

HOW AD CONGRUITY AND INTERACTIVITY AFFECT FANTASY GAME PLAYERS' ATTITUDE TOWARD IN-GAME ADVERTISING

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ABSTRACT

This study investigates how the perceived congruity of an in-game advertisement with the game environment and its perceived interactivity affect fantasy game players' perceived ad intrusiveness, narrative realism and, ultimately, their overall attitude toward in-game advertising (IGA). We also show how players' general attitude toward advertising moderates these effects. The results of two experimental studies with active fantasy game players ($N = 597/N = 613$) indicate that perceived ad congruity and interactivity both benefit fantasy game players' attitude to IGA by reducing the perceived ad intrusiveness and positively contributing to the perceived realism of the fantasy game. Additionally, the positive effects of perceived ad congruity and interactivity through ad intrusiveness are positively reinforced by players' general attitude toward advertising, while the effects through narrative realism are attenuated by players' general attitude toward advertising.

Keywords: In-game advertising; Congruity effects; Interactivity; Fantasy games; Attitude to in-game advertising

1. Introduction

Traditional mass media advertising is under pressure: shifting media usage, advertising avoidance, skepticism toward advertising and advertising overkill cast doubt about the effectiveness of these traditional advertising formats [De Pelsmacker et al. 2018]. Therefore, advertisers are looking for new ways and touchpoints to reach and persuade their audiences. Many of these new advertising formats integrate commercial messages into media content, a phenomenon called product or brand placement, the paid inclusion of brand identifiers in media content, such as movies, television programs, games, music, and even books [Dens et al. 2018]. In-game advertising (IGA), the incorporation of advertisements within digital games [Herrewijn & Poels 2015; Nelson et al. 2004], differs from traditional advertising in some ways. In-game ads cannot be avoided, thus reach of and exposure to the gamers is guaranteed. Games have a long 'shelf life' since many players repeatedly play them over long periods of time. Players like the games they play and are often very involved in them. Their associations with the game spill over to the brands integrated into the game by means of meaning and affect transfer [Poels et al. 2015]. Consequently, the processes underlying the effects of brand placement in general and in-game advertising, in particular, are different from traditional advertising and, given their growing role in contemporary advertising, are worthy of investigation.

Digital gaming is no longer a pastime exclusively for adolescent males [cfr. Herrewijn & Poels 2015]. Instead, millions of people from all socio-demographic segments play digital games [Cheung et al. 2015; Herrewijn & Poels 2014]. Worldwide, investments in IGA have grown from 1.4 billion \$ in 2010 to 3.6 billion \$ in 2017, with an expected further increase to 5.1 billion \$ in 2020 [Statista 2018]. At the same time, academics suggest that digital games do not

reach their full potential as an advertising medium due to difficulties in determining and optimizing players' responses to in-game advertisements [Herrewijn & Poels 2015]. The main purpose of the current study is to investigate factors that could explain players' (general) attitude to IGA. The attitude to IGA reflects players' opinions and attitudes that players of digital games hold about the phenomenon or practice of ad placements inside digital games [Poels et al. 2013]. It thus differs from the attitude toward a specific in-game ad, as studied in, for example, Verberckmoes et al. [2016] or Herrewijn & Poels [2013]. Importantly, players' (general) attitude toward in-game advertising is found to be an important determinant of how people respond to specific ads [Mehta 2000]. It has also been shown to positively affect the perceived influence of IGA on players' product purchase intentions [Nelson et al. 2004]. The influence of attitude on behavior is explained by models as the Theory of Planned Behavior [Ajzen 2002].

The danger of integrating advertising into games is customer backlash [Peterson 2011]. People are already bombarded by advertising in the "real world", and may hope that their game-world be devoid of such practice [Nelson et al. 2004]. It is not at all clear whether they would accept paying \$60 for a game and then getting ads [Peterson 2011]. People continue to play online games if they have optimal experiences while playing [Choi & Kim 2004]. Customer loyalty offers advantages such as a higher willingness to pay, positive word-of-mouth recommendations, declining marketing and operating costs, and low likelihood of switching to competitors [Rezaei & Ghodsi 2014]. If ads annoy players, their inclusion could have detrimental effects on players' gameplay experience, harming the game's popularity and sales and thus actually leading to decreased revenues for the publisher (and the included brand) [Poels et al. 2013]. It is therefore important to gauge whether players are OK with the idea of ads in and around their games (and how these perceptions could be improved), to avoid a boycott of games and/or brands. A negative attitude toward in-game advertising may also transfer to opinions about advertising in other media [Lewis & Porter 2010].

Several studies [Activision Blizzard 2014; Nelson et al. 2004; Poels et al. 2013] already focus on how willing players are to accept the practice of in-game advertising. In this paper, we investigate previously unstudied antecedents of players' attitude toward in-game advertising, which have been studied as antecedents to players' attitude toward specific ads. Based on prior research, we focus on (1) *in-game ad congruity* (the level of fit between the execution of the in-game ad and the game environment) and (2) *in-game ad interactivity* (the degree to which a player perceives that he or she can interact with the in-game ad). Both factors have previously been identified as major antecedents to players' specific ad and brand responses. *Congruent in-game ads* have positive effects on players' attitude and behavior toward the ads and brands, while *incongruent in-game ads* result in negative effects [Chang et al. 2010; Lewis & Porter 2010]. *Interactive in-game ads* offer the possibility to players to interact with a brand or product (e.g., a branded racing car that can be customized by choosing different models and colors) [Herrewijn 2015]. Although research on the effects of interactivity of in-game ads is scarce, two recent studies show that interactive in-game ads result in significantly more positive brand attitudes than non-interactive one (e.g., passive billboards around a racing track) [Herrewijn 2015; Verberckmoes et al. 2016]. However, little research has investigated the mechanism through which both in-game ad congruity and in-game ad interactivity affect players' attitude toward the practice of IGA. Therefore, our primary objective is to investigate how in-game ad congruity and in-game ad interactivity positively influence players' attitude to IGA through the mediating role of perceived in-game ad intrusiveness (the degree to which the IGA is perceived as intrusive by a player) and perceived narrative realism (the degree to which the IGA contributes to a more realistic game environment). The secondary objective is to investigate the extent to which players' general attitude toward advertising moderates these effects. People's attitude toward advertising in general (whether they are positive or negative toward the practice) is an important determinant of how they respond to advertising [Lutz 1985; Mehta 2000]. The IGA literature has included the role of players' general attitude toward advertising in some studies [Nelson et al. 2004; Winkler & Buckner 2006], but not as a moderating factor.

When investigating perceptions of IGA, the game genre in which the in-game ad is incorporated might play an important role. Studies have shown that racing and sports games are genres which are perceived by consumers as most appropriate for the implementation of in-game ads, while role-playing or 'fantasy' games are perceived as most inappropriate [Nelson 2002; Yongjun & de Gregorio 2008]. This is because IGA is often considered best suited in modern and contemporary settings where real-life advertising exists. Integrating in-game ads in sports games (e.g., FIFA) and racing games (e.g., Gran Turismo) is no difficult feat since these games include a realistic and contemporary environment that is designed to mimic real life as closely as possible. The settings represented in these games also show a lot of advertising in reality as well (e.g., branded cars and clothing, billboards around the race tracks and sports field). Oppositely, "fantasy games", such as massive multiplayer online role-playing games (MMORPG: e.g., World of Warcraft, Guild Wars) and individual role-playing games (e.g., Dragon Age Inquisition, Final Fantasy) take place in a fantasy setting with imaginary events and creatures such as elves, trolls, fairies, wizards, dwarfs, etc. [Poels et al. 2013]. In these settings, IGA for "real" brands (e.g., a Coca-Cola billboard in "World of Warcraft") can appear as inappropriate [Nelson 2002].

Consequently, it is more challenging to make the appearance of advertisements seem appropriate in fantasy genres than in other genres [Herrewijn & Poels 2014]. We therefore test to what extent a good execution of an in-game ad in a fantasy game can enhance fantasy game players' attitude to IGA. Because fantasy games have received little attention in research about IGA compared to racing and sports games [for exceptions, see e.g., Lewis & Porter 2010; Nicovich 2010], the application to the under-researched game genre of fantasy games represents a contribution of our study.

The present study contributes to the IGA literature, first, by investigating the processes through which in-game ad congruity and interactivity affect players' perceptions of IGA beyond specific ad responses. Second, the current study tests a potential boundary condition, i.e., the general attitude toward advertising, that might weaken or strengthen this relation. Third, the study is conducted in the context of fantasy games that only received scant attention in the academic literature. IGA in fantasy games is a relevant topic, both from a theoretical and a practical point of view. Players' responses to IGA may be game-specific. Fantasy games are special because of the specific nature, settings, and events in these games. The process underlying players' responses to IGA in fantasy games has only received scant attention in the academic literature. As fantasy games, especially MMORPGs, attract a large number and variety of internationally dispersed players [Hsiao & Chiou 2012; Poels et al. 2013; Teng & Chen 2014], unraveling the mechanisms that drive game players' responses to IGA in these games will offer valuable insights to practitioners. The results of this study can help advertisers to better understand how to effectively use fantasy games as an advertising medium, and game developers how to avoid consumer backlash. Figure 1 presents the conceptual framework. The framework is based, among other things, on schema congruity theory [Lewis & Porter 2010] and flow theory [Hamari et al. 2016], as we will explain in more detail below. We test this conceptual framework in two experimental studies in samples of international fantasy game players, in which we manipulate congruity and interactivity of the in-game ad in a fantasy game.

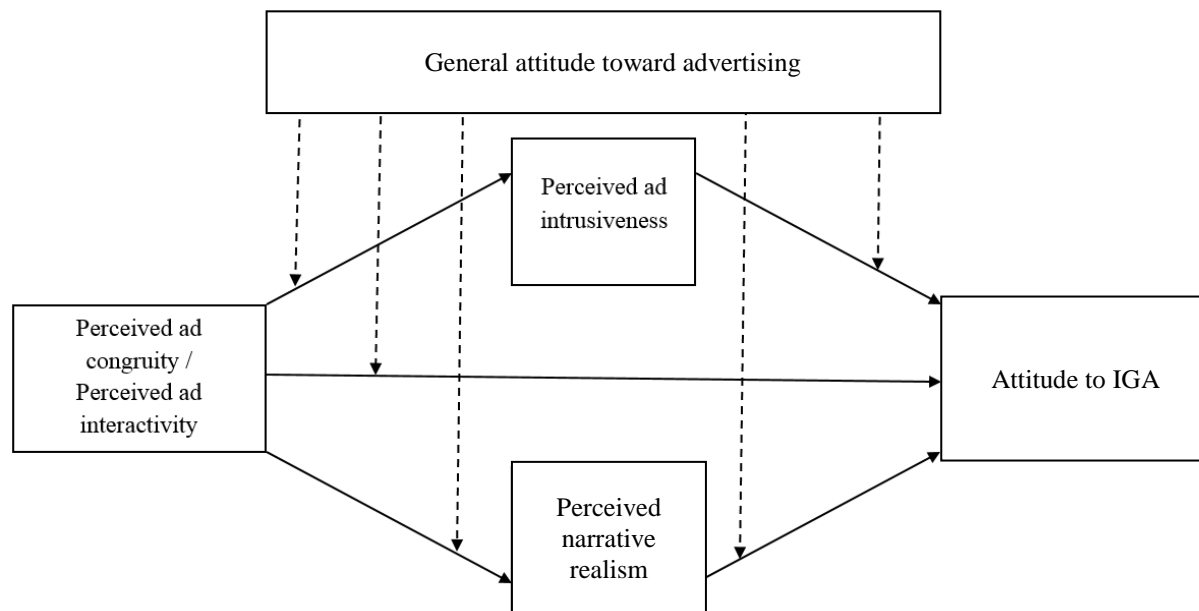


Figure 1: Conceptual Framework

2. Literature Review and Hypotheses Development

2.1. IGA congruity

Congruity is the perceived level of fit between the execution of the in-game ad and the game environment. Contemporary advertising such as modern-day billboards, as seen in racing games or sports games, will appear incongruent with the fantasy game environment as fantasy games take place in an imaginary environment with, for example, medieval themes (e.g. "World of Warcraft", [Blizzard Entertainment 2004]). Therefore, in a fantasy game set in a medieval-like context, a medieval-themed ad will appear more congruent than a modern billboard ad. Schema congruity theory [Meyers-Levy et al. 1994] states that people strive for harmony and conformity among their thoughts, feelings, and behaviors, and value information that is consistent with their (pre-existing) schemata. A schema is "a cognitive structure that represents knowledge about a concept or type of stimulus, including its attributes and the

relations among the attributes” [Fiske & Taylor 1991, p. 98]. Schemas organize expectations, beliefs, prototypes, and affect regarding a given domain. Central to schema congruity theory is the notion that (pre-existing) schemata affect how people interpret and evaluate information. People tend to prefer congruent stimuli (e.g., in-game ads) because they tend to conform to their expectations and it is easier to fit these stimuli with their schemata [Moore et al. 2005]. Therefore, more congruent stimuli lead to more positive evaluation and intentions than (extremely) incongruent stimuli [Moore et al. 2005]. Consequently, schema congruity theory would argue that IGA should strive for congruity with the game.

2.2. IGA interactivity

Interactivity is defined as “the extent to which users can participate in modifying the form and content of a mediated environment in real time” [Steuer 1992]. Interactivity in digital games allows players to modify, control and change the course of events in the game [Herrewijn & Poels 2014]. Examples of interactive in-game ads are driving a branded car in a racing game, customizing and wearing branded sports clothes in a soccer game, or eating and drinking products that have a certain effect on the player character (e.g., regaining energy after drinking a can of soda) [Herrewijn 2015]. In contrast, non-interactive in-game ads are passive billboards and posters that the player cannot interact with (e.g., billboards or posters around the soccer stadium or racing track). Interactive IGA offers the possibility that players, through their game characters, can become active participants in advertising and have the opportunity to feel, control and/or interact with a brand or product in a vivid and immersive environment [Herrewijn 2015; Nelson et al. 2004]. Moreover, players can form meaningful relations with brands with which they interact in games [Lee et al. 2014; Lee & Faber 2007]. Research indicates that game interactivity typically leads to positive outcomes, such as game enjoyment and play intention [Wu et al. 2008; Wu & Liu 2007].

2.3. Intrusiveness

Advertisements are perceived as intrusive when they interrupt a person's goals (e.g., when a pop-up advertisement appears that interrupts persons’ online searching task, this pop-up ad can be perceived as intrusive) [Edwards et al. 2005; Varnali et al. 2012]. Negative responses to game features (for instance frustration) may lead to negative attitudes and playing intentions [Liao et al. 2016]. Similarly, when an ad is perceived as intrusive, this can result in negative attitudinal responses because it interrupts the gameplay and potential flow experience [Edwards et al. 2005; Ying et al. 2009]. Ads that are congruent with the media content are perceived as less of an interruption, and thus less intrusive than ads that are incongruent [Edwards et al. 2005; Ying et al. 2009]. In a fantasy game, Lewis and Porter [2010] show that incongruent in-game ads were found to be significantly more intrusive than congruent in-game ads. Moreover, as congruent in-game ads appear less intrusive, fantasy game players will find them more appropriate. As players have a more positive attitude toward interactive in-game ads [Herrewijn 2015], we also assume that interactive IGA will be perceived as less intrusive and players’ attitude to IGA will be improved.

2.4. Narrative Realism

It is important that the inclusion of IGA does not diminish the perceived sense of realism of the fantasy game world. By realism, we mean ‘narrative realism’ which is the extent to which the fictional content is plausible and coherent within the fictional narrative [Busselle & Bilandzic 2008]. Thus, ‘realism’ in an MMORPG denotes a fantasy world plausible and coherent with ‘fantasy’ genre schemas. These schemas involve particular spatial (castles, dungeons) and temporal setting, typical plots (quests) and characters (elves, trolls, fairies, wizards, dwarfs) and rules specific to the fantasy world. Players may view parts of a fantasy world, such as IGA, as unrealistic when they perceive them as incoherent or implausible within the fictional narrative. Again, this would detract from flow. Based on this logic of narrative realism, IGA that is congruent with the fantasy world thus should appear as more realistic as it appears plausible in and coherent with the fantasy world than incongruent IGA. Indeed, Lewis and Porter [2010] and Nelson et al. [2002; 2004] found that incongruent in-game ads reduced the games’ perceived sense of realism whereas congruent in-game ads contributed to the games’ perceived sense of realism. We also assume that interactive IGA might make the game world seem more realistic, as players are used to clicking items to find treasure, follow quests, talk to other characters, etc. Game realism has a positive effect on game enjoyment [Wu et al. 2008]. We pose that when the game world is perceived as more realistic because of the IGA, this leads to finding IGA in fantasy games more appropriate [Lewis & Porter 2010].

Based on the previous reasoning, we thus expect that the perceived intrusiveness of the ad and the perceived realism of the fantasy game will mediate the effect of in-game ad congruity and interactivity on players’ attitude to IGA. We formulate our hypotheses referring to the level of perceived ad congruity and interactivity (the degree to which a player perceives an ad to be congruent or interactive), rather than actual congruity and interactivity (as manipulated by the researchers). We do this because research has shown that perceived variables are more relevant in predicting consumer responses than manipulations, for example in the context of personalized ads [De Keyser et al. 2015; Kramer et al. 2007] or interactive ads on websites [Cauberghe et al. 2011; McMillan et al. 2003].

H1: Perceived ad congruity has a positive effect on fantasy game players' attitude to IGA. This effect is mediated by (a) a decreased perceived ad intrusiveness and (b) an increased perceived narrative realism of the fantasy game.

H2: Perceived ad interactivity has a positive effect on fantasy game players' attitude to IGA. This effect is mediated by (a) a decreased perceived ad intrusiveness and (b) an increased perceived narrative realism of the fantasy game.

We test these hypotheses in two experimental studies. In the first study, the advertised product is an energy drink. The second study tests the robustness of the findings for a different product, clothing. These product categories are commonly used as in-game items in fantasy games (i.e., potions, armor). Furthermore, in the second study, we test the boundary conditions of this basic mediation model and predict that the mediated relationship is reinforced by players' general attitude toward advertising.

2.5. The Moderating Role of Players' General Attitude toward Advertising

People's attitude toward advertising in general is an important determinant of how they respond to any particular advertisement [Lutz 1985; Mehta 2000]. For example, findings from Mehta and Purvis [1995] show that magazine readers' general attitudes toward advertising influenced buying interest following specific advertisements. In an IGA context, people's general attitude toward advertising was found to be positively related to their general attitude toward IGA in several studies [Nelson et al. 2004; Winkler & Buckner 2006]. Players who had a negative (positive) attitude toward advertising in general also had a negative (positive) attitude toward IGA.

So far, studies have only examined the direct influence of players' general attitude toward advertising on their response to IGA in general. In the present study, we propose that the general attitude toward advertising will moderate the process of how in-game ad congruity and interactivity influence players' attitude to IGA. People with favorable general attitudes toward advertising tend to value the hedonic (pleasurable, entertaining) aspect of ads [Eze & Lee 2012]. Therefore, people with a positive general attitude toward advertising may find congruent or interactive ads less intrusive and more realistic than people with a less positive general attitude toward advertising, as these in-game ads look more aesthetically pleasing or bring entertainment [Lewis & Porter 2010]. We also expect that individuals with a more positive general attitude toward advertising will find ad intrusiveness relatively less bothersome (which should therefore exert a less negative effect on their attitude to IGA) and attach greater value to the positive effects of IGA such as the enhancement of narrative realism (which should therefore exert a more positive effect on their attitude to IGA). We posit the following hypotheses:

H3: The effect of perceived ad congruity on fantasy game players' attitude to IGA through (a) a decreased perceived ad intrusiveness and (b) an increased perceived narrative realism of the fantasy game are reinforced by a more positive general attitude toward advertising.

H4: The effect of perceived ad interactivity on fantasy game players' attitude to IGA through (a) a decreased perceived ad intrusiveness and (b) an increased perceived narrative realism of the fantasy game are reinforced by a more positive general attitude toward advertising.

3. Study 1

3.1. Research Design and Stimuli

We set up a 2 (congruent in-game ad – incongruent in-game ad) x 2 (interactive in-game ad – non-interactive in-game ad) between-subjects online experiment. The experimental design aims to create variance in the independent variables. However, for this study, we are not explicitly interested in the interactions between congruity and interactivity. The experiment is based on vignettes; short, carefully constructed descriptions of a person, object or situation that are shown to respondents in order to elicit judgments about these scenarios [Atzmüller & Steiner 2010]. Vignettes were chosen because of the complexity to create an actual fantasy game in which IGA is manipulated. The reactions to this hypothetical situation can, however, provide insights into the behavior and decisions of consumers in real-life situations since vignettes simulate real-life experiences [Schoenberg & Ravdal 2000]. Vignettes are frequently used in marketing studies [e.g. d'Astous & Seguin 1999; Wason et al. 2002] and in game studies [e.g. Funk et al. 2003]. A vignette study is, therefore, a fitting choice for initiating research on how to best apply IGA in fantasy games.

A screenshot of the MMORPG 'Lineage 2' [NCSOFT 2003] was chosen to represent the fantasy game. For the in-game ads, we used a fictitious brand of energy drink named 'Fast Fizz' to avoid potential confounds due to previous brand exposure or experience [Schneider & Cornwell 2005]. The vignettes contained screenshots of the fantasy game in which the focal in-game ad was incorporated in either a congruent or incongruent way and in either an interactive or non-interactive way, together with textual information describing the context (see Appendix A). The screenshot showed an in-game billboard ad with a medieval-looking castle in the background. The incongruent in-game ad displayed a modern billboard with a metallic soda can and the brand name and slogan in a modern font. The congruent in-game ad displayed a wooden billboard with a potion flask and the brand name and slogan in an embellished font. Both in-game ads contained the same slogan: "Your dose of energy now". In the interactive condition, participants

first saw the billboard, after which they saw two additional vignettes describing how the player receives the energy drink and their character drinks it to restore its energy levels. The non-interactive condition showed the first vignette with the billboard only and explicitly described that players could not use or interact with the drink.

3.2. Procedure and Sample

Participants were solicited through 27 popular MMORPG forums (e.g., www.mmorpg.com) and were invited to complete an online survey. We collected responses over two weeks. Participants were randomly assigned to one of the four conditions (congruent/non-interactive = 147, incongruent/non-interactive = 150, congruent/ interactive = 152 and incongruent/interactive = 148). A total of 597 participants thus completed the survey (Male = 87,8%; Age: $M = 24.72$, $SD = 7.20$; America = 54%, Europe = 38.6 %, Asia = 4.2%, Oceania = 2.2%, Africa = 1%). The participants were generally avid MMORPG players; 34.3% of the participants had been playing MMORPGs for six to eight years, and 38% had been playing MMORPGs for nine years or more. The majority also played MMORPGs on a weekly (39.9%) or daily (49.4%) basis. Furthermore, 56.3% of the participants spent 1 to 3 hours on one MMORPG session, and 38.7% spent more than three hours.

3.3. Measures

First, participants were inquired about their socio-demographic situation (age, gender, nationality), their experience with MMORPGs (1 = ‘less than one year’, 2 = ‘one to two years’, 3 = ‘three to five years’, 4 = ‘six to eight years’, 5 = ‘nine years or more’), frequency of playing MMORPGs (1 = less than a couple of times per year’, 2 = ‘at least monthly’, 3 = ‘at least weekly’, and 4 = ‘daily’), and duration of an average session when playing MMORPGs (as leisure activity) (1 = ‘less than an hour’, 2 = ‘between one and three hours’, 3 = ‘more than three hours’). They then saw one of the vignettes, and perceived intrusiveness of the IGA, perceived narrative realism of the fantasy game, perceived congruity of the IGA, perceived interactivity of the IGA, and attitude to IGA in fantasy games were measured (see Appendix B for scales, items, and alphas). For each construct, the average scores over the different items were calculated to compute the construct scores.

A Confirmatory Factor Analysis (CFA) was performed with Amos Graphics to test the composite reliability, the convergent validity and discriminant validity of the measurement items. The composite reliability (CR) should be above the threshold of .70 [Hair et al. 2006], which is the case as it ranges from .841 to .952 (see Table 1). To establish convergent validity, the averaged variance extracted (AVE) for each construct should be greater than .50 to ensure that the construct is well explained by its observed items [Hair et al. 2006]. This is also the case, as the AVE ranges from .639 to .833 (see Table 1). Moreover, to confirm discriminant validity, both the maximum shared variance (MSV) and the averaged shared variance (ASV) should be smaller than the AVE [Hair et al. 2006]. These conditions are met (see Table 1). Lastly, the square root of the AVE is also greater for each construct than inter-construct correlation (see Table 1), further confirming discriminant validity.

Table 1: Test of composite reliability, convergent validity and discriminant validity (Study 1)

	CR	AVE	MSV	ASV	Correlation matrix*			
					Perceived ad congruity	Perceived ad intrusiveness	Perceived narrative realism	Perceived ad interactivity
Perceived ad congruity	.841	.639	.458	.316	.800			
Perceived ad intrusiveness	.941	.669	.452	.279	-.672	.818		
Perceived narrative realism	.952	.833	.458	.280	.677	-.596	.913	
Perceived ad interactivity	.921	.750	.039	.031	.197	-.171	.160	.866

* Diagonal values are the square root of the AVE of the construct

A manipulation check showed that the congruent in-game ads ($M = 3.15$, $SD = 1.61$) were perceived as significantly more congruent ($t(435) = -16.195$, $p < .001$) than the incongruent ones ($M = 1.47$, $SD = .80$). Further, the interactive in-game ads ($M = 5.59$, $SD = 1.30$) were perceived as significantly more interactive ($t(578) = -28.36$, $p < .001$) than the non-interactive ones ($M = 2.30$, $SD = 1.52$). This shows that the manipulations successfully managed to induce a certain degree of variance in the levels of perceived congruity and interactivity. We also analyzed differences between the 4 conditions in terms of age (4 categories, $p = .223$), gender ($p = .001$), education (4 categories, $p = .780$), MMORPG playing experience (years) ($p = .971$), MMORPG playing frequency ($p = .277$) and average duration of a game play session ($p = .689$) based on chi-square analyses. The results indicate that, with the exception of gender, the sample compositions are equivalent across conditions.

3.4. Results

To test our hypotheses, we analyzed the data using Hayes' [2017] PROCESS macro for SPSS. Hayes suggests a linear regression-based approach which has become the standard in testing moderated mediation. We used Model 59, which corresponds to the conceptual framework in Figure 1. We ran two separate analyses, entering perceived ad congruity as the independent variable in the first analysis, and perceived ad interactivity in the second. As argued in the literature review, we used the (measured and mean-centered) perceived degrees of ad congruity and interactivity as input. The dependent variable in both analyses is the players' attitude to IGA. The analyses also include the two mediators, the perceived ad intrusiveness and the perceived narrative realism of the fantasy game, and players' general attitude toward advertising as the moderator (mean-centered, with potential moderation tested on all paths). Due to the skewness of the sample, we added age and gender as covariates. The covariates were not significant in any of the analyses.

The results of the analyses containing the independent variable **perceived ad congruity** (Table 2) show that the effect of the perceived ad congruity on the perceived ad intrusiveness is negative and significant ($b = -0.560, p < .001$), and the perceived ad intrusiveness, in turn, exerts a significant negative effect on the attitude to IGA ($b = -0.260, p < .001$). The PROCESS macro also provides an estimate of the indirect effect at different levels of the moderator (general attitude toward advertising), based on bootstrapping with 5000 bootstrap samples. The indirect effects and their 95% confidence intervals are reported in Table 4. The rule of thumb is that the indirect effect is considered significant when its confidence interval does not contain 0. This is indeed the case across all levels of players' general attitude toward advertising. Therefore, we conclude that the indirect effect of perceived ad congruity on players' attitude to IGA through perceived ad intrusiveness is significant. Thus, H1a is supported. Furthermore, perceived ad congruity has a significant positive effect on perceived narrative realism ($b = 1.662, p < .001$), which in turn has a significant positive effect on players' attitude to IGA ($b = 0.029, p = .001$). The bootstrapping results confirm that this indirect effect, too, is significant at lower and moderate levels of players' general attitude toward advertising (the 95% confidence intervals do not contain 0). This result is in support of H1b. As the direct effect of perceived ad congruity on players' attitude to IGA is no longer significant when the mediators are included, the mediation is indirect-only [Zhao et al. 2010].

Table 2: Regression coefficients and R² for the analysis with perceived ad congruity (Study 1, N = 597)

<i>Independent variable</i>	Attitude to IGA	Perceived ad intrusiveness	Perceived narrative realism	Attitude to IGA
Age (covariate)	—	0.011 (.0068)	-0.031 (.0208)	0.004 (.0042)
Gender (1 = Female) (covariate)	—	0.241 (.1462)	-0.369 (.4462)	-0.061 (.0896)
Perceived ad congruity	0.192*** (.0236)	-0.560 *** (.0314)	1.662 *** (.0958)	-0.024 (.0258)
General attitude toward advertising	—	-0.235 *** (.0526)	0.773 *** (.1606)	0.315 *** (.0333)
Perceived ad congruity × General attitude toward advertising	—	-0.100 ** (.0330)	0.530 *** (.1008)	-0.015 (.0252)
Perceived ad intrusiveness	—	—	—	-0.260 *** (.0266)
Perceived narrative realism	—	—	—	0.029 *** (.0091)
Perceived ad intrusiveness × General attitude toward advertising	—	—	—	-0.093 ** (.0270)
Perceived narrative realism × General attitude toward advertising	—	—	—	-0.0154 (.0090)
R²	<i>.100</i>	<i>.390</i>	<i>.392</i>	<i>.421</i>

Notes: *** $p \leq .001$; ** $p \leq .010$. Figures between brackets represent standard errors.

The results of the analysis with **perceived ad interactivity** as the independent variable (Table 3), show that the perceived ad interactivity exerts a significant negative effect on the perceived ad intrusiveness ($b = -0.093, p < .001$), which in turn exerts a significant negative effect on players' attitude to IGA ($b = -0.252, p < .001$). The indirect effect of perceived ad interactivity on players' attitude to IGA through perceived ad intrusiveness is significant, based on the bootstrapped confidence intervals for moderate and high levels of players' general attitude toward advertising.

H2a is therefore supported. Furthermore, perceived ad interactivity exerts a significant positive effect on the perceived narrative realism ($b = 0.268, p = .001$), and perceived narrative realism has a significant positive effect on players' attitude to IGA ($b = 0.026, p = .002$). The indirect effect is small, but statistically significant at moderate levels of players' general attitude toward advertising ($b = 0.009, 95\% \text{ CI} = [.0016; .0144]$). This result supports H2b. The mediation effect through both mediators is again indirect-only, as the direct effect of the perceived ad interactivity on players' attitude to IGA is insignificant [Zhao et al. 2010].

Table 3: Regression coefficients and R² for the analysis with perceived ad interactivity (Study 1, N = 597)

<i>Independent variable</i>	Attitude to IGA	Perceived ad intrusiveness	Perceived narrative realism	Attitude to IGA
Age (covariate)	—	0.007 (.0084)	-0.018 (.0258)	0.004 (.0042)
Gender (1 = Female) (covariate)	—	0.106 (.1806)	0.011 (.5533)	-0.068 (.0893)
Perceived ad interactivity	0.037 * (.0174)	-0.093 *** (.0272)	0.268 *** (.0834)	-0.007 (.0136)
General attitude toward advertising	—	-0.304 *** (.0647)	0.959 *** (.1981)	0.322 *** (.0331)
Perceived ad interactivity × General attitude toward advertising	—	-0.042 (.0283)	0.104 (.0867)	-0.0291 (.0144)
Perceived ad intrusiveness	—	—	—	-0.252 *** (.0243)
Perceived narrative realism	—	—	—	0.026 ** (.0084)
Perceived ad intrusiveness × General attitude toward advertising	—	—	—	-0.097 *** (.0255)
Perceived narrative realism × General attitude toward advertising	—	—	—	-0.0154 (.0087)
R²	.008	.069	.066	.424

Notes: *** $p \leq .001$; ** $p \leq .010$ * $p \leq .05$. Figures between brackets represent standard errors.

When we consider the interactions with players' general attitude toward advertising, we notice significant interactions between perceived ad congruity and players' general attitude toward advertising on both the perceived ad intrusiveness ($b = -0.100, p = .003$) and the perceived narrative realism ($b = 0.530, p < .001$) (Table 2). This means that, as expected, a more positive general attitude toward advertising reinforces the negative effect of congruity on intrusiveness and its positive effect on perceived narrative realism. A more positive general attitude toward advertising also further reduces the negative relationship between perceived ad intrusiveness and players' attitude to IGA (Tables 2 and 3). To further interpret these interactions, we consider the conditional effect sizes provided by PROCESS. Table 4 shows the indirect effects of perceived ad congruity and interactivity on players' attitude to IGA at three levels of their general attitude toward advertising, i.e. its mean (which is zero, because the variable is mean centered), its mean minus one standard deviation and its mean plus one standard deviation. The table also includes the 95% confidence intervals of the effects. Confidence intervals that do not contain zero represent a significant effect. The conditional effects analyses show that the indirect effect of perceived ad congruity on players' attitude to IGA through perceived ad intrusiveness becomes stronger with an increasingly positive general attitude toward advertising, in support of H3a. The effect through narrative realism actually becomes (slightly) smaller, which is against our expectations. Therefore, H3b is rejected.

Table 4: Conditional effects of perceived ad congruity and interactivity on players' attitude to IGA at different levels of players' general attitude toward advertising (Study 1, N = 597)

	Perceived ad congruity		Perceived ad interactivity	
	Effect size (b)	95% confidence interval	Effect size (b)	95% confidence interval
<i>Conditional indirect effect through perceived ad intrusiveness</i>				
General attitude to advertising				
Low = Mean -1 SD (-.938)	0.081	[.0394 ; .1277]	0.009	[-.0019 ; .0227]
Moderate = Mean (.000)	0.145	[.1096 ; .1827]	0.024	[.0091 ; .0394]
High = Mean + 1 SD (.938)	0.227	[.1708 ; .2849]	0.045	[.0154 ; .0777]
<i>Conditional indirect effect through perceived narrative realism</i>				
General attitude to advertising				
Low = Mean -1 SD (-.938)	0.051	[.0143 ; .0883]	0.007	[-.002 ; .0159]
Moderate = Mean (.000)	0.049	[.0193 ; .0795]	0.007	[.0016 ; .0144]
High = Mean + 1 SD (.938)	0.032	[-.0132 ; .0817]	0.004	[-.0035 ; .0146]

The conditional indirect effects for the analysis with ad interactivity as the independent variable shows that the effect through ad intrusiveness increases with an increasingly positive general attitude toward advertising, in support of H4a. However, the indirect effects through narrative realism are not affected by players' general attitude toward advertising. Therefore, H4b is rejected.

3.5. Discussion

This study supports the idea that congruency and interactivity of a single in-game ad can benefit fantasy game players' perception of the practice of IGA in general, through a decrease of perceived ad intrusiveness and an increase in narrative realism. These findings expand those of Lewis and Porter [2010]. Whilst the results of Lewis and Porter [2010] show that a greater congruity between the in-game ad and the fantasy game results in players being more acceptant of and less annoyed by a specific in-game ad, this paper explicitly links these outcomes to players' attitude toward IGA in general and tests whether the same relationships hold for interactivity. The results further show that the indirect effect through intrusiveness is enhanced by players' general attitude toward advertising. However, unexpectedly, the effect through narrative realism is slightly diminished. The reduction in the conditional effect could be explained by the negative interaction between narrative realism and players' general attitude toward advertising on their attitude to IGA. This negative interaction means that players with a more positive attitude toward advertising value the increase in narrative realism less than players with a more negative attitude. An explanation might be that players who have a favorable general attitude toward advertising do not require IGA to contribute to the perceived narrative realism of the game, as they will simply generally be more accepting of it (for example, as research suggests, because of its entertaining nature). Players with a more negative attitude toward advertising are likely more skeptical of IGA. When these players notice that a congruent or interactive in-game ad contributes to narrative realism, this can lead them to see a potential benefit in IGA for their gameplay experience, causing them to find it more acceptable. However, the reduction in the effect size is almost negligible, and the negative interaction is not statistically significant.

Nonetheless, the effect is surprising, because we had anticipated a POSITIVE reinforcement effect. To test whether this result may be product specific, or robust, we set up a second study where we test an in-game ad for a different product (clothing instead of an energy drink). An energy drink (Study 1) is a consumption item, which could improve the outcome of the game, while the clothing we use in Study 2 is purely cosmetic. Therefore, the two products tap into different game play motivations [Yee 2006].

4. Study 2

4.1. Method

We tested the same design as in Study 1: a 2 (congruent in-game ad – incongruent in-game ad) x 2 (interactive in-game ad – non-interactive in-game ad) between-subjects online experiment. The method used in the second study is identical to the method of Study 1, except for the stimuli used. Instead of using a brand of energy drink, we used a brand of clothing. Just like players can use a potion to boost energy, they often have numerous options in clothing (e.g., armor, capes, hats, etc.). The study is again based on vignettes using screenshots of the MMORPG 'Lineage 2'. We again used a fictitious brand ('Raging Ram') to avoid potential confounds due to prior brand experience. The advertised product was a modern scarf (incongruent condition) or a medieval cape (congruent condition). In the interactive condition, participants were explicitly told and shown that they could customize their characters with these pieces of clothing, while this option was absent in the non-interactive condition.

As in Study 1, participants were recruited by placing invitations on 27 international online gaming forums. The 613 participants (Male = 83,7%; Age: $M = 24.63$, $SD = 6.70$; Nationality: America = 47.50%, Europe = 46 %, Asia = 4%, Oceania = 2.20%, Africa = .3%) that completed the survey differed from those in Study 1 and were randomly assigned to one of the four experimental conditions (congruent/non-interactive = 150, incongruent/non-interactive = 159, congruent/interactive = 150 and incongruent/ interactive = 154). The constructs were measured identically to Study 1. First, participants completed their socio-demographic situation (age, gender, and nationality), MMORPG gaming frequency and –experience, and general attitude toward advertising. They then considered one of the vignettes and indicated the perceived ad intrusiveness, perceived narrative realism, perceived ad congruity, perceived ad interactivity, and their attitude to IGA (see Appendix B for scales, items, and alpha’s).

As in the previous study, the players had considerable experience with MMORPGs, as 40% of the participants have been playing MMORPGs for six to eight years, and 36.9% have been playing MMORPGs for nine years or more. Further, 45.5% of the participants play daily, and 40.6% play weekly. Lastly, 59.7% of the participants spent 1 to 3 hours on one MMORPG session, and 36.1% spent more than three hours.

A Confirmatory Factor Analysis (CFA) was again conducted with Amos Graphics to test the composite reliability, the convergent validity and discriminant validity of the measurement items. The composite reliability (CR) ranges from .845 to .955 which is above the threshold of .70 [Hair et al. 2006]. The averaged variance extracted (AVE) ranges from .646 to .843 (see Table 5) which establishes convergent validity [Hair et al. 2006]. Moreover, both the maximum shared variance (MSV) and the averaged shared variance (ASV) are smaller than the AVE which confirms discriminant validity [Hair et al. 2006]. Discriminant validity is further established as the square root of the AVE is also greater for each construct than inter-construct correlation (see Table 5).

Table 5: Study2: Test of composite reliability, convergent validity, and discriminant validity

	CR	AVE	MSV	ASV	Correlation matrix*				
					Perceived ad congruity	Perceived ad intrusiveness	Perceived narrative realism	Perceived ad interactivity	General attitude to advertising
Perceived ad congruity	.855	.663	.506	.298	.814				
Perceived ad intrusiveness	.951	.710	.506	.258	-.711	.843			
Perceived narrative realism	.955	.843	.489	.249	.699	-.615	.918		
Perceived ad interactivity	.909	.719	.142	.093	.377	-.336	.311	.848	
General attitude to advertising	.845	.646	.056	.036	.236	-.186	.184	.143	.804

* Diagonal values are the square root of the AVE of the construct

Analogously to Study 1, the manipulation checks showed that the congruent in-game ads ($M = 3.78$, $SD = 1.53$) were perceived as significantly more congruent ($t(575) = -14.888$, $p < .001$) than the incongruent ones ($M = 2.10$, $SD = 1.24$) and the interactive in-game ads ($M = 5.30$, $SD = 1.19$) were perceived as significantly more interactive ($t(574) = -24.264$, $p = .001$) than the non-interactive ones ($M = 2.56$, $SD = 1.57$). Chi-square analyses also confirm that the sample composition is equivalent across the 4 conditions in terms of age (4 categories, $p = .593$), gender ($p = .663$), education (4 categories, $p = .968$), MMORPG playing experience (years) ($p = .699$), MMORP playing frequency ($p = .672$) and average duration of a game play session ($p = .699$).

4.2. Results

We ran the same analyses as in Study 1, estimating 2 separate regression-based analyses using Model 59 of Hayes’ [2017] PROCESS macro for SPSS, one for each of the two independent variables, perceived ad congruity and perceived ad interactivity (both mean-centered). In both analyses, the perceived ad intrusiveness and perceived narrative realism served as mediators and players’ general attitude toward advertising as moderator. Players’ attitude to IGA was the dependent variable. Gender and age served as covariates, but did not exert any significant effects.

The results of the analysis that contain **perceived ad congruity** as the independent variable (Table 6) show that the effect of perceived ad congruity on perceived ad intrusiveness is negative and significant ($b = -.590$, $p < .001$), and perceived ad intrusiveness has a significant negative effect on players’ attitude to IGA ($b = -.230$, $p < .001$). The indirect effect at different levels of players’ general attitude toward advertising is reported in Table 8. Based on the fact that the 95%, confidence intervals of this indirect effect never contain 0, we conclude that the indirect effect of perceived ad congruity on players’ attitude to IGA through perceived ad intrusiveness is significant. This result again

supports H1a. Further, perceived ad congruity exerts a significant positive effect on perceived narrative realism ($b = .501, p < .001$), which in turn has a significant positive effect on players' attitude to IGA ($b = .140, p < .001$). The indirect effect is significant across different levels of players' general attitude toward advertising (confidence intervals do not contain zero). Therefore, H1b is also again supported. Since the direct effect of perceived ad congruity on players' attitude to IGA is insignificant, this suggests indirect-only mediation [Zhao et al. 2010].

Table 6: Regression coefficients and R² for the analysis with perceived ad congruity (Study 2, N = 613)

<i>Independent variable</i>	Attitude to IGA	Perceived ad intrusiveness	Perceived narrative realism	Attitude to IGA
Age (covariate)	—	0.013 (.0076)	-0.013 * (.0065)	-0.004 (.0043)
Gender (1 = Female) (covariate)	—	-0.091 (.1359)	-0.061(.1170)	-0.072 (.0770)
Perceived ad congruity	0.215*** (.0206)	-0.590 *** (.0310)	0.501 *** (.0267)	-0.023 (.0242)
General attitude toward advertising	—	-0.084 (.0552)	0.058 (.0475)	0.253 *** (.0313)
Perceived ad congruity × General attitude toward advertising	—	-0.016 (.0324)	0.009 (.0279)	0.009 (.0253)
Perceived ad intrusiveness	—	—	—	-0.230 *** (.0244)
Perceived narrative realism	—	—	—	0.145 *** (.0288)
Perceived ad intrusiveness × General attitude toward advertising	—	—	—	-0.056 * (.0257)
Perceived narrative realism × General attitude toward advertising	—	—	—	-0.0461 (.0320)
R²	.390	.393	.387	.411

Notes: **** $p \leq .001$; ** $p \leq .010$; * $p \leq .050$, ° $p \leq .100$. Figures between brackets represent standard errors.

The results of the analysis with **perceived ad interactivity** as the independent variable (Table 7) show that the effect of perceived ad interactivity on perceived ad intrusiveness is negative and significant ($b = -.240, p < .001$), and perceived ad intrusiveness, in turn, exerts a significant negative effect on players' attitude to IGA ($b = -.210, p < .001$). H2a is again supported. The perceived ad interactivity also exerts a significant positive effect on the perceived narrative realism of the game ($b = .174, p < .001$), which in turn has a significant positive effect on players' attitude to IGA ($b = .275, p < .001$). The indirect effect is significant. This result is again in support of H2b. As the direct effect of the perceived ad interactivity on the attitude to IGA is not significant, the mediation is indirect-only [Zhao et al. 2010].

Table 7: Regression coefficients and R² for the analysis with perceived ad interactivity (Study 2, N = 613)

<i>Independent variable</i>	Attitude to IGA	Perceived ad intrusiveness	Perceived narrative realism	Attitude to IGA
Age (covariate)	—	0.011 (.0091)	-0.013 (.0079)	-0.004 (.0043)
Gender (1 = Female) (covariate)	—	-0.0342 (.1639)	-0.113 (.1425)	-0.071 (.0768)
Perceived ad interactivity	0.129*** (.0178)	-0.240 *** (.0309)	0.171 *** (.0269)	0.0371 (.0153)
General attitude toward advertising	—	-0.202 *** (.06557)	0.162 ** (.0570)	0.246 *** (.0311)
Perceived ad interactivity × General attitude toward advertising	—	0.023 (.0316)	-0.027 (.0275)	-0.005 (.0157)
Perceived ad intrusiveness	—	—	—	-0.210 *** (.0227)
Perceived narrative realism	—	—	—	0.026 *** (.0084)
Perceived ad intrusiveness × General attitude toward advertising	—	—	—	-0.0594 * (.0247)
Perceived narrative realism × General attitude toward advertising	—	—	—	-0.035 (.0293)
R²	<i>.079</i>	<i>.121</i>	<i>.095</i>	<i>.416</i>

Notes: **** $p \leq .001$; ** $p \leq .010$; ° $p \leq .100$. Figures between brackets represent standard errors.

To test the moderating effects of players’ general attitude toward advertising, we consider the interaction effects in Tables 6 and 7. Table 8 further illustrates the nature of the moderation by showing the indirect effects (and their 95% confidence intervals) of perceived ad congruity and interactivity on the dependent variable at three values of the moderator, i.e., the mean and the mean minus and plus one standard deviation. Confidence intervals that do not contain zero represent a significant effect. Both in the analysis with perceived ad congruity (Table 6) and perceived ad interactivity (Table 7) as the independent, the interaction effect of perceived ad intrusiveness and players’ general attitude toward advertising on their attitude to IGA is significant. The conditional effects analyses show that the indirect effects of perceived ad congruity and perceived ad interactivity on players’ attitude to IGA through perceived ad intrusiveness become stronger with an increasingly positive general attitude toward advertising (see Table 8). These results confirm H3a and H4a. There are no significant interactions related to narrative realism. These effects are, therefore, not moderated. We must, therefore, reject H3b and H4b.

Table 8: Conditional effects of perceived ad congruity and interactivity on players’ attitude to IGA at different levels of players’ general attitude toward advertising (Study 2, N = 613)

	Perceived ad congruity		Perceived ad interactivity	
	Effect size (b)	95% confidence interval	Effect size (b)	95% confidence interval
<i>Conditional indirect effect through perceived ad intrusiveness</i>				
General attitude to advertising				
Low = Mean -1 SD (-.932)	0.108	[.0662 ; .1547]	0.041	[.0222 ; .0644]
Moderate = Mean (.000)	0.136	[.1019 ; .1736]	0.051	[.0342 ; .0694]
High = Mean + 1 SD (.932)	0.162	[.1033 ; .2293]	0.058	[.0302 ; .0916]
<i>Conditional indirect effect through perceived narrative realism</i>				
General attitude to advertising				
Low = Mean -1 SD (-.932)	0.093	[.0492 ; .1370]	0.031	[.0146 ; .0503]
Moderate = Mean (.000)	0.073	[.0425 ; .1043]	0.022	[.0119 ; .0334]
High = Mean + 1 SD (.932)	0.052	[.0085 ; .1003]	0.014	[.0022 ; .0290]

4.3. Discussion

Study 2 confirms the effects of perceived ad congruity and interactivity on fantasy game players’ attitude to IGA, as mediated by perceived ad intrusiveness and narrative realism, found in Study 1. We can also reconfirm that the effects through perceived ad intrusiveness are reinforced for players who are generally more positive toward

advertising in general. What is driving the moderation is that players with a more positive attitude seem more accepting of the intrusiveness that ads in fantasy games can cause, as the negative effect of perceived ad intrusiveness on players' attitude to IGA is significantly smaller for players with a more positive general attitude toward advertising than players with a more negative attitude.

We also expected players' general attitude toward advertising to exert a significant moderating effect on the indirect relationship between the perceived ad congruity and interactivity on players' attitude to IGA, through the perceived narrative realism of the game. Contrary to our expectations, however, there were no significant effects here. Like in Study 1, the conditional effects become slightly weaker with increasing levels of players' general attitude toward advertising. Since the interactions are not significant, however, the conclusion should be that there is no moderation.

5. General Discussion and Conclusion

Across the two studies, we find the expected effects of perceived ad congruity and interactivity on fantasy game players' attitude toward in-game advertising, and the expected mediating mechanism through perceived ad intrusiveness and narrative realism. Furthermore, players' general attitude toward advertising reinforces the positive effects of perceived ad congruity and interactivity through perceived ad intrusiveness. This effect is driven by the fact that players with a more positive general attitude toward advertising are less annoyed by the potential intrusiveness of in-game ads. At the same time, the effects of perceived ad congruity and interactivity through perceived narrative realism are largely unaffected by players' general attitude toward advertising.

The present study contributes to the IGA literature in several ways. First, we extend the findings of prior research on (fantasy game) players' attitude to IGA [Lewis & Porter 2010; Nelson et al. 2004] by empirically testing how interactivity and congruity of a single ad can improve perceptions of IGA in general, and showing the mechanisms through which this occurs. Both studies show that ad congruity and interactivity positively influence players' attitude to IGA through the mediating role of perceived ad intrusiveness and perceived narrative realism. Based on schema congruity theory and flow theory, congruity and interactivity are well documented as important in generating positive ad responses to a specific ad. We extend these findings by showing that they also influence responses toward the practice of IGA in general.

Another contribution is that we show that players' general attitude toward advertising reinforces the positive effects of interactivity and congruity by reducing the negative effects of ad intrusiveness. To our knowledge, there are very few papers that consider players' general attitude toward advertising as a moderator in the context of in-game ads. Thirdly, this paper contributes to IGA literature by utilizing the under-researched game genre of fantasy games as it has received scant attention in research about IGA compared to other genres (e.g., racing and sports games).

The study also has practical implications for managers and game developers. As mentioned, it is more challenging to make the appearance of advertisements seem appropriate in fantasy genres than in other genres [Herrewijn & Poels 2014]. However, the results of our research show that, if game developers adequately integrate ads, this does not only lower the perceived intrusiveness of that particular ad, it also contributes to the narrative realism of the gameplay experience and can clear the path to making IGA in fantasy games more accepted. The better the integration of a few "pioneer" ads, the more acceptable the practice of IGA to players altogether. This insight offers new opportunities for advertisers to reach an ever-growing audience as well as for game developers and game publishers who may expect an increase in advertising revenues, which can help subsidize the rising development and marketing costs of their games, without having to increase the retail price. This could result in lower game prices, to the benefit of game players as well.

First, in-game ads should be made congruent with the fantasy game environment. Congruent in-game ads lead to greater overall acceptability of IGA because this type of ad does not interrupt the gameplay experience and appears more plausible and coherent within the fantasy game world. It should be noted that not all brands have a natural (visual) congruity with the fantasy environment. Some brands (e.g., Monster Energy, Bearskin Airlines, Jack Wolfskin) may be relatively more easily integrated in a congruous way than others. The question is whether it would be a good idea for less naturally fitting brands to alter their visual identity (e.g., brand logo and colors) in IGA to appear more congruent with a fantasy game. Players may be unable to correctly identify the brand in store as being the same brand as in their game.

Second, IGA should also be made an interactive part of the game such as customizing one's character with branded clothes or making IGA an essential part of a quest to make the ad less intrusive and the gameplay experience more realistic. In making the in-game ad interactive, players will find IGA in fantasy games more appropriate. As previous research also shows that congruous and interactive ads enhance the play intention of the game and players' intention to purchase the advertised brand, this is an additional bonus.

Apart from interactivity and congruity, game developers should look into other ways of incorporating in-game ads that would make the ads less intrusive and more realistic. Tying a branded item to a quest could be such an example. Overall, in-game ad congruity and interactivity contribute positively to the acceptability of IGA in fantasy games. This effect is especially true for players who already have a generally positive attitude toward advertising, but we still document positive effects for players who generally dislike advertising. Advertisers can target players with a positive general attitude toward advertising as these players possess certain demographics. For instance, younger adults report more favorable attitudes toward advertising in general than older adults [Huhmann & Limbu 2016; Shavitt et al. 2004]. Further, men also have a more positive view of advertising in general compared to women [Shavitt et al. 1998]. Based on these results, advertisers can target young adult, male players, which coincides with the primary audience of fantasy games [Williams et al. 2008].

6. Limitations and Suggestions for Further Research

The current study has some limitations and raises some unresolved issues that future research should address. First, participants were recruited from MMORPG platforms and could self-select to participate. Because we did not explicitly inform potential participants that the study would be about IGA before the study, we believe that potential problems arising from self-selection are limited. Participants were also randomly assigned to conditions. Our analyses indicate that the sample composition is highly comparable between condition. However, we cannot rule out a self-selection bias with certainty. This is a common issue to all survey research.

Second, since our two studies use screenshots of in-game ads in a fantasy game context, our findings cannot be generalized fully to a situation in which players play an actual fantasy game where they can genuinely interact with the in-game ad. The effects may be even stronger with stronger manipulations of ad congruity and especially interactivity. Future research should use real games with manipulated IGA as stimuli. The interactive conditions in this study provided a small “incentive” for clicking: A potion that could restore health or an item that could be worn (but was not functional to the game). While this is a common approach for interactive in-game ads (cfr. the rising popularity of value exchange ads), this could represent a confound. The manipulations in future research should therefore also entail other types of brand integrations (e.g., that are less “relevant” to the game) to test the robustness of the findings.

Further, it should be noted that, even in the congruent condition, participants’ mean ratings of congruity were below the scale midpoint ($M_{S1} = 3.15$, $SD_{S1} = 1.61$; $M_{S2} = 3.78$, $SD_{S2} = 1.53$) suggesting that, on average, respondents did not find the ‘congruent’ condition very congruent. Future research should test whether this is a given fact for all IGA in fantasy games (i.e., floor effect), or how perceptions of congruity could be further enhanced. Future research could also measure more specific ad and brand responses such as brand awareness, the attitude toward the brand or purchase intention of the advertised products. Additionally, examining the effectiveness of IGA in different product categories than energy drinks and clothes is also another possibility for further research. Such research may also try to disentangle “product” from “brand” effects.

Including other potential mediators could be an interesting avenue for further research. The fact that we find evidence of indirect-only mediation in all but one cases signals that an omitted mediator is unlikely [cfr. Zhao et al. 2010]. However, it is always worthwhile to study whether other mediators (e.g., telepresence, flow or content relatedness) offer alternative explanations for our results.

Lastly, the nature of the moderating effect of the general attitude toward advertising on the effect of perceived narrative realism is unexpected. Future research should try to further unravel the mechanism that drives this effect.

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Appendix A. Stimulus Materials

Participants were either told they could (interactive condition) or could not (non-interactive condition) use the advertised product displayed in the screenshots. The textual information of Study 1 is provided below as an example. Study 2 used the same textual format but with a clothing article instead of an energy drink.

Study 1: Non-interactive condition

Imagine that you are playing a fantasy MMORPG. Whilst taking a stroll around this castle you come across this advertisement. You stop and take a good look at it. On the advertisement you can see that a brand of energy drinks is being promoted. You can also see a picture of the advertised product, an energy drink, on the advertisement. You cannot use nor interact with this energy drink in the game.

Study 1: Interactive condition

Above screenshot 1: Imagine that you are playing a fantasy MMORPG. Whilst taking a stroll around this castle you come across this advertisement. You stop and take a good look at it. On the advertisement you can see that a brand of energy drinks is being promoted. You can also see a picture of the advertised product, an energy drink, on the advertisement.

Above screenshot 2: You can click on the advertisement and receive the energy drink as a free gift in the game.

Above screenshot 3: 'You can then interact with and use the energy drink you have received in the game. When you use the energy drink it heals all of your HP and MP'.

Study 1: Congruent and interactive condition:



Study 1: Incongruent and interactive condition:





Study 2: Congruent and interactive condition:



Study 2: Incongruent and interactive condition:



Appendix B: Scales, Items and Alphas

Construct / Items	Cronbach's α Study 1	Cronbach's α Study 2	Scale origin
Attitude to IGA - Overall, I like in-game advertising - Overall, I consider in-game advertising a good thing - My general opinion toward in-game advertising is unfavorable (reversed)	.860	.863	Pollay & Mittal [1993]
Perceived congruity of the in-game ad - The advertisement matches with the game - The advertisement is appropriate within the game - The advertisement does not fit together with the game	.836	.854	Chang et al. [2010], Till & Busler [2000], Fleck & Quester [2007]
Perceived ad interactivity - I can use the advertised product in the game - I can interact with the advertised product in the game - I cannot experience the advertised product in the game (reversed) - The advertised product enables players to heal the HP and MP of their avatars (Study 1)/ The advertised product enables players to customize the appearance of their avatars (Study 2)	.915	.907	Adapted from Lee et al. [2014]
Perceived ad intrusiveness - The advertisement is intrusive - The advertisement disturbs the game experience - The advertisement does not interfere with the game experience (reversed) - The advertisement invades the game experience - The in-game advertisement does not bother me (reversed) - The advertisement distracts from the game experience - The advertisement is annoying - The advertisement is obtrusive	.940	.950	Li et al. [2002]
Perceived game realism - The digital game environment appears more realistic because of the integration of the advertisement - The digital game environment appears more believable because of the integration of the advertisement - The advertisement makes the MMORPG more believable - The advertisement makes the MMORPG more realistic	.950	.955	Poels et al. [2013]
General attitude toward advertising - Overall, I like advertising - Overall, I consider advertising a good thing - My general opinion toward advertising is unfavorable (reversed)	.865	.843	Pollay & Mittal [1993]