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van Reijmersdal, E.; Rozendaal, E.; Buijzen, M.

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**CHILDREN'S RESPONSES TO ADVERGAMES:
THE ROLE OF GAME AND CHILD CHARACTERISTICS**

Eva van Reijmersdal, Amsterdam School of Communication Research ASCoR, University of
Amsterdam, The Netherlands

Esther Rozendaal, ASCoR, University of Amsterdam, The Netherlands

Moniek Buijzen, ASCoR, University of Amsterdam, The Netherlands

Corresponding author:

Eva van Reijmersdal

ASCoR University of Amsterdam

Kloveniersburgwal 48

1012CX Amsterdam

The Netherlands

E-mail: e.a.vanreijmersdal@uva.nl

Telephone: + 31 20 525 3986

Fax: + 31 20 525 3681

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ABSTRACT

This study examined the effects of three factors typically associated with advergames: brand prominence, game involvement, and children's (limited) persuasion knowledge on cognitive and affective responses. An experiment among 7 to 12 year old children (N = 104) showed that brand prominence led to increased brand recall and recognition, whereas game involvement led to more positive brand attitudes. The effect of game involvement was mediated by game attitude. Finally, our study revealed that persuasion knowledge (i.e. knowledge of the commercial source of the game and its persuasive intent) did not influence cognitive or affective responses to the brand or game.

INTRODUCTION

The last decade has seen a sharp increase in non-traditional interactive marketing techniques (Calder, Malthouse, and Schaedel, 2009). Many of these techniques are targeted toward children: Advergames, branded websites, and brand placements in movies and television programs have saturated children's media environments (Calvert, 2008; Moore, 2004). These techniques integrate persuasive messages into highly entertaining program or editorial content, resulting in blurred boundaries between advertising, entertainment, and information (Raney et al., 2003). It is generally assumed that children have difficulty recognizing the commercial nature of these advertising practices, which may result in unwitting and unwilling persuasion (Livingstone, 2009; Nairn and Fine, 2008; Rozendaal, Buijzen, and Valkenburg, 2009). In addition, these non-traditional forms of advertising are often highly interactive and immersive. Children's increased involvement with the persuasive media content may thus make them highly susceptible to commercial effects (Lee et al., 2009). Very little is known about *how* children process these marketing techniques. Insights are lacking as to how the defining characteristics of these techniques - that is their integrated and involving nature - affect children's processing. These insights are important not only for our theoretical understanding of this increasingly popular phenomenon, but also to determine the types of marketing policies and interventions needed to increase children's understanding of these marketing techniques.

LITERATURE REVIEW

Effects of Brand Prominence

Adult research has shown that prominent placements have a stronger effect on cognitive responses such as brand memory in comparison to subtle placements. This is because prominent placements capture audience attention (Gupta and Lord, 1998; Nelson, 2002; Schneider and Cornwell, 2005; Yang and Roskos-Ewoldsen, 2007), providing an information processing advantage for prominent compared to subtle placements, making the brand more likely to be seen, stored, and retrieved from memory (Gupta and Lord, 1998). The question remains as to whether brand prominence has the same effect on children as on adults. Children may lack the

ability to distinguish between relevant and irrelevant information. When playing an advergaming, children may be so distracted by the game itself that even prominent placements fail to attract their attention. Further, if prominent placements do successfully attract their attention, children's limited working memory capacity may prevent the brand from being processed while simultaneously playing the game (Luciana and Nelson, 1998). Therefore, prominence may exert differential effects on children than adults. To test the effect of prominence on children's responses we base our hypothesis on adult research:

H1: The prominence of brands in advergaming has a positive effect on children's cognitive responses (i.e., brand recall and recognition).

Prominently placed brands may activate awareness of the brand's presence and thus raise defenses against persuasion. When audiences realize that a brand is placed in order to persuade, reactance occurs leading to counter argumentation (Brehm and Brehm, 1981; Friestad and Wright, 1994). Consequently, attitudes towards the brand or game may be negatively affected by brand prominence (Russell, 2002; Van Reijmersdal, 2010). However, it is not yet known whether this adverse effect of brand prominence on affective responses also holds for children. They have yet to develop the necessary socio-cognitive and information processing abilities to deal with advertising critically (Moses and Baldwin, 2005; Rozendaal, Buijzen, and Valkenburg, 2010). Activation of critical advertising defenses are expected to be hampered when a persuasive message is integrated into entertaining and involving content, as this will overwhelm children's emotion regulation and rational argumentation (Rozendaal, et al., 2010). Even when a brand is prominently placed in an advergaming, it is still embedded in an involving and entertaining content. Therefore, it is questionable as to whether brand placement, even when prominent, will activate children's critical defenses.

RQ1: How does brand prominence in advergaming influence children's affective responses (i.e., brand attitude and game attitude)?

Effects of Involvement with the Game

Involving the child in the game increases the duration of play and thus exposure to the brand or branded message. This, in turn, is likely to increase children's recall and recognition of the brand. However, involvement with the game may also distract from the brand, resulting in less cognitive activation or brand memory. Indeed, adult research revealed that brand memory was lower when adults were highly involved with the movie or game in which the brand was integrated (Grigorovici and Constantin, 2004; Nelson, Yaros, and Keum, 2006). Due to high involvement with the movie or game, no cognitive capacity was left available to process the brand. As a result, adults' brand memory is lower in situations of high game involvement compared to low game involvement.

It remains unknown as to how game involvement influences children's processing of integrated brands. It is conceivable that the effects of involvement observed among adults are amplified among children, due to their limited cognitive development. As children's ability to control their thoughts and actions is limited, they may be totally absorbed in the game, leaving no cognitive capacity available to process the brands in the game.

H2a: Involvement with the advergaming has a negative effect on children's cognitive responses (i.e., brand recall and brand recognition).

Among adults, associating the brand with an enjoyable experience is assumed to influence brand attitudes positively, via mechanisms of affect transfer and association activation, including the spill over effect (Grigorovici and Constantin, 2004; Moorman, Neijens, and Smit, 2002; Raney et al., 2003). Spill over suggests that the effects of an appreciated context (the game), such as involvement with the game, carry over to embedded commercial messages (De Pelsmacker, Geuens, and Anckaert, 2002). Children have been shown to be particularly susceptible to these affective processing mechanisms (Buijzen, 2007). While children's emotional involvement with a persuasive message's surrounding content has received no research attention, we anticipate that the affect transfer mechanism observed among adults, will also hold and perhaps be even stronger for children.

H2b: Game involvement has a positive effect on children's affective responses (i.e. brand attitude and game attitude).

H2c: The effect of game involvement on brand attitude is mediated by game attitude.

The Role of Children's Persuasion Knowledge of Advergaming

Persuasion knowledge incorporates an understanding that the source of advertising formats is commercial and that there is persuasive intent (Friestad and Wright, 1994; Robertson and Rossiter, 1974). It is assumed that due to advergaming's embedded and involving nature, children have difficulty recognizing the source and persuasive intent of advergaming (Livingstone, 2009; Nairn and Fine, 2008). It is further assumed that a limited persuasion knowledge is associated with stronger cognitive and affective responses (Friestad and Wright, 1994; Kunkel et al., 2004; Livingstone and Helsper, 2006).

Several empirical studies regarding children's persuasion knowledge of traditional advertising have indeed shown that at around 8 years of age, children begin to understand the intent of advertising, but a detailed comprehension of persuasive intent does not fully mature until the age of 12 (Rozendaal, et al., 2010). For non-traditional advertising formats this is even more difficult. A recent study explicitly comparing children's persuasion knowledge of traditional versus non-traditional advertising confirmed that children have significantly greater difficulty understanding the nature of non-traditional and embedded forms of advertising, including advergaming (Owen, 2008). However, the question remains as to whether this limited persuasion knowledge affects children's susceptibility to advertising's persuasive influence. Empirical evidence for this relation is scarce and inconclusive (Livingstone and Helsper, 2006). Our final research question therefore asked:

RQ2: To what extent is children's persuasion knowledge of advergaming related to their cognitive and affective responses and how does persuasion knowledge interact with prominence and involvement?

METHOD

Participants and Stimulus Materials

A total of 104 children of 7 to 12 years old ($M = 9.49$, $SD = 1.65$) participated in the research. Children were recruited from three elementary schools. Prior to participating, institutional approval, parental consent, and children's informed consent were obtained. The children played the advergaming twice which took about 3 minutes. The researcher then returned to the room and completed a computer-assisted online survey with the child. Two versions of an advergaming were designed. The aim of both games was to catch falling bags of crisps and cans of soda in a basket. In the prominent placement version, the products were Lays chips bags and Pepsi cans. In addition, large logos of both brands were displayed centrally in the background. In the subtle placement version, the crisp bags and soda cans contained no logos or brand identifiers. Instead, the words 'chips' and 'cola' were written on them. A small Lays logo was displayed on the left side and a small Pepsi logo was displayed on the right side of the screen. The study only focused on the effects of Pepsi as this brand was appreciated equally among children of different ages, $F(2, 102) = 2.06$, $p = .13$, $\eta^2 = .04$.

Measures

Game involvement was measured with two items (e.g., "how hard did you try to achieve a high score?") on a scale ranging from 1 (*not at all*) to 4 (*very much*), Pearson $r = .33$, $p < .01$, $M = 3.60$, $SD = .48$. As most children were highly involved, this variable was recoded based on a median split ($Mdn = 3.5$) into low versus highly involved. Brand recall was measured by asking the children which brands they remembered from the game (Pepsi coded 1, all other responses 0; $M = .26$; $SD = .44$). For brand recognition, children were asked to indicate from a list of brands whether they remembered them from the game. The recognition measure was corrected for false responses by recoding the scores (2 = only seen Pepsi, 1 = Pepsi and one other brand, 0 = all brands or no brands seen; $M = 1.07$, $SD = .91$). Brand attitude was measured with two items (e.g., "Do you like Pepsi?") on a scale ranging from 1 (*no, not at all*) to 4 (*yes, very much*), Pearson $r = .49$, $p < .01$, $M = 2.45$, $SD = .81$ (Pecheux and Derbaix, 1999). Game attitude was measured with the five questions, for example "Do you like the game?," and "Do you think the game is great?" on a scale from 1 (*no, not at all*) to 4 (*yes, very much*) (Cronbach's Alpha = .73, $M = 2.92$, $SD = .55$) (Derbaix and Pecheux, 2003; D'Alasio et al., 2009). Two aspects of persuasion knowledge were measured: Understanding of the source was measured with the question "who created the game?," with the following response options; "Pepsi and Lays" (1), "my teacher," "a supermarket," "a gaming website," or "the researcher (all 0)" ($M = .40$, $SD = .49$). Understanding persuasive intent was measured with the question "why do you think this game is online?" with the following response options; "to make children like Pepsi and Lays (1)," "to show what you can buy in stores," "because children like it," or "because the queen likes it (all 0)" ($M = .57$, $SD = .50$), constructed and validated by Owen (2008).

Children's age, gender and game playing experience was also ascertained. The groups did not differ with respect to age, sex, or their game playing experience ($p > .10$)

RESULTS

MANOVA yielded a significant overall effect of prominence, $F(4, 91) = 14.12$, $p < .01$, $\eta^2 = .38$. The more prominently the brand was placed within the advergaming, the higher children's brand recall and brand recognition. Prominence had no significant effect on affective responses toward the brand or game. The analysis also yielded a significant overall effect of game involvement, $F(4, 91) = 6.32$, $p < .01$, $\eta^2 = .22$. When children were more involved with the

advergame, they demonstrated more positive brand and game attitudes. Involvement had no significant effect on cognitive responses. Further, the MANOVA showed no significant overall interaction effect between prominence and game involvement. The effect of involvement on brand attitude was analyzed further to see whether it was mediated by game attitude (H2c). The effect of involvement on brand attitude became non-significant when game attitude was added as a factor, $F(1, 90) = 0.65, p = .42, \eta^2 = .01$, suggesting a complete mediation by game attitude. The mediated effect was formally tested using bootstrapping, which revealed significant mediation for the effect of involvement on brand attitude via game attitude (95% bca CI = .02; .36; Point estimate = .19). With respect to persuasion knowledge, overall 40% ($SD = .49$) of the children understood that the brands created the game and 57% ($SD = .50$) understood that the game had a persuasive intent. The MANOVA showed no significant overall effect of understanding the source, $F(4, 91) = 0.81, p = .56, \eta^2 = .03$, or understanding persuasive intent, $F(4, 91) = 0.65, p = .63, \eta^2 = .03$. Finally, there were no significant overall interaction effects.

DISCUSSION

The primary aim of this study was to examine how brand prominence, game involvement, and persuasion knowledge influence children's cognitive and affective responses to advergames. The study indicates that prominence and involvement result in different types of effects, while persuasion knowledge plays no role. Overall, three important conclusions can be drawn: (1) brand prominence evokes cognitive responses (i.e., brand recognition and recall), (2) game involvement leads to affective responses (attitude toward the game and brand), and (3) children's persuasion knowledge regarding advergames is limited and does not influence the effects of the advergame. These conclusions have important theoretical and societal implications. Theoretically, the present study demonstrates that different game elements influence different persuasion outcomes. Brand prominence leads to cognitive processing, in which brand memory is influenced but not attitudes. Game involvement, in contrast, influences affective processing resulting in a mediated effect on brand attitude, via game attitude. Theory on the processing of new marketing techniques should acknowledge these separate mechanisms which play a role in children's processing of new marketing techniques.

In addition, our study implies that the role of persuasion knowledge regarding new marketing techniques may be smaller than expected. In line with Mallincrodt and Mizerski's (2007) findings, our results suggest that persuasion knowledge regarding new marketing techniques does not decrease children's susceptibility to persuasion. Even when children possess the relevant knowledge, they are unable to independently retrieve and apply this knowledge when confronted with advertising embedded in involving and entertaining contexts. This implies that in order to reduce persuasion via new online marketing techniques, we must find alternative ways of making children able to apply their knowledge in the persuasion process. Future research could further explore the nature and role of persuasion knowledge, for instance by investigating how children's defenses can be activated while playing an advergame.

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