

An Augmented Reality Installation to Metaphorically Represent the Causes, Manifestations, and Consequences of School Bullying in East Asia

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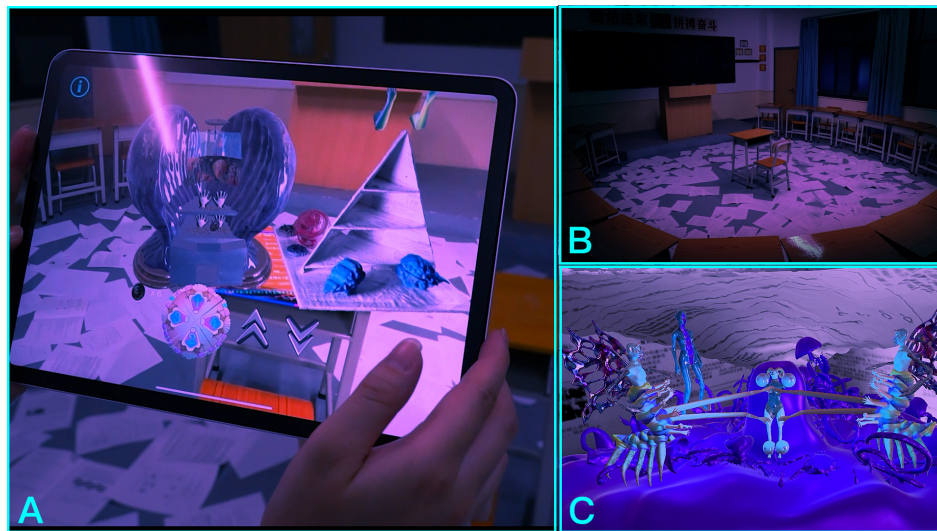


Figure 1: This AR artwork was made for mobile devices. It consists of an interactive game and an installation in an actual Chinese high school classroom that is arranged to express the internal feelings of those who were traumatized at school. Trailer video- <https://youtu.be/7RNtPAYfo0Q>

Abstract

This article discusses the contributing factors, manifestations, and consequences of school bullying in East Asia. Moreover, this article delineates our creation of an interactive Augmented Reality (AR) artwork that conveys the aforementioned discoveries metaphorically. We elaborated on the design of game mechanisms that enable players to experience emotions that many East Asian parents felt, which foster a deeper reflection of the school bullying in East Asia. These emotions experienced by East Asian parents include feelings of frustration and anxiety that arise from financial constraints, as well as a sense of powerlessness when they have no choice but to pressure their children to succeed in the national college entrance exam. Lastly, we present a novel approach to AR storytelling: visualize the inner feelings of individuals affected by traumas through both the design of the virtual component and the arrangement of the actual location where the trauma happened (see Figure 1).

Keywords

Augmented Reality Storytelling, School Bullying, East Asian Parenting, Status Anxiety, Ego Depletion, Metaphorical Game Mechanism.

Introduction

The Definition and Manifestation of Bullying

Bullying, known as "ijime" in Japan, "qifu" in China, and "wang-ta" in Korea, is a social issue prevalent in both Eastern and Western countries. A comparative analysis of Bullying in Eastern and Western societies concluded that power imbalance and intentional harm are the two criteria that define Bullying [15]. The power imbalance in Bullying could manifest in various forms. For example, the attacker may be physically stronger than the victim, have a family with higher social or economic standing, or be more popular at school than the victim. The widely recognized methods the bullies use to intentionally harm others include 1) Verbal bullying (verbal insult, malicious teasing, threatening, etc.), 2) Physical bullying (physical attack, sexual assault, etc.), 3)

Indirect, relational bullying (damaging someone's peer relationships by means such as rumor spreading) and 4) Social exclusion (isolating an individual or compelling others to do so)[15]. Some researchers argue that Bullying may also take the form of making coercive demands and destroying property[7, 10]. Coercive demand refers to extortion, forcing the victim to join illegal groups or to engage in unlawful activities. Destruction of property encompasses the theft or malicious damage of an individual's property. With the popularity of electronic devices and people's interests in online social media and forums, Cyberbullying become one of the main forms of bullying in contemporary society[6].

Contributing Factors To School Bullying In East Asia

Confucianism and the hierarchy in schools contribute to school bullying. Confucianism emphasizes the class difference between teachers and students, and advocates that students should treat their teachers with the same respect and worship they would give their parents, the emperor, or God[3]. In addition, Confucianism stresses that students should make every effort to maintain a harmonious relationship with their teachers[3]. Under the influence of Confucianism, East Asians are instructed from a young age, both in school and at home, to defer to their teachers and refrain from challenging them. Thus, students in East Asia are vulnerable to teacher-initiated bullying due to the hierarchical relationship between educators and students, and the students' inclination towards compliance.

The prevalent educational system in East Asia is exam-orientated education. The primary consideration for the government and residents when deciding where to invest or enroll their children is the school's promotion rate, which refers to the number of students admitted to top-ranking universities every year. Therefore, the competition among high schools is fierce in nations that value exam-oriented education. High schools will adopt various methods to increase their student promotion rate. The prevailing approach is to classify students into various levels of classes based on their performance on examinations. On the one hand, class separation fosters competition among students, which motivates students to study more diligently to defeat other students. On the other hand, schools can optimize the use of their resources by allocating the best hardware and educators to the best students. The majority of East Asian nations, including Japan, China, Hong Kong SAR, and Taiwan, enforce a nine-year compulsory education system. Some of these countries, such as China and Taiwan, have implemented legislation that prohibits schools from separating students into high or low-level classes during the nine-year compulsory education period. However, gaining entrance to an outstanding senior high school (grade 10-12) is a prerequisite for gaining admission to a top-rated university. Therefore, pressure from parents and the school's desire to enhance the promotion rate compel some junior high schools (grades 7 to 9) to disregard government restrictions and covertly execute student categorization. Since senior high school is not included in the nine-year compulsory education in the majority of East Asian nations, student classification in senior high school is legal and ubiqui-

tous. Given the importance of student promotion rates, high schools extremely value students with excellent test scores. Consequently, students classified in high-score classes receive more care and preferential treatment from teachers and schools. Such a hierarchical structure creates conditions for students divided into high-score classes to bully those in low-score classes.

Additionally, since the school publicly discloses the ranking of the students within each class after every examination, there is also a hierarchical division of students in each high and low-score class. Students who achieve higher grades in their classes are often afforded more privileges and advantages compared to their classmates with lower grades. For instance, teachers tend to prioritize students with good academic performance when selecting individuals to serve as class committee members. These committee members are granted the authority to manage and discipline other students, creating an environment conducive to class committee members-initiated bullying.

Students are tempted or forced to bully others. Spending money is the most common method of relieving stress. The ease of gaining monetary and material rewards via violence and intimidation tempts some students to bully others in schools[8]. Furthermore, East Asian students who exhibit below-average academic performance are unable to get the respect of their educators and classmates. Also, it is common for these students to face insults and physical discipline from their parents. In an attempt to rebuild their self-worth, these students abuse other students since it gives them a strong, superior, and dominating self-image that they find pleasant[8]. The fact that bullies are rarely or only lightly punished is the third incentive that encourages students to engage in bullying behavior. Due to the fear of retaliation, victims rarely report the perpetrators to the teachers. Even if they did, many East Asian teachers are unlikely to accord it due seriousness, seeing it instead as a joke among peers. Even in cases when the educators discipline the bully, the school's penalties have very little influence on stopping the bully's actions. In East Asia, conventional disciplinary measures implemented by educators encompass the following: compelling bullies to stand outside the teacher's office, assigning demerits to their records, imposing detention, and notifying their parents of the wrongdoing[8]. Lastly, students engage in bullying behavior for fun. As a means of surviving the boredom of studying during the high school years, many junior and senior high school students resort to cruel and immoral forms of entertainment, such as bullying their schoolmates. After witnessing multiple instances of bullying in schools, bystanders of bullying are highly terrified of being the next victim. Teachers give bystanders the impression that they can't safeguard the students from being bullied. Thus, they will choose to join a gang either inside or outside of school for protection. Becoming a member of a gang requires engaging in acts of physical assault, extortion, and intimidation against others; thus, they are transformed from bystanders into bullies[8].

Prolonged stress depletes the self-control of students and teachers. Layte et al.[9] discovered that low-income earners residing in countries characterized by significant income inequality exhibit greater anxiety regarding their social

status than those with comparable income levels but living in countries with lesser income inequality. Similarly, high-income earners residing in countries with massive income inequality are also more anxious about their social status than their counterparts in countries with lower income inequality. Furthermore, social status anxiety increases with poverty, whether in countries with low or high-income inequality. Another study that surveys residents in both Eastern and Western countries found that parents living in countries with high wealth inequality also have higher demands for their children's academic achievement than parents residing in nations with lower income inequality[5].

The findings of these two research indicate that parental anxiety with advancement in social status or the preservation of family reputation and social standing imposes significant pressure on their children. Parent's anxiety also places a significant strain on the nation's education system. In East Asia, a junior and senior high school's promotion rate (the number of students who got promoted into a prestigious senior high school or college) is the major consideration for individuals when selecting a school for their offspring. Therefore, both private and public high schools must make every effort to improve their promotion rate so that they can attract academically outstanding students, who in turn contribute to the maintenance or advancement of the promotion rate, thereby establishing a positive feedback loop.

The primary determinant influencing the rate of promotion of students is the quality and efficacy of the teaching team. Hence, junior and senior high schools classified students into high/low-grade classes to ensure that excellent students are provided with outstanding educators, thus enhancing teaching efficacy. In addition, schools conduct frequent and strict evaluations of educators' performance to guarantee the quality of the teaching team. In order to secure their employment and advance their career, teachers are often required to do extensive administrative and research work in addition to their regular duties of preparing lessons, teaching, and correcting assignments. These administrative and research tasks include writing self-evaluations of the past semester's teaching, planning for the next semester's teaching, applying for teaching grants, participating in and submitting reports on professional development courses, publishing essays, etc[13]. As a consequence, educators are also subjected to significant pressure.

According to empirical findings of psychology, people's capacity for self-control is limited[11]. It can be depleted when people force themselves to do things that require willpower, such as managing stress, regulating unpleasant emotions, restraining oneself from temptation, and repressing immoral thoughts. Once this resource is exhausted, it cannot be immediately replenished. Therefore, If a person's self-control is drained by one event and then he/she is immediately confronted with another event that also demands self-control, he/she will fail to control himself during the latter event. Through adequate rest, an individual's self-control can be slowly restored to its peak level. However, suppose one is placed in a high-pressure situation for an extended period of time. In that case, his or her rate of recovery of self-control will not be able to keep up with the pace of utilizing it, and the individual will always be in a condition of self-

control deficit. As a result, the individual will exhibit many impulsive and immoral behaviors[11]. For years, East Asian students compelled themselves to devote most of their time every day to studying and testing; East Asian teachers compel themselves to stand and teach for numerous hours every day, to mark countless test papers, and to deal with school evaluations. Both educators and students are in a constant state of self-control deficiency due to the protracted pressure and emotional distress. Consequently, they can't control their anger and will exhibit violent or abusive behaviors when they get irritated at school. Also, they will be unable to suppress their immoral thoughts and engage in impulsive behavior. These uncontrollable behaviors of students and teachers lead to school bullying.

School Bullying Affects Victims' Mental Health And Personality

According to the conclusion of a review article comparing school bullying in Eastern and Western nations, bullying makes victims more vulnerable to emotion-related mental diseases such as anxiety and depression[15]. Moreover, individuals who experience bullying will form maladaptive coping mechanisms when they don't know how to regulate the negative emotions arising from bullying or when the intensity of the negative emotions is beyond their capacity to manage. It is extremely difficult to treat and alter these profoundly ingrained coping habits. Therefore, these patterns are likely to follow victims throughout their lives, which significantly impair their social, academic, and occupational functioning. The typical maladaptive responses to emotional distress are overcompensation, submission, and avoidance[4]. The essence of overcompensation is the overprotection of oneself and excessive catharsis. When one overprotects oneself, it shows in the following ways: Firstly, Individuals will become narcissistic to protect their self-esteem from being harmed by external evaluations, which elicits distress. They will believe they are superior to others; thus, others have no right to judge them. Secondly, Individuals will strive to achieve perfection in all aspects of their lives to avoid unfavorable outcomes, criticism, or rejection. Excessive catharsis of individuals who experienced bullying can manifest in two distinct manners: 1) cold mode of releasing negative emotion. They will calmly and ruthlessly plot how to get rid of a threat, competitor, or barrier, and they manipulate, deceive, and cajole others to achieve their own goals; and 2) hot mode of releasing negative emotion. Individuals who have experienced bullying may resort to direct verbal or physical attacks on others as a means of alleviating their distressing feelings. Using a hot mode to deal with negative emotions is the reason why many bullying victims turn into bullies.

The surrender strategy refers to the victims' yielding to the abuser. One explanation for this is that victims fear mental and physical harm if they defy their abuser's demands. Another explanation is that bullied individuals internalize the insults of the bully and believe that they are being bullied because they are defective or annoying. As a result, the victims start to despise themselves and permit others to mistreat and trample them. Avoidance strategies can be identified by two key characteristics. Firstly, individuals reduce their percep-

tion of negative emotions by excessively indulging in relaxing activities, such as engaging in sexual activities, playing games, consuming alcohol, watching films/TV series, or using drugs. Secondly, individuals actively avoid things or environments that have the potential to elicit negative emotions, such as interpersonal relationships and stressful occupations.

Game Design

Game Mechanics As Metaphor: Similarities Between Coin Pushers And East Asian Parenting

According to ludologist Sebastian Martin Möring, Cognitive Linguistic Metaphor Theory (CLMT) is the most frequently referenced framework within the domain of game studies for examining the metaphorical aspects of games. CLMT states that in order to comprehend a new thing, humans possess an innate tendency to draw comparisons between that unknown thing and a familiar thing that exhibits similar characteristics [12]. By utilizing this cognitive function of the human brain, our artistic AR game encourages players to rely on their knowledge and experience of the coin pusher to understand East Asian parents' obsession with obtaining an excellent child and the harm that this obsession can bring. The coin pusher is a prevalent type of game machine that can be found in arcade gaming halls around the globe (see Figure 2). The coin pusher consists of a transparent box filled with coins at its base, with additional things of higher value, such as currency, jewelry, toys, and cards, positioned above the coins. The only thing the player can do is to keep feeding coins into the machine. A moving metal cube pushes the newly descending coins forward, causing the foremost coins and the prize positioned on them to be squeezed out, and players can get all the things that descend.

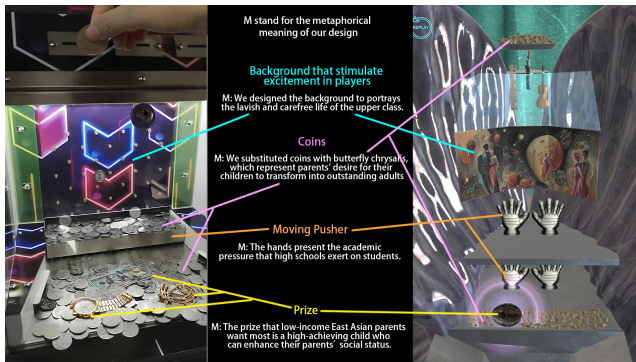


Figure 2: We modified the design of traditional coin pushers to better express our themes.

The game mechanics and principle of coin pusher underlies our AR artwork. Coin pushers started out as a gambling device. Likewise, having offspring is like a gamble for many low-income parents living in countries with huge income disparity. They expect that their investment could win them an extraordinary offspring who can advance the social and economic standing of the family. Common gambling machines are probabilistic games, such as pachinko and slot machines. These games operate on the principle of uncertain outcomes,

which means that there is a probability of winning or not winning a prize after putting in a coin; while coin pushers operate on the principle of certain outcomes. Players are assured of obtaining the desired prize as long as they put in an adequate number of coins. This means that players must keep feeding coins into the machine until it is enough to squeeze out the prize. If they give up before obtaining the prize, they will lose all the money they have already invested. The player's fixation on the desired reward intensifies as an increasing number of coins are inserted into the coin pusher. Ultimately, gratifying the desire becomes the player's highest priority; consequently, the player will make sacrifices to reach the objective—such as spending money they cannot afford. Similar to the coin pusher, many low-income parents in East Asia perceive parenthood as a gambling game with a certain outcome. They believe that by investing sufficient time and money, they will obtain the desired prize: an exceptional child. In East Asia, where exam-oriented education is valued, the standard for an excellent child is to achieve high scores in examinations, gain admission to a prestigious university, and obtain a respectable occupation. To attain this desired prize, East Asian parents must consistently invest both financial resources and time in their children. As the level of investment escalates, the parents' fixation on acquiring an exceptional child will intensify to the extent that it becomes their sole focus, and they will disregard the sacrifices that are made in the pursuit of this obsession. These sacrifices include the mental and physical health of their children, their children's affection for them, etc.

Role Playing In Games: A Way To Provoke Profound Reflection On East Asian School Bullying

Gaming, according to ludologist Ian Bogost, conveys concepts to the player in a very different way than literature and film. Literature and film utilize words and visuals to convey concepts to the audience, while games stimulate the player to think critically about a concept or a phenomenon through role-playing. During such role-playing, players need to know every detail of an event in order to make a series of decisions [2]. In contrast to the passive reception of information in literature and film, games compel players to actively engage in decision-making, which necessitates a significant investment of time and cognitive resources. The investment of time and cognitive efforts leads to the deep emotional engagement of players when they observe the results of their choices. Players' emotional engagement subsequently drives them to deeply contemplate the concepts that the game is trying to convey or the phenomenon that the game aims to criticize.

When playing the classic coin pusher, the player can endlessly insert coins into the machine, one at a time, and wait for the prizes to be squeezed out by the coins. In our AR game, The player assumes the role of a low-income parent, who constitutes a significant proportion of the East Asian population. Therefore, the player only has six coins to use, signifying limited economic resources. We modified the design of traditional coin pushers to better express our themes (See Figure 2). Every parent in East Asia desires for their child to enroll in a prestigious university. They typically have

only two options for achieving that objective. One approach involves making significant investments in the extracurricular activities of their children, which are essential when applying for top international universities that value student’s holistic development. Another approach is to push their children to study diligently to rank high in the national college entrance exam, which takes place once a year. In order to show the different ways East Asian parents can choose to invest in their children and the increased desire of the parents to get an ideal offspring after each investment, we modified the game mechanism of traditional coin pushers. The player could use the 6 coins to manipulate the movement of the violin, palette, candle, or pencil (see Figure 3A). A plate containing many butterfly chrysalises is supported by these four objects, and players can tilt the plate by raising or lowering these objects(see Figure 3B). The player’s different manipulations of the four objects determined the degree of tilting of the plate and how many of the chrysalis could fall down. We substituted coins with chrysalis, which represent parents’ desire for their children to transform into outstanding adults. The hand pushers represent the academic pressure that high schools exert on students. Both parents and schools have the same objective; hence, the chrysalis and the hand pusher work in tandem to squeeze the egg out of the machine. The game is intentionally designed to give the impression that there are two ways to win(see Figure 3B). The two approaches for winning the game represent the aforementioned two routes for East Asian students to enter prestigious universities. The first method involves either raising the violin in area 4 to its maximum height so that the plate tilts fully to the left, or elevating the palette in area 3 to the highest level so that the plate tilts fully to the right, causing all of the chrysalis on the plate to fall off. This strategy represents parents’ attempts to get their children into prominent colleges by investing extensively in extracurricular activities. The second approach is to tilt the plate entirely forward by raising the pencil in area 1 to the highest level and dropping the candle in area 2 to the lowest. This method signifies that parents spur their children to study hard to enter a top-ranked university through the national entrance exam. In regions 3 and 4, each lever movement costs two coins, whereas in regions 1 and 2, each lever movement costs only one coin. This design indicates that investing in extracurricular activities exerts more financial pressure on parents than preparing their children for the college entrance exam. If players try the first approach, they will discover that the pillars in areas 3 and 4 can only be raised halfway with only 6 coins. Thus, players are forced to use the second method to obtain the prize. This indicates the fact that low-income parents have no choice but to pressure their children to succeed in the national college entrance exam. Failure while attempting the first approach or being compelled to use another approach will cause the audience to feel frustrated, confined, and anxious. The player’s experience of these feelings will prompt them to reflect deeply on the plight of low-income families in countries with high-income inequality and the school bullying that resulted from parental pressure.

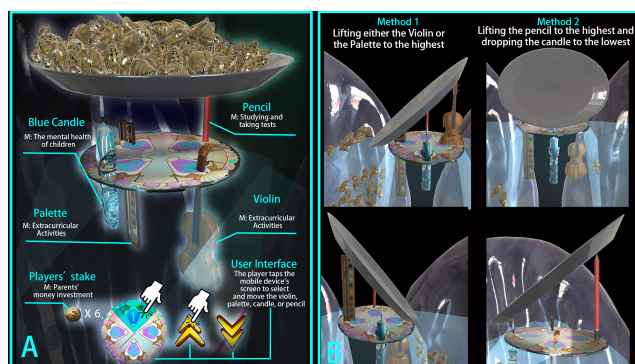


Figure 3: The game mechanism of our AR game. M stands for the metaphorical meaning of our design

Visual Design

The Metaphorical Depiction Of East Asian School Bullying’s Causes, Forms, And Consequences.

Beside the digital coin pusher is a virtual sculpture that reacts to the player’s manipulation of the four pillars. To make this virtual sculpture, we first constructed a three-tiered pyramid sculpture out of national college entrance exam papers from Japan, China, Hong Kong SAR, Taiwan, and Korea. Subsequently, cement was used to create additional elements, including clouds, spiked mountains, masks, and a ball entwined with vines(see Figure 4D). We then converted the physical sculpture into a digital model by 3D scanning it. Following this, we generate virtual animations based on that 3D scanning. Seeing familiar exam papers will trigger memories and associated emotions in the player. To maximize this emotional response, we decided to use 3D scanning to maintain the intricate details of these test papers. Additionally, In order to make players deeply feel the tenacious nature of the mental harm caused by school bullying, the actual texture of cement was retained using 3D scanning.

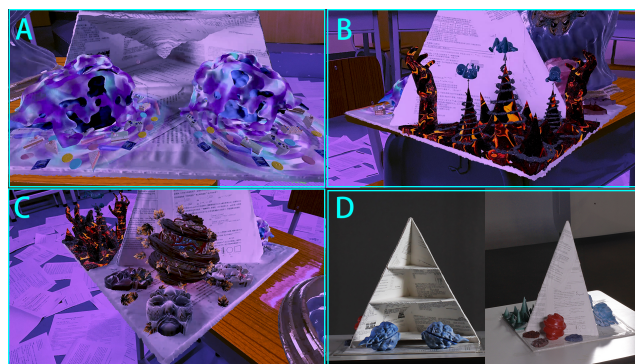


Figure 4: The physical sculpture. Please refer to the trailer video for more details

The pencil inside Region 1 is a metaphor for studying, taking regular tests, and the national college entrance exam. When the player first elevates the pencil, it signifies that low-income East Asian parents compel their students to study diligently to succeed in the national college entrance exam, and exert pressure on junior and senior high schools

by primarily considering the school's promotion rate into top senior high schools or universities when selecting a school for their children. To maximize such a promotion rate, junior and senior high schools divide students into high and low-grade classes. After the player raises the pencil for the first time, the virtual sculpture will change to demonstrate the hierarchy in school caused by the school's student classification strategy and how the stress resulting from such a strategy consumes the self-control of educators and students (see Figure 5A). Bubbles appear one by one above the virtual sculpture, and each bubble carries an audio. These audios consisted of actors reading the negative thoughts of teachers and students regarding the student categorization strategies of East Asian schools. These visceral thoughts are found in online forums or interviews conducted for academic publications. A hand hanging next to these bubbles will eliminate the bubbles after the sound in the bubbles has finished playing (see Figure 5D). The hand represents the self-control of teachers and students to regulate their negative thoughts and emotions. The educator is at the apex of the virtual sculpture, followed by the high achievers in the center and the low performers at the bottom.

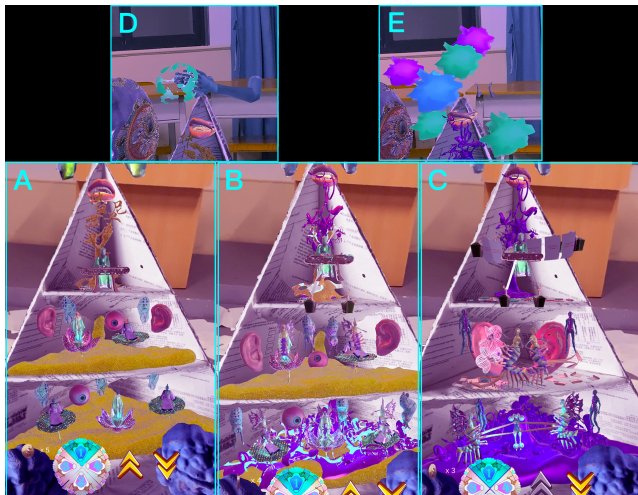


Figure 5: The animation scenes that show how parental pressure depletes educators' and students' self-control. Please refer to the trailer video for more details

Additionally, these animations also metaphorically represent that Confucianism and school hierarchy are contributing factors to school bullying in East Asia. In order to emphasize that Confucianism is a product of the feudal society, the animation characters all wear traditional Chinese costumes. Under the influence of Confucianism, East Asian students are extremely submissive and deferential to their teachers. The shimmering golden words and the floating mouth in this virtual sculpture symbolize that East Asian students see their teacher's words as God's will. The words turn into liquid and form a pond, and the lotus sprites, representing the students, feed on this liquid. This design suggests that East Asian students are trained to readily accept the teacher's instructions without exhibiting skepticism or criticism, akin to the natural and routine processes of respiration and feeding. Hence, East Asian students are highly susceptible to teacher maltreatment.

The act of players lifting the pencil in Area 1 for a second time symbolized that parents' heightened anxiety and desire regarding their children's academic achievement compel their children to study more diligently and urge high schools to evaluate teachers' performance more strictly. Upon the player's second elevation of the pencil, a series of new voice bubbles arose sequentially, including teachers complaining about the pressure of assessments and students describing the temptations that drive them to engage in bullying behavior. Self-control is a finite resource. As the hand continued to consume these bubbles, it shrank, and its capacity to eliminate negative thoughts diminished. The characters and environments within the virtual sculpture swiftly transition between two states, symbolizing the internal conflict experienced by both educators and students as they grapple with the urge to vent out their negative emotions on others (see Figure 5B). Two rulers were holding up a teacher who was grading papers; he appeared to be on the verge of falling. At most East Asian high schools, the primary criterion for evaluating a teacher's instructional proficiency is the number of students under their tutelage who have successfully gained admission to prestigious universities. The ruler symbolizes the school's evaluation of teachers, and the scale on the ruler represents the number of qualified students. The words coming out of the mouth alternate between their original form and their metamorphosis into poisonous insects, alluding to the occasional bullying that educators inflict on their students. The chrysalis becoming butterfly demon represents that the parent's frantic expectation, along with the stressful exam-oriented education, may force the birth of butterflies (excellent people by society's standards), but these pressures will also transform these butterflies into demons that deliberately or uncontrollably hurt others to compensate for their suffering.

The action of the player raising the pencil for the third time can be seen as an allusion that parents are increasing the pressure on schools and students in response to their escalating levels of status anxiety. The hand symbolizing self-control ceases to function, signifying that educators' and students' self-control was entirely depleted due to the overwhelming pressure (see Figure 5E). Both student and educator-initiated bullying are growing in prevalence. New voice bubbles appear, each containing a person's actual story of being bullied by teachers, members of the class committee, or classmates. The newly emerged animation in the virtual sculpture is created based on these experiences (see Figure 5C).

The animated scene in the middle of Figure 5C depicts an actual incident in which a class monitor solicits bribes from his classmates. Students who bribe the class monitor will have their schoolwork verified as submitted, even if they haven't finished it. Conversely, if students decline to bribe him, even if they submit the homework, the class monitor will destroy their assignments and then inform the teacher that these individuals failed to turn in their homework.

The animation scene shown in Figure 1C was derived from an actual bullying event that occurred inside a senior high school located in Beijing, China [14]. A male student, aged 16, was bullied by his roommates due to his sexual orientation. This incident of bullying was portrayed in a surreal and

metaphorical way. We welded the body of a mountain sheep and jade together using iron plates to represent the student being bullied. The jade symbolizes minors' psychological and physical vulnerability. The mountain sheep serves as a symbolic representation of the roommate's derogatory remarks towards the victim's sexual orientation, drawing a parallel to the behavior of mountain sheep who engage in same-sex mating. The victim being restrained by breasts alludes to the roommate forcing the victim to watch heterosexual pornography. The monster's relentless caressing of the victim's thighs and breasts implies the four perpetrators' persistent sexual harassment. The venom expelled from the educator's mouth constitutes the platform that binds the victim, alluding to the teacher's indirect bullying, who only punished the perpetrators for writing self-criticism and persuaded the victim to forgive the perpetrators and to transfer to other schools.

The player's action of lowering the candle in region 2 indicates that the parents continue to exert pressure on the child to achieve academic success, to the extent that it harms the mental health of their offspring. When the players descend the candle for the first time, animations will appear on the virtual sculpture to show how individuals who have developed the coping mechanism of avoidance deal with their negative emotions (see Figure 4A). The 3D scans of the physical sculptures of clouds, animations of melting humans, and objects on the ground are all designed to show the victims' deep indulgence in relaxing activities. In addition, these visual designs aim to convey the bullying victim's inclination for escapism and their exciting and psychedelic mental state when engaging in these activities. Upon the player's second descent of the candle, new animations show up to depict overcompensation, another coping mechanism that victims of bullying are likely to adopt (see Figure 4B). These animations reveal that individuals who have experienced bullying are highly likely to seek a sense of superiority and release their rage through the manipulation and harm of their closest relationships (e.g., partners, parents, children, or pets).

Following the third lowering of the candle by the player, more animations manifest on the virtual sculpture, illustrating the avoidance strategy often used by victims of bullying (see Figure 4C). An individual isolates herself in a ball, and the strands that grow from her impede the free-spinning gears from functioning. This visual design aims to show how bullying victims' life is brought to a halt by their self-doubts and fear of human interactions. The leaf-like masks, which symbolize the individual's different emotions, are detached from the tree's trunk, implying that victims of bullying suppress their feelings and stay away from circumstances that may elicit emotions in them. The withered and falling maple leaves represent the lifelessness and loneliness that victims of bullying feel due to their avoidance of social interactions and detachment from their emotions.

Augmented Reality Storytelling

Conveying the Victims' Inner Feelings Through Both The Virtual And Tangible Component

According to Azuma, Augmented Reality (AR) storytelling can be categorized into three types, namely reinforcing, re-

skinning, and remembering[1]. The essence of AR storytelling is to combine something virtual/intangible (e.g., CG animation, videos) with something physical/tangible (e.g., a place, object, person) to form a new experience. Who plays the dominant role in the new experience, the virtual content or the actual content, determines what type of AR narrative it is. The main character in Reinforcing is the actual components, while the virtual elements only serve to reinforce the appeal of the actual elements. For example, no matter where players are in the city of Manhattan, an AR application called 110 Stories will access the camera of the player's cellphone, find where the Twin Towers once stood, and draw the outline of it. The virtual content of this AR piece is simply two rectangular lines. As a supporting role, this virtual content does not have much meaning on its own. However, when juxtaposed with the city of Manhattan, the leading character, the virtual components highlight the disappearance of the Twin Towers, an iconic and historic building that used to give directions to many Manhattan residents.

On the contrary, virtual content plays the leading role in Reskinning and Remembering, imbuing the AR work with soul and meanings. The physical elements only serve to facilitate the demonstration of the virtual content. The distinction between the two is that Remembering's virtual element is based on the non-fiction memories of people, while Reskinning's virtual component is based on fictitious narratives. The method of remembering underlies our AR artwork. The essence of our artwork is the virtual content created based on the memories and thoughts of East Asians who have been bullied in school, and this virtual content is placed in an actual high school classroom in China. The classroom is only a supporting role to enhance the players' emotional involvement and immersion in the virtual content.

Azuma states that Remembering has a unique and intriguing feature: one physical object can serve to represent the memories of multiple individuals. People who experienced the same event, stayed at the same location, or encountered the same person will have distinct recollections of the event, place, or person due to their varied political/religious/class stands, beliefs, biases, upbringings, and motives. This phenomenon is named the Rashomon Effect. In an AR artwork titled Three Angry Men, the virtual content involves three jurors discussing a case, and the actual component is a conference room. Each of the three virtual jurors sits in a real chair, and when the player sits in one of the chairs, he/she can observe the other two jurors from the perspective of the virtual juror sitting in the same chair and hear the juror's inner thoughts. Juror A harbors prejudice against African-American Juror B, while Juror C perceives Juror B as a potential ally. Thus, Juror B appears and behaves differently in the eyes of Jurors A and C. Players will see these differences while taking the positions of Jurors A and C[1]. Three Angry Men depicts the Rashomon effect by manipulating the virtual content, which is the alteration of Juror B's behavior and appearance. Our AR artwork presents a method of showing one's subjective perception and memories about an event/place through both the virtual content and the actual component.

The first author's experiences of being educated and bul-

lied at a Chinese high school inspired the creation team to investigate the phenomenon of school bullying across East Asia. By drawing upon a compilation of sources, including the first author's personal experiences, reported bullying incidents, and a comprehensive analysis of relevant publications, we developed an AR artwork that offers a victim's perspective on the subject of school bullying in East Asia. The virtual part of this AR work consists of a modified coin pusher and a sculpture that transforms in response to players' input. The metaphorical connotations of our coin pusher's game mechanics, as specified in the previous section, reflect numerous East Asians' perceptions regarding their educational and abuse experiences in schools. They feel that East Asian parents are obsessed with creating an idealized offspring, hence exerting significant pressure on both their children and educational institutions to meet their expectations. The influence exerted by parents catalyzes bullying in schools.

The physical part of our AR work is a classroom in a Chinese high school (see Figure 1B). We also arranged this classroom to represent the subject perception of many East Asians, including the first author, regarding their education and abuse encounters in schools. They view their schooling before college as being confined in a cave, and they view the college entrance exam as the only way of escaping. Every day, they mechanically prepared for exams, took exams, reviewed for exams, and took new exams. They look forward to the day when they can leave this cave and truly begin their free and colorful life. To convey the students' feeling of being trapped and their hope for escaping, we blocked out the view from the classroom's window and left only a dim light above the classroom. The test papers that keep falling from above imply that the college entrance exam is the only way to escape. The dimly lit environment and the red color of the sole light signify the trapped student's feelings of anxiety, scare, and suffocation. A solitary table is positioned in the middle of a collection of examination papers and encircled by a cluster of other tables. The configuration aims to express the first author's perception of the other students at school. She developed a profound sense of competition due to the continuous examinations and transparent rankings. She, therefore, views all those in her vicinity as potential adversaries who could occupy the quota at her dream university. Additionally, the experience of being bullied made the first author fear and avoid human interaction.

Conclusion

The class anxiety triggered by the country's vast wealth disparity has led many East Asian parents to view having a child as a gamble to change their class status. Like coin pushers, parents regard having offspring as a gamble with a certain outcome; they believe that by investing sufficient time and money, they will obtain the desired reward: an exceptional child. We designed a digital coin pusher based on this concept, and we limited the player's stake to allow players to experience emotions often encountered by East Asian parents, including helplessness, anxiety, and fixation on obtaining the prize. To strengthen the player's emotional engagement with the artwork and to trigger deeper reflection on the school bullying, we used a high school classroom in China as the phys-

ical part of our AR work.

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