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## **The Psychology of and Therapeutic Application of Horror Games**

Horror games have garnered a cult following in modern culture, with equally large groups of people who are devoted fans of the genre and those that avoid the medium. The goal of horror is very well represented by the Goddess of Horror, Phrike, whose name directly translates to ‘trembling due to fear’ (Wikipedia contributors, *Phrike*). Horror games are a genre of video games that are centered around horror fiction and are typically meant to evoke fear or terror in the player. This is achieved through several different methods, including auditory, visual and psychological stimuli. The processing of these stimuli may evoke negative reactions but also may be quite healthy and even therapeutic. It may come as a surprise that there is a possible application of horror games as a means of therapy, but throughout this paper, we will explore several aspects of horror games as a medium, as well as the therapeutic application of horror games.

### **Exploring Horror as a Genre**

Horror is a genre that has been present in human culture long prior to the 1000s. The roots of horror were present in Ancient Greek and Roman literature, and were largely focused on death, the afterlife, evil, the demonic and subsequent possession in people. The 18th century was when horror began to blossom and develop with the development of Romanticism and the Gothic horror genre. The 18th century then directly influenced 19th century horror works that are well known today, such as Mary Shelley’s *Frankenstein*, Oscar Wilde’s *The Picture of Dorian Gray*, and the works of Edgar Allen Poe. However, it’s only with the *Frankenstein* movie, released in 1931, that really catapulted horror fiction into what it is now in popular media. The 20th and 21st century is when horror began to evolve and branch out, and with the development of the internet, media from other countries were distributed to expand on the genre.

H. P. Lovecraft, who is regarded to be one of the most significant horror authors, writes in his essay ‘Supernatural Horror in Literature’ that “The oldest and strongest emotion of mankind is fear, and the oldest and strongest kind of fear is fear of the unknown” (Lovecraft). This will be expanded in the latter portion of this paper.

### **Horror Games**

The horror genre began to be incorporated into video games quite early on, as early as 1972 and were very much directly based off of horror films and novels. In typical horror movie fashion, the games would make use of audio cues, using sounds such as menacing sound effects and increasing audio speed to create panic in the player. As technology developed and graphical and processing capabilities improved, video games began to use better and more highly rendered horror-related imagery and were eventually able to use 3D space and movement to better convey the ambiance.

There are several sub-genres within the horror game genre, which include: survival horror, psychological horror, action horror and jumpscare horror. The genre most associated with horror and fear tends to be jumpscare horror, as those games and movies tend to use jumpscare to engage the sudden rush of adrenaline. Action horror is also largely associated with horror games, as zombie games fit into this category. Zombies are, indeed, scary and are often used to evoke a sense of fear. Like zombies, a common element within horror games is the usage of monsters or demons. However, the two genres that best define the horror video game genre are psychological horror and survival horror due to its relation to the subconscious mind instead of visceral physiological reactions.

### *Survival Horror*

Survival horror is a subgenre of action-adventure and horror games that, as the name suggests, focuses on survival while the game attempts to scare the player with horror visuals or a fear-inducing ambiance. Combat can be incorporated into gameplay, and there are several titles that do place an emphasis on combat, but what differentiates survival horror and a typical shooter game is how much control one has. Players are deliberately made to feel less in control than in typical action games by incorporating elements such as limited ammunition or weapons, health, speed and vision, as well as other deliberate obstruction of game mechanics. They may also incorporate puzzles that must be solved before the threat consumes the player, which causes panic. The most notable title (which also coined the term 'survival horror') is *Resident Evil* (1996), which became a huge influence on the future of survival horror games and is currently a very large franchise (although it did deviate away from its origins and is largely an action horror game in the present). We must note that there is some overlap between survival and psychological horror in games, which will be discussed briefly below.

### *Psychological Horror*

Psychological horror is a subgenre of horror games that aim to scare the player not through shock or monsters, but rather through emotional, mental and psychological states. To elaborate on that, the fear is created from the discomfort and dread that players experience through playing the game rather than a visceral reaction. Psychological horror games also tend to rely much more on setting, environment, and plot to provide an overall unpleasant, unsettling, or distressing atmosphere. It can be said that psychological horror is based not on what is seen, but rather what is not seen. The presence of monsters, the threat of their appearance, and knowing that there is danger coming is what produces a deeper and truer sense of horror.

A common theme used in psychological horror to set the tone is the usage of archetypal shadows used in analytical psychology. Analytical psychology, also known as Jungian psychology, is a school of thought within clinical and counseling psychology. It is founded by Carl Jung, a Swiss psychiatrist, in order to take a deeper look into the psyche and distinguish it from the other psychological school of thought popular at the time, Freud's psychoanalytic theories. These archetypal shadows refer to the common or universal psychological and emotional vulnerabilities of humanity, which include: suspicion, distrust, self-doubt and paranoia of others, themselves and the world. These universal fears are used in conjunction with the highlighting of the darker parts of humanity and the psyche. 'Psyche' refers to the totality of the human mind, both conscious and unconscious (Wikipedia contributors, *Psyche*). This term is

used to describe the processing of feelings and emotions, and how it results in attitudes and actions.

One of the most influential titles in the psychological horror game genre is the *Silent Hill* franchise, of which the first installment was released in 1999. This franchise does have a lot of elements of survival horror, but is distinct because unlike prior survival horror games that focused on protagonists with combat training, *Silent Hill* protagonists are the average person with no combat experience. The games make use of obstructing vision (very dense fog), which was actually done because of graphical limitations, but has a great impact on the player. One is unable to see what is in front of them, but is also aware that there are threats lurking around which, again, evokes a greater and deeper level of fear and horror.

Despite the general negative physiological effects and reactions evoked from horror, the question must be raised regarding the popularity of the genre: what about horror as a genre is so compelling that it is often compared to roller coasters or haunted houses. Before addressing the addictive nature of horror games and its allure, it is important to understand the physiological processes involved in a fear response. Fear is defined as ‘an unpleasant emotion caused by being aware of danger, or a feeling of being afraid’ (Merriam-Webster). Whether or not fear is a learned emotion or a survival instinct is highly debated, and the question of if there are a certain set of basic human emotions that might be universal still exists (Ekman). This answer changes depending on the type of theory and school of thought approaching the topic, but it will be assumed throughout this paper that fear is a basic emotion of all humans and most animals, based on a survival instinct.

## **The Survival Instinct and Development of Fear**

The survival instinct, commonly known as the fight or flight (or fight-or-flight-or-freeze) response, involves the sympathetic nervous system. The sympathetic nervous system is a part of a control system called the autonomic nervous system, of which the parasympathetic nervous system is also a part of. The autonomic nervous system is a subconscious process and is responsible for the body’s regulation of basic functions such as heart rate, digestion, respiratory rate, pupillary response, urination and sexual arousal. Because the survival instinct is a basic evolutionary function (although still debated, which is detailed in Paul Ekman’s paper), this response has to be regulated through the autonomic nervous system. The ‘freeze’ portion of this reaction is slightly different from the first two in that it is usually elicited when the threat is inescapable.

### *Terminology*

The organs involved in the fight or flight response (and fear) are as follows: the amygdala(e) (which includes the adrenal cortex), the hippocampus, the hypothalamus, and the pituitary gland. The purpose and function of these regions will be briefly discussed below:

- The amygdala(e) is a brain region located deep inside the brain, and is responsible for memory processing, decision making and emotional responses. This region is only present in complex vertebrates, of which humans are a part of. The adrenal cortex is a large region of the amygdala(e), and produces several hormones (Wikipedia contributors, *Amygdala*).

- The hippocampus is a brain structure that is located deep within the temporal lobe and has a major role in learning and memory. It is known to be part of the limbic system, which is considered to be the 'primitive brain', of which the amygdala is also a part of (Gilbert et al.).
- The hypothalamus is a portion of the brain whose primary function is to connect the nervous system to the endocrine system via the pituitary gland. (The endocrine system is a system consisting of several feedback loops of hormones circulating the body and is an integral part of regulating organs) (Wikipedia contributors, *Hypothalamus*).
- The pituitary gland, part of the endocrine system, is located at the bottom of the hypothalamus. Its function is to secrete hormones that help control growth, blood pressure, energy management, the functions of the sex organs, thyroid glands, metabolism. It also has some effect on the water/salt concentration of the kidneys, temperature regulation and pain relief (Wikipedia contributors, *Pituitary gland*).

These terms will be used throughout the paper when explaining the physiology of the fear response.

### *Physiology*

The physiological reaction known as fight-or-flight is a response to perceived danger or adverse stimuli and consists of three stages: a nonspecific mobilization stage, a resistance stage, and an exhaustion stage (Wikipedia contributors, *Stress*). The first stage involves two phases: the shock phase, in which the body undergoes changes such as hypovolemia (a decrease in extracellular fluid), hyponatremia (a decrease in low sodium), hypoglycemia (a decrease in glucose or sugar) which is known as the stressor effect and is, for the most part, subconscious; and the antishock phase, in which the body begins to more consciously identify and recognize the adverse stimuli. After identifying that this is, in fact, a threat, the amygdala sends a signal to the hypothalamus, which in turn activates the pituitary gland to secrete ACTH (adrenocorticotrophic hormone). As this is going on, the sympathetic nervous system activates the adrenal cortex, which stimulates the release of adrenaline (also known as epinephrine). Adrenaline increases the body's blood pressure and heart rate (increased blood pressure is known as hypertension, and increased heart rate is known as tachycardia), as well as providing more glucose to the blood. This is done in order to provide the body with a burst of energy required to evade the threat.

The second stage is a little short, but is an important part of the stress response. During this stage, glucocorticoids are increasingly secreted and aids in intensifying the body's systemic response by increasing the concentration of glucose, fat, and amino acids in the blood. One of these glucocorticoids, cortisol, is widely known as the body's 'stress hormone'. Over time, this hormone has come to be associated with negative effects and the negative health consequences of stressors, such as anxiety, depression, panic and other disorders. In high concentrations, cortisol can indeed have detrimental effects, something known as allostatic overload (McEwen). The hippocampus, prefrontal cortex and the amygdala easily respond to acute and chronic stress and eventually show chemical and morphological changes. We have to note that there is a difference between acute and chronic stress, and the type of stress or negative effect horror games typically evoke is *acute* stress, or at least temporary.

The third and last stage is known as the exhaustion stage, and this is when the body successfully overcomes the stressor and then the resources that have been depleted are restored. Because the body has been completely exhausted, it cannot function as it does normally. The initial response that the body experiences in the first stage reappears, ie. sweating, raised heart rate etc. This is the stage that determines whether or not that stressful experience is going to make positive changes in your body and mind, or if it's going to become damaging.

It has been briefly mentioned previously that there is a third response, called the freeze response. This is a passive coping strategy to the stressor and is usually elicited when the threat is inescapable. Unlike the fight-or-flight response, which utilizes activation of the sympathetic nervous system (hypertension, tachycardia etc), this response involves autonomic inhibition, which actually lowers blood pressure (hypotension) and slows heart rate (bradycardia). This happens because specific brain circuits appear to mediate distinct coping mechanisms and reactions to different types of stressors (Keay et al.).

### *How Fears are Developed*

It is difficult to explain exactly how fears are developed, but the general consensus is that it is a natural and primitive human (and animal) response, as discussed previously. The human body is able to identify threats that pose a direct threat to life, and this ability is a result of evolution spanning over two millennia. However, there is another type of fear that affects the modern human's day to day life much more. This is an emotional response to fear, and it is highly unique to each individual. It is well known that animals (including humans) learn to fear certain situations and things that may have previously caused pain or stress. This is called 'contextual fear conditioning', which is also associated with the famous study done by Ivan Pavlov on canines (Zelikowsky et al.). Fear is an emotion of anticipation that is triggered when a situation that may be a risk to safety is perceived. When these fear responses and the circuits in the brain are dysfunctional, they may also lead to chronic psychiatric disorders, including (but not limited to) post-traumatic stress disorder (PTSD) and various phobias.

With that, animals and humans also have the ability to become habituated to certain negative stimuli and no longer display an adverse reaction to these stimuli and overcome their fears.

### **The Therapeutic Application of Horror Games**

According to Angela Connolly of the Journal of Analytical Psychology, it is important to distinguish between horror and terror. While the genre name suggests that the primary feeling you get from playing horror games is 'horror', 'terror' is actually the correct term. These two terms, 'horror' and 'terror', are often used interchangeably, but there are some important semantic differences between the two. Terror, from the Latin root *terrere*- to frighten- is defined as extreme fear, while horror, from the Latin root *horrere*- to bristle or to shudder- is defined as terrified shuddering and intense dislike. Thus, we can infer that horror refers to the physical effects and has overtones of disgust, whereas terror refers to the general mental state associated with fear. The latter may "actually have a positive function for individuals and cultures" (Connolly). As states in *Jung: A Feminist Revision*, "Whereas 'terror' signifies the expansion of the conscious self under sublime pressures, for example, in the erosion of borders between natural and supernatural in a ghost story, 'horror' means a reverse direction of recoil and even

self-fragmentation” (Rowland). Horror is typically associated with an “almost physical loathing, and its cause is always external, perceptible, comprehensible, measurable, and apparently material, while terror is identified with the more imaginative and subtle anticipatory dread” (Perron). Hence, when discussing horror games and its relationship with human growth and development, it is necessary to understand that the general category of horror as a response is actually quite positive. As was mentioned earlier, both the terms ‘horror’ and ‘terror’ are used interchangeably in society, and for the remainder of this paper, will be as such.

The reason why horror games and media are so loved by people is the same as why roller coasters are seen as fun. People get a natural high from the endorphins that are released with the fight-or-flight response. Adrenaline and cortisol were noted to be released during this response, but dopamine, serotonin, adrenaline and oxytocin (pleasure neurotransmitters and hormones) are released as well in order to help focus the mind. In controlled amounts, eliciting this survival instinct is very healthy and exercising the limbic system is beneficial.

Proposing that horror games may be used as a therapeutic measure may come as a surprise. It seems unlikely that a medium that provokes such negative experiences could be used in a positive way. However, as mentioned above, controlled and recurrent exercise of the limbic system (amygdala and hippocampus) is quite healthy, and neurotransmitters as well as hormones that have a positive effect on the body are released.

However, while the argument that one can achieve this reaction by just watching horror films is true, there is a key difference between merely watching something scary and engaging in it. When horror games use game elements (such as obscuring vision and decreasing player control) and a player is engaging with the game, the player feels a much greater fear than they would with watching a horror movie. A study was done to measure the effects of interactivity (or agency), on the physiological responses of participants by having different groups either playing or watching a horror video game. Results showed that agency had the effect of inducing a significantly greater physiological fear response, and part of it is due to the games giving a player “a mediated enactive experience through which to identify within a virtual world, and then experience such senses as presence and autonomy, thus inducing greater emotional response” (Madsen). By being able to act in and with the environment, a horrific experience as well as a cathartic experience is produced when a game causes a “constant level of anxiety in players while allowing the players to act on it” (Geraci et al.).

Robert M. Geraci et al. also discusses the usage of dreadfulness and grotesque environments and plots in horror video games and “tentatively conquer[ing] inner fears and anxieties” (Geraci et al.). To continue with this idea, horror video games incorporate key aspects of the horror genre and allow users to ‘exorcise one’s inner fears and demons’ but in the context of gaming and how visceral those reactions can be. We have to recall H. P. Lovecraft’s famous quote, detailing that one of the greatest human fears is the fear of the unknown. These unknown and strange things are also extremely fascinating to humans, which is why horror games and media are so loved by people, and according to Otto, “fascinate us because they evoke quasi-religious dread and desire, but we also pursue that which disturbs us because we desire to control it”. Humans are able to acclimate to adverse stimuli with deliberate exposure, which is seen with exposure therapy. Sigmund Freud notes that it is seen that children “repeat unpleasurable experiences for the reason that they can master a powerful impression far more thoroughly by being active than they could by merely experiencing it passively”, which is consistent with agency causing increased fear responses (Geraci et al.). It seems unnatural for this to happen, but this behavior is quite rational because “it is in and through such experiences

that psychological comfort emerges” (Geraci et al.). This is the reason why people ride roller coasters, why people skydive and rock climb; it is because all of one’s attention is focused on one thing, and “it is the most basic way of reducing ontological anxiety, the fear of impotence, of nonexistence” (Csikszentmihalyi). Through Freud and Csikszentmihalyi’s findings, we can infer that engaging in game and repetitively fighting for survival and against monsters is a method of psychological mastery.

Just as how classical horror literature and media depict evil as demons and monsters, it is the same in horror video games. A monstrous body “quite literally incorporates fear, desire, anxiety, and fantasy ... giving them life and an uncanny independence” (Gilmore). These monsters not only are able to give form to single, tangible fears and anxieties, but are also able to represent social insecurities and situations, ie. the scapegoating of women in the Salem Witch Trials. Horror games lay the groundwork for the realization of evil and confronting sin to achieve a greater moral awareness. To some extent, players are able to subconsciously combat their own ‘monsters’ in addition to confronting fear. The games are able to materialize what unnerves us as people and the things that we work to keep hidden away. Geraci et al. sums this up very nicely: “The demonic and the monstrous appear in pop culture because they represent evil and out fears and anxieties. It is our human nature to be attracted to the horrific and obtain pleasure from encountering it because this is how we gain a partial and temporary victory over ourselves” (Geraci et al.). By allowing people to be able to confront a terrifying thing or gruesome situation in a controlled environment that allows for failure, repetition and success, horror video games serve a greater purpose than just evoking fear. It is a method for people to address their fears indirectly while still having a positive effect on them, their relationship with emotions and encouraging closure.

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