SimBully: A 'Bullying in Schools' Simulation

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ABSTRACT
In this paper we describe SimBully, a simulator that shows the impact that peer and personal rules can have on incidences of bullying in a school environment. The user can add and remove rules, and add or eliminate characters from the environment and see how this affects the bullying situation (maybe bullying decreases or other bullies emerge). In this way, the user can study the impact of certain rules on the bullying behavior.

Categories and Subject Descriptors

I.2.0 [**Artificial Intelligence**]: General – *Cognitive simulation*

General Terms
Algorithms, Design, Experimentation.

Keywords
Artificial Intelligence, Non Playable Characters, Simulation, Bullying.

1. INTRODUCTION
Bullying is a big problem in schools, affecting the life quality of students; there is research on how to help students cope with it, or on how to stimulate bystanders to stand up and defend victims of bullying. Even though most students would agree that bullying is bad and you should stand up for the victims, in practice this doesn't always happens. Ferráns et al. [1] interviewed students and developed a multilevel framework of justifications of choice of strategy on how students react to bullying situations in school, depending on if the bully or the victim is a friend or not, the power, and other factors. In SimBully, we use these and others results [2] to create a simulator that shows the effect of the personal and peer rules. The simulator is still in the alpha phase but its ultimate goal is to allow to study the impact of certain rules on the bullying behavior. The simulator is using iATTAC, an NPC AI engine developed in the context of a research project on cyber bullying (Friendly ATTAC [3]). We introduce the engine, iATTAC, as well as the simulator SimBully.

2. iATTAC
iATTAC is an AI engine designed to generate autonomous, goal oriented NPC characters. It was originally created for the Friendly ATTAC project [3], a research project on cyber bullying, but it can also be used in other games and simulations.

iATTAC uses Reiss's personality model [4] as a base for creating emotional characters. Each character has its own unique personality. Based on his personality, a character will select a behavior or activity that satisfies its own personal needs. These behaviors can be an individual behavior, like reading a book or going to the cafeteria, or related to bullying: bully, by stand, or stand up.. It also incorporates some of the patterns defined by Lankoski [5][6], like "Actions have Social Consequences", "Eavesdropping", "Linked Destinies", and "Memory of Important Events" among others.

3. SIMBULLY
SimBully uses the results of Ferráns and others [1] together with iATTAC to create realistic NPCs, and allows the user to enable or disable certain rules to see the impact this has on the bullying situations. Some rules may make bullying less or more frequent, or more or less intensive. We created a simulator for a middle school situation, where each NPC has a unique personality.

To realize this, we mapped the framework of Ferráns et al. [1] to iATTAC. In this way, the characters in the simulator will move around and interact with each other autonomously, following the rules defined in [1]. We mapped the rules to the decision process system, for example, the rule "Stick up to your friends no matter what" is considered at the time of choosing whether a character should support the victim or the bully (or nobody). If the bully is a friend of the character, then there is a bigger probability of supporting the bully, unless it is an aggressive bullying and the rule "It's okay to make fun of others as long as you don't take it too far" is active, in which case both rules are considered by the character to determine what to do.

The interface for SimBully is, for the moment, rather simplistic; it shows a 3D world with students moving around, a clock to show the current time and day, and the rules available (both the enabled as well as the disabled rules)(Figure 1).

When the cursor is on a character, the interface will show the current needs and desires of that character (i.e. the personality profile), giving insight on why the character is behaving the way he does. The user can eliminate characters from the simulation or add new characters and see how this affects the situation (maybe bullying decreases or other bullies emerge).

SimBully provides user a way to get insight in why some students are bullies, why some are bystanders or some stand up to it, based on personal, institutional and peers rules, and how changing these rules can impact the amount of bullying in schools.

Some educational games try to teach kids about bullying and how to cope with it (e.g., [7]). However, our simulator is aimed towards adults to provide them insight in the reasons behind bullying, why it keeps happening, and how certain rules can positively or negatively affect the incidents of bullying.
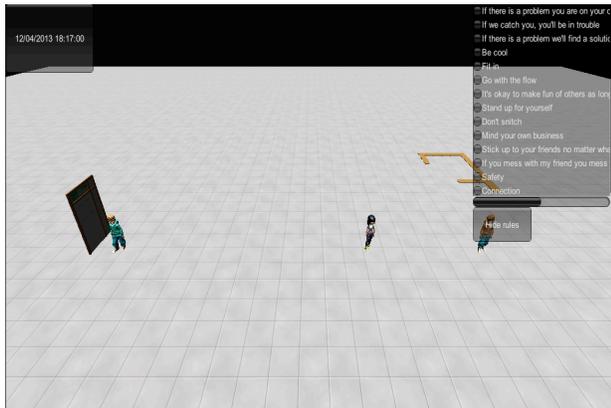

Figure 1. Main interface for SimBully; the user can enable and disable the rules.

4. RULES
Ferráns et al. [1] interviewed students and organized students' justifications in three levels: intrapersonal, interpersonal and institutional.

"*At the intrapersonal level, study participants referenced their personal needs for connection, power and safety as individual motivations for their actions. At the interpersonal level, study participants referenced the messages they receive from friends and peers about appropriate responses to particular situations. At the institutional level, study participants referenced the messages they receive from teachers and administrators about how students are expected to behave when they encounter a specific situation*".
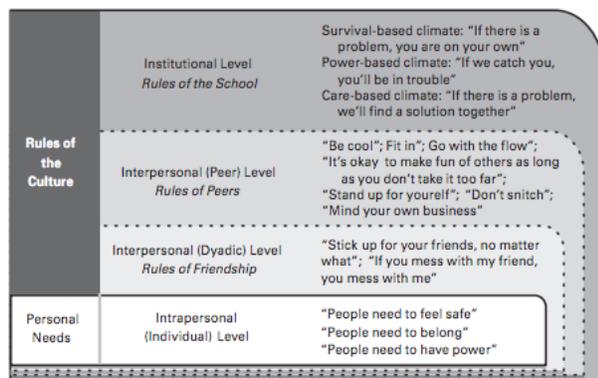

Figure 2. Multilevel framework of justifications (taken from [1])

SimBully includes the 15 justifications (see Figure 2). Each justification is considered at every step of the decision making process of the NPC in real time. If for example, the rule "People need to be safe" is disabled, the next time a player is considering standing up to a bully, it will dismiss the fact that the bully can physically harm him, so making standing up more probable. So enabling or disabling a rule will have immediate repercussions on the amount of bullying, and the amount of by standing and standing up may change.

SimBully is still on an alpha stage; the interface will be improved in the future and an evaluation of the simulator will be performed.

5. TECHNICAL REQUIREMENTS
It requires a browser with the Unity plug in installed.

6. LINK
http://omar.mx/SimBully.html

7. ACKNOWLEDGEMENT

8. REFERENCES
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