VIRTUAL ANTI-BULLYING VILLAGE PROJECT FOR COPING WITH BULLYING AND CYBERBULLYING WITHIN A 3D VIRTUAL LEARNING ENVIRONMENT: EVALUATION RESEARCH

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ABSTRACT

The current study aims to evaluate the implementation of a unique educational project- The Virtual Anti-Bullying Village for Kids and Teens (ABV4KIDS) that was designed and operated by the European Commission. A 3D virtual environment as an innovative, international project for adolescents, focused on knowledge acquisition and
new ways of coping with bullying and cyberbullying. Sixty seventh graders-Israeli adolescents-completed five questionnaires before and after the project to assess its impacts regarding cyberbullying and socio-emotional variables. They evaluated the project as important, enjoyable, and increasing their knowledge about cyberbullying, but expressed a need for more practical tools for coping. At the end of the project, the control group reported more cyberbullying experiences, as well as a decrease in social support, whereas the research group reported no changes in cyberbullying experiences and in socio-emotional aspects.

**Keywords:** Cyberbullying, Bullying, 3DVLE, ABV4KIDS Project, Evaluation Research

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**INTRODUCTION**

**Cyberbullying and Bullying among Adolescents**

Adolescents face peer bullying and peer-aggressive behavior at many junctions in their daily lives, and these incidents may take many forms and contexts. Much psychological and sociological research attention has focused on this issue (Monks & Coyne, 2011). According to Monks and Coyne, although peer bullying is usually associated with aggression in schools, and particularly on the playground, it is also observed in a wide range of settings including social settings, and encompasses preschool, school, home, residential care, and, in recent years, cyberspace. Aside from the many advantages of online behavior and interactions for adolescents, such as deepening social connections, having access to massive knowledge and entertainment, exchanging information, and more (Tokunaga, 2010), we are facing a new, “modern” form of bullying, which occurs on the net: cyberbullying. Cyberbullying (CB) is defined as the use of the Internet and related technologies to harm other people, in a deliberate, repeated, and hostile manner. It is an aggression carried out using electronic forms of contact, and is characterized as being intentional, repeated, and power-imbalanced (Nicol & Fleming, 2010; Ortega, Calmaestra, & Mora-Merchán, 2008; Smith et al., 2008; Sticca & Perren, 2013).

CB consists of three main criteria: (1) The actions take place on the net by a perpetrator with intent to harm, and the victim subsequently perceives these actions as harmful; (2) the action has a pattern of recurrence or repetition; and (3) the relationship
between the perpetrator and the victim is unequal, with the former having an advantage over the latter (Smith et al., 2008). Involvement in CB may be divided into three distinct groups of participants: perpetrators, victims, and witnesses (Nicol & Fleming, 2010). CB can take a variety of forms: phone calls, texts or videos, picture messages, emails, chats in chatrooms, via instant messenger, “slam books” on social network sites, through digital online games, within virtual environments (e.g., SL), and in blogs (Smith et al., 2008; Ybarra & Mitchell, 2004). Studies in Europe, the United States, and Canada indicate that approximately 20% of teenagers (aged 12-18) have reported repeated experiences of CB (Mishna et al., 2010; Vandebosch & Van Cleemput, 2009; Ybarra & Mitchell, 2004). In a study conducted in 2011 among 600 Israeli adolescents, 16% reported being cyber victims, 12% reported being cyber bullies, and 32.6% reported being witnesses to CB (Olenik-Shemesh, Heiman & Eden, 2012). Studies show that the harassment and violence that children and youth are exposed to on the Internet are correlated with and affected by well-being, loneliness, low self-esteem, and low self-efficacy (Brighi et al., 2012; Navarro, 2013; ŞAHİN, 2012; Ybarra et al., 2006). Therefore, the need for effective tools for coping and confronting CB is urgent and salient (Kowalski, Morgan, & Limber, 2012; Ybarra, 2004). In spite of the fact that CB is a version of bullying and shares many similarities with traditional bullying, it is still a unique new phenomenon, sometimes considered more harmful than traditional bullying (Sticca & Perren, 2013), that takes place in the digital world. As such, it may require a unique prevention and intervention program that takes into consideration the new platforms that bullying has taken and that thus relates to the online environment. Despite CB’s differences and unique features, it remains a version of bullying, and demands educational and coping means that can combat bullying, but via a different approach. Indeed, 3D environments suggest such a way.

3D Virtual Learning Environments (3DVLE) as an Educational Tool

According to Prensky (2010), youth and children today are considered “digital natives” because they have grown up with digital technologies such as computers, the Internet, and mobile phones. These new media are an integral part of their everyday lives. In many countries, the vast majority of young people have access to the Internet and they make intensive use of social networks, instant messaging, and content-sharing sites (Livingstone & Hadden, 2009). Around 135 million people are active users of virtual
worlds, with 45% of these users aged 10-15 and 30% aged 15-25. The increasing relevance of virtual worlds is underlined by projections that predict 750 million users in the age range of 10-25 by the end of 2013 (Downey, 2010).

3D virtual environments, such as Active Worlds, Second Life (SL), and Openism, part of the Internet world, open up new opportunities for education and e-learning (Boulus, Hetherington, & Wheeler, 2007; Roussos et al., 2006). Experts have suggested that SL has the potential to revolutionize e-learning, and numerous online communities of online educators already exist (e.g., “Educators and Teens” in SL, SimTeach). Numerous well-known universities and colleges (e.g., Harvard and Stanford University) actively use SL for educational purposes. Virtual environments are dynamic platforms in which users actively participate in computer-generated 3D virtual worlds (Singhal & Rogers, 2002). Compared with the conventional 2D web, virtual environments offer novel and intuitive ways for gaining knowledge, and for coping with various issues through attending and participating in live events, such as virtual discussions, conferences, and the building of communities (Jin, 2013). In addition to being an entertainment medium for multi-player online gaming and social networking, 3D virtual worlds are increasingly being used in a broad variety of health-education settings. The utilization of interactive and engaging interfaces promises to increase students’ motivation and involvement in learning environments (Jin, 2013). In the field of e-learning, virtual environments mostly involve multi-users, serving as a communication medium between pedagogical-instructional avatars and student avatars.

The 3D virtual environment has several advantages for educators and students: it brings remote students together in the same virtual classroom, thereby offering schools, teachers, and students a broader community; and teachers and educators can teach diverse materials in new ways and from different angles. Students experience a greater sense of involvement and face-to-face interaction. The virtual environment can be used as an educational tool for enhancing learning and education targets through situated experience. It can influence students’ knowledge, attitudes, and behaviors with regard to educational issues, and previous research has reported such changes regarding educational issues promoted in the use of this platform (Bainbridge, 2007; Papa et al., 2000).

More so than traditional environments, virtual learning environments (VLEs) and 3DVLEs give users a strong sense of presence and real-time involvement, thus facilitating online interaction and collaboration, as well as the process of building an
online community. Furthermore, 3DVLEs promote action-oriented, experimental, and creative learning processes. All in all, 3DVLEs may be ideal platforms for bringing together young people from different places to learn and interact in a playful yet task-oriented way.

**The ABV4Kids (Anti-Bullying Village for Kids and Teens) project**

Building on the educational potential of 3DVLEs, a unique digital-educational cultural-intervention program was developed and run for two years (2010-2012) by the European Union. The program was called the *ABV4KIDS (Anti Bullying Village for Kids and Teens)* and involved the cooperation of seven countries: Bulgaria, Germany, Israel, Italy, Norway, Poland, and the UK. The project was planned and developed in order to raise awareness about ways of coping with bullying and cyberbullying for kids and youth in a 3D virtual environment. The main purpose of the project was to establish a virtual village for coping with school bullying and cyberbullying within OpenSim, a 3DVLE. These topics have been on the agenda of many countries, with various reports underlining the necessity of tackling them (Livingstone & Hadden, 2009). Whereas adults provide the vast majority of approaches, findings suggest that peer-to-peer approaches and activities that actively involve young people are highly promising (Cooper & Cefai, 2009). This rationale led to the development of a unique coping project that was built on the educational potential of 3DVLEs and aimed at involving the youngsters in the planning, developing, and creation of an “Anti-Bullying Village” that was based mainly on the ideas of the youth: activities and dynamics. The project also aimed at applying the educational potential of avatar-based e-learning in the computer-assisted 3D virtual worlds of SL in the field of prevention of and intervention in bullying and cyberbullying.

Involving the students in dealing with the project’s overall topic of school bullying and violence, the project was meant to be a practical exercise in commonly establishing a platform that promotes e-participation and intercultural cooperative processes. In a playful way, this type of involvement promotes social thinking, e-collaboration, and e-competencies in addition to encouraging cultural international cooperation. The virtual village was built on a virtual island, step by step, by the participating youngsters, and primarily addresses those pupils—children and adolescents—whose age makes them more prone to be affected by bullying and cyberbullying.
Among other characteristics of 3DVLEs, the project focused on the use of an avatar—a computer-generated visual representation of a media user—that, in this case, is the pupil (Bailenson et al., 2006). The 3D graphical, simulated world played online allows individuals to interact through their digital characters (avatars), not only with the designed environment in which the activities take place but also with other individuals’ avatars, and enables a sense of realism, verbal disclosure, and nonverbal disclosure (Steinkuehler & Duncan, 2008). Avatar-mediated networking increases social presence and interpersonal trust in net-based collaborations (Jin, 2013).

During the project, each pupil from the participating countries was given an avatar through which they could operate on the island. The avatars could walk through the village, watch shows and exhibitions, and interact with other avatars through textual chat. All the activities in the virtual village were conducted through these avatars (see Figure 1).

**Figure 1 Examples of Vatars Who Participated in the ABV4KIDS**

The pupils were actively involved at various levels in creating the *Anti-Bullying Village* (ABV) on the virtual island, from the design of virtual buildings that were commonly planned and created in the project’s first phase through participation in the virtual social events and the creation of the materials regarding the issues of bullying and cyberbullying. At the end of the project, the ABV hosted various events, such as a conference for pupils, creative workshops, role-plays, and exhibitions. More specifically,
the project included two phases spread out over two years. The first phase was aimed at planning and creating the virtual infrastructure and architecture of the virtual ABV, and thus the partners and school teams from the partner countries commonly created the ABV. Two pupils were selected from each participating class as class representatives in the Parliament. These representatives were asked to democratically and freely decide how they would like their virtual world to look and act. Accordingly, they built a virtual Parliament that met every two weeks. The representatives of this Parliament decided which events and activities would take place in the village, and were responsible for their content. In addition to the Parliament building, the students designed many other buildings: The Creation Artists Center, a film center, and informal meeting places for the pupils (see Figures 2, 3, and 4). All these buildings and the activities created within them focused on the issues of violence, bullying, and cyberbullying, including ways of prevention.

In addition, each school was assigned a special area on the virtual island, which the students designed and built. In their school buildings, the pupils presented research papers, PowerPoint presentations, posters, short films, and exhibitions, all related to the divergent kinds of expressions as well as prevention of violence in schools and on the Internet.

![Figure 2 The Virtual Parliament at ABV4KIDS](image-url)
The project’s second phase focused on events and activities, all connected to bullying and cyberbullying, that were held in the ABV, such as, workshops, role-plays, public discussions, and exhibitions. The project ended with a two-day e-conference that was open to youth around Europe. Each school team presented an event in their school building, such as an exhibition, a film-production workshop, or a conceptual PowerPoint presentation dealing with the issues of bullying, cyberbullying, racism, and xenophobia.
The conference also hosted experts on topics relevant to the content, and the participants communally dealt with questions about the sources of bullying and cyberbullying, discussed feelings and thoughts regarding violence, and suggested ways of prevention and how to deal with these different issues (see Figures 5 and 6).

Figure 5 The Israeli School Building, Designed and Built by Pupils

Figure 6 Presenting Creative Products (Posters, Presentations and Films Dealing with Cyberbullying)

In addition to the pupils, teachers from each school were involved and helped coordinate the activities of their school team as well as ensured communication and cooperation with the national contact person of the specific partner country.
The actual project in the virtual village combined theory and practice and contained learning of the first order about bullying, violence, and cyberbullying in addition to second-order advanced learning skills such as distance learning (e-learning), online participation in a democratic setting (e-participation), online cooperation (e-collaboration), and more. Moreover, the virtual island encouraged peer learning dealing with a specific topic among pupils from all over Europe.

In Israel, two classes—seventh graders from two different schools—participated in the project, whose emphasis was on raising awareness as well as providing ways to deal with cyberbullying. The virtual work was combined with two frontal lectures and discussions and was accompanied by an evaluation study. These took place over two years.

**Research Objectives**

The purpose of the current study was to evaluate the contribution of the educational intervention program in 3DVLEs (*the ABV4Kids*) for developing awareness about online bullying and vulnerability as well as ways for Israeli adolescents to deal with bullying. Based on the research literature, cyberbullying and bullying may have various effects on the victim, which are manifested in emotional and social difficulties: high levels of depressive mood (Ybarra, 2004), and low levels of social support and well-being (Juvonen & Gross, 2008; Patchin & Hinduja, 2010). Thus, we examined whether after participation in the project, a change occurred in some of these emotional-social variables.
correlated with the experience of cyberbullying.

METHOD

Participants

Sixty pupils (48% girls) participated in the two rounds of the research: pre and post. They were in the seventh grade (ages 11-14, \( M = 12.5, SD = 0.67 \)) in a junior high school located in the center of Israel. Sixty-five pupils participated in the pre-test (27 in the research group and 38 in the control group). In the post-test, 26 pupils were part of the research group and 34 were part of the control group (five pupils dropped out for various reasons).

Procedure

After receiving permission from the Israel Ministry of Education, school principals, parents, and pupils, each participant was assigned a unique code that was kept separate from the questionnaire, and the pupils were guaranteed anonymity and confidentiality. The study made use of two groups—the research group (RG), the class that participated in the ABV project, and the control group (CG), pupils from another class that did not participate in the ABV project. At the beginning of the project (baseline), all the pupils (RG + CG) completed self-report questionnaires. At the end of the project, the participants filled out the same questionnaire again (post-assessment).

Measures

Attitude questionnaire toward the ABV project. The questionnaire consisted of seven items dealing with the attitudes and experiences regarding participation in the ABV project and about their attitude/awareness toward learning about CB. We selected the items after analyzing the goals of the project, and performed a content validity test. All the items were rated on a 5-point Likert scale (1=totally disagree, 5=totally agree). The items are as follows: “I enjoyed participating in the project;” “I will recommend participating in the project to my friends;” “Participation in the project helps reduce cyberbullying;” “I know more about the risks of cyberbullying;” “I know more about cyberbullying than I knew before;” and “I know how to deal with cyberbullying.” Only pupils from the research group filled out the questionnaire at the end of the project. In addition, we calculated a general attitude score. Confirmative Factor Analysys (FCA) that
yielded high internal reliability revealed the general index. The Cronbach Alpha reliability for the sample studied reliability was .88.

**Cyberbullying questionnaire** (Smith et al., 2008). Adapted to Hebrew by Heiman, Olenik-Shemesh, and Tarabulus (2011). This questionnaire consisted of 22 items addressing Internet knowledge and exposure to and coping with cyber- and face-to-face bullying. The questionnaire included definitions of cyberbullying and face-to-face bullying. Construct validity was evidenced by previous studies (Brighi et al., 2012; Smith et al., 2008; Steffgen, König, Pfetsch, & Melzer, 2011). The questionnaire was translated from English into Hebrew and then translated back into English (back-translation) by three judges to check the accuracy of the translation.

**Well-being questionnaire. Satisfaction with Life Scale** (SWLS; Diener et al., 1999). Respondents rated each of five items (e.g., “I am very satisfied with my life;” “If I could live my life again, I would change very little”) on a 7-point scale (1=don’t agree at all, 7=very much in agreement). Cronbach’s alpha reliability for the sample studied was .80. The questionnaire has face, construct, and predictive validity.

**Mood questionnaire. Children’s Depression Inventory (CDI)** (Kovacs & Beck, 1977). The CDI elementary and high school form was used for students’ self-ratings of feelings of depression. The questionnaire consisted of 27 statements on a 3-point Likert scale (0=never, 1=sometimes, 2=always). Each pupil had to mark the best description of his/her feelings over the past two weeks for each item (e.g., “No one really loves me” or “All the bad things are my own fault” or “I am sad all the time”). The scores range from 0 to 54, the highest depression score. Analysis indicated reliability for boys and girls, and at different times (Alpha = preadolescents: 0.84, 0.87; adolescents: 0.83, 0.85 for boys and girls, respectively). Saylor, Finch, Spirito, and Brad (1984) reported that the CDI can differentiate individuals with and without emotional disturbance. The Cronbach’s alpha reliability for the sample studied was 0.80. The questionnaire has face, construct, and predictive validity.

**Social support questionnaire. Multidimensional Scale for Social Support** (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988). The MSPSS consists of 12 items on a 7-point Likert scale (1=not suitable at all, 7=very suitable). The general score and three subscales describe the individuals’ social support from (a) family (4 items), (b) friends (4 items), and (c) a significant other (4 items). Scores for each of these scales range from 1 to 28, where a higher score indicates higher social support. Cronbach’s alpha for the entire scale
for this sample was .92; for the family factor, .91; for the friends factor, .89; for the significant-other factor, .90; and for the general score, .91. The questionnaire has face, construct, and predictive validity.

RESULTS

Internet-Use Level and Patterns

It was found that all the participants had a computer with an Internet connection in their homes. On an average weekday, they used the Internet 3.24 hours (SD 1.90, range from 0 to 8 hours) and 4.32 hours on an average weekend day (SD 3.10, range from 0.5 to 12 hours). The most common uses of the Internet were watching videos on sites such as YouTube (86.7%), playing games (85%, where 30% played in virtual worlds such as SL and SimCity), downloading files (music, movies, software, and games; 82%), participating in social networks such as Facebook (80%), and completing homework and assignments for school (80%). The rarest uses of the Internet were reading newspapers or magazines (23.3%) and reading and writing web blogs (23.3%). There were no significant differences between the research and the control group in the pattern of Internet use.

Pupils’ Evaluations and Perceptions toward Participating In the ABV Project

At the end of the project, the research group participants were asked to evaluate their attitudes toward and level of satisfaction with the project. As mentioned above, the Israeli implementation of the project emphasized the awareness of and the coping with the phenomenon of cyberbullying; thus participants were also asked their opinion about the effectiveness of the project in dealing with cyberbullying. Their answers were rated on a 5-point Likert scale (1 = totally disagree, 5 = totally agree). Figure 8 presents the participants’ attitudes toward and evaluations of the project.

As shown in Figure 8, all the pupils had positive attitudes toward the project general score ($M = 3.76, SD = 0.86$). Eighty-eight percent ($M = 4.42, SD = 0.83$) indicated that learning about cyberbullying at school is important or highly important. Seventy-nine percent reported that they enjoyed participating in the project ($M = 4.00, SD = 1.02$), and 58% reported that they would recommend joining the project to their friends ($M = 3.79, SD = 0.98$). Regarding cyberbullying, 52% ($M = 3.78, SD = 1.13$) of the participants
reported that as a result of the project, “They know more about the risks of cyberbullying,” and 62% agreed that they “know more than before about cyberbullying” ($M = 3.46, SD = 1.56$). Forty-two percent of the participants ($M = 3.38, SD = 1.10$) reported that as a result of their participation in the project, they now knew how to cope with cyberbullying better than previously.

![Bar chart showing average agreement scores of pupils' evaluation of attitudes toward participating in the ABV project (n=26).](chart.png)

**Figure 8** Average Agreement Scores of the Pupils’ Evaluation of Attitudes toward Participating in the ABV project (n=26)
Differences in Experiencing Cyberbullying (Research Group vs. Control Group)

At the beginning and end of the project, the pupils from the two groups were asked if they had ever been victims to cyberbullying. Similar questions were asked regarding their involvement in cyberbullying as bullies and/or witnesses.

Table 1 Frequencies, Percentages, and Differences in Cyberbullying Indices for Pre- and Post-measurements of the Research Group (RG) and the Control Group (CG)

|               | RG (n=25) |                   | CG (n=33) |                   |
|---------------|-----------|-------------------|-----------|-------------------|
|               | Pre       | Post              | Pre       | Post              |
|               | Yes       | No                | Chi²(1)   | Yes               | No                | Chi²(1)   |
| Knows someone¹ | 10        | 16                | .01       | 14                | 19                | 24        | 10        | 5.41*     |
|               | 38.5%     | 61.5%             | 60.0%     | 42.4%             | 57.6%             | 70.6%     | 29.4%     |
| Victim        | 5         | 21                | .01       | 8                 | 26                | 14        | 20        | 2.42      |
|               | 19.2%     | 80.8%             | 80.0%     | 23.5%             | 76.5%             | 41.2%     | 58.8%     |
| Bully²        | 1         | 25                | 1.17      | 0                 | 34                | 6         | 27        | 6.79      |
|               | 3.8%      | 96.2%             | 88.0%     | 0%                | 100%              | 18.2%     | 81.8%     |
| Witness       | 9         | 16                | .37       | 8                 | 26                | 24        | 10        | 15.11*    |
|               | 36%       | 64%               | 28%       | 72%               | 23.5%             | 76.5%     | 70.6%     | 29.4%     |

Note: *p < 0.05; **p < 0.001

Table 1 presents the frequencies and percentages of and the differences between the cyberbullying indices, both from the research and control groups, at the pre- and the post-measurements (at the beginning and end of the project). The significance of the differences between the pre- and the post-measure for each group, was tested with Chi-square test for independent variables.

As shown in Table 1, no significant differences were found between the RG and the CG before the project began: being a cyber victim, knowing a cyber victim, being a cyber bully, and/or being a witness to cyberbullying. By contrast, in the post-measurement, in the CG, we found a significant increase in the percentages of responders who reported knowing someone who was a cyber victim and who witnessed cyberbullying episodes. In addition, we found an increase in cyber victims. (We did, however, have difficulty in checking the significance, due to the small sample). No significant increase occurred in the control group in the percentage of participants reporting being cyber bullies (again, checking the significance of the differences of this index was difficult due to the small

¹ Knows someone who was a cyber victim.
² The significance of differences between the pre- and post-measurements was not calculated for this index due to the small number of responders who reported being bullies.
number of respondents who reported being cyber bullies). No significant change occurred in the research group in reporting cyber victimization before and after the project.

**Differences in Experiencing Face-To-Face Bullying (Research Group vs. Control Group)**

For the purposes of comparison, we also studied the involvement in face-to-face bullying. At the beginning and end of the project, the pupils were asked if they were involved in face-to-face bullying (as victims, as knowing someone who was a victim, and as bullies). Table 2 presents the frequencies and percentages of and the differences in face-to-face bullying indices both from the research and control groups in the pre- and the post-measurements, at the beginning and at the end of the project. We tested the significance of the differences between the pre- and the post-measure for each group, using a Chi-square test for the independent variable.

As shown in Table 2, no significant differences were found between the research group and the control group in the indices of face-to-face bullying at the beginning of the project and no changes were found in the research group as well as in the control group in the post measurement.

**Table 2 Frequencies, Percentages, and Differences in Face-to-Face Bullying Indices in Pre- and Post-measurements in the Research Group (RG) and the Control Group (CG)**

|                  | RG (n=26) |                  | CG (n=33) |                  |
|------------------|-----------|------------------|-----------|------------------|
|                  | Pre       | Post             | Pre       | Post             |
|                  | Yes | No | Yes | No | Chi²(1) | Yes | No | Yes | No | Chi²(1) |
| Knows someone³ | 16 | 10 | 16 | 9 | .03 | 28 | 6 | 29 | 5 | .11 |
| Victim           | 10 | 16 | 8 | 17 | .23 | 19 | 15 | 16 | 18 | .53 |
| Bully⁴          | 7 | 19 | 4 | 21 | .90 | 9 | 25 | 13 | 21 | 1.08 |

³ Knows someone who was a face-to-face-bullying victim.
⁴ The significance of differences between the pre- and post-measurements were not calculated for this index, due to the small number of responders that wrote that they were bullies.
Changes in the Socio-Emotional Variables

Because cyberbullying victimization is correlated with and affected by a number of main socio-emotional variables—depressive mood, social support (family, friends, and significant others), and sense of well-being—and because the context of the project addresses these variables in an indirect manner as well, we also studied the changes in these variables before and after participation in the project, in the two groups. We ran an ANOVA between-subjects design with repeated measures. The first independent variable was the group (research vs. control group) and the second independent within-subjects variable was the time of measurement (pre- vs. post-measurement). The dependent variables were the socio-emotional variables. Table 3 presents the means, standard deviations, and the differences for each of the socio-emotional variables in the research and the control group (pre- and post-measurements).

Table 3. Means, Standard Deviations, and the Differences for the Variables of the Research (RG) and Control Group (CG) Pre-and Post-project

|                          | Pre-measure | Post-measure | Ftotal | Finteraction |
|--------------------------|-------------|--------------|--------|--------------|
|                          | CG          | RG           | Total  | CG           | RG           | Total  | df= 1.57 | df= 1.57 |
| Well-being               | 5.61        | 1.12         | 5.22   | 1.12         | 5.44         | 1.13    | 5.49     | 1.49    | 5.37      | 1.22    | 5.43    | 1.37    | 0.01    | 0.51    |
| Depressive Mood          | 1.70        | 0.75         | 1.84   | 0.80         | 1.76         | 0.77    | 1.83     | 0.90    | 1.98      | 0.72    | 1.89    | 0.83    | 2.05    | 0.2     |
| Social support (ss)      | 6.06        | 1.06         | 5.30   | 1.37         | 5.74         | 1.25    | 5.86     | 1.03    | 5.62      | 1.24    | 5.76    | 1.12    | 0.18    | 3.56    |
| Family(ss)               | 6.13        | 1.08         | 5.29   | 1.76         | 5.77         | 1.46    | 6.19     | 1.14    | 5.76      | 1.40    | 6.01    | 1.26    | 2.55    | 1.58    |
| Friends(ss)              | 5.80        | 1.69         | 5.10   | 1.71         | 5.50         | 1.72    | 5.12     | 1.73    | 5.29      | 1.74    | 5.19    | 1.72    | 0.26    | 4.24*   |
| Significant other (ss)   | 6.27        | 1.01         | 5.54   | 1.39         | 5.96         | 1.23    | 6.30     | 0.96    | 5.82      | 1.23    | 6.10    | 1.10    | 1.15    | 0.76    |

Note: *p < 0.05

No differences were found in the socio-emotional variables (well-being, mood, and social support) before and after the project and no interaction between the groups and the time of measurement. By contrast, in the control group, at the end of the project, we found a decrease in social support from friends. We also found an interaction between the groups and the time of measurement ($F_{(1,57)} = 4.24$, $p < 0.05$).
Differences between Cyberbullying Victims and Non-Victims in Socio-Emotional Variables

At the beginning of the project, 13 pupils indicated they were cyberbullying victims, while 46 pupils indicated they were not. To check if differences existed in the socio-emotional variables between these two groups (victims and non-victims) that participated or did not participate in the project, we created five new variables, one for each index, that measured the differences in each variable before and after the project (calculated by subtracting the grade before the research from the grade after the research). A two-way MANOVA was run to estimate the differences between cyber victims and non-victims in the two groups (RG and CG) for the five variables. Table 4 presents the means, standard deviations, and the differences between cyber victims and non-victims in the two groups for the five variables.

Table 4 Means, Standard Deviations, and the Differences between Cyber Victims and Non-victims in the Two Groups for the Socio-Emotional Variables

| Cybervbulling victim | Cyberbullying non-victim | F_total | F_interaction |
|----------------------|--------------------------|---------|---------------|
|                      | RG (n=5) | CG (n=8) | Total (n=13) | RG (n=20) | CG (n=26) | Total (n=46) | Df=1, 55 | Df=1, 5 |
| Well-being           | .20  1.88 | -.50  1.04 | -.23  1.39 | .14  1.06 | .00  .70 | 1.44  .66 | .22  .36 |
| Depressive Mood      | .29  1.10 | .28  .87 | .28  .92 | .11  .66 | .07  .67 | .09  .66 | .63  .01 |
| Social support (ss)  | .15  1.87 | -.54  .76 | -.27  1.27 | .36  1.21 | -.10  .82 | .10  1.02 | .90  .10 |
| Family ss            | .80  2.19 | -.06  1.01 | .27  1.54 | .39  1.41 | .09  1.00 | .22  1.19 | .09  .47 |
| Friends ss           | -.60  1.74 | -.10  2.28 | -.85  2.02 | .39  1.62 | -.59  1.35 | -16  1.54 | 1.82  .31 |
| Significant other ss | .25  2.05 | -.56  .76 | -.25  1.38 | .29  1.17 | .21  .84 | .25  .99 | 1.36  1.12 |

The multivariate analysis was found to be non-significant ($F_{(6,50)} = .74$, ns). As shown in Table 4, there were no differences between the two measurements between cyber victims and non-victims in the socio-emotional variables. In addition, no interaction occurred between the groups (research/control) and if the respondent was a cyber victim or not ($F_{(6,50)} = .76$, ns).
DISCUSSION

Using a 3DVLE within OpenSim, the ABV4Kids project aimed at tackling the problem of school bullying, violence, racism, and cyberbullying, all of which have a strong impact on youths’ personal and social daily lives as well as their sense of well-being. The project was built on the educational potential that 3DVLEs offer. More than other online platforms, they give their users a sense of real-time involvement, promote new forms of social interaction, and give them room for creative processes (Oliver & Carr, 2009; Salt, Atkins, & Blackall, 2008), which makes them highly attractive for young people.

The first phase of the project focused on establishing the infrastructure of an anti-bullying village (ABV) that school teams from the partner countries created together. The second phase focused on events and activities held in the ABV and they all related to the issues mentioned above. By means of facilitating young people to acquire knowledge and strategies (i.e., through a young people’s conference, workshops, role-plays, short movies, or topic-related events prepared by them), the project tried to provide them with knowledge and quality tools that could help them cope with problems they face on a daily basis regarding bullying, violence, and cyberbullying. In a playful and explorative way, the project also aimed at addressing several key competencies, such as improving digital competence, and raising social support and competencies, mood, and one’s sense of well-being. The KiVa anti-bullying program (Salmivalli, Kärnä, & Poskiparta, 2010) also emphasized the enhancement of socio-emotional variables, for example, empathy, self-efficacy, peer social support, and anti-bullying attitudes. KiVa has been evaluated in large random samples and has been shown to reduce multiple forms of victimization, including verbal, physical, and cyberbullying, in addition to reducing anxiety and depression and improving peers’ social support among participants as compared to controls (Salmivalli, Kärnä & Poskiparta, 2011)

The project combined aspects of dealing with crucial issues in youths’ daily lives through their active participation and the use of innovative ICT tools. In Israel, the project was focused on the issue of cyberbullying and an evaluation study that accompanied the project.

Along with the project, study targets, and assumptions, the findings indicate the pupils had positive attitudes toward the project. Most of them enjoyed participating in the project and stated that learning about cyberbullying at school was highly important. They
also reported that they would recommend to their friends to join a similar project. Two thirds reported that they “know more than before about cyberbullying,” and more than half of the participants reported that as a result of the project, “they know more about the risks of cyberbullying.” However, only 42% of them reported being more capable of coping with cyberbullying as a result of their participation in the project. Thus, although the project enabled the participants to enrich their knowledge about the subject, that is, to actually learn about the topic of cyberbullying in an exciting place for learning, it apparently did not supply them with enough tools for coping. This finding reveals that the students perceive the subject of cyberbullying as significant, understand the importance and impact of this type of bullying in their lives, but lack coping strategies. To date, many studies have indicated the need to develop programs to deal with cyberbullying (e.g., Hinduja & Patchin, 2009; Li, Smith, & Cross, 2012; Sticca & Perren, 2013), but this finding indicates that the need for coping tools and strategies comes from the adolescents themselves, based on their unique experiences. Moreover, this finding indicates that future intervention and prevention programs for dealing with cyberbullying should allocate a major part toward more practical tools for coping with cyberbullying- its expressions and impact-and they should also include the adolescents’ views.

The findings regarding differences in cyberbullying and bullying experiences, as reported before and after the project, revealed no differences between the research and control group when addressing cyberbullying as well as bullying, but in the post-assessment, an increase in cyberbullying indices occurred in the control group (cybervictim, knowing someone who was a victim, witnessing cyber victimization, and cyberbullying).

The process of raising awareness about the phenomenon of cyberbullying and its manifestations that took place during the lifetime of the project may explain this finding, and may have prevented a rise in CB experiences in this group, whereas in the control group (which did not participate the project), an increase occurred in CB indices, similar to the general increase in CB, as reported in the research literature during recent years (Elledge et al., 2013; Patchin & Hinduja, 2011; Popovic-Citic et al., 2011; Tokunaga, 2010).

Regarding the changes in the socio-emotional aspects before and after the project, we found a decrease in social support from friends at the end of the project in the control group, whereas in the research group, we found no change between the two
measurements. A link may exist between the increase in cyberbullying experiences and the decrease in social support from friends, and the rise in cyberbullying in this group may have created a sense of decline in social support. Still, the direction of this possible relationship is not clear, and it is suggested to study these relationships in a further study.

The ABV4KIDS project combines aspects of dealing with issues that are of major concern in the daily lives of youth, using their creative products regarding bullying and cyberbullying in a 3D virtual environment. As such, the project promotes and strengthens the relationships between academia and practice: the school, school staff, and students.

The results are consistent with Global Kids, Inc. (2006), whose emphasis is on the strengths of virtual worlds, such as SL, and their ability to facilitate and enable users to collaborate and interact, as can be seen in the current project. Kemp and Livingstone (2006) compared virtual worlds, such as SL, with traditional learning management systems and claim that SL has distinct advantages, especially in enhancing the experience of learning. In addition to giving the users a sense of embodiment, they highlight the power of rich 3D demonstration models and multimedia material over purely written means.

Furthermore, the current study contributes to the growing literature that presents the strengths in the potential of SL as an educational tool that offers a confidential and non-judgmental experience (Jin, 2013; Thomas, 2012), and suggest social-networking processes benefits’ for playful acquisition of ICT skills as well as an available collection of the broad pool of resources and tools that help facilitate educators’ work.

**LIMITATIONS AND FUTURE RECOMMENDATIONS**

In spite of the innovative nature of the project and the accompanying evaluation study findings, these findings should be examined carefully for several reasons. First, the study was conducted over the school year in two classes (the research group and the control group). Thus, intervening factors, such as school and class climate, may exist that affect the pupils’ violence in general, and specifically in the classroom. Second, the sample that was studied was relatively small; therefore, assessing and validating these findings is difficult. We suggest implementing the project as well as the evaluation study using a larger sample with a more divergent population.
Because no difference was found between the baseline measurement and the post-assessment regarding traditional (face-to-face) bullying, when developing prevention and coping programs that deal with the two faces of bullying—bullying and cyberbullying—addressing only one kind of bullying does not seem to be enough. Rather, prevention and intervention efforts should deal with the whole range of bullying.

Moreover, the 3D platform requires specific technical knowledge from the teachers that manage the activities and the sometimes-considerable specific hardware demands that often go beyond the capabilities of regular classes in most schools. It may also interfere with the sequence and dynamics of cooperation and the learning process, and be an obstacle to implementing such a project. One way to overcome problems of this kind is to design a special training program for teachers and instructors.

A 3DVLE may not be accessible to all contexts, yet we hope that in the near future, further technological and educational developments will give more and more contexts access to this resource.

CONCLUSION

Nowadays, the easy and unlimited access to the Internet, and the significant difficulty of identifying and locating cyber bullies demand special programs to raise awareness and develop effective coping strategies for pupils and educational staff as well as parents. This project represents an original and innovative way of dealing with this phenomenon and its impact on socio-emotional variables, one that “speaks the children’s language.” We recommend implementing it in different class levels for school-aged children, as well as widening the research and evaluating its advantages and disadvantages as a contemporary learning-educating-intervening tool.

In addition to the direct target groups of pupils and schools, the current 3D virtual education project may be important for a broader audience of professionals (e.g., educators, teachers, principals, counsellors, and educational and developmental psychologists) that confront and are required to deal with the problem of bullying and violence on and outside the Internet, in school settings and beyond.

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