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5 Assessment Of Risk Behaviors Related To Substance Use, Bullying and Alterations in Body Image in Adolescents Through a 3D Simulation Program

Abstract: Currently, the expansion and use of new technologies has occurred not only in the field of entertainment and communication, but also in applied professional contexts. In this sense, the development of virtual reality (VR) environments has proved to be a fruitful field for the development and implementation of various programs for the treatment of different psychopathological disorders. In this sense, it is not strange that diverse authors have recently pointed out the great impact that VR environments could have on human interaction and on their consciousness; this is why they have become a deeply appealing kind of technology for people nowadays. In this regard, Blaschovich & Bailenson (2011) in their book *Infinite Reality* brilliantly address the question of the affinity and attraction that VR environments produce in human beings. Thus, it is interesting to notice that as VR environments are more widely accepted and integrated into our daily lives, they will be used in some environments as a replacement for the natural or physical world. In such cases, as for example when using VR environments in psychotherapy, the question arises as to what is real and what is not, but the fact is that we do get immersed in such virtual environments, and react within them as though we were in the “real” world.

In this chapter, the importance and application of VR will be addressed in three areas of great relevance in Psychology for the study of risk behaviors in young people. In particular, drug use behaviors, bullying among pupils at school, and the alterations of body image commonly present in people with eating disorders. To begin with, in the first section we will discuss the distinctive characteristics of VR, such as its main definitions, the existing types of VR, and the main advantages that this sort of technology would present. Then, some of the most important developments of VR applied to the treatment and assessment of problematic behaviors appearing at school ages will be described. Lastly, we will discuss the features of a new desktop VR computer program named MySchool4web aimed at the detection of problematic behaviors in young people at school ages as well as its main outcomes.

5.1 Definition of virtual reality

There have been several attempts at defining VR over time, as such we will first present the most relevant characteristics. Virtual reality implies a new sort of human-computer interaction, being that the users are not only external observers of images on a computer, but active participants in the frame of a three-dimensional computer-generated world (Riva, 1997). As can be deduced from this description, VR would imply the use of computers as much for its development as its application. At the same time, it is important to emphasize that VR would be a dynamic system of interaction between a computer and the person who uses it. In this sense, VR systems wouldn't be passive devices, such as TVs – they imply real interaction, allowing the person to participate in the simulated context.. Continuing with the characteristics of VR, this technology would fall somewhere between a TV and a computer, making it possible for us to watch, hear, and feel in a three-dimensional graphically created world and to interact with it, facilitating in the participant a surrounding experience, which would lead the person to feel and believe they are really there (Perpiñá, Botella, & Baños, 2003).

In a similar way, other authors have defined VR as an advanced type of contact (interface) between a human being and a computer, which would allow the user to both interact and become immersed in a computer generated environment in a natural way (Adams, Finn, Moes, Flannery, & Rizzo 2009). For instance, this interaction could happen through the use of tracking devices that make it feasible to determine both the position and the orientation of the person's head in space and to use this information in order to change the image that is being virtually presented. In addition, this sort of contact between the person and the virtual environment brings about a different way of showing information, generating the feeling of immersion, which is a perceptual and psychological sensation of being present in the digital environment. Being-present and immersion experiences are the two main features that would distinguish virtual reality systems from other computer applications (McLellan, 2001).

In conclusion, VR systems would imply at least the following basic distinctive characteristics (Carmona, 2012):

- i. The use of computer systems for its development and application.
- ii. The simulation of environments (mainly three-dimensional) that would appropriately recreate both real life and imaginary situations.
- iii. The possibility of interaction between the computer and the person who uses it.
- iv. The person as subject of the presence and immersion experiences generated by the virtual environments and the machine-person interaction.

5.1.1 Types of virtual reality

Nowadays, several classifications of virtual reality exist. Brill (1993, 1994) differentiated seven categories or types of VR, these include: (i) Immersive first-person with HMD, (ii) desktop VR, (iii) mirror world, (iv) Waldo world, (v) CAVE or chamber world, (vi) cab simulator environment and (vii) cyberSpace. As McLellan (2001) pointed out, there would be three more types of VR, that is: (viii) augmented reality, (ix) VisionDome y (x) Experience Learning System. Next, a brief description of each of these VY types will be presented.

- i. Immersive first-person with HMD. The most widely accepted VR, it would be mainly characterized by using devices such as VR glasses, best known as head-mounted display (HMD), fiber-optic-wired gloves, position-tracking devices, and audio systems providing 3-D (binaural) sound as well as olfactory stimuli. The HMD device mainly contains screens inside of the goggles through which virtual reality images are presented. At the same time, a sensor attached to the helmet and a movement-tracker allow the participant to change the vision of the virtual world consistently with the motion of the head in the real world - in such a way that movement made in real life would produce this same movement in the virtual world.
- ii. Desktop VR. This form of VR introduces a three-dimensional world generated virtually that is watched through the screen of a conventional computer. As a consequence, the user interacts with such an environment through devices usually used in normal personal computers (PC), such as a keyboard, mouse, or a control pad similar to those used in videogames. This type of VR is not considered as immersive as those with HMD. Nevertheless, desktop VR would have significantly fewer technical and economic requirements than immersive first-person VR using HMD systems.
- iii. Mirror world. This system provides a second-person experience projecting virtual realities by using a video camera. However, the person is able to interact and communicate with objects and people, although this interaction is always done outside of the virtual world. At the same time, the image of the person who participates could be either superimposed on the simulated virtual image or mixed with the virtual world through the projected video image. A digitizer is used with the purpose of processing the user's images and features, such as the position, movement or number of fingers in the scene.
- iv. Waldo world. Also known as virtual animation, this sort of VR device consists of real-time computer animation in which user's motion is digitally detected using an electronic mask or body armor equipped with sensors. Therefore, it is possible to generate a real-time virtual animation of the person's motion on a screen or in a robot.
- v. CAVE or chamber world. This is actually a version of the immersive virtual reality with HMD. Nevertheless, the virtual simulation system called CAVE (cave automatic virtual environment) allows us to cause an even greater sensation of immersion in

- the participant thanks to the possibility of projecting the virtual world using several computers that generate images which are then projected on a cubicle of 4 or 6 walls. These images can be seen in three dimensions through the use of HMD.
- vi. Cab simulator environment. Conceived as a way to realistically recreate the cab of a vehicle (a plane, car, etc.), this VR system manages to produce an experience of immersion through virtual environments that use additional components, such as visual elements that are bigger than the field of view and three-dimensional sound inputs.
 - vii. Cyberspace. This term encompasses all those nets and databases generated and maintained by computers creating an artificial global reality. It can be visited simultaneously by many people through connected computers making up a net.
 - viii. Augmented reality. The main characteristic of this system is that it uses both virtual stimuli generated by a computer and real world stimuli. In this regard, augmented reality uses computer generated items that are superimposed over the real world to highlight certain features. VR items can be displayed by VR glasses such as HMD but also using a desktop monitor or a hand held display.
 - ix. VisionDome. This is a VR system similar to CAVE, with the exception that it is not necessary to use any VR device (goggles, helmet, etc.) to watch the simulation. Here, the users are immersed in a VR system that generates three-dimensional models using a 180 degrees screen inside a hemispheric structure. This results in a total experience of being immersed in 360 degrees by a 180 degrees virtual environment thanks to the synchronization of that structure with the motion of the participant.
 - x. Experience Learning System. This system has been designed in the context of the military industry in order to provide the Army with highly realistic training simulations that rely on advances in virtual reality, artificial intelligence, and other cutting-edge technologies. At the same time, the developed systems are aimed to produce immersive environments for simulations, ranging from better head-mounted displays and force-feedback devices to surround-sound audio systems and computer networks that allow the simultaneous participation of troops all over the world in real-time simulations.

5.1.2 Advantages of virtual reality

As many other researchers in the field of Virtual Reality have mentioned, the use of this type of technology would have some advantages compared with traditional treatment and evaluation procedures. In this regard, some of the most relevant are (Scozzary & Gamberini, 2011; Botella, García-Palacios, Baños, & Quero, 2007; Adams et al., 2009; Perpiñá et al., 2003):

- a) Experiences similar to real life. The main characteristic of this technology is that it allows a person to experience something similar to what they might in the real

- world if they were in that context. Thus, VR can cause the same emotions, thoughts, and behavioral responses as if the person were exposed to the real context.
- b) Safety of the virtual world. VR are presented as a safe context where the person is not exposed to the risks that they would face in the real world. In this sense, the person immersed in the virtual world can experience emotions, thoughts, and react knowing that nothing in the virtual environment that really frightens them can cause any harm, which allows the context of therapy to be perceived by the person as a safe environment where they can behave freely and without any risk.
 - c) Simulation of real world situations. As we all know, the use of 3D simulation allows any situation in the real world to be realistically recreated. This characteristic is especially relevant in both evaluation and intervention, since it allows the person to be submerged in a virtual world with characteristics similar to those in the real world, where their responses in certain conflictive contexts can be studied, and which could, in turn, improve the ecological validity of measures using VR instruments over the usual procedures.
 - d) Control of scenes presented. The use of VR systems allows the therapist greater control over the presented stimuli . Certain parameters in the scene can be manipulated, for example the intensity of the stimuli. In fact it makes evaluation and treatment more flexible and adaptable to each person, as well as to the demands of the therapist or researcher.
 - e) Presenting situations at any moment. Therapists often struggle with the fact that they cannot control what the patient experiences outside of therapy. Using VR as a supplement to existing therapy, however, helps to overcome this limitation, as it permits the therapist to present to the client, at any moment during the therapeutic process, key situations or stimuli as often as needed
 - f) Confidentiality. The use of VR environments inside the office of the therapist safeguards the privacy and confidentiality of the client's answers without it being necessary to expose the person to real contexts.

5.2 Virtual reality applications in psychology: drug use, bullying and alterations in body image

This current paper is not aimed at making a detailed review of the existing VR developments, which is beyond the scope of this chapter. Instead this section will show those elements that are associated with the contents of the different scenes included in the MySchool4web simulation program (which will be described in section 3). We will focus on the work carried out by the principal research groups that have studied the use of VR in three common phenomena in adolescence, that is: drug use, bullying and alterations in body image. Nevertheless, for a more comprehensive outlook on the multiple VR applications developed so far there are several books which have focused on this topic. In this regard, one which is very much recommended is the book entitled

Advanced Computational Intelligence Paradigms in Healthcare 6 (Brahnam & Jain, 2011), which focuses on the use of VR in psychotherapy, rehabilitation and assessment. This book offers an extensive picture of the multiple applications developed so far in the field of psychological interventions, assessment, and healthcare rehabilitation. In addition to this, we think the book edited by Christiane Eichenberg (2012) can provide a wider perspective of the state-of-the-art technology in the field of VR applications, applied not only to psychotherapeutic contexts, but also to pedagogical and medical contexts.

5.2.1 Virtual reality and drug use

In the field of addictive behaviors, similar to exposure therapy in specific phobias, repeatedly showing cues of alcohol, tobacco, or other drugs not followed by substance-administration should lead to the extinction of craving responses, therefore removing the motivation or desire to continue using drugs. Specifically, VR environments have focused on the recreation of situations related to the consumption of different drugs, mainly tobacco and alcoholic drinks, but also marijuana, cocaine, amphetamines, and opiates (Scozzari & Gamberini, 2011). Through this sort of procedure, the person is exposed to virtual contexts explicitly related to the consumption of different drugs in order to reduce or eliminate their craving responses by means of extinction. Thus, drugs and objects directly related to substance use (paraphernalia) are presented. At the same time, rituals of consumption are simulated; that is, people, behaviors, and common interactions that usually happen when consumers are in this sort of contexts. To sum up, we try to introduce through the use of VR those places related to consumption of drugs, along with all those stimuli which are usually present.

The information obtained after the exposition to the contexts associated with drug consumption and the subsequent generation of craving responses, are then used in the treatment of addictions throughout the therapeutic process. This is used as a therapeutic technique aimed at the reduction or extinction of craving answers when these behaviors have been shown as a maladapted pattern. In the frame of interventions that use this sort of technology, VR scenes have been developed as valid exposition strategies inside the virtual reality exposure therapy (VRET).

With regard to the efficacy of VR environments to generate craving, several studies have shown the effectiveness of this technology when provoking craving responses for all the drugs assessed. At this regard, there would be enough evidence to support the use of VR environments as a therapeutic tool for the treatment of people with drug use problems (Bordnick, Graap, Copp, Brooks, Mirtha, & Ferrer, 2005; Bordnick et al., 2008; Bordnick et al., 2009; Lee et al., 2003, 2008; Saladin, Brady, Graap, & Rothbaum, 2006; Scozzari & Gamberini, 2011).

5.2.2 Virtual reality and bullying

At present, as part of the efforts aimed at diminishing the problems related to the dynamics of bullying at schools, we found the ECircus European project (Education through Characters with emotional-Intelligence and Role-playing Capabilities that Understand Social interaction), which created a tool called “FearNot!” (Fun with Empathic Agents to Reach Novel Outcomes in Teaching). Developed to be applied on children at school ages. “FearNot!” is a software that simulates a virtual school in which several avatars (pupils) interact autonomously. The scene simulated in “FearNot!” shows a narrativesequence, in which bullying episodes follow a coherent and established structure similar to real life. Firstly, the participant is witness (from a distance, without getting involved) to a bullying situation between characters inside the school. Then, the victim moves on to ask the participant for advice as to the management of bullying situations. The participant then has to give the victim advice about in what manner to react in order to cope. In terms of this advice, the participant can choose among several coping answers predefined by the program. Next, the victim who is asking for help modifies his/her behavior depending on the advice given by the participant (Zoll, Enz, Schaub, Aylett, & Paiva, 2006). Lastly, depending on the advice given and its functionality, a final scene is simulated in which the participant would watch the consequences of their advice. At this point, the participant receives feedback on the appropriateness of his or her advice to solve the bullying problem appropriately.

The purpose of involving the pupil in this sort of interaction is to move him or her to empathy; that is, that he or she gets to feel the emotional state of the victim, their feelings, emotions, and thoughts. As the program’s authors pointed out, the promotion of empathy with regard to victims of bullying through the interactions in “FearNot!” would result in a reduction of the probability of participants becoming bullies. However, this research group hasn’t published any results with regard to the efficacy or validity of this anti-bullying program so far.

5.2.3 Virtual reality and eating disorders

Different research groups have shown interest in both the characteristics of the answers given by people with eating disorders immersed in VR contexts and the therapeutic possibilities of VR as an assessment and treatment tool. The real effect of exposure to meaningful stimuli in people with eating disorders has been recently evaluated in three experimental conditions: virtual, real world, and photos. People diagnosed with anorexia and bulimia, and people without any psychological disorder participated in this study (Gorini, Griez, Petrova, & Riva, 2010). Findings from the study found that virtual situations were able to generate anxiety. In particular, the main outcomes showed a significant principal effect in the interaction of groups

and the type of exposure in regard to anxiety. Post-hoc analysis revealed that both anorexia and bulimia groups showed significantly higher levels of anxiety than those shown by the group without any diagnostic (control group). Furthermore, the anxiety and bulimia groups showed high levels of anxiety when they were exposed to real and virtual food compared to these same stimuli in photos. In conclusion, this study demonstrates that exposure to virtual stimuli, such as different sorts of food, hotel trade situations, etc., would be as effective as the exposition to these stimuli in real life and more effective than in photos (Gorini et al., 2010).

If we focus on the VR environments developed, Riva and collaborators created the Virtual Environment for Body Image Modification (VEBIM) (Riva, 1998), aimed at the treatment of body image distortions and dissatisfaction that is usually associated with eating disorders. With regard to the outcomes, the application of the VR program in conjunction with a cognitive-behavioral psychological intervention was useful in reducing body dissatisfaction increasing the body awareness in individuals with anorexia (Riva, Bacchetta, Baruffi, Rinaldi, & Molinari, 1999). At the same time, in people with obesity and binge-eating disorders, researchers not only found a reduction of the dissatisfaction with their own body, but also a positive change in their behavior. In particular, the quality of social relationships improved and the use of dresses to hide their body and their worries about social judgments decreased (Riva, Bacchetta, Baruffi, Rinaldi, Vincelli, & Molinari, 2000). Furthermore, the intervention with VR jointly applied with cognitive-behavioral therapy was more effective in the short term than this treatment alone without VR expositions with regard to the improvement in the satisfaction with their own bodies, the reduction of their anxiety levels and binges (Riva, Bacchetta, Baruffi, & Molinari, 2002). It is also important to emphasize the work done by Perpiñá and collaborators (Perpiñá, Botella, Baños, Marco, Alcañiz, & Quero, 1999; Perpiñá, Botella, & Baños, 2002), who, using similar VR environments to those used by Riva (1998), also demonstrated the efficacy of VR in treating alterations in body image. Once again, the intervention using VR and the usual treatment jointly proved to have the same effectiveness at least as the usual treatment alone (without VR). Nevertheless, those people exposed to VR environments showed a meaningful improvement in general psychopathology measures, specifically in anxiety, and a bigger satisfaction with their own bodies in social situations. In addition, they showed less negative thoughts and attitudes toward their own body, and less fear in increasing their weight to become healthier. Furthermore, the VR group showed less withdrawal rates than the cognitive-behavioral group (Perpiñá et al., 1999). In the follow-up, these positive outcomes even improved after one year (Perpiñá, Marco, Botella, & Baños, 2004).

Finally, we think it is important to note that there are also VR environments developed to be used in conventional computers (desktop VR), without having to use any devices such as HMD, which would facilitate use through increased accessibility. Letosa-Porta, Ferrer-García, & Gutiérrez-Maldonado (2005) developed a program called The Body Image Assessment Software (BIAS). As these authors point out,

BIAS would permit the modeling of the avatar's body proportions more freely than in previous programs. At the same time, BIAS would allow us to modify specific parts of the virtual body while keeping a holistic vision of the avatar. The program was valid in differentiating people at risk of having an eating disorder from those who are not and those who had a clinic history of such disorders (Ferrer-García & Gutiérrez-Maldonado, 2008). Subsequent studies showed the effectiveness of VR environments used in personal computers (desktop VR) which were able to produce emotional responses in people with a diagnosis of eating disorders and in people without any disorder diagnosed. The evaluation of people with or without an eating disorder diagnostic who were immersed in VR scenarios showed the existence of a significant effect on anxiety and depression (Ferrer-García, Gutiérrez-Maldonado, Caqueo-Urizar, & Moreno, 2009).

5.3 MySchool4web: Detection of drug use, bullying and alterations in body image through a virtual reality desktop program

Designed to be used in personal computers, the recently developed program named MySchool4web recreates scenes related to drug use, bullying, and alterations in body image using three-dimensional environments. In particular, this would be the first program designed to detect these sorts of behaviors, which are commonly present in school settings. In fact, MySchool4web is the improved and up-to-date version of the Mii-School simulation program, which was previously developed by the same research team (Carmona, Espínola, Cangas, & Iribarne, 2010a).

In particular, MySchool4web consists of a total of 12 scenes in which situations regarding drug use, bullying, and social situations related to body image distortions are presented. The final objective of the computer program is to be used as a screening tool to detect pupils that were drug users or at risk of being implicated in bullying. In addition, the program is also aimed at the detection of young people at risk of having problems with their body image. Given the relationship between the alterations of body image and the presence of an eating disorder, such as anorexia and bulimia, the program allows for the early detection of these sorts of disorders.

Generally speaking, MySchool4web consists of the 3D presentation of different close-to-real-life scenes in which the participant has to point out how they would react in the specific simulated situation. Once the scene is presented, the program also simulates the different answer options available for each specific scene. Then, a static screen is presented displaying the possible answers. Lastly, through the use of a mouse the participant chooses how they would react.

With the intention of giving the reader a more specific idea as to the content assessed by MySchool4web, next we will describe the main characteristics of the different scenes in the program. In total, six scenes are aimed at assessing drug use in young people. Five of them allude to the consumption of drugs, and a sixth scene

is related to parental behavior with regard to the participant. In particular, the drug scenes assess the consumption of tobacco, alcoholic drinks, marijuana, cocaine (stimulants), and MDMA (ecstasy). If we have a look at the context in which drugs are used in MySchool4web, tobacco and marijuana simulations take place in a park. In this scene, two friends are sitting on a bench smoking. The interior of a house has been recreated for the alcoholic drinks scene. There, a group of young people are enjoying a party in which they are dancing and drinking while others are sitting down on couches speaking. For the MDMA (ecstasy) the interior of a pub has been simulated in which young people can be seen dancing excitedly while others offer the participant substances. On the other hand, the cocaine consumption scene occurs in the toilets of this same pub, where it is possible to observe how this substance is consumed. Finally, is also the situation in which the familiar dynamic with the parents of the participant is evaluated. In this scene the participant arrives home late at night; here it is the reaction of the parents to her son's or daughter's disobedience that is being assessed.



Figure 5.1. Drug use scene of the MySchool4web program

In all the situations described before, the participant is offered each one of the drugs. We think it is important to note that we have tried to assess the consumption of each drug by simulating the natural contexts in which the consumption of these drugs occur most commonly at young ages. Thus, in MySchool4web we emphasize the realism of the scenes simulated and the interaction among avatars.

With regard to bullying, three scenes were created. The courtyard of a high school was simulated in the first bullying situation. In particular, some bullies surround the

participant while aggressively insulting and threatening them. In the second bullying scene the participant is sitting down in the classroom. Again, some bullies surround him, threatening and even beating the participant while they remain still. The last bullying scene assesses the participant's social relationship with his or her peers. Thus, the character of the participant is shown different situations in order to assess if he or she is usually alone, in a group, or even if he or she feels different from others or is nervous and afraid when he or she is in a group.



Figure 5.2. Bullying scene of the MySchool4web program

It is important to emphasize that in all bullying scenes we were especially careful about the animation of the avatars (aggressiveness, fear, bravery, etc.). In this sense, the aggressive and intimidating attitudes of the bullies are easy to perceive if we examine the facial and body gestures of the avatars involved.

Last but not least, a group of three scenes are aimed at the detection of people with body image problems. One of the situations assesses the participant's response to a social situation which takes place in a park. In this simulation a group of people can be seen chatting around a bench. The participant has to point out how he or she would act when they are looking at him or her. In a second scene, the interior of a room in a house is simulated. The participant is watching their own body reflected in a big mirror. Then, the attitude toward his or her own body is assessed. The last scene is related to eating disorders, and involves a situation in which the participant's attitude toward an extremely thin person is assessed. In particular, in this scene the participant can be seen with a friend in the hall of a high school. They are observing an extremely thin person who is passing by. Then, the participant is asked about how they reacted after having seen this person.



Figure 5.3. Body image scene of the MySchool4web program

In essence, through the simulation of alterations in body image related scenes we aim at detecting people who could be at risk of developing an eating disorder.

The MySchool4web program has been designed to be applied online, without the handicap of using any sort of extra device, such as a CD or DVD. In this regard, a virtual platform has been created through which any person interested in the use of the program can make a request and get permission to use it by using the following link: <http://www.myschool4web.com>.

Furthermore, there are several versions of the MySchool4web program translated into different languages so far. As well as the Spanish version, the program has been translated into English, German, Italian, and a Spanish dialect spoken in Chile.

5.4 Evaluation of the MySchool4web properties: preliminary results

Once virtual environments have been developed in order to be applied throughout assessment and treatment processes in psychology, it is of utmost importance to assess the validity of these VR environments when used as effective support tools for the treatment or assessment of different mental disorders. In other words, there is little point in creating attractive VR environments if they will not show their validity in the context of the psychological interventions for which they were created.

For this reason, we carried out a number of studies in order to assess the MySchool4web program in detecting young people at risk of problematic behaviors.

As such, in this section we will show the psychometric properties related to the reliability and validity of the MySchool4web program when trying to detect drug use, bullying, and alterations in body image. In this regard, there have been two studies aimed at the evaluation of the validity and reliability of the MySchool4web program so far.

In a first study (Cangas, Gallego, Aguilar-Parra, Salinas, Zárate, & Roith, 2013) the construct validity and internal reliability of the MySchool4web scenes were evaluated. Based on the outcomes obtained, with regard to the validity analysis of the program, an exploratory factorial analysis with the principal components method and VARIMAX rotation (with KAISER normalization) was carried out. The outcomes revealed the existence of a 4-factor structure, which explained the 64.07% of the total variance. In particular, these 4 factors would gather three clearly differentiated dimensions, that is: drug use, bullying, and body image. Specifically, as to drug use dimension, one of the factors would gather the situations of tobacco, alcoholic drinks, and marijuana consumption. That is, drugs with the highest frequency and prevalence compared to others (European Monitoring Centre for Drugs and Drug Addiction, 2007); therefore, their use would be more disseminated and socially accepted than other drugs. The second factor would gather those situations in which drugs used are less disseminated in the general population, in particular cocaine and MDMA (ecstasy). The third factor would gather bullying situations, both as bully or victim in this context. Finally, a fourth factor would gather those situations related to the assessment of body image.

The reliability analysis of this same study showed the internal consistency of the MySchool4web situations or items to have a Cronbach's alpha index of .688 for the drug use dimension and of .822 for the bullying dimension. The body image dimension was not analyzed due to the different nature of the scenes and as such the scoring of the different answer options wouldn't be equivalent (Cangas et al., 2013). In conclusion, taking into account that Cronbach's alpha is usually used as a sign of the global reliability of a tool (Busch, 2002), these results would show MySchool4web as a reliable instrument for the detection of those risk behaviors the program is aimed toward.

The second study was focused on analyzing whether the program was able to detect and differentiate between young people at risk of drug use, bullying, and alterations in body image and those who are not (Cangas, Gallego, Aguilar, Carmona, & Langer, 2013). In other words, we tried to analyze the criterion validity of the program for the detection of these behaviors. With regard to the criterion validity statistical analysis, the answers that pupils gave to the different simulated scenes in MySchool4web were compared to the answers obtained from three paper-and-pencil questionnaires, which were used as external criteria of comparison.

First, it is important to emphasize that the total of 12 scenes included in MySchool4web have passed the specified significance value $p < .05$ as to its relationship with drug use, bullying, and alterations in body image. Thus, the total

of the simulated scenes in MySchool4web would be valid to detect these sort of risk behaviors. In addition, we found significant relationships between specific answers of the computer program and the use of drugs, being a bully or victim of bullying, and having problems in body image. These results are similar to those obtained in the previous version of the program (Carmona, Espínola, Cangas, & Iribarne, 2010b). To sum up, thanks to the analysis of the answers obtained through the MySchool4web program, specific answer profiles have been found that would differentiate between young people at risk and those who are not at risk of presenting these sorts of conflictive behaviors.

Thus, drug users answer in MySchool4web situations with use and trying the substances, whereas no-users react by rejecting the offer, giving advice about the risk of using the drug, and even leaving the place in which people are using drugs. In addition, as to the family situation, people who don't consume alcoholic drinks point out that they have parents who are not indifferent in the situation in which the youngster disobeys them by arriving late at night. Instead, they claim to have understanding parents who get angry when they disobey them in this situation. On the contrary, marihuana users point out that they have parents who remain indifferent to this sort of disobedience, whereas those who are not users of marihuana answers that they have understanding parents.

With regard to the different bullying scenes of the MySchool4web program, bullies answered with indecision to threats, whereas those who are not bullies reacted with irony and insults. If we have a look at the profile of victims of bullying, these answered with shame, whereas those who are not victims would react aggressively, showing indecision when coping with threats. At the same time, victims stated that they usually remain alone when they are on a break at school and that they feel different from others. On the contrary, young people who are not victims of bullying point out that they usually stay in group.

Finally, if we focus on those with body image problems, they answer in the MySchool4web scenes with leaving the place and hiding themselves as a way to avoid others staring or even seeing their own bodies. At the same time, they place importance on having an extremely thin body similar to the characters displayed in the simulation. On the contrary, those who wouldn't be at risk of having body image disorders answer in a manner that is accepting of their own body. In addition, they are indifferent to the presence of an extremely thin person and wouldn't like to look like him or her.

In conclusion, based on the results obtained in the two described studies, we could affirm that the MySchool4web computer program would not only be valid at detecting the presence of pupils at risk of being drug users, bullies, victims of bullying, and presenting body image problems, but also to demonstrate the specific coping answers that young people need when they are in conflictive situations. Therefore, MySchool4web allow us to obtain risk profiles associated with having these sorts of problematic behaviors.

5.5 Discussion

In the current chapter we have tried to demonstrate the relevance and importance that VR environments have in the field of applied psychology. Specifically, the MySchool4web program has been presented. In particular, this computer desktop program uses 3D simulation environments to detect pupils at risk of being involved in drug use, bullying, and problems with their own body image. As was described previously in this chapter, MySchool4web is the improved and up-to-date version of the Mii-School simulation program (Carmona et al., 2010a), also developed by the same research team. In this regard, MySchool4web presents considerable upgrades compared with its predecessor. Mainly:

- i. The graphical environment has been notably improved in regard to the recreated scenes, the avatars interactions, and the physical and facial features of them - such as expressions, emotions, etc. Overall, the new desktop VR program simulates situations and interactions in a much more realistic way.
- ii. The process to get permission and use the program has been simplified, with it now being possible to use it online on any PC and operative system without the need to use any extra or external hardware or device.

We think social networking within the educative system could take advantage of the utilities that this sort of program presents, particularly because of the importance and implications that drug use behaviors, bullying, and eating disorders can have when they appear at school ages. Furthermore, it is in school contexts that young people usually spend the most of their daily time, and that the problematic behaviors mentioned before appear. Therefore, the school context may become a powerful field from which to start working on both prevention and intervention in order to reduce the possible risks associated with these sorts of conflictive behaviors.

In conclusion, the MySchool4web program would join the existing VR programs applied in psychology. In particular, this program has proved to be a valid and reliable screening tool to detect young people at risk of being drug users, bullies or victims of bullying, and having body image problems. However, it is important to emphasize that while the MySchool4web program is a valid procedure, it is not to be used in isolation, but as detection tool used in combination with other assessment tests that confirm or reject what is suggested by the program. In other words, the use of MySchool4web is conceived by its authors as a valid screening VR tool to be applied in large populations and aimed at the detection of the possible existence of pupils at risk. Therefore, once the program is used, other assessment procedures are needed in order to start a subsequent intervention.

Overall the program also has a number of positive aspects. Initially one of the advantages that desktop VR programs would have in general, and MySchool4web in particular, is that they can be applied directly through the internet using a regular PC, without the need to acquire special high-cost equipment, something that would

complicate their use. At the same time, we think it is also important that a unique tool assesses all three of the most relevant types of problematic behaviors within school context, that is, drug use, bullying, and problems with body image that are associated with eating disorders. In this regard, MySchool4web is a tool that can be easily applied in the school environment, with the aim of the intervention and prevention of the problems associated with specific risk behaviors that appear during school ages.

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