/single-modality condition



Concept2

REMEMBER THE FOLLOWING NUMBER SEQUENCE
YOU WILL BE ASKED TO RECALL THIS SEQUENCE AFTER YOU PLAY A GAME
DO NOT WRITE IT DOWN
5746983219412
57 seconds

 Previous

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Hey Kids! This game's an advertisement.