Designing a Serious Game for Young Users: The Case of Happy Farm

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Abstract. The interactivity and attractiveness of video games are increasingly deployed for educational and training purposes in what are called “serious games.” This paper describes Happy Farm, a serious game targeting young people and aimed at increasing their awareness of the risks connected to the consumption of psychoactive substances. The development of the game is driven by the premise that credibility and usability are pre-conditions for persuasion. The achievement of these qualities is pursued in the design and is generally testified by the results of the users’ evaluation. Suggestions for the improvement of the game are also outlined.

Keywords. Serious game, Persuasive technology, Drug prevention

Introduction

Serious games [1,2] represent a growing area of computer applications that use videogames to improve users’ awareness or skills (e.g. in cognitive training [3]). In addition to being appealing, serious games also offer the advantage of an interactive learning modality, which allows the user to engage in some behavior instead of remaining passive. Abt [4 quoted by 14] states that video games are able to provide a “dramatic representation” of a subject and allow players to take on realistic roles, to cope with problems, to make decisions, and to get immediate feedback from their own actions without actual harm.

Happy Farm, the serious game presented here, is designed to address young people and increase their awareness of the risks involved with consuming psychoactive substances. Similarly to a previous serious game developed by the same research group [5], this software can be adopted by social workers and teaching personnel within larger prevention programs (one of the main information channels for young people in Europe [6]). In order to be persuasive, however, this kind of software needs to be perceived as credible by its final users [7] [8]. In Happy Farm, credibility resides in the perceived accuracy of the information provided and in a verisimilar depiction of the night world. The strategy with which these dimensions were embedded in the game is described in the paper, followed by a synthesis of its evaluation.
1. Game rationale

Happy Farm was created with Macromedia Flash Professional 8. The game environment is a club called “Old Farm,” which includes a bar, a chill-out zone, a garden, a parking, and a dance floor. All characters (i.e. bartender, dancers, DJ, dealer, best friend, cute girl, crew, nerd, bossy guy) are anthropomorphized animals (Figure 1a) including the main character (Figure 1b). Aspects of the social environment such as the characters’ behavior, expressions, and dressing style or the music associated with different moments of the narrative and areas of the club are carefully selected. The cartoon-like style with anthropomorphized animals populating the scenes adds an ironic perspective on the situation, which is appreciated by a young audience and decreases any expectation of a fully realistic graphic representation.

Playing the game does not require specific instructions. The narrative develops through 26 scenes, each one lasting about one and a half minutes. At specific points in the plot, the player is asked to choose among risky or safe behaviors (see Figure 2a), influencing the subsequent development of the narrative. Some immediate consequences of the chosen behavior are shown soon after the selection through an animated sequence (Figure 2b). At the end of the game, the user is given a straightforward synthesis of his/her night out, like in any final screen of a classic video game match.

At relevant points in the narrative, the player has the option to browse a book describing characteristics of an illegal substance, its short-term effects (Figure 3a), and the legal aspects connected to its use. It also contains advices about solving difficult situations, and an image gallery. Substances included are ecstasy, alcohol, marijuana, ketamine, LSD and cocaine. Two dangerous phenomena are described, namely abuse and consumption of different substances. Short-term effects are privileged over long-term given the time span of the story narrated in the game (i.e. a night). Information is provided with plain language and images.

The connection between actions and consequences as well as the ability to see the link between events is considered a powerful educational or persuasive strategy [9].

Figure 1. Scene of the game with anthropomorphized animals as characters (left). Main character (right).
Embedding information in the narrative, giving optional access to objective facts about biological and legal consequences, and contextualizing risks in familiar scenarios increases the game’s persuasiveness. Crucial choices are emphasized and correspond to key moments where the user intervenes; thus, the choices—and their consequences—appear to belong to the user.

To further emphasize the dilemmas encountered while trying to enjoy a night out, the main character is accompanied by an angel and a devil throughout the duration of the game (Figure 3b). They alternately appear before or after a choice, in order to provide good advice or to tempt. The negative consequences are depicted in a practical fashion (e.g. family fight, big expense, loss of driver’s license, poor figure) as well as the temptations (e.g. getting relaxed, forgetting, or seducing).

2. Design: A user-driven approach

Two common techniques to involve users in the design phase were adopted: brainstorming [10] and affinity diagrams [11]. The former aims at producing ideas in a group thanks to the participants’ heterogeneity and to a facilitator. The latter is a bottom-up process aimed at grouping ideas within commonly negotiated categories. The former encourages creativity, the latter allows systemization. Two distinct groups of 20 and 22 students, respectively, (mean age 22.2) were involved in the design phase, the first generating ideas through a brainstorming and the second organizing them...
through affinity diagrams. The participants were informed beforehand that the collected information would be used for a video game to increase awareness of the risks connected to drug consumption. These techniques were used to collect ideas and personal experiences about a typical night in a club as well as samples of the language used by 20-somethings. The suggestions received helped define the game scenes and dialogues.

3. Users’ evaluation of usability and credibility

Once a Beta version of Happy Farm was completed in Italian, the evaluation of its usability, attractiveness, and credibility was carried out with final users. The evaluation consisted of a game session and a questionnaire administered after it. The items were either specific to Happy Farm characteristics or adapted from common usability questionnaires such as [12]. They consisted of 28 statements to which users could agree or disagree on a five-point Likert Scale.

A total of 175 people (63 females and 112 males, mean age 22.6) were questioned in two popular cafeterias and an international music festival in Italy. They were requested to use the game, to provide some personal information (age, education, job), and then to fill in the anonymous questionnaire.

The results were generally positive (Percentages are referred to players who responded “strongly” or “completely agree”, namely elected the positive degrees in the Likert scale). Usability was rated high: for instance, 89.4% users found it easy to play, 91.6% found the story clear, and 82.6% understood the meaning of the icons. Regarding attractiveness, 66.7% users liked the game, 70.4% found the graphics to be funny, and 69.8% felt involved in the narrative. Regarding credibility, 63.1% users declared that the dialogue suited the story, 58.5% found that the voices suited the characters, 65.6% found the story credible, and 75.9% found the drug consumption effects credible. The complexity of the game (42.4% found the game too easy) and the music selection (42.6% respondents chose the middle point of the scale) were marked as areas for improvement.

In order to check the effect of the respondents’ anagraphic characteristics, a MANCOVA on the responses for each item was performed, considering gender and education as fixed factors and age as a covariate. The analysis yielded significant results for the main effects of gender for the item “I liked the game” \(F(1;130)=5.582, p=0.20\), with males rating the game more positively than females. The main effects of education for the item “Game was easy to play” was also significant \(F(1;6)=2.889, p=0.012\), with higher education respondents finding the interface easier to use. Main effects of education \(F(1;5)=2.246, p=0.043\) and age \(F(1;130)=8.044, p=0.005\) were found significant for the item “I found a good correspondence between my choices and what were represented as consequences in the game”, with older and less educated respondents finding better correspondence.

4. Conclusions

This paper describes the design choices and the reasons behind the development of Happy Farm, as well as the users’ evaluation. It shows that usability, attractiveness, and credibility are to a great extent achieved. The high rate of credibility in particular
shows that the game has an important requisite for being persuasive. The results of the evaluation also suggest areas of improvement. For instance, the game could attract a wider audience by making characters and situations more appealing to women. In addition, the game could attract players already familiar with it and be used in a longer awareness program by adding more complexity [13]. Future developments can then include more choices, to generate a larger variety of plots covering more situations, and different levels, connecting level upgrades to the users’ ability of making safer choices.

References