Designing a serious game for in-field interventions to promote nightlife well-being

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Abstract. Nightlife well-being interventions, although much needed, face several challenges related to the specificity of the context addressed. We argue that a game-facilitated intervention helps with facing these challenges. The characteristics of a game developed to this goal and the results of user tests conducted in situ are presented.

Keywords. Serious game, nightlife well-being, design, satisfaction.

1. Introduction

In clubs, festivals, and social events the abuse of recreational drugs is high [1], and so is the need for in situ interventions to promote safety and well-being. Interventions of this sort, however, have to face three critical challenges: a potentially reluctant audience looking for entertainment; unfamiliar nightlife cultures and values; and a hectic environment hampering reflection and sustained attention.

To face these three challenges, we designed an intervention with three main characteristics. First, in order to attract an audience looking for entertainment, the delivery of information on the physical, legal, and social consequences of recreational substances abuse was obtained through a serious game [6]. The game is called “What the Dope!” (henceforth WTD) and was designed based on a set of recommendations especially collected [3]. A peer-operator supervised the game session and was available to complement the game with other information material (e.g., leaflets).

Second, in order to get familiar with nightlife culture and taste, the game graphics and music are close to those adopted in nightlife parties and advertising and the game content is generated through a participatory design process. In particular, the design process involves different groups (i.e., university students, young people at risk, peer operators, and experts) and included the following three phases:

a) young people at risk and peer operators produced the game content taxonomy through a brainstorming session and assimilation tasks; the resulting categories distinguish between different sources of risk (i.e., alcohol, cannabis, ecstasy & methamphetamine, hallucinogenic substances, amphetamines and other stimulants,
ketamine, GHB/GBL, popper and other solvents, cocaine, heroine, mix, friendship & sexuality) and different consequences of risky behavior (desired effects; undesirable acute psychological effects; undesirable long-term psychological effects; undesirable physical/medical effects; legal issues, history, politics, and geography; curiosities, myths, and urban legends; gender specificities & pregnancy; driving; sexually transmitted diseases; violence, bullying and microinterethnic conflicts; first aid, precautions, and context; other).

b) scientific material and prevention material (e.g., flyers, web portals) from reliable sources was collected and examined to extract the quiz content and its related explanations; all content was then double-checked for correctness by experts, entered into the system, and categorized according to the double taxonomy described in point a) above.

c) the game was then populated by visual narratives [4] (Figure 1), where a sequence of pictures recounts the events connected to risky behaviors and undesired consequences; storyboard and pictures were developed by target users during dedicated workshops.

![Figure 1. Screenshot of a visual narrative and its related true/false question.](image)

Third, in order to fit the environment in which WTD is going to be played, while at the same time incorporating basic game characteristics such as competition, chance, and simulation [5], the game is designed for multiple players (up to six people can play simultaneously) and is presented on a large screen, since players in a public space often approach games in groups, surrounded by an occasional audience [6]. Also, since the environmental conditions do not allow comprehension of complex game plots, the game has a simple quiz structure; and it allows different configurations that vary in difficulty, content categories, number of questions, number of players, and response time. At the beginning of each game session, the operator can easily choose the configuration s/he deems most appropriate to the intervention and its specific audience.
2. WTD: Rationale and appearance of the serious game

The game was developed with Ruby On Rails Framework, as well as C# and WiiMoteLib for WiiMote input. A game session comprises a predefined number of questions at a difficulty level that is selected by players at the beginning of the game within the range of levels activated by the operator for that particular intervention. Before starting to play, a brief video explains the commands and the rationale of the game. Each player interacts with the game through a Wiimote® to select his/her avatar (Figure 2) and then to enter the answers to the quiz questions. The quiz includes true/false questions or multiple-choice questions. Once all players have entered their answer or after the time allotted to answer has elapsed, the results are displayed showing which player answered correctly, the updated scores of each player, and the explanation for the answer (Figure 2). Instructions are not given vocally in the game, since it is assumed that the environment can be very noisy; instead, all information is given with enticing text and graphics displayed on the screen and always accompanied by a musical soundtrack. The game is currently offered in five languages (English, Italian, French, German, and Spanish).

Figure 2. Screenshot of the avatar selection panel (top), and of the score panel (bottom).
The field interventions use a gazebo (Figure 3) especially designed to host an information desk where operators can distribute dissemination material and having a white wall onto which the game can be projected at night. Players are assumed to sit outside the gazebo, in front of the game wall, so that other people can follow the game as an audience and learn passively. The projected game enhances the visibility of the gazebo and helps to attract visitors. The location of the gazebo should be central enough to reach as many players as possible, while at the same time quite it should avoid crowded areas to allow gameplay and some verbal exchanges.

![Figure 3. The intervention gazebo with the information desk (left) and the game wall (right)](image)

3. Users’ satisfaction

Access to summer events was negotiated with the event organizers in order to have an official space where WTD could be shown and tested. In this way, the game underwent a set of pilot tests with 90 people at night, during two major summer festivals in Croatia (“Outlook” and “Dimensions” festivals), in order to identify main issues in the overall procedure or in the system that could emerge only by trying out the protocol and the game in the field.

Once technical bugs and procedural awkwardness were fixed, players’ satisfaction with the game usage and interface was assessed during two events in Italy (“Cerebration” and “Pop Corn”). Participants (N = 73, 24 women, 49 men, Mean age = 26.5, DS = 4.79) signed an informed consent and were then administered a written questionnaire after playing one game session; questionnaire items were 8 simple statements about which respondents were asked to express their agreement on a 6-degree Likert scale. The questionnaire items are listed in Table 1.

Results were positive (Table 1), showing that the effort in designing the game led to a positive usage experience and to an appreciated aesthetic appearance. Of particular importance to us was the high score obtained in Item 5 ($M = 5.14$, $DS = 0.90$), which asked whether the information provided in the game was reliable in the users’ opinion.
The high score means that a format such as a game, in the specific context of a night festival, is believed to be able to convey reliable information.

Table 1. Scale ranging from 1 to 6, 1 = very negative.

<table>
<thead>
<tr>
<th>Item</th>
<th>M</th>
<th>DS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did you like playing the “What the Dope!” game?</td>
<td>4.66</td>
<td>1.20</td>
</tr>
<tr>
<td>2. Are the “What the Dope!” graphics cool?</td>
<td>4.29</td>
<td>1.25</td>
</tr>
<tr>
<td>3. Was the “What the Dope!” game entertaining?</td>
<td>4.64</td>
<td>1.23</td>
</tr>
<tr>
<td>4. Do you like the idea of having the “What the Dope!” game at the [event name] festival?</td>
<td>5.29</td>
<td>0.92</td>
</tr>
<tr>
<td>5. Did you get reliable information from the game?</td>
<td>5.14</td>
<td>0.90</td>
</tr>
<tr>
<td>6. Did you learn anything new about substances from the game?</td>
<td>4.62</td>
<td>1.39</td>
</tr>
<tr>
<td>7. Is the game information useful for [event name] people’s health</td>
<td>4.82</td>
<td>1.13</td>
</tr>
<tr>
<td>8. Please rate the following aspects of the game:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graphics</td>
<td>4.04</td>
<td>1.20</td>
</tr>
<tr>
<td>Sound</td>
<td>3.66</td>
<td>1.27</td>
</tr>
<tr>
<td>Multiplayer modality</td>
<td>4.80</td>
<td>1.13</td>
</tr>
<tr>
<td>Large screen</td>
<td>5.25</td>
<td>1.13</td>
</tr>
<tr>
<td>Content (substances)</td>
<td>5.04</td>
<td>0.98</td>
</tr>
</tbody>
</table>

4. Conclusions

In conclusion, a game-based intervention needs to acknowledge the specific challenges set by its target context and to be validated for effectiveness. We described how “What the Dope!” was designed to meet such challenges, both in its game rationale and in the process through which the game content was built. We also provided evidence of users’ satisfaction with the game. The future work will consist of assessing its credibility/appropriateness as well as its ability to improve players’ knowledge.

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References