EFFECTS OF VR ROLE-PLAY ON BYSTANDER EMPATHY, BEHAVIOR, AND ATTITUDE IN BULLYING SITUATIONS

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Abstract - The present study investigates the impact of the experience of VR role playing a bullying victim on empathic responsiveness toward victims and attitudes toward bullying. The purpose of the present study is to explore whether the roleplay experience can change one's attitude in the bullying situation. That is, make the outsiders willing to help the bullying victims and become defenders. Subjects with high or low affective empathy first wear VR glasses and roleplayed as the victims in stage one by viewing a bullying video. In stage two they entered a SecondLife bullying situation to roleplay bystanders. Those subjects in the control group only participated in stage two. The results show that subjects who roleplay as victims in VR are found to be more willing to help victims compared to people who do not roleplay as victims in VR. It indicates that people's virtual experience through role-playing as bullying victims can influence their attitudes toward bullying and empathic responsiveness toward bullying victims, no matter their original levels of affective empathy. Theoretical and practical implications are also discussed.

Keywords - Bullying, Role-play, Empathy, Attitude, Virtual Reality, Virtual Environment.

I. INTRODUCTION

Bullying is a prevalent problem in school settings beginning from elementary schools to senior high schools. Due to the damaging effects of bullying, parents, teachers, researchers, and government alike are concerned with understanding how to stop and prevent peer bullying (Polanin, Espelage, and Pigott, 2012).

There are several different ways to prevent bullying, such as evidence-based programs (Farrington, David, and Maria, 2009), activities to teach students about bullying (Breakstone et al., 2008), staff training on bullying prevention (Carney et al., 2001). One of the strategies is to encourage bystanders to intervene against bullying. However, it is difficult to change bystanders' behaviors. Therefore, we try to explore if the introduce of VR experience can change one's attitude toward bullying. The purpose of our study is to understand if providing bystanders with VR role-play experience will make them willing to help the bullying victims.

1.1. Bullying

Bullying is an unwelcome and aggressive behavior among school. This behavior involves an imbalance of power and has the potential to be repeated, over time (Jimerson et al., 2010; Olweus, 1993). School bullying has negative short-term effects on students' physical and psychological health and long-term effects on their psychosocial adjustment. Bullies are more likely than the non-bullies to have an increased likelihood of theft, antisocial or violent behavior and binge drinking and smoking (Nansel et al., 2001; Olweus, 1993). The bullying victims perceived lower levels of support and greater depression than the non-victims (Stuart et al., 2014).

1.2.Bystanders of Bullying

Bystanders are the biggest group in a bullying situation and are not directly involved as bullies or victims (Craig, Pepler, and Atlas, 2000). The bystander behaviors influence the risk of students being bullied (Salmivalli et al., 2010) and deter the demoralizing of bullying (Tsang et al., 2011). Victims who have one or more classmates defending them are less anxious, less depressed, and higher self-esteem than victims without defenders. (Huitsing and Veenstra, 2012). Research finds that bystander intervention is a very important factor influencing bullies' behaviors (Salmivalli, Voeten, and Poskiparta, 2011). But it is also known that bystander intervention against bullying occurs in only 10-25% of all bullying incidents (Obermann, 2011). How to make a change in the behavior of bystanders and try to encourage bystanders to intervene against bullying is necessary.

The conceptual framework of bystander motivation to intervene in bullying situations (Thornberg et al., 2012) investigates the helping motives. There are some reasons that influence student to help or not help a victim when witness bullying: interpretation of harm in the bullying situation, emotional reaction (Correia and Dalbert, 2008; Nickerson et al., 2008), social evaluating (Oh and Hazler, 2009), moral evaluating (Bandura, 1999; Gini, 2006), and intervention self-efficacy (Bandura, 1997; Gini, 2008). Interpretation of harm in the bullying situation means that the students consider the bullying situation to be harmful to the victim, so they motivated to intervene. Emotional reaction means that bullying evokes different emotional reactions. For example, their empathic tendencies urge them to intervene. They are afraid of being victimized by the bully, so they do not intervene in a bullying situation.

Social evaluating refers to that bystanders think of their social positions and social relationships when they witness bullying. The social positions include friendship, social rank, and gender. Moral evaluating means that bystanders judge or evaluate the act of bullying, and attribute the responsibility to the bully or the victim. Intervention self-efficacy means that students select a method of intervention because they believe their actions are effective. For example, students with low intervention self-efficacy believe that they will be incapable of intervention.

1.3. Participant Role Approach

The participant role approach (Salmivalli et al., 1999; Salmivalli, 1999) identifies 4 different roles that bystanders can take: assistants, reinforcers, outsiders, and defenders. Each type of them has different ways of behaviors and reactions toward bullying. The assistants help and assist the bully, for example, holding or chasing the victim. Even if they do not initiate the bullying process, they eagerly join in. The reinforcers do not actively help the bully or attack the victim, but they provide feedback to the bully by seeing what is going on, cheering, laughing. The outsiders typically do not take sides with bullies or victims. They tend to stay away from places where bullying happens. The defenders actively help the victim, either by asking the others to stop bullying, comforting the victim, or telling a teacher. A study targeting 6th and 8th-grade students indicated that 27% of them were assistants and reinforcers, 24% were outsiders and 17% were defenders (Salmivalli et al., 2011). Thus, the smallest group of students are defenders.

1.4. Bully Prevention Program

The following are several bully prevention programs that reduce bullying by established with a bystander component to the initiative. The Olweus Bullying Prevention Program (Olweus, 1999) is a whole-school program that has been proven to reduce the occurrence of bullying. The goal is to teach students social skills that will allow them to achieve healthy relationships. FearNot! (Schneider et al., 2011) is a novel virtual learning strategy. It is designed to enhance the problem-solving skills of current or potential victims and to increase empathy of bystanders that will allow them to defend for victims. FearNot! helps bystanders to become defenders in the German sub-sample. KiVa (Salmivalli and Poskiparta, 2012), an anti-bullying program for grades 2-6, has a strong emphasis on influencing onlookers to support the victim rather than encouraging the bully. KiVa primarily implemented in Europe, which includes universal actions (20 hours of student lessons) to prevent the occurrence of bullying and indicated actions to intervene in individual bullying cases. SchoolLife (Gehlbach et al., 2014) is a web-based 3D virtual school environment that allows students to experience the roles of a victim and bystander. SchoolLife let us understand how virtual environments can facilitate fundamental social processes and social perspective taking to improve relationships in schools.

1.5. Role-play

Role-playing (Goffman, 1959) requires people to take actions to fulfill someone else and try to think from the perspective of others. There are many forms of role-playing, such as dramas, video games, and virtual reality (VR). In role-play, people have a chance to understand the other person's feelings, thoughts, and behaviors in a given situation (Kelley, Osborne, and Hendrick, 1975). Therefore, when people roleplay as victims of bullying, they will not only be impacted by the bullying situation, they will also be influenced by the emotions and attitudes of the characters.

1.6. Virtual Environment: A Venue for Social Observation

Virtual environments (VEs) have been used in a wide variety of applications, such as language learning, teacher training, psychological research, and social study. Studies using VEs present participants with an artificial situation, potentially eliciting responses that researchers intend to know. Indeed, VEs have been shown to be particularly effective for expressing social skills (Duncan et al., 2012; Falloon, 2010). Thus, VEs could offer a simulation environment to observe people's behaviors.

In our study, students took on the role of bystanders involved in bullying and experienced the feelings, thoughts, and behaviors when they witnessed bullying.

1.7. Research Purpose

Although many kinds of research reduce the occurrence of bullying by enhancing bystanders' empathies and changing their responses, relatively few studies have examined the change of bystanders' behaviors and attitudes toward bullying. Therefore, our purpose is to understand if the provision of victim role-play experience can change bystanders' empathies toward victims and attitudes to bullying. The independent variables are victims roleplay experience (with or without) and levels of subjects' affective empathy (high and low). The dependent variables are (a) participant role, (b) empathic responsiveness toward victims of bullying, (c) attitudes toward bullying.

There are 5 hypotheses of this study:

H1. In general, people who role-play as victims in VR tend to become defenders of bullying than people who do not roleplay as victims in VR.

H2. In general, people who role-play as victims in VR have more empathic responsiveness toward victims of bullying than people who do not role-play as victims in VR.

H3. In general, people who role-play as victims in VR have healthier attitudes toward bullying than people who do not roleplay as victims in VR.
H4. After roleplaying as victims in VR, people who have high affective empathy develop more empathic responsiveness toward victims of bullying than people who have low affective empathy.
H5. After roleplaying as victims in VR, the attitude of people who have high affective empathy changes more toward bullying than people who have low affective empathy.

II. EXPERIMENTAL DESIGN

2.1. Method

This study employs a 2 (high affective empathy/low affective empathy) x 2 (VR roleplay/no roleplay) mixed experimental design. The between-subjects factor is affective empathy (High vs. Low) indicating the degree of affective empathy. The between-subjects factor is roleplay (VR roleplay vs. No roleplay) indicating whether participants play as a bullying victim in VR. This unique experimental setting enables us to effectively test both (a) the general effects of playing as victims on bystander's behaviors of bullying and (b) the effects of affective empathy between 4 groups.

2.2. Design of Virtual Bullying Environment

This study using SecondLife as a virtual bullying incident for observing bystanders' behaviors. The bullying occurred behind the pool at the university during the break time and took roughly 10 minutes. The participant, the bully, and the victim were classmates. The bully and the victim were females; the participant's gender was the same as real life.
The Participant passed by the bullying scene while walked to the classroom. The bullying incident was that the bully accused the victim of bribing the teacher in order to receive a scholarship. The victim denied that. After some quarrel, the bully sneered, abused, and even thrust the victim into the pool. The participant then decided what to do when he or she passed by. The following were possible behaviors of the participant: ignored the bullying, stayed away from the bullying as quickly as possible, watched the bullying in the distance, talked with the bully or the victim, intervened in the bullying, etc. The bullying storyline would be changed according to the different behavior of the participant. If the Participant intervened to stop the bullying, the bully would stop bullying the victim and leave the scene. If the participant did not intervene, the bully would continue until the victim was thrust into the water and then leave the scene. The participant was then asked to enter the classroom before class started. After the bullying incident, the victim would walk into the classroom and talk to the participant for about 3 minutes, ask the participant's opinion about how to deal with this bullying incident. The experiment ended when the conversation was over.

2.3. Participants

One hundred and twenty-two undergraduate and graduate students in two Universities volunteered to fill out the recruitment questionnaire. Among them, we selected 72 participants (39 males, 33 females) who had witnessed bullying but never intervened to stop bullying to participate in the study. The participants were assigned to the high affective empathy group (13 males, 23 females) and the low affective empathy group (26 males, 10 females) according to the empathic concern items of the empathy questionnaire (Davis, 1980). Then, the participants were randomly assigned to the VR roleplay group and no roleplay group. The numbers of participants for each group were 18.

2.4. Procedures

When recruiting participants, participants filled out the pre-exposure questionnaire. Participants who met outsiders of bullying bystander roles would be invited. The experiment was conducted 2 weeks later.
Before entering the virtual environment, the VR roleplay group watched the first-person perspective video "UR: Bullying in Virtual Reality" (McCann Stockholm, 2016) by wearing VR glasses. The VR video was made by Sweden's Educational Broadcasting Company. The VR roleplay group experienced the first-hand experience including been given nasty glares, verbally abused, and intimidated by physical aggression. Fig.1. showed the experimental scenario.



Fig.1. The experimental scenario. Participant of the VR roleplay group was watching the VR video.

Upon entering the SecondLife virtual environment, the participants were told that they should basically familiarize themselves with the SecondLife controller. This incentive was given to ensure the participants' full attention to the task. The participants should see the bullying incident before walk into the classroom. When the participants witnessed the bullying, they did something to help or not to help the victim according to what they want to do. The behaviors of participants were shown in

Fig.2. After experiencing virtual bullying environment, the participants logged onto a survey website with the post-experiment questionnaire, which asked the participants about their feelings and behaviors about the virtual experience. After answering all questions, the participants were thanked with gift certificates.



(a) The participant of the HN group watched the bullying far away.



(b) The participant of the HV group intervened in the bullying.



(c) The participant of the LN group ignored the bullying.



(d) The participant of the LV group intervened in the bullying

Fig.2. (a & b & c & d) The behaviors of participants.

2.5. Measures

(1) Participant Role

The Participant Role Scale (Salmivalli, 2004) was used after the virtual environment simulation to assess bystander behavior during virtual bullying. The scale was answered on a 3-point scale: ”0 = No”, “1 = Want to do, but don't do”, “2 = Yes”. The 15 items assess the following four participant roles: (a) Assistant (e.g., “Helps the bully, maybe by catching the victim”), (b) Reinforcer (e.g., “Comes around to see the situation and feels fun”), (c) Defender (e.g., “Tells bully to stop bullying”), (d) Outsider (e.g., “Stays outside the situation and quickly keeps away from bullying”).

(2) Empathic Responsiveness toward Victims of Bullying

The measure of empathic responsiveness toward victims was adapted from Batson et al. (1997). The scale was answered on a 7-point scale: “1 = Not at all”, “7 = Extremely”. The 12 items were a set of participants’ emotions toward victims of bullying (e.g., “You felt sympathetic for victims of bullying”). This scale was administered in the pre-exposure and post-exposure questionnaire.

(3) Attitudes toward Bullying

The measure of attitudes toward bullying was adapted from Swearer and Carey (2003). The scale was answered on a 5-point scale: “1 = Totally Disagree”, “5 = Totally Agree”. The 17 items assess attitudes toward bystander intervention and bullying situation (e.g., “Being bullied is no big deal”; “Bullying is good for wimpy kids”; “I’m worried about being retaliated after being defender”). This scale was administered in the pre-exposure and post-exposure questionnaire.

III. RESULTS AND DISCUSSION

3.1. Participant Role

Table 1 shows the number of 4 participant roles per group. Before the experiment, 0% (n = 72) of the participants were defenders of bullying. After the experiment, 75% (n = 27) of VR roleplay group became defenders and 14% (n = 5) of no roleplay group became defenders. The result supported H1.

Table 1: The Number of Participant Roles per Group after the Experiment

Role	HN	HV	LN	LV
Assistant	0	0	0	0
Reinforcer	0	0	0	0
Defender	3	14	2	13
Outsider	15	4	16	15
Total	18	18	18	18

3.2. Empathic Responsiveness toward Victims of Bullying

We conducted repeated ANCOVAs with affective empathy as the between-subjects factor, the roleplay as the within-subjects factor, and the pre-exposure scale as the covariate. Table 2 shows significant main effects of roleplay ($F(1, 67) = 4.52$, $p < 0.05$) were found, which supports H2. Specifically, people who roleplay as victims of bullying in VR (M = 5.23, SD

= 0.97) had more empathic responsiveness toward victims of bullying than people who did not roleplay as victims of bullying in VR (M = 5.00, SD = 0.79). Fig.3. shows people who have high affective empathy had developed higher empathic responsiveness after roleplaying as victims in VR than people who have low affective empathy, which supports H4.

Table 2: Tests of Between-Subjects Effects (Dependent Variable: post_E)

Source	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model[a.]	4	9.373	33.686	.000	0.668
Intercept	1	3.049	10.959	.002	.141
pre_E	1	23.909	85.924	.000	.562
Roleplay	1	1.259	4.526	.037	.063
Empathy	1	.001	.004	.952	.000
Error	67	.278			
Total	72				

[a.] R Squared = .668 (Adjusted R Squared = .648)

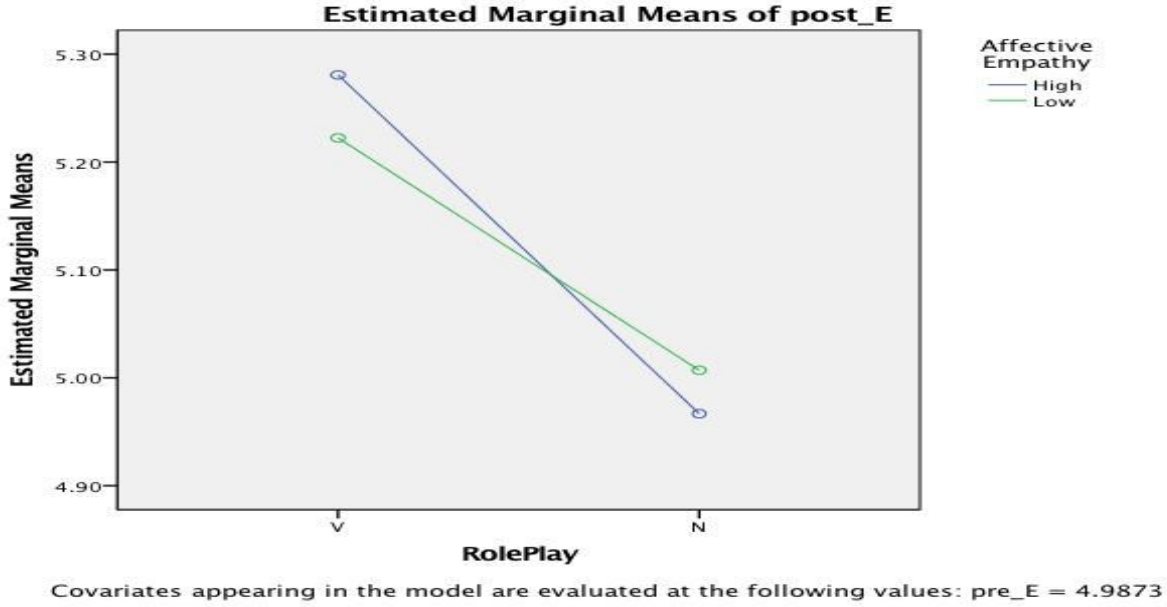


Fig.3. Diagram of roleplay victims and affective empathy on empathic responsiveness toward victims of bullying.

3.3. Attitudes toward Bullying

We conducted repeated ANCOVAs with affective empathy as the between-subjects factor, the roleplay as the within-subjects factor, and the pre-exposure scale as the covariate. Table 3 shows that significant main effects of roleplay ($F(1, 67) = 10.76$, $p < 0.05$) were found, which supports H3. Specifically, people who roleplay as victims of bullying in VR (M = 3.77, SD = 0.39) had healthier attitudes toward bullying than people who did not roleplay as victims of bullying in VR (M = 3.65, SD = 0.43). Fig.4. shows people who have high affective empathy changed more in their attitudes toward bullying after roleplaying as victims in VR than people who have low affective empathy, which supports H5.

Table 3: Tests of Between-Subjects Effects (Dependent Variable: post_B)

Source	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model[a.]	4	2.221	46.471	.000	0.736
Intercept	1	0.605	12.659	.001	.141
pre_B	1	6.051	126.62	.000	.562
Roleplay	1	0.514	10.756	.002	.063
Empathy	1	0.100	2.084	.153	.000
Error	67	0.048			
Total	72				

[a.] R Squared = .735 (Adjusted R Squared = .719)

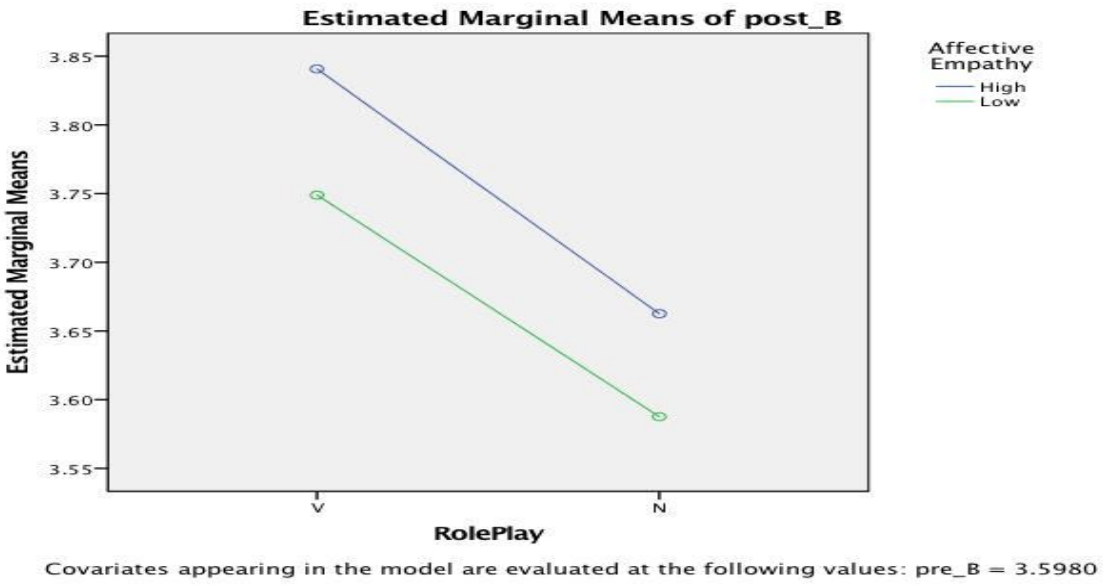


Fig.4. Diagram of roleplay victims and affective empathy on attitudes toward bullying.

CONCLUSIONS

Educating students on bystander intervention and encouraging them to intervene as defenders in bullying incidents is an important strategy for anti-bullying activities and bullying prevention. Virtual reality is a tool that can be used to let people roleplay as victims of bullying. Roleplaying in VR can effectively assist in bystander intervention education and affect both the high and low affective empathy people. Although past studies have explored participant bystander intervention in virtual reality, the present study tries to compared effects VR role-play experience of high and low affective empathy people in terms of their empathic responsiveness toward victims and attitudes toward bullying. This study found significant effects that VR roleplay evoked more empathy toward bullying victims and healthier attitudes toward bullying. This study's implications are valuable for school and practitioners who develop anti-bullying campaigns, as it provides insight into how students' empathy and attitudes toward bullying can be influenced by VR roleplaying.

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