Advergaming and healthy eating involvement

How healthy eating inclinations impact processing of advergame content

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Abstract

Purpose – The purpose of this paper is to understand how healthy eating involvement (HEI) impacts the evaluations of branded food advergames.

Design/methodology/approach – This paper invokes the elaboration likelihood model and reactance theory to explain the effects of different levels of brand integration within a food advergame on individuals with different reported levels of HEI. Undergraduate students were assigned (non-random) to play one of three different advergames with varying levels of brand integration. Furthermore, participant's health involvement was measured and incorporated as a moderating variable on brand and advergame attitudes. Regression analyses were used to analyze the data.

Findings – The results showed significant interaction effects between HEI levels and level of brand advergame integration. Individuals with higher levels of HEI showed more negative attitudes toward the brand and game when integration was high. However, lower levels of brand advergame integration resulted in positive effects among lower HEI individuals.

Research limitations/implications – Limitations of this research are that gamer experience was not measured prior to game play. Also, that no control of advergame playing time was conducted. However, a manipulation check was conducted. Future research should examine the impact of healthy advergames on individual's reactions and information processing.

Practical implications – Editors and creators of advergames must be more aware of the impact that branded items have within a gaming situation. Individuals may not always positively evaluate the brand integrated within a fun online environment. Furthermore, better consumer targeting will likely lead to higher message acceptance based upon individuals levels of self-congruency with that message.

Originality/value – This study provides needed examination of contextual and individual level variables in responses to advergaming content.

Keywords Information processing, Advergaming, Brand attitudes, Health involvement

Paper type Research paper

Introduction

Online media consumption such as social networking, game playing, and web surfing are becoming primary online activities for today's youths and young adults (Rideout *et al.*, 2010). Furthermore, this media environment is filled with numerous advertising messages that permeate every aspect of our society and culture. This has created a clutter of advertising that appears on the internet and via digital media and can result

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in negative attitudes toward online advertisements (Ha and McCann, 2008). Because of this over-saturation, agencies, and companies have had to re-define their messages as entertainment. One way of creating an engaging and entertaining experience with the consumers in online environments is through the usage of advergames. Advergaming combines advertising messages within and around video games.

This new form of advertising is one of the newest weapons through which marketers and advertisers have been creating entertaining experiences for children, adolescents, and young adults. A recent content analysis showed that 139 brands produced a total of 632 different advergames, thus some brands are using multiple advergames to reach consumers (Lee *et al.*, 2009). Other research has also shown the prevalence of advergame usage among major brands and companies. For instance, Lee and Youn (2008) content analyzed the websites of 100 leading national US advertiser's usage of interactive gaming and advergames. The study resulted in 294 unique advergames used by 26 major companies and that over 50 percent of those advergames included some form of brand identifier (Lee and Youn, 2008). In addition, a majority of the food and beverage industry is incorporating advergames on their websites (Cai, 2008; Quilliam *et al.*, 2011). Thus, branded food items from snacks, to soda beverages, and fast-food companies are often the types of products creating advergames (Lee and Youn, 2008; Moore, 2006; Paek *et al.*, 2013; Weber *et al.*, 2006; Cicchirillo and Lin, 2011).

Moreover, food advertising (unhealthy food advertising) is shown to effectively persuade individuals to consume low nutritional, high caloric foods (Harris *et al.*, 2009) and has been linked to obesity (Zimmerman and Bell, 2010). Both television and internet food advertising have been found to be highly persuasive in this regard (Pettigrew *et al.*, 2013). Despite the growing popularity of food advergaming, little research has focussed on how personal trait variables related to health involvement may interact with situational variables (brand integration) to impact advertising outcomes from playing an advergame. This study adds to the literature by examining the role of healthy eating involvement (HEI) in conjunction with level of brand integration in an advergame on attitudes toward the game and attitudes toward the brand.

Literature review

Advergames and brand integration

Advergames encourage the player to engage with the persuasive messages and muddle the difference between entertainment and content (Paek *et al.*, 2013). It is such that the brand plays a prominent position within the gaming environment. According to Chen and Ringel (2001) advergames are "the use of interactive gaming technology to deliver embedded advertising messages to consumers" (np). Advergames are specifically designed with the intent of promoting/marketing the brand or product featured in that game. Thus, the brand in the gaming environment is the reason for the game and its content centers around the most positive positioning and promotion of that brand (Cicchirillo and Lin, 2011). Furthermore, advergames offer uniquely different experiences than say watching television. This is partly because advergames are very interactive and require active participation on the part of the consumer. According to Klimmt *et al.* (2007) control and interactivity during game play are important determinants of game enjoyment.

Researchers have noted that there are three different levels of brand integration (associative, illustrative, and demonstrative) within advergames (Chen and Ringel, 2001; Li and Leckenby, 2007; Huang and Dinu, 2010).The extent to which a brand is integrated into the game increases at each level. Thus, at the associative level, the lowest level of brand integration, the brand or spokes character is often

incorporated only as a background object or billboard (Li and Leckenby, 2007). The illustrative level, the second highest level, integrates the product's brand within the gaming environment (Huang and Dinu, 2010). In the illustrative level players engage the product in an active fashion; however the product or branded character does not help the player advance or is necessary to the games function. Finally, at the demonstrative level, the highest level of integration, the branded product, or spokes character is an integral part of the game play. In this regard, demonstrative advergames ask participants to learn about and use the brand within the game in order to advance to further levels within that game (Huang and Dinu, 2010). Research on the level of brand integration within an advergame can lead to important insights into how this integration impacts attitudes.

Kinard and Hartman (2013) examined the effect of advergames for entertainment brands (i.e. reality television shows) on attitudes (game and brand) and behavioral intentions. Also, Kinard and Hartman (2013) did look at level of integration in terms of congruency with the advergame as well as prior brand experience. Thus, the researchers examined four different advergames that varied on level of brand integration (high vs moderate) along with level of brand experience (none vs prior). Two were deemed to be high brand integration and the other two were deemed to be moderate brand integration (Kinard and Hartman, 2013). The researchers did not include a low level brand integration condition. The results showed that high brand integration elicited more negative attitudes regardless of prior brand experience (Kinard and Hartman, 2013). The results also showed that brand integration did not affect behavioral intentions. However, individuals without prior brand experience showed lower behavior intentions toward the high brand integration advergames (Kinard and Hartman, 2013). The outcome related to brand integration is particularly relevant as high integration resulted in negative attitudes.

Other research has noted similar findings based upon level of integration. Brand placement and brand prominence (i.e. integration) have been examined with a diverse older audience (age range was 15-40 years) (Cauberghe and De Pelsmacker, 2010). The researchers argued that level of integration would have a negative effect on brand attitude. This negative attitude could be generated by an orienting response (Diao and Sundar, 2004) to brand prominence (high integration) that would interfere with gaming goals. The results showed that brand integration positively affected brand recall, but not brand attitudes (Cauberghe and De Pelsmacker, 2010). Thus, brand integration did not have an effect upon attitudes.

Also, Peters and Leshner (2013) examined the effect that brand congruity and proximity (i.e. integration) in an advergame has upon attitudes and brand memory. The researchers examined brand congruity in the context of the brand's fit with the game content. Proximity was conceptualized as the visual prominence of brand as either central or peripheral within the border of the advergame (Peters and Leshner, 2013). The results of this study found that congruent and less proximal brand placement (peripheral) in an advergame had a better impact upon positive attitudes than incongruent and more proximate placement. Congruent placement also had a positive impact upon implicit brand memory. Furthermore, it was shown that incongruent and more centrally proximal brand placement resulted in high negative attitudes (Peter and Leshner, 2013). Moreover, the results of these studies (Kinard and Hartman, 2013; Peters and Leshner, 2013) show that high brand integration (ex. demonstrative) in the form of central placement or proximal placement within the game can result in negative attitudes among some players.

Demonstrative advergames that incorporate the brand in a prominent position may result in higher negative attitudes than either illustrative or associative advergames.

For instance, Redondo (2012) examined the effect of brand positioning prominence (more or less conspicuous) and level of advergame exposure duration on brand attitudes. Placement conspicuousness was manipulated via either included the brand logo on the game pieces or no logo on the on the game pieces and having the brand characters (personified candies) in the pane next to the game or situated closer to the game in lower right corner (see Redondo, 2012, p. 1676). Overall, the less conspicuous positioning did not make the brand the central focus, while the more conspicuous placement made the brand a central part of the advergame play. The results did show that prominently positioned brands may interrupt the transference of positive affect generated from game play to the brand (Redondo, 2012).

Thus, researcher further supports that prominent positioning (i.e. demonstrative) can likely result in negative attitudes. This may occur through blocking or hindering the development of positive affect. A factor that might help further understand why this occurs is by taking into account individual level variables that might impact the process of attitude change or formation based upon existing attitude structures toward brand or product categories. Oliver and Krakowiak (2009) have noted that individual differences in the forms of traits or dispositions might be important moderating variables that are often overlooked in media effects research. The current study extends the research on advergames by taking into account HEI as a disposition toward the processing of messages related to diet and or nutrition. Thus, HEI might influence motivation to process health or diet related messages which can impact the processing of advergames. The reason we might expect HEI to impact this process is that a majority of advergames involve branded food and beverage items that are of low nutritional content (Moore, 2006). The current study examines how brand integration and HEI interact to impact the processing of food-related advergames.

Elaboration likelihood model (ELM), involvement, and advergames

One mechanism that might impact brand attitudes and advergame attitudes is the elaboration elicited by individuals with different inclinations toward the brand. For instance, Wise *et al.* (2008) noted that since only one brand is the focus in an advergame, it affords individuals the opportunity to apply more cognitive effort toward processing that brand in-game and evaluating its thematic connection to attitudinal measures. Thus, elaboration about the brand in conjunction with the game itself might impact brand attitudes. The ELM (Petty and Cacioppo, 1996) has been largely predictive in explaining how individuals respond to persuasive messages. The model argues that there are two different routes of cognitive thought processing that impact how we evaluate messages. The first route is called the central route and involves thoughtful consideration of issues and arguments of a persuasive message (Petty and Cacioppo, 1996). The other route is called the peripheral route and results from non-issue relevant evaluations of shallow level considerations of a message (Petty and Cacioppo, 1996). The peripheral route relies on negative or positive cues to influence attitudes associated with that message (Petty *et al.*, 1983).

Research suggests that which route an individual applies to a message depends upon their motivation to process that message (Jung *et al.*, 2011; Petty *et al.*, 1983; SanJosé-Cabezudo *et al.*, 2009). Individuals are more likely to devote cognitive effort when involvement is high rather than low (Petty *et al.*, 1983). Researchers have noted that in "high involvement situations, consumers have high motivation to process advertising messages due to high personal relevance, high product category involvement and high need for cognition" (Cho, 1999, p. 38). This suggests that in

instances of high involvement the central route to persuasion should be enacted. However, research has shown that dual processing is never such a simple process. For instance, Petty and Cacioppo (1981) found that peripheral cues did impact persuasiveness among both high and low-involvement individuals. Furthermore, other researchers have noted that peripheral contexts can impact both routes (central and peripheral) and lead to attitude formation (Bitner and Obermiller, 1985; Lord *et al.*, 1995).

In the context of food-related advergames, HEI is likely to impact the motivation level to process the advergame content. HEI is a concept that has been used predominantly in research pertaining to individual food preference (Olsen, 2003; Roininen *et al.*, 1999) and was derived largely from the involvement construct studied in consumer behavior research (Pieniak *et al.*, 2008). Zaichkowsky (1985) defined involvement as "a person's perceived relevance of the object based on inherent needs, values, and interests" (p. 342). Researchers interested in food choice and preferences have adapted this definition to describe the importance one places on health issues, particularly eating a healthy diet (Olsen, 2003; Pieniak *et al.*, 2008). Similar constructs such as health orientation, which refers to one's motivation to engage in preventative health behaviors (Moorman and Matulich, 1993), have been associated with the type of communication channel one uses as their primary source of health-related information (Dutta-Bergman, 2004).

For example, Dutta-Bergman (2004) found that people with greater health orientation were more likely to seek out health information from active sources such as newspapers, magazines, and the internet that demand more information processing, while those with lower health orientation were inclined to rely on media considered passive such as television as a primary source of health information. Bodie and Dutta (2008) noted that "those with a high level of health information orientation are critical consumers of health information, more likely to carefully listen to and read a variety of sources (including the Internet) with quality criteria in mind" (p. 191). Thus, Individuals who are high in HEI may likely be more motivated to process information related to diet and nutrition.

Advergames centered on fast-food items may be likely to impact how individuals with different levels of HEI perceive the game and brand featured in that game. Research shows that health consciousness can impact consumer's perceptions of healthiness of a fast-food restaurants' menu (Hwang and Cranage, 2010). According to the ELM, individuals with higher HEI should be more motivated to engage in higher levels of cognitive elaboration and demonstrate resistance when playing a fast-food-related advergame due to their involvement in the subject matter. As mentioned, advergames represent an attempt to make the game the brand message (An and Stern, 2011). As such, the higher the integration the more aware the individual may become to persuasive intent of the game (van Reijmersdal *et al.*, 2012). Moreover, the highest level of integration may result in lower positive attitude from individuals high in HEI. This can occur because the highly involved individual might experience a psychological reaction to such a blatant persuasive attempt.

Another factor that can affect advertising processing is the saliency or self-congruency cue of that message. Self-congruency cues are features such as source characteristics and design elements that relate to the personality of a website or advertisement that individuals can perceive to be either in line with their own self-concepts or incongruent (Chang, 2002, 2012). Chang (2002, 2005) noted that individuals are likely to accept and view positively products or brands that are congruent with

their self-images (i.e. self-congruent) but reject those that are discrepant. Furthermore, the level of self-congruency is likely to impact how those individuals process that advertising message. Chang (2002) found evidence that self-ad congruency functions as a peripheral cue, when individuals are in a positive affective state and have limited cognitive involvement, to impact evaluations of the brand. However, when individuals are highly involved with a products message then we might expect more cognitive involvement (i.e. elaboration). Chang's (2005) research also indicates both the cognitive and affective components of self-referencing can impact attitudes.

More recently, Chang (2012) examined the impact of self-congruency to branded messages in online contexts. Websites can be important marketing vehicles for companies and can communicate brand identities and personalities. Chang (2012) hypothesized that website-self-congruency leads to positive cognitive and affective outcomes, but also may be moderated by product involvement. The results showed that congruency between an individual's self-concept and a website's personality (i.e. traits of a website including human characteristics and information technology features that allow the viewer to imbue the site with a personality; Chen and Rodgers, 2006) positively impact attitudes and purchase intentions (Chang, 2012). Furthermore, the results showed that website-self-congruency and low involvement resulted in higher positive attitudes (Chang, 2012). Thus, lower product involvement and high self-congruency to the brand had a positive effect. Based upon different levels of involvement and we might expect different attitudinal outcomes toward a brand.

Chang's research shows that individual's self-concepts or involvement levels can impact product or brand evaluations based on one's level of congruency with the product/brand. Furthermore, self-congruency with an ad should impact individual's evaluations of that brand message (Chang, 2002, 2012). Thus, individuals who are high in HEI may view fast-food advergames from an incongruent or discrepant self-congruency based upon the perceived nutrition level of that product, leading to counter-arguing and negative attitudes toward the game and the brand. On the other hand, for individuals with low HEI, advergames featuring unhealthy food may be more congruent with their self-concept and less likely to result in high levels of elaboration related to discrepant cues. Those with lower HEI are more apt to rely on congruent peripheral cues and have more positive attitudes toward the game and the brand.

These game and brand evaluations may also depend upon the level of integration. Reactance Theory (Brehm, 1966; Clee and Wicklund, 1980) holds that individuals prefer their choices and attitudes to be relatively free from social influence. Furthermore, "when social-influence attempts are the source of reactance, the individual will tend to move in the direction opposite from the influence effort" (Clee and Wicklund, 1980, p. 390). Research has shown that online advertising is evaluated to the extent to which it can offer valuable information or entertainment. For instance, Chang (2012) found that e-mail advertisements that offer entertaining content are perceived as less intrusive and elicit stronger positive attitudes. However, this finding is based upon the extent to which an individual perceives that message as intrusive. Thus, meeting with an individual's expectations for messaging and involvement will impact negative or positive reactions.

Reactance theory has been previously applied to advergames. For instance, Redondo (2012) examined individuals reactance to casual advergames based upon the level of subtly (high or low conspicuousness) of that brand placement within and around the game. The results supported contentions that brands placed more subtly (i.e. less prominent) within the game had more positive effects on brand attitude

improvement (Redondo, 2012). On the other hand exposure to a prominent brand placement did not significantly improve brand attitudes. Redondo (2012) found that this effect occurred because the prominent placement created negative reactions blocking any positive affect transference from the game to the brand.

Overall, the connection between HEI and the saliency of a fast-food advergame should create different reactions at different levels of placement. Brands incorporated at the highest level (demonstrative) are more likely to be salient and engaging. Individuals with different levels of HEI are likely to process those advergames in different manners. High HEI is likely to lead to negative processing of food advergames, especially if the product is integral part of the game. On the other hand, low HEI is likely to not generate as strong as a reaction because the brand image (fast food) may be congruent with an individual's preferences and attitudes. The more engaging the game and the more likely self-congruency match with those low in HEI the more likely it will result in positive evaluations of the advergame and brand. Thus, we expect the opposite effect for level of brand integration with low health involvement.

Based on the literature outlined above, the following predictions will be examined:

H1. Health involvement moderates the effect of advergame level on attitudes toward the brand. Thus, higher health involvement will interact with more integrated brand advergames to predict lower positive brand attitudes. While, lower health involvement will interact with more integrated brand advergames to predict higher positive brand attitudes.

H2. Health involvement moderates the effect of advergame level on attitudes toward the advergame. Thus, higher health involvement will interact with more integrated brand advergames to predict lower positive advergame attitudes. While, lower health involvement will interact with more integrated brand advergames to predict higher positive advergame attitudes.

Methods

Participants

A total of 183 individuals participated in the study, 75 percent were female and 25 percent were male. Participants were enrolled at a large public university in the Southwestern USA and were recruited from large undergraduate courses in the College of Communication. Approximately 24 percent were freshman, 30 percent were sophomores, 27 percent were juniors, and 19 percent were seniors. Ages ranged from 19 to 30 ($M = 20.83$, SD = 1.44).

Pilot test

In order to ensure the advergames represented distinct levels of integration the games were piloted tested using an independent sample ($n = 30$). Participants were randomly assigned to evaluate one of the advergames for two minutes (individuals were asked to stop playing after two minutes) and then rate that advergame on level of brand integration. Brand integration was assessed along a ten-point scale (10 – highest level of integration and 0 – no integration). The results showed the advergames were significantly different on integration, $F(1, 30) = 11.00$, $p < 0.01$, $n^2 = 0.44$. The demonstrative advergame was ranked highest in integration ($M = 8.77$, SD = 1.48), followed by the illustrative advergame ($M = 6.80$, SD = 1.93), and lastly the associative advergame ($M = 5.25$, SD = 1.65). Overall, each game differed to the extent to which the brand was integrated within the advergame.

Measures

HEI. HEI was measured using a four-item scale developed by Olsen (2001) study related to food preference. Participants were asked to indicate their degree of agreement on a seven-point Likert scale ranging from strongly disagree (score = 1) to strongly agree (score = 7) to statements such as "I am very involved in health issues" and "It is important for me to have variation in my diet" ($\alpha = 0.746$, $M = 5.18$, SD = 1.00).

Attitude toward the game. Attitude toward the game was measured using an 11-item semantic differential scale ($\alpha = 0.962$, $M = 3.48$, SD = 1.32). Participants were asked to indicate their position on a seven-point scale between two bi-polar words describing the game, "I feel that the advergame I played was […] 'boring: interesting,' 'poor: outstanding,' 'not appealing: appealing,' etc." This scale has been used reliably in research examining individual's attitudes toward advertising stimuli (see Appiah, 2004, 2007).

Attitude toward the brand. Attitude toward the brand was measured using an 11-item semantic differential scale ($\alpha = 0.957$, $M = 3.75$, SD = 1.29). This scale is similar to the one used to assess advergame attitudes, but specifically asked participants to rate their evaluation of the brand featured in the advergame (ex. I feel that the brand featured in the advergame I played was … "useful: useless," "worthless: valuable," "not for me: for me").

Interest toward the advergame. Interest toward the advergame was measured via four items on a five-point Likert scale ranging from strongly agree to strongly disagree. Items assessed individual's interest level toward the advergame (i.e. this game held my attention, I paid a lot of attention, I was caught up in the game, and I got involved in the goal of this game) ($\alpha = 0.918$, $M = 2.10$, SD = 0.89).This measure is used as a covariate for the first two hypotheses (see results section).

All measures were calculated by averaging participants' responses to each item in the scale, which resulted in participant scores ranging within the minimum and maximum response possible. See each scale description for point ranges.

Procedure

This study employed a quasi-experimental design (pre-test – post-test). Participants first completed an online pre-test measuring level of health involvement and attitudes toward a variety of fast-food brands. After a two-week lag, an e-mail was sent with a link to an online survey that first directed participants to play one of three fast-food advergames (i.e. associative, illustrative, and demonstrative) and then respond to a post-test comprised of attitude and interest measures. After completing the pre-test, initial data analysis was conducted to evaluate participants' level of health involvement ($M = 5.18$, SD = 1.00) and the sample was divided into three groups: low-involvement ($M = 4.01$, SD = 0.78), moderate-involvement ($M = 5.25$, SD = 0.20), and high involvement ($M = 6.13$, SD = 0.37). However, these discrete distinctions were excluded in the analysis. Instead, an SPSS macro program (Hayes and Preacher, 2014) was conducted. This macro program allows individuals to test two and three-way interactions in moderation models that are not normally possible with SPSS analyses.

Participants in each group were then equally distributed among the three advergame conditions via selective assignment (non-random). This was conducted in order to ensure that equal numbers of differing HEI individuals appeared in each condition. Approximately two weeks after completing the pre-test, participants received a second survey that directed them to an online advergame promoting

McDonald's. The associative condition featured a pinball game with a McDonald's logo on the virtual pinball machine, the illustrative condition was a driving game in which players were instructed to balance a McCafe beverage on the hood of a car they had to drive down the street, and the demonstrative condition was a "Simon says" style memory game that involved dunking chicken McNuggets in different flavored dipping sauces. Thus, each level of advergame increased with the extent to which the brand was an important part of the game and each level increased in the ability to interact with the branded product. Participants were instructed to follow a link located in the online survey directing them to the advergame and instructed to play the game for approximately two minutes. A manipulation check was conducted examining whether or not individuals played the game. Participants were asked to free recall what they remembered from playing the game. The results showed that only nine participants reported not playing game or failed to recall accurate information, these individuals were dropped from all analyses. After playing the advergame attitudes toward the game and attitudes toward the brand were measured.

Results

SPSS was used to analyze all hypotheses. The first two hypotheses used a regression analysis with a moderation macro program (Hayes and Preacher, 2014) in order to treat HEI as a continuous variable that interacts with a multicategorical variable (i.e. advergame level). This allowed the analysis to better reflect the nature of health involvement as a continuous variable rather than treating as dichotomized variable. Also, in order to run a regression using advergame level (i.e. categorical variable) we dummy coded the variables and ran separate moderated regressions (see Hayes, 2005). Furthermore, gender and interest were included within the regression as covariates. Gender was included because a large proportion of the sample was female and females ($M = 5.28$) scored higher overall on HEI ($F = 6.215$, $p < 0.05$) than males ($M = 4.86$). Also, interest to the advergame was incorporated as a covariate. This was done because the study wanted to specifically examine HEI on this process rather than interest level. It should be noted that interest was not significantly correlated with HEI ($r = -0.001$, $p = 0.988$) and was not significantly different across the brand integration levels ($F = 0.514$, $p = 0.718$). Although not predicted a preliminary analysis showed that there were no main effects for advergame level on brand attitudes $F(2, 172) = 0.053$, $p =$ ns or advergame attitudes $F(2, 172) = 0.599$, $p =$ ns.

Hypotheses one predicted that HEI will moderate the relationship between level of advergame and attitudes toward the brand. The results showed that for the demonstrative condition individuals with higher HEI reported lower positive brand attitudes $\Delta R^2 = 0.039$, $t(173) = -2.82$, $b = -0.235$, $p = 0.005$ than the associative condition. Furthermore, for the associative condition individuals with lower HEI reported higher positive brand attitudes $\Delta R^2 = 0.026$, $t(173) = 2.30$, $b = 0.184$, $p = 0.022$ than in the demonstrative condition. However, the illustrative condition did not show any significant differences compared to the associative condition or demonstrative conditions ($p =$ ns). In order to see the direction of the moderation, the interaction terms were plotted and graphed using excel (see Figure 1). The plots show that participants with high HEI reported lower positive attitudes toward the brand after playing the demonstrative advergame than those who played the illustrative and associative advergames. Conversely, participants with low HEI showed higher positive attitudes toward the brand after playing the demonstrative advergame than after playing the associative and illustrative advergames (see Figure 1).

Hypothesis two predicted that HEI will moderate the relationship between level of advergame and attitudes toward the advergame. The results showed that for the demonstrative condition individuals with higher HEI reported lower positive advergame attitudes $\Delta R^2 = 0.024$, $t(173) = -2.97$, $b = -0.190$, $p = 0.003$ than in the associative condition. However, there were no significant interaction effects for the associative condition ($p =$ ns) or illustrative conditions ($p =$ ns). In order to better represent the interaction effect the plots for the interaction terms were graphed (see Figure 2). Thus hypothesis two was partially supported.

Discussion

The purpose of this study was to contribute to extant literature on advergames by examining the ways in which a personal trait, i.e., HEI, interacts with a key feature of an advergame, specifically level of brand integration, to influence an individual's affect toward the game and the brand it features. Most research predicts that higher levels of integration can positively impact post-game play outcomes like enjoyment and recall (see Dardis *et al.*, 2012; Huang and Dinu, 2010). However, some research suggests that too high of a prominent positioning or integration within an advergame can cause a negative reaction (i.e. attitudes) to that brand (Redondo, 2012). In this study, it was predicted that higher levels of HEI would result in more negative attitudes as brand integration increased. The results did show that higher levels of HEI resulted in more negative attitudes (lower positive affect) for the demonstrative condition than lower levels of integration (i.e. associative condition). Thus, when the McDonald's brand logo

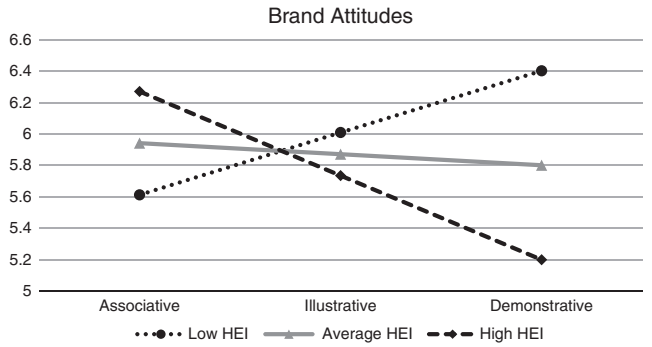

Figure 1.
Plotted interaction between advergame level and health involvement for brand attitudes

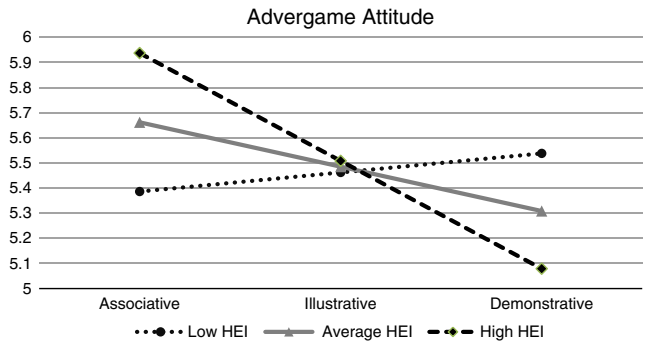

Figure 2.
Plotted interaction between advergame level and health involvement for advergame attitudes

was integrated as only a background object those individuals with higher levels of HEI responded more favorably to the game and the brand. Conversely, the opposite effects were found for those individuals who are low in HEI for brand attitudes. Lower health involved individuals had more positive attitudes toward brand in the demonstrative condition than in the associative condition.

For healthy involved individuals this drop in positive affect may be due to the incongruence between one's perception of their healthfulness in terms of diet and the unhealthy reputation of McDonald's food. Additionally, Reactance theory (Clee and Wicklund, 1980; Redondo, 2012) would assume that individuals would view an advergame as a form of social-influence that is attempting to change their attitudes toward brands featured within that game. In the context of highly HEI individuals the brand feature in these advergames (fast-food) is highly incongruent with their own image. Thus, the advergame is trying to impact their attitudes toward a position that is in contrast to their own attitude. Chang (2005) noted that individuals will use self-referencing when evaluating advertising messages. Thus, level of HEI likely led to individuals assessing their overall self-image with the brand. This self-image in-congruency in conjunction with a psychological reactance against being persuaded likely led to negative evaluations of brand and advergames.

On the other hand, participants with lower HEI had greater positive affect toward the brand when the brand was highly integrated into the game play. Thus, when maintaining a healthy diet was a lower priority for an individual, the lower levels of brand integration actually result in less positive affect toward the brand. This result in is line with research conducted by Hernandez (2011). Thus, an advergame where individuals have greater interaction with the branded product can result in higher brand attitudes. However, this effect can be attenuated by levels of involvement. Although, there were no effects for lower HEI on positive attitudes toward the advergame. It could be that lower HEI individuals appreciate the brands attempt to provide free entertainment in the form of a digital game.

Managerial implications

The results of this research show that level of brand integration in an advergame can have effect on outcomes related to brand attitudes. However, the route to which those positive attitudes are generated can be impacted by consumer characteristics. In this instance, HEI was a significant predictor of positive/negative attitudes. In contexts were the brand takes a prominent position (especially if that brand is not always deemed to be healthy) individuals who have healthier inclinations are not likely to evaluate that product or game in a positive manner. For instance, as previously noted by Wise *et al.* (2008) product relevancy can impact the relationship between game attitudes and brand attitudes. On the flip side, those less health involved were more likely to evaluate the higher integrated brand advergame (demonstrative condition) than when the brand is less involved. This finding supports research related to brand control in an advergame (Hernandez, 2011). In this context, the greater ability to control or customize the game play experience resulted in higher positive attitudes. Customization in the gaming context may likely result more positive outcomes especially among experienced gamers (see Teng, 2010).

Editors and creators of advergames must be more aware of the impact that branded items have within a gaming situation. Individuals may not always positively evaluate the brand integrated within a fun online environment. Furthermore, better consumer targeting will likely lead to higher message acceptance based upon individual's levels

of self-congruency with that message. For instance, research has shown that health food involvement positively predicts purchase of certain health food options (Aschemann-Witzel and Hamm, 2010). As such brands must be aware of their customer's levels of health involvement when targeting them with advergames. Creators should look toward minimizing unhealthy food options that appear in advergames or use healthier brand options within advergames when targeting highly health involved individuals.

The level of brand integration needs to be warranted with caution. Some research has shown that level of integration does not necessarily have an effect on advergames outcomes (Huang and Dinu, 2010). Or may even result in a negative reaction from an overt placement based upon psychological reactance (Redondo, 2012). This research shows that integration does impact evaluations only when considered in conjunction with personality traits. The creation of an advergame must be considered in mind with the target audience. Matching self-image and brand image in the context of an advergame is likely to result in more positive attitudes toward the game which may result in higher brand attitudes.

Limitations and future research

A limitation of this research is that while HEI was measured prior to game play no measure of gamer experience was included, nor was a definitive measure of each participant's time spent playing the advergame. These variables could impact the results of this analysis. However, most advergames are casual in nature and created with the intent that any individual can play the game without advanced experience of gaming techniques for any length of time. Furthermore, most advergames that incorporate branded food items target children. The results of this analysis used college students. However, the advergames that were used were deemed to be targeted toward a wider audience than children and adolescents. Also, the level of brand integration was applied using the definition set forth by Chen and Ringel (2001). The pilot test revealed that the games did differ on level of brand integration. However, game genre may also have an effect upon participant's responses. Each was different in style from pinball game to Simon says game; this may have impacted the results.

Future research should examine genre types within the level of brand integration to determine if this factor impacts evaluations. Also, research should examine the effect of advergames with healthier food options. The limited extant literature reveals mixed findings. While some studies indicate exposure to advergames featuring healthy foods such as fruit influences healthier food choices (Pempek and Calvert, 2009), others have found that advergames with any type of food cues (i.e. healthy and unhealthy foods) increases the likelihood players will choose unhealthy snacks after playing (Folkvord *et al.*, 2013). Further, these studies have been conducted on young children (ages eight to ten) and should be extended to teen and adult populations. Finally, Huang and Dinu (2010) noted that a brand's spokes character or personality may also be incorporated within an advergame as a level of integration. Future studies should examine specifically brands with anthropomorphized characters in order to determine if these characters are more persuasive than simply brand products featured in an advergame. Outcomes from the current study suggest such research should incorporating HEI to fully understand the effect of healthy advergames. Finally, research on advergames needs to better address behavioral measures after game play. While game attitudes and brand attitudes are worthwhile of investigation, research needs to be conducted to see if an advergame can impact behavioral reactions.

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