Serious Games in Social Intervention: Designing Technologies to promote Safe and Healthy Behaviors

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ABSTRACT
In this paper, we outline a specific application domain for serious games, i.e. the social intervention for the promotion of safe and healthy behavior in the nightlife. The potential of serious games in this domain are synthesized and a set of design guidelines, derived from interviewing stakeholders and operators, is provided.

Categories and Subject Descriptors
J.3 LIFE AND MEDICAL SCIENCES – Health; J.4 SOCIAL AND BEHAVIORAL SCIENCES - Psychology

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Serious Games, videogames, e-health, prevention, drug and alcohol abuse, persuasive technology, safer nightlife.

1. INTRODUCTION
Information and Communications Technologies (ICTs), namely technical devices that facilitate the rapid collection, collation, storage, and dissemination of data, assisting knowledge creation and diffusion [13, 25] are beginning to emerge as a valuable resource in the promotion of healthy and safe behaviors [15, 19]. In particular, they can play a relevant role in supporting social interventions to prevent risky behaviors and promote safe behaviors [24] through dedicated software, web based applications or videogames. Innovative practices of social intervention are offered via mobile phones, large screens, or regular desktop PCs in domains as different as learning [10], primary care [11], safe driving [9], or bullying [26], to name but a few.

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The present paper focuses on serious games to promote a safer nightlife in the young population. Serious games are particularly appropriate in this domain, but not as intensely exploited as they are in other domains of health and safety promotion. Our goal is to highlight their potential and to provide some guidelines for their design. Section 2 defines serious games and describes the way in which they are usually deployed in social interventions for health promotion. Section 3 narrows the focus to the domain of safe nightlife promotion and briefly explains the potential of serious games. Section 4 outlines some design guidelines for these games.

2. SERIOUS GAMES SUPPORTING SOCIAL INTERVENTION
Serious games are videogames that, while being fun and attractive as any other game, are also able to convey serious contents such as teaching a specific subject (e.g., traffic rules), increasing awareness on a particular social phenomenon (e.g., racial prejudice) or promoting sustainable behavior (e.g., energy wasting); they are often able to persuade users to modify their attitude or their behaviors or both, and for this reason they are sometimes called persuasive games [3]. The World Health Organization “established the Global Observatory for eHealth (GOe) to review the benefits that ICTs can bring to health care and patients’ well-being (since the) widespread appeal of computer and videogame playing among children and adults creates a unique opportunity to deliver health education during leisure time” ([18], p.27). Prochaska and Velicer [22] pointed out that knowledge about risky behaviors is not highly correlated with the adoption of healthy habits; however, this low correlation can be affected by the way in which knowledge is acquired. In fact, experiential learning could offer a more effective way to convey knowledge, embedding it into concrete behaviors. In a videogame this experience can occur in a safe environment, thereby joining the advantages of experiential learning with those of a safe learning setting [4].

Videogames promoting safety and health usually gravitate around two possible strategies: environment simulators and/or simulation of cause/effect relations. Environment simulators enable the user to experience an environment where they can deal with a specific situation/role or can practice a certain skill [28]. An example of the former is “Global Conflicts: Palestine” [27], a serious game to decrease discrimination and prejudice thanks to the psychological
approach of social repositioning [12]. Players can take on the role of different parties in a conflict, and have the chance to interpret the same conflict from different standpoints. Examples of environments to practice specific skills are videogames designed to improve perceptive and cognitive abilities in the elderly. The other strategy deployed in serious games, cause/effect simulation, immediately and vividly displays the consequences of a behavior that in real life would take longer time to appear and would then be easily downplayed. This is the case of videogames for safer nightlife, which are described in the next section.

3. SERIOUS GAMES IN THE PROMOTION OF A SAFER NIGHTLIFE

A domain where serious games have a high potential yet a low deployment is the promotion of safer nightlife behaviors among young people. Nightlife social contexts are usually conceived as spaces freed from the constraints and pressures of ordinary life [20], a space that thrives also because it represents a fundamental resource to local economies. In these environments several dangerous situations can emerge, and a prominent one is alcohol and psychoactive substance abuse. Coping with this abuse means to plan interventions that are able to effectively address young cultures and that keep updated on the evolving trends in drug usage. ICTs can be instrumental to these interventions in several respects: by supporting in-field interventions [5] and peer education [29], or by implementing rapid alert systems within drug checking programs that cope with new substances and detect unexpected adulterants [2]. Interventions in this domain are usually placed under the umbrella of “healthy settings”, “healthy night clubs”, “safer dance” or “club health” [16]. The benefit of using serious games to support these interventions relies on the affinity with the context targeted by the intervention, since both are characterized by fun and entertainment. In addition, videogames can use language and graphics that suit the taste of a young target, which improves the effectiveness of a persuasive message [4].

A set of serious games in this domain was developed by the Human Technology Laboratories, HTLab, at the University of Padua in Italy, and tested in the field around Europe. These games exploit the cause/effect strategy described in section 2, and display the consequences of psychoactive substance abuse [8], and risky driving behaviors [7, 17, 21, 23].

4. DESIGN GUIDELINES

The design of serious games for safer nightlife promotion deserve some additional guidelines with respect to the general recommendations that hold true for any videogame or technology. These remarks emerged during a brainstorming session with 21 members of associations operating throughout Europe to promote safety between partygoers.

4.1 Ensuring social realism

While a serious game needs to be fun, it should not lack credibility. A persuasive message is credible when its source is perceived as reliable and expert [4]. In the case considered here:

- The game should be promoted/sponsored by neutral associations and entities, whose agenda does not deny the reality of the feelings and needs experienced by partygoers, or to convince them to avoid certain situations, but to communicate with them and make them aware of short and long-term risks.

- The game should have a strong scientific background, which should be well advertised.

- The game should avoid language and graphic solutions that are perceived as ridiculous by the users. Nightlife culture is deep and rich, and young people can recognize its nuances from small aspects such as jargon, or clothes. Since these nuances are attributed also normative value, with some groups of people being considered as undesirable and alien and some other as cool and close, the context to which the videogame is directed needs to be scanned in advance so as to avoid faux-pas in the design choices.

To involve final users and stakeholders (e.g., operators or associations) in the design, informal techniques such as brainstorming, on-line forum and affinity diagram sessions should be preferred to more structured ones [8].

4.2 Early prototype in-field testing and contents updating

The game needs to be tested with users in a real context [1] since its early design stage. This general design guideline is especially important for products targeting nightlife contexts, because this particular setting imposes several constraints to the usage of a product (e.g., distractions, background noise, space availability, climatic conditions). Therefore:

- The tests should be carried out in the same physical and social setting in which the games will be played.

- Crucial dimensions of this in-field validation are the usability of the game, its attractiveness and acceptance, and its perceived reliability. About reliability in particular, requirements and recommendations to make a game credible (section 3.1.1) are collected in advance but the actual choices made in the design phase need to be validated iteratively to see if the requirements are met.

Finally, the nightlife culture is subject to frequent changes; the scientific knowledge of the consequences of substance abuse develops continuously. Thus:

- It is suggested to constantly update the serious game contents.

4.3 Acknowledging sociability

The presence of an audience or of co-players during a game session can transform the game experience and make it different form the way designers originally conceived it. It is very likely that partygoers approach the videogame station accompanied by other people or that the game becomes an event in itself, attracting a small audience around it.

Previous studies showed the importance to consider and eventually control the social setting when technologies are adopted for “educational” purposes [9]. Therefore the design needs to take into account the possibility of collective game sessions since the beginning.

- Videogames should be designed for large screens, to be used in big open spaces that make the game attractive and the information visible to more than one user at a time.

- Design should exploit the presence of several players to make the game more attractive by implementing “competitive” and “collaborative” features; competition
should be aimed at involving the audience and not be disruptive to the final goal of the game

- When possible, the game can also foresee the role of a moderator that grants access to certain aspects of the game according to the crowd in the setting.

The presence of audience or co-players, the chaotic nature of the nightlife context and the sensitivity of the topic of substance abuse, should also suggest to avoid the disclosure of sensitive or embarrassing information as a necessary step to progress in the game; anonymity must be warranted to players.

4.4 Rapid access to relevant information and multiple layers of knowledge

Often the situation in which serious games are played does not permit to focus on complex information. Therefore

- The videogame should first present key messages of rapid access.
- The information should be organized in layers, both in the game and in the intervention in general. The game just needs to trigger the player’s interest, while further information can be made available during the subsequent days in recommended brochures, websites, social network.

Layers of information also serve another purpose: adjust the kind of information to the actual interests and drug consumption habits of the player. In fact, not all players have the same habits during nightlife in terms of substance abuse; therefore:

- Recommendations directed to heavy abusers of substances should not be proposed in the foreground, implying that these habits are shared by all people approaching the game. Instead, it could be offered after the user has taken a few, “softer” steps in the game and has chosen his/her desired kind of information.

Third, not all users have the same skills in using ICTs; so:

- The access to the game needs to be facilitated in its initial steps, to make the starting phase easy and rewarding.

5. FUTURE WORK

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7. REFERENCES


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