Violence and immersion: defining terms

"Violence," in the scope of this project, is defined as bringing harm to an entity in order to disable, destroy or kill said entity. This definition of "violence" can easily be confused with generalized aggression. "Aggression," in the scope of this project, covers adversarial conflict but does not necessarily involve violence. As an example, contact sports, such as football or hockey, involves competition where victory goes to the team who works the hardest, or swiftest, or smartest. "Aggression" in this regard simply implies trying to outdo, overwhelm, or defeat another entity or group, usually with a connotation of physical brutality. Aggression can be considered violent when applied to military actions, an assault, or sports such as mixed martial arts or boxing. However, with careful consideration, aggression does not always imply violence. The project looks at violence as an active challenge to an entity's safety, typically suggesting lethality. Lethality is not always definitive, as actions could be implored to disable but not necessarily to kill. The lack of security draws the distinction between violence and other aggressive actions, and the risk of death or being injured or resolving conflict that cannot be solved rationally plays into why violence entertains gamers.

Immersion makes a player feel like they are "in the game." Gamers describe a game as immersive when the real world around them fades away and they feel fully connected to the game world. It is this sensation, immersion, that makes a player better believe in the game world, distracts the player from the reality of the glowing screen in front of them, just as a good book distracts the reader from the printed words on paper. In the most modern western games, the game puts the player in the body of the player-controlled character and includes several modeled features to dissolve the connection between the player and the game, such as putting the game camera exactly where the character's eyes would be, so that the camera bobs and moves subtly just as one's gaze does when walking, or seeing the sites of a gun to increase accuracy as a marksman would to to better aim their weapon.

To make the translation from real space to game space more believable, especially when regarding games from a first-person perspective, games typically strive for realism and presence. For the scope of this project, it is imperative to distinguish presence from realism. Realism affects believability, and hence the distraction or escapist value of the game. Therefore presence can be enhanced with realistic elements, but presence does not mean just a simulation or copy of the real world. Presence is the feeling one gets when watching a live play, the quality of experience where the subjects or the fabricated world can be touched and felt as if they were really there (Drew). Extending beyond this example into the realm of gaming, presence can arise from simply the narrative if the player interaction and attention to detail is done well enough, but what the player actually sees in the screen does not have appear realistic. "Realism" can mean two things: an accurate depiction of the real world, or a believable sense of reality. Does the game try to mimic the real world, such as the historic accuracy of the *Total War* franchise, or instead does it make something completely new can convince you it's real, such as the abstract imagery found in *The Polynomial*? The former satisfies desires to reenact past events or take part in exciting activities that would be too dangerous or require extraneous skills to accomplish in

real life, whereas the latter evokes fantasy or escape from the real world entirely in a way that the mind thinks it is present in that new realm. The latter meaning of realism can certainly aid a sense of presence in a game, but the two are not mutually inclusive.

Immersion in a game implies embodiment, which can come from the sense of presence in the game world; it also emphasizes agency in a game, The player *is* the player character. In terms of a violent game, immersion emphasizes agency in violent action, and the player *is* a violent agent. For this project, I aim to see how much the player wants to believe that they are, in fact, a violent agent. How much can a player be immersed in a violent reality? For how long?

The first-person shooter

The project focuses on the first-person shooter genre because of its characteristics conducive to immersion, its prevalence in gaming culture, and its direct analog of virtual reality. The first-person shooter, ever since its early incarnations in the mid 1990s, is defined by the point-of-view of the camera, which lies at the general location of the player character's eyes. The exact location of the camera varies, but typically, with military shooters such as *Call of Duty* or fantasy role playing games like *The Elder Scrolls,* the camera can clearly see character's hand-held weapons. The character's body model connects the player to a three-dimensional virtual world, as the player has the ability to walk in any direction and realistically comes into contact with physical obstructions. The weapons in the FPS allow the player to "connect" with the world further via projectiles propelled from a gun and hitting game objects. The connection feels real to the player because of the disconnect between the player in the real world and the game object the projectile hits. Just as a marksman fires a rifle to hit a target, the marksman does not hit the target himself but via a propelled, separate projectile. Modern gamepads have motors that provide haptic vibration to replicate the sensation of holding a gun while it fires, further increasing the believability of the action. Because of the combination of the haptic sensations and the fact that the player character does not (normally) physically touch targets to "hit" them, first-person shooters can easily create a believable interface between the real and virtual world.

Not unique to the first-person shooter but certainly an important characteristic, the player exhibits a considerable level of agency in the virtual world. The player is responsible for the life of the player character and possibly allies, and capable at inflicting damage to people, structures, terrain, and objects. The player's role in the life and death of virtual entities causes much of the controversy surrounding the genre while also affecting the player's sense of immersion.

Most studies of first-person shooters typically focus on how these games will eventually destroy the fabric of civilization or raise a generation of merciless killers. The violence in these games may or may not actually be problematic, as studies have disproven links to violent video games and abusive behavior (Markey, Markey, & French), but the fear generated from this implied causality has a lasting impact on the perception of violent games, and not so much violent movies and other literature. Violence has been prominent in entertainment for centuries, and has been more acceptable than other touchy subjects like sex and vulgarity. Therefore it's not the violent subjects in these games that critics fear, but the agency the player possesses in the violent activities. Alexander R. Galloway identifies player action as the central medium of the video game:

If photographs are images, and films are moving images, then video games are actions. Let this be word one for video game theory. Without action, games remain only in the pages of an abstract rule book. Without the active participation of players and machines, video games exist only as static computer code. (Galloway, 1)

Because a game comes from the player's interaction with the digital content and not the content itself, a violent game therefore instructs and guides a player to become an aggressive agent. The characteristics of the first-person shooter serve to heighten this agency.

The first-person shooter genre prevails in Western culture. In 2015, shooter games made 21.7% of the gaming market share, trailing behind action games by only 7%, and beating all other genres by large margins (McCarthy). The genre has had a lasting impact on the reception of video games as a medium ever since *Doom* in 1996. The interface of the first-person shooter serves as the best analog for the future of virtual reality games. Acknowledging the several modern exceptions of first-person games that lack any form of violence, such as *Firewatch* or *Gone Home,* the genre shows what kinds of game mechanics that could easily be accomplished through current VR implementations, such as the projectile-disconnect explained previously. Because of its significant placement in gaming culture, the characteristics of the FPS have dictated development of video games, and continues to affect their development especially in the realm of VR, as seen by early prototypes of immersive game technology.[12] Most importantly, VR is "first person," both in terms of perspective and agency. The participant does not control a separate character, they are the character. Of course, the perspective is not exclusive to shooters, as several puzzle games take place in the first-person perspective. What the FPS provides, however, is a unique continuous connection between the participant and the virtual world through navigating the space and by connecting projectiles to targets. This facilitates a mutual reinforcement of immersion and identification with the player character (Call, Whitlock, & Voorhees, 34).

History of violent culture: east and west

Games invoke fantasy, and fantasy is often dictated by film, theater, and objective forms of visual art. Film and literature have had a huge impact on taste making and reinforcing cultural trends. When asking someone "why they play an FPS," a reply such as "because they're awesome" is not an acceptable answer: there must be something else. This something else is cultural influence provided books or movies, which capture the context of given moments in time of the society in which the work was created.

The FPS genre started in America around 1996 with the release of *Doom.* It wasn't the first FPS title, but it certainly started a trend. The years following were filled with releases of "Doom clones." But to know why the US made the FPS before anyone else, let's look at the history and culture of the country: the country has deep-seeded relationship with firearms. The liberty of the original colonies was one at the end of a musket, held in the hands of the armed public. The gun made the average citizen a hero, at least, that's the romanticized interpretation of it. This is the kind of image protected by the Second Amendment, that at any moment, the

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[1] http://www.virtuix.com/

[2] http://www.priovr.com/

everyman can take up arms against a threat to his liberty. This romanticized ideal of gun violence continued as the country widened its frontiers into the west, where having a pistol or rifle was critical for the survival of family and livestock (Brumberg).

Enlightenment brought with it a new sense of individuality, as respect for the person soon outgrew the respect for the group. It became the responsibility for the American man to be more self-sufficient, to defend himself when he or his cause were threatened. The industrial revolution came into conflict with this respect for individuality, where the factory machine diminished the worth of a single person. At this time, when the individual, one of the core values of American liberty, had lost value, the gun was seen as a tool to aid in self-sufficiency and self defense, and turn the everyman, once again, into the hero (Emberton).

The image of the hero with a gun was solidified after action in two world wars, in each of which the American public declared the United States the victor, which influenced post-WWII Americans to see themselves the world's police force, the most powerful military in the world. This only encouraged the proliferation of pro-gun and pro-war culture. Post-war America saw another shift in the roles of men. As the middle class grew, so did the amount of men taking desk jobs. The growing white-collar worker force began to feel in less control over their destiny, more dependent on the group in both professional and home life, in all regards emasculating modern men (Pitzulo, 3). Gender politics aside, the anxiety permeating throughout society would create fertile ground for an aspiring film industry to take root and flourish, full of virtual worlds for people to escape their mundane lives.

The Western film genre reinforced the romantic tradition of the cowboy, the drifter, the gunslinger. About men who had to protect their land and their ideals with bad guys with guns, and had to secure their own meals. WWII movies maintained ideals of war heroics and the courage and risk the individual goes through in combat. In this new era of film we see an emergence of escapism, to leave the mundane world behind for a moment to witness heroics of your Humphrey Bogarts and John Waynes, excitement, drama not available in real life.

Later in the 1950s we see a fascination with destruction, with further destruction thwarted by, once again, the heroics of a man with a gun. Giant robots from outer space or Soviet experiments gone wrong were thinly-veiled metaphors for the country's paranoia and anxiety surrounding nuclear weapons and Communist infiltration (Barr, 19). Disasters were the outcomes of evil doers, and in the end a hero with a gun apprehends the evil robot or mutant creature, just as peace and security in real-life are maintained by a superior military force

Video games introduced decision making and skill into media consumption, which restored some sense of control to individual lives. Later, in the game *Myst,* first person perspective made the player the character, and the character's actions are the player's actions, immersing the player into a virtual world or puzzles and decision making. Once a gun was added to the immersive perspective, the FPS genre was ripe to take off. The gun restored control to the player's life: now instead of watching someone else escape reality and live vicariously through a character in a film, a video game player could be the one to literally call the shots. Multiplayer satisfied the individual need to be better than other individuals inherent in aggressive competition. The virtual violence in these competitive environments evoked the ideals of self

defense against others, proving to the oneself that you are more capable than others of keeping themselves alive. In all games, players make decisions, a type of control, but in an FPS, the decisions must be made quickly and frequently in tests of control. Soon as graphical capabilities improved, American FPS games pushed the boundaries of realistic graphics, to make violent games as real and as gritty as possible.

The ancient warrior society of Japan focused on strengthening the body and, most importantly. Strong village and community dynamic maintained the group of greater importance than the individual, with the exception of leadership. Simply, Japan is a much older country than America, and predates the gun. America's upbringing and identity tied so closely to the gun whereas in Japan the gun is less important. Instead, focus is on the sword. As an analog to the gun, the sword is less of a tool but actually an extension of the self. It is not a disposable weapon like a gun, but an instrument to transmit skill and personal energy (Extra Credits).

Ancient forms of theater and inventions aimed to perfectly mimic nature, to harmonize and pay homage to nature, not to dominate it. But in the nineteenth century, Western powers began imperialist engagements with Asian entities. American vessels used force to open up trade with Japan and, as a result, Japan underwent massive changes in its military and economy to prevent Western domination. By forming a strong, modern military and a rich economy, they soon had the capability to force colonies on neighboring countries, ironically becoming imperialist themselves (Barr, 36).

World War II left Japan devastated. The US was much more technologically advanced, and Japan lost the war because of it. Massive destruction due to a combination of harmful intent and advanced technology affected Japanese culture for the rest of 20th century. Civilian scientists and engineers seek to always be technologically advanced, but a nation-wide belief in pacifism has prevented any kind of strong military research, and they were one of the first countries to advocate nuclear non-proliferation (Denison, 12).

Popular Japanese game genres include the classic puzzle platformers, like the *Super Mario* and *Legend of Zelda* franchises, 2D fighting games, role playing games in a unique visual and mechanical style (commonly referred to as JRPG), and the dubious interactive story games. The games align with several of the ideals that revealed themselves during cultural and historical research, such as putting the focus of the game on the story of another and not putting the player in the story, hence why the first-person perspective is generally not as popular as it is in the US. The games, especially action-oriented ones, also do not focus on making realistic depictions of reality; instead, the game renderings, while they may be beautifully detailed, make fantastically stylized renderings of characters and environments with over-the-top visuals. (Extra Credits). The immersion comes not from the perspective or the visuals, but from the storytelling, character development, and world-building. This kind of immersion is difficult to pull off effectively in a first-person perspective, because in order to do so, the story must dictate the intended life of the player, who assumes the role of the character internally instead of externally as an observer. Rarely is the player character the player in Japanese games. The player instead controls an avatar that is not supposed to be the player. The player is the puppet master instead of the puppet itself.

The tools and weapons used by characters in Japanese games also align with this theme of having tools not as disposable objects meant to turn average people into heroes, as seen in American examples, but again as an extension of the self. The character and the weapon are one, and often each define each other. Some would argue that American FPS game follows this, when a character is "the sniper," hence the character becomes defined by his tool, and he is one with the tool. But when the player is the character, the player is expected to pick up and use several guns, casting aside old guns when they run out of ammo or when a better one becomes available. In Japanese games, the artifact of the tool is the same and has its own maximized potential, as governed by science or lore. The effectiveness of the tool comes from the synergy it shares with its user and the user's training and power (Extra Credits).

Classifying violence

In all entertainment media, violent content will fall under two categories: romanticized and deglamorized. Each implement violence to accomplish two different agendas. "Deglamorized violence" aims to address the more serious aspects of violence, and capitalizes on themes of mortality, the weight of loss of life, justice, and the lack of duality between good and evil. When a work wants to address the real implications of violence in the world, deglamorization occurs. "Romanticized violence" serves as a foil, and aims to address the fun aspects of violence, such as putting down evil people who are only evil for the sake of being evil, or being able to survive by one's wits and one's gun. In order to accomplish deglamorization correctly, much more thought must go into the narrative and drama. The violence is not to create entertainment, it's there to create a message and set the tone of the piece. In effect, works with deglamorization typically show much more graphic gore and mature themes meant for adults. Here you find *Saving Private Ryan* or *The Godfather.* In romanticization, the violence *is* the entertainment. This form of violence shows more popularity in film and games, and often intended for even children. This is the realm of comic book heroes and PG-13 blockbusters.

The propagation of violent media illustrates its prevalence in popular culture. In the realm of violent video games, the violence typically exists as the central aspect of the game's mechanics, certainly with first-person shooters. Games exhibit both categories: *Team Fortress 2* capitalizes on the fun aspects of violence as seen in 1970s spy movies, while *Medal of Honor* evokes the somber tones of World War II films. However, both somehow have the ability to generate entertainment value from making the player an active participant in violent acts.

Psychological studies have indicated three primary human needs that motivate us in our daily lives. These three needs are autonomy, belonging, and competence. These three needs also provide the reasoning behind how people find violent games enjoyable. People desire to have the ability to make choices in their lives. People also want the satisfaction of making correct decisions. Autonomy revolves around the concept of decision making, but also include having control over decisions. Belonging, or relatedness, concerns the desire to be a part of something bigger than the self, whether that involves working with a small group to accomplish something or feeling accepted by a large community. Belonging can also correspond to providing meaningful contributions to a group of people, to feel useful. Usefulness ties into competence,

which encapsulates the desire to have and use knowledge. People also want to demonstrate their knowledge to others, and sometimes the amount one knows becomes competitive.

Violent content in video games serves to bolster the satisfaction of these three basic motivations. Especially true to first-person shooters, the player must make thousands of choices every second. Stephen Totilo, editor of Kotaku, explains the effect of the frequency of choices in a first-person game:

> *Any good game is a series of decisions. They're not necessarily always decisions that you enjoy intellectualizing or thinking about in terms of their context, but they're interesting. What can I do next? What will I do next? What will I choose not to do next? And the shooter games wind up presenting some of the most interesting, in-the-moment decisions available when you're playing games. Simple things that you wouldn't really want to have to worry about in real life, but should I run here or should I hide? Should I shoot? Should I shoot here? Should I shoot there? Constant decision making is what these games are all about (Totilo).*

The tremendous frequency of decisions made in this context increases the amount of satisfaction experienced when these choices successfully keep the player character alive. The life and death scenario of these games enhances the satisfaction obtained from decision making because of the sense of meaning derived from the depicted situation, whether it be a realistic military war zone or futuristic starship. Even though the depicted situation is simply a recreation on a digital screen, the immersion of the game makes the player feel like it's actually happening.

In a similar fashion, the life and death scenario increases the effectiveness of a game's ability to satisfy belonging and competence. By aiding to keep teammates "alive" in a dangerous situation, a player can feel they made significant, meaningful contributions to a combined group effort. Staying alive in such a game also demonstrates one's competence in a game, but because of the sense of reality crafted by the game, the competence can be regarded to have translated to real-life application,

Most modern first-person shooters have competitive multiplayer as a critical component. The multiplayer adds another layer to the entertainment value of these violent games due to the observations by other players on the activities of a player in a game. Playing and communicating with other real people to accomplish objectives further satisfies the need for belonging and in a way that includes more authenticity than with computer-controlled allies (Rigby & Ryan, 71). In a competitive context, "killing" an opponent proves a player's competence in the game exceeds that of the "slain" opponent. Because one player is depicted as dead while the other is alive, the imagery and context provoke satisfaction of the most carnal achievement, survival.

Despite the theoretical effectiveness of violent context in games to enhance the satisfaction of the basic motivations, personal taste affects how much one is willing to subject themselves to violent media. Regardless of taste, people experience a rush of adrenaline when playing violent games, which is the same reaction when exposed to real-life risky situations. According to developmental psychologist Douglas Gentile,

These gamers do have an adrenaline rush, and it's noradrenaline and it's testosterone, and it's cortisol — these are the so-called stress hormones ... that's exactly the same cocktail of hormones you drop into your bloodstream if I punched you ... But when you know you're safe, having that really heightened sense of stress can be fun (Yenigun).

When in danger, humans, like other animals, kick into fight-or-flight mode to ensure they live another day, either by getting as far away as possible from a threat or by becoming a threat to their threat. Humans are naturally wired to have this response, and when the response is triggered in a secure environment, like when playing a video game, it can arouse a sense of enjoyment. As an activity approaches a point where security loses absolute certainty, as experienced in haunted houses, roller coasters, or paintball, the fight-or-flight response continues to increase in magnitude but fear for security will eventually take over for most people (Tajerian). With a haunted house, a person can have direct physical contact with their biggest irrational fears; with roller coasters, there's an awareness that some people have died from similar rides; with paintball, real pain occurs when hit by an opponent. As brought up by Gentile, people get pleasure from the chemicals that result from getting punched in the face, but the actual pain resulting from getting punched in the face can offset that pleasure. The same occurs with violent games and a player's sense of morality.

Some individuals I interviewed expressed how they felt morally opposed to violent content in video games, especially when the violence involved committing controversial acts, like crime in *Grand Theft Auto* games or shooting civilians in *Call of Duty: Modern Warfare.* Some simply felt that because killing in real life was wrong, killing in a videogame was wrong as well. Players are aware that the game world is not real, yet when given the opportunity to kill in a completely virtual world, despite not actually killing, they still feel morally opposed to killing, because the immersion and agency allotted to them makes it feel real.

In the opposite regard, some people absolutely want to kill in a virtual world because it feels real to them but without the emotional baggage of actual killing in the real world. For these individuals, violence plays a critical role in their gameplay, and often defines the key aspects of those games. To tie back to the idea of life-and-death significance present in violent games, depiction of dangerous situations in a game validates some gamers' sense of fulfillment in a game. As an example, the "mature" content of these games dissolved some notions that video games were only for children, and made escapism (or even "make believe") an acceptable activity for working, peaceful adults. These games made adults bored with their lives feel like they were "actually doing something," despite simply looking at a glowing screen with a gamepad in their hands. Violence validated their make-believe play, despite being morally opposed to violence in real life.

Reception of violent content in games varies for different people and depends on the background and held preconceived notions of the medium, which makes investigation of this topic rather tricky. A common aspect of concern is the graphic nature of violent content which challenges the sensibilities of some people and produces discomfort, whereas some people find this discomfort pleasurable or entertaining. The amount and intensity of graphic content often coincides with believability of action, which ties into immersion. If a game "pulls punches" by reducing the amount of gore produced by a particularly brutal attack, some may find the game

immature or lacking. As an adjacent aspect, the context of the violence also affects one's enjoyment of the game. Does the violence take place in a romanticized battle between good and evil, or does it involve running over pedestrians with an automobile?

To better organize characteristics of violent video games, I constructed a violence spectrum. The spectrum optimizes gauging interest in violent games and categorizes different aspects of different types of violence. Currently I have five levels: no violence, comical violence, fantasy violence, realistic violence, and hyper violence. The framework is based on research and consultation with several game designers and self-identified gamers. I hope to create additional intermediate levels with further research to make the project more interesting.

Violence Level	Examples	Characteristics
1. No	*Little Big Planet, Tetris, Fez, Viva Pinata, Gone Home, Firewatch*	Imagery ecompasses abstraction, stylization, and realism. If any aggression occurs between entities, it's either through dialog or humorous contact with no physical harm inflicted.
2. Comical	*Mario Franchise, Super Smash Bros., Pokemon, Super Meat Boy, Binding of Isaac*	Stylized or cartoon imagery. Physical harm comes to other entities, but in comical fashion and rarely results in death.
3. Fantasy	*DOTA, League of LEgends, Final Fantasy, Kingdom Hearts, World of Warcraft*	Imagery approaches realm of realism yet emphasizes fantastic aspects. Art focuses on depicting impossible visual phenomenon. Physical harm and death occur often but through unrealistic circumstances and with minimal gore.
4. Realistic	*Battlefield, Call of Duty, Medal of Honor, Grand Theft Auto, Total War*	Audio, art, and animations mimic real-life as much as budget allows. Death is primary method of neutralizing entities. Camera typically in first-person perspective. Physical harm represented with anatomical correctness and gore certainly occurs. However, the gore occurs in a controlled fashion.
5. Hyper	*Gears of War, God of War, Dawn of War, Mortal Kombat, Dead Space, Doom, Far Cry*	Primary focus of art direction is to emphasize aggression. Gore, while sometimes anatomically correct, is abundant, and violent actions aim to generate as much gore as possible. Imagery drifts back to

		stylized realm but typically stays within boundaries of realism.

Prototypes

For my first prototype, I created a simple game to demonstrate my idea of "different look, same game" to identify how violent content affects gameplay and player's feelings towards a game. The game I constructed was a simple 2D sprite game akin to Atari game, *Outlaw,* where two opponents face off and shoot at each other, able to hide behind cover and move vertically up and down the screen to dodge incoming projectiles. For my game, I let the player control what the game looked like. With a button press, the character models, the bullet sprites, the cover, the background, and the music would change. I made the game before I developed the above framework, so I did not put as much thought into the forms in the game as in the framework. The game had three forms. In the first, simple squares represent everything as gentle music plays. In the second, the player avatars are replaced by cartoon-stylized lizard monsters that shoot fireballs at each other, the cover turned into city buildings, and the music changes into the Godzilla theme song. In the final form, the avatars become human future-soldiers with large guns that shoot projectiles resembling a tracer round, and the quirky Godzilla music changes to aggressive heavy metal music.

People play games, just as most activities, to satisfy the three fundamental needs. If the game's mechanics satisfy one or more of these needs, autonomy, belonging, or competence, then the art direction should be irrelevant, but it is not. People will prefer and gravitate towards one of the forms based on personal taste. The game in the aspect prototype exhibits the same mechanic of a simple shooting game, but users commented how the change in aesthetics felt like entirely different games, suggesting the amount of influence graphic content can have over a game's reception. This also illustrates how concerns generated by violent games emanate from the graphic content, context, and implied identity of the subjects and not from how the games are played, despite the essence of the game coming from the actions of the player, not the visuals and audio.

However, I will admit the prototype did a poor job of going deeper on this insight, as the underdeveloped game, with it's faulty controls and lackluster gameplay, distracted the players too much to obtain any useful information from their play.

My final product will be a matured evolution of this aspect, ensuring the quality of the game does not take away from the intended investigation. I developed a system prototype to illustrate, in detail, what the game will accomplish. The game will be a VR FPS game focused on full-body immersion that allows the player to change the form of violence, like in the aspect prototype before it. Each "form" will encapsulate one of the categories along the violence

spectrum I explained earlier. The amount of time spent and the player's performance in each form is tracked.

I wanted to see if I could find useful information in tracking the objective physical responses of the player. Numerous studies have shown how games indicate psychological arousal through heart rate (Barlett, Harris, & Baldassaro) and skin conductivity, standardly referred to as electrodermal activity, or EDA (Poels). From these residual effects researchers can extract a player's feelings in game, such as fear, excitement, or frustration (Cicchirillo & Stewart, 383). The game would track the player's kill-to-death ratio as another metric into player performance, to see if the player would get a different average game score with the introduction of different levels of violence. The game would track subjective information, such as violence spectrum preference, through tracking the time spent in particular forms. This information would potentially coincide with the questionnaires conducted at the beginning and end of the study -- if someone expressed feelings that violence is critical to the games they play and have no problem with excessive gore, then they would in theory spend the most time in the most violent form of the game. However, there preference in violence says nothing about how their physical body will react to the different forms of violence or how their score in the game would be affected. Also, theoretically, a player may spend more time in a form of the game that contradicts their questionnaire responses, which would indicate how violence may be received differently within a virtual reality game versus a traditional video game.