

Exaggerated Claims for Interactive Stories

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Abstract. As advertising becomes more crucial to video games' success, developers risk promoting their products beyond the features that they can actually include. For features of interactive storytelling, the effects of making such exaggerations are not well known, as reports from industry have been anecdotal at best. In this paper, we explore the effects of making exaggerated claims for interactive stories, in the context of the theory of advertising. Results from a human user study show that female players find linear and branching stories to be significantly less enjoyable when they are advertised with exaggerated claims.

1 Introduction

In the year 2008, U.S. revenues from video games rose to a record 11.7 billion USD [1]. As competition in the market continues to increase, the task of successfully advertising video games is becoming increasingly important, for over 10% of 2008's total revenue was earned by only the top 0.33% of games [1, 2]. Given that advertising is intended to increase interest and excitement for a product, it is tempting for video game marketers to aim high. However, when resources for development run short, some features that were advertised must be implemented very simply, while still maintaining the illusion that they function as described. As a result, the advertisements for such games become exaggerations of the game's true features - a strategy known as *puffery* [3].

In the context of story-based video games, features involving player-driven story adaptation are prime targets for puffery, as the mechanisms that drive the adaptation are rarely visible to the player. Hidden from direct examination, even relatively simple adaptive story systems might be advertised as being involved and complex, leaving players to imagine more complexity than there actually exists. What are the effects of making such exaggerations? In this paper, we formally explore the effects of advertising player-based story adaptation in a computer video game. We begin by addressing video game advertising in terms of two psychological theories, and then present the results of a large human user study created to evaluate the effect of puffery on player enjoyment. We conclude with a discussion of the study's results, and offer suggestions for how the advertising of player-based story adaptation could potentially be improved.

2 Theories of Advertising and Performance Assessment

In the field of advertising, the effects of different marketing strategies on consumer product assessments are a central concern. When considering product performance, two theories are prevalent: cognitive dissonance, and contrast theory.

Cognitive dissonance is an unpleasant state that arises when a person recognizes the inconsistency of his or her actions, attitudes, or beliefs; it occurs when consumers who believe the advertising of a product discover that the product fails to meet the expectations that the advertising generated. To relieve themselves of this disagreement, consumers revise their assessments to reflect less negatively on the product's performance, toward matching the positive sentiments of their initial expectations. This process of revision suggests that advertisers may benefit from overstating the advantages of their products, as the relationship between expectations and assessment is positive [3].

Contrast theory, unlike cognitive dissonance, describes a phenomenon wherein the relationship between consumer expectations and product assessment is negative. For example, when a product fails to meet consumer expectations, the higher the initial expectations, the more negative its final assessment will be. On the other hand, when a product performs *more* favourably than expected, lower initial expectations yield a more positive assessment; this suggests that advertisers who understate a product's benefits could cause a pleasant consumer surprise.

Under what differing circumstances might these competing theories apply? Korgaonkar and Moschis' work suggests that the deciding factor between them is the degree of involvement engendered by the product in question; for highly involving products (e.g., computers), cognitive dissonance applies, while for products of low involvement (e.g., soft drinks), contrast theory applies [3]. Given that commercial video games often take long periods of time to play and can generate highly dedicated online communities, one might argue that they engender high involvement. Thus, when considering their performance in terms of consumer enjoyment (i.e., 'fun'), one would expect there to be a positive relationship between the expectations of players prior to playing a game and their reported amount of fun recorded afterwards; puffery should succeed.

3 Advertising Adaptive Stories

The idea of game stories adapting during play has begun to attract significant mainstream attention, with independent projects such as Mateas & Stern's *Façade* garnering substantial critical acclaim [4]. In academia, varied approaches have been taken toward dynamically changing different aspects of interactive stories, including the sequence of experienced events and the behaviours of non-player characters [5–8]. Even so, most commercial video game companies still prefer to stay within the well-established patterns of the past 30 years: linear stories or branching stories. That is, players have either no meaningful choices whatsoever, or only a few pivotal choices which decide how the story will end¹. Given these types of stories as the *status quo*, one might reasonably

¹ While one might argue that neither of these story types are truly adaptive, an advertiser could still claim that at least some degree of story adaptation is present whenever *any* player choice (meaningful or not) can result in differing player experiences.

expect companies who *do* decide to be innovative with their storytelling to try to capitalize on the novelty of their work in an advertising campaign. What happens, then, if the final features of a storytelling system fail to live up to what was advertised? Does puffery work as the advertising literature suggests? We investigated these questions in the context of a human user study, which we describe in the sections that follow.

4 Empirical Evaluation

To assess the effect of puffery on player-driven story adaptation, we conducted a user study to test the hypothesis that varying the advertising of an interactive story between modest and exaggerated claims would have a significant effect on players' enjoyment of their story experience, i.e., that $\text{Fun}(\text{modest}) \neq \text{Fun}(\text{exaggerated})$. For a secondary hypothesis, we also tested whether players' genders would effect their rating of Fun.

4.1 Experimental Design

We began our study by presenting each participant with some initial information about a story that they would play, to simulate either modest or exaggerated advertising. We then gave them each a short linear or branching story to play, and asked them to complete a survey after they had finished playing.

Initial Advertising The initial information that we provided to our participants had two potential alternatives. One described the stories that they were about to play as having been created by a group of university students, and the other introduced PaSSAGE, an adaptive, player-driven interactive storytelling system that we developed in prior work [8]. Figure 1 shows the text of these alternatives as we presented them to our participants, following a general introduction to the idea of interactive storytelling; we will refer to the alternatives as “modest advertising” (stories were created by students), and “exaggerated advertising” (stories were created by PaSSAGE), respectively.

We created our control and experimental groups by varying which initial advertisement was presented for each session of the study. Participants who were exposed to the modest advertisement formed our control group, as no puffery was employed (the

“A group of university students has created a set of interactive stories. You’re here today to help us find out what makes different stories more or less fun to play than others, by playing through one, and telling us how much you enjoyed it by the end.”

“A research team at this university has been working on a project called PaSSAGE - an artificially intelligent system that learns about its players while they play through an interactive story, and dynamically customizes the story to suit them the best. You’re here today to help us find out if PaSSAGE works, by playing through one of its stories and telling us how much you enjoyed it by the end.”

Fig. 1. Two alternative initial advertisements: modest (top), and exaggerated (bottom).

stories actually *were* created by a group of university students). We formed our experimental group from the participants who were exposed to the exaggerated advertisement, which claimed that PaSSAGE’s story adaptation would be active when in fact it was not; players in our experimental group experienced the same set of stories as those in the control group, thereby allowing us to assess the effect of advertising player-driven story adaptation when only a trivial amount was present.

Test Stories To represent the stories commonly found in the video games industry, we adopted two stories from our previous work (one linear, one branching) [8]. Both stories share the same setting (a medieval fantasy world), have similar casts of characters, and take approximately 30 minutes to play. The progression of both stories follows part of Campbell’s Monomyth [9], wherein the hero (controlled by the player) begins at home, is called to join an adventure, crosses a threshold to the world beyond, overcomes some trials, and finally suffers and overcomes an ordeal. The content of the stories varied for each of these phases; the linear story was based closely on the fairy tale “Little Red Cap” [10], while the branching story granted the player the option to team up with the villain (the Wolf) to capture the rescuer (the Woodsman) at the end, with a final chance to free the rescuer from captivity if the capture had occurred.

Post-game Survey We gathered players’ assessments of the two stories via a post-game survey, which asked them to rate their story in terms of how well they enjoyed it in comparison to an average video game of similar length, or their expectation of one. Ratings were made as selections from a seven point scale, representing a spectrum from negative to positive sentiment (e.g., “Less Fun” to “More Fun”). We also asked participants to indicate their age and gender.

4.2 User Study

We conducted our study with 112 human participants (mean age: 19 years), drawn from the student population of an introductory Psychology class at the University of Alberta. For each session of the study, we alternated the given initial information between the modest and exaggerated advertisements, and randomly assigned each participant to play one of our two test stories. The numbers of players that participated in each of the four resulting groups (linear/modest: 31, linear/exaggerated: 29, branching/modest: 29, branching/exaggerated: 23) were reasonably well balanced; variations are due to inconsistent participant attendance and our random story assignment.

Following the initial advertisement, each player was given a sheet of instructions for how to play the game, and offered a few minutes to become familiar with the controls. We implemented our stories using the Aurora Neverwinter Toolset, the editor for BioWare Corp.’s computer role-playing game, *Neverwinter Nights* [11]; this toolset allows the rapid creation of rich, 3-dimensional, virtual environments, and offers a scripting language to control story progression. To eliminate any bias caused by errors in the Neverwinter Nights engine (e.g., players becoming unable to move), we analyzed every player’s gameplay logs and discarded their ratings if any errors occurred; 112 is the number of participants whose data was retained after this pruning was complete.

Source	Sum of Squares	Deg. of Freedom	Mean Squares	F	Prob>F
Advertisement	1.22	1	1.22	0.72	0.40
Gender	0.08	1	0.08	0.04	0.83
Advertisement \times Gender	11.50	1	11.50	6.82	0.01
Error	182.14	108	1.69		
Total	196.78	111			

Table 1. 2-way ANOVA table for player ratings of Fun.

We began our analysis by combining players’ ratings of the linear and branching stories, to assess the effect of exaggerated advertising for these types of stories in general. Table 1 shows the results of a 2-way Analysis of Variance (ANOVA), with advertisement and gender as two independent variables and player ratings of Fun (enjoyment) as the dependent variable. Although the ANOVA failed to show any significant, gender-independent effect of advertisement on player Fun ratings, it did show a significant interaction between the two sources ($\alpha = 0.01$), suggesting that the effect of varied advertising may depend on a player’s gender. To investigate this possibility, we performed two comparisons between the sub-groups generated by the interacting sources: males exposed to modest advertising versus males exposed to exaggerated advertising, and females exposed to modest advertising versus females exposed to exaggerated advertising; the other possible comparisons (e.g., males/modest vs. females/modest) are not relevant to this study, for while advertising can be controlled by a company, players’ genders cannot. Table 2 shows the number of participants in each group (columns 2 and 3), and each group’s average fun rating (columns 4 and 5). The rightmost column shows p-values for the average fun ratings being significantly different from one another when player genders are considered separately; these results were obtained using a two-tailed Welch’s t-test, as the variances of our sample groups were significantly different.

5 Discussion and Future Work

The results in Table 2 show a significant negative effect of exaggerated advertising on the Fun ratings of female players ($\alpha = 0.01$), confirming the secondary hypothesis of our study. Assuming that our exaggerated advertisement increased player expectations as we intended, then treating Fun_{exag} for females as “low” implies that contrast theory was in effect for these players, and this in turn suggests that they had only low involvement in their story experience. Although this assumption remains to be tested, recent

Gender	N_{mdst}	N_{exag}	Fun_{mdst}	Fun_{exag}	$\text{Fun}_{\text{mdst}} \neq \text{Fun}_{\text{exag}}$
Males	22	23	3.82	4.26	0.25
Females	38	29	4.42	3.55	0.01

Table 2. Number of players (N), average Fun rating ($\text{Fun} \in [1, 7]$), and p-values for the averages being different between the modest (mdst) and exaggerated (exag) cover stories.

findings by Lin and Reeves offer support; when players believe that the controller of an interactive experience is an Artificial Intelligence (AI) system (versus a human), their physiological arousal during the interaction is decreased [12]. Combining this result with work that links physiological arousal with involvement [13], the low involvement of our female players who received the exaggerated advertising may have been a direct result of knowingly interacting with an AI system. Future work should explore the implications that such a result may have to the advertising of AI-based interactive stories.

6 Conclusion

In this paper, we explored the effects of exaggeration when advertising interactive stories. We described two psychological theories of advertising, contrast theory and cognitive dissonance, and made conjectures as to how they might apply in the context of player-based story adaptation. We then presented the design of a human user study, which tested the effects of modest versus exaggerated advertising on player enjoyment for two interactive stories. By conducting our study on 112 university students, we found that making exaggerated claims for interactive stories has a significant negative effect on the enjoyment of female players.

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