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A Global Perspective On The Significance of Violent Imagery in Relation To Other Variables Of Interest Within Computer Games

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FOREWORD

The ongoing discussion concerning how violence in computer games effects player arousal has been mostly influenced by behavioural psychologists. Despite being experts in their field of study, many researchers have demonstrated little understanding of fundamental computer game design. As a result of this, previous research revealed that many researchers do not account for the other variables of interest found within computer game play. This raises doubts concerning the reliability of pre-existing theories which currently associate specific player behavioural responses and elevated arousal with the presence of violent themes and imagery. As a 1st class graduate of BA Computer Games Design I was concerned that previous studies failed to provide fair research conditions for the accurate measurement of player response. In light of this, I decided conduct my own research which combines the knowledge drawn from previous research by psychologists with an applied understanding of game design from my own studies.

ACADEMIC BIBLIOGRAPHY

Ba Computer Games Design (First Class) – Awarded by The university of Huddersfield

ABSTRACT

This study explores the significance of explicit violence in computer games as a mechanism for entertaining the player. Twenty-Two participants played a violent and non-violent version of the same computer game and then rated each one in relation to how much they enjoyed the experience. To provide effective analysis of the research data purpose built stimuli was used in this study to ensure that every aspect of their construction, other than the presence or absence of violent imagery, was standardised to eliminate alternative variables of interest. Through analysis of counter-balanced quantitative and qualitative data it was found that increased realism and violent intensity had little effect on the samples overall arousal and surprisingly the majority of participants preferred the non-violent alternative. Although there was some evidence to suggest that increased violence correlated with intensified immersed emotional reactivity, the results showed that the fundamental gameplay mechanics were the primary contributor to player behaviour such as excitement, aggression and competitiveness. The findings of this study suggest that gory violence had little effect on player emotional reactivity which raises doubts as to whether violence in computer games is as significant of a stimulant as previous researchers have suggested.

1.1: CONTEXT AND JUSTIFICATION

In the 1950's many western living rooms experienced the invasive arrival of the television which exposed many homes to frequent displays of graphic violence. For decades the association between violence and entertainment has been integral to the foundations of the multimedia industry. With violent computer games, such as Call of Duty: Black Ops, individually grossing over a billion (US) dollars in sales (Activision Press Release, 2010), previous research has identified violent imagery as a significant contributor to their appeal (Dill and Dill, 1998). However, computer games entertain us in a multitude ways other than visually for example, they evoke competitive behaviour, utilise narrative and present opportunities for problem solving. Therefore, the visual presentation of violent themes is one of many ways in which computer games could contribute player enjoyment. It was found that there was a lack of research offering a global perspective on how significant violent imagery is to player enjoyment in relation to other aspects of their design which this study intends to address.

In summary, this study will explore whether the presence of violent imagery is significant to player enjoyment, it will also investigate into whether any alternative behavioural needs are satisfied through exposure, and will design a more effective method for measuring emotional reaction to specific elements of computer game stimulus.

1.2: HYPOTHESES

Hypothesis One - *The participants exposed to the high intensity detailed depictions of violence within the custom made violent level will experience an increase in their levels of enjoyment than those exposed to the non-violent stimuli.*

Hypothesis Two – *Participants will experience a stronger emotional reaction as a result of the more hostile imagery whilst playing the violent condition.*

Null Hypothesis: *Any conclusive results that emerge from the analysis of the data are purely coincidental: participants in both conditions will report similar experiences.*

2.0: Literature Review

2.1: Summary of Terms

Computer Game: A comprehensive and up to date definition of a "computer game" comes from Wolf (2008) who states that they are computer controlled environments designed to react or respond to user input by generating visual or auditory stimuli. There are alternative names for the medium such as *video games* and *electronic games*. For the purposes of this experiment, the term *computer game* will be adopted (as opposed to video game) as it refers to a computer generated game environment which is more representative of the present technology and stimuli associated with the interactive medium discussed in this study.

Gameplay: "the components (of a computer game) that make up a rewarding, challenging experience which sits at the heart of a game" (p. 7, Oxland, 2004).

Game mechanics: a term given to the individual elements of gameplay design, they "define the types of challenges in a game" and "determine the how the player interacts and controls them". (p. 27, Oxland, 2004).

Violence: The Oxford University Press defines *violence* as "*behaviour involving physical force intended to hurt damage or kill someone or something*" (Oxford University Press, 2009)

The above definition of the term "violence" places emphasis on the physical force being used to intentionally inflict pain or damage on "someone or something". However, Hart et al (1988) claims that one can be indirectly violent through using non-physical, verbal, or emotional methods of aggression. Indirect violence could come in the form of insulting, swearing, or placing an unwilling person in a situation of extreme stress. Emotional acts of violence are considered to be just as distressing as their physical counterpart, as they could potentially inflict psychological trauma on a victim, and researchers suggest that in extreme cases could lead to hallucinations, psychopathology, and even eating disorders (Hart et al, 1998). The forthcoming experiment will not be studying any acts of emotional violence in relation to the research topic as according to Murray (2005) computer games are not at present sophisticated enough react to such behaviour. For the purposes of this study the term "violent" will be used in reference to the definition provided by The Oxford University Press (2009), and thus this study will only focus on the physical interpretation of "violence".

Visual Reward: Throughout this investigation, the researcher will be using the term "visual reward" in reference to any computer game feedback which reinforces player success. Visual reward is crucial in reassuring the player that they are advancing in the correct direction and contributes greatly to the levels of violence found within some video games (*Sweetser and Wyeth*, 2005). For example, *Gears of War* (*Epic Games*, 2006) generates "blood spatter" effects when an opponent is shot. The presence of the blood spattering is direct consequence of player interaction and is a visual means of informing the player of a successful "hit", thus providing real-time feedback to the player which relates to their accuracy. Effects of this nature also act as means of visually alerting the player they are being harmed.

Enjoyment: The Oxford English Dictionary defines enjoyment as "The state or process of taking pleasure in something" (Oxford University Press, 2009).

Immersion: *"A Zen-like state where your hands just seem to know what to do, and your mind just seems to carry on with the story" (Brown and Cairns, 2004).*

Non-Playable-Character (NPC): An NPC is a non-playable-character whose behaviour is controlled by the computer.

First-Person-Shooter (FPS): An FPS is a particular genre of computer game which places the player within a first person perspective of their character. The defining gameplay mechanic of this genre is that the primary objectives are focused around using various forms of weaponry to "shoot" hostile NPCs.

2.2: COMPUTER GAME VIOLENCE

Over the past 30 years, it has been made apparent that the increased popularity of violent computer games has correlated with the technological advances of the medium (Wolf, 2007). The popularity of violent themed computer games would suggest there is something intrinsic to their design which is appealing to consumers. This is most apparent by the constant replication of games featuring violent content: Successful ventures spawn imitations. In many computer games, killing or injuring virtual opponents is a repetitive and necessary means to progress or complete objectives (*Gentile and Anderson*, 2003). In 2001, a study by *Children Now* (2001), author unknown) found that 89 percent of computer games contained "some violent content and about 50 percent of computer games contained violent acts which would result in serious injury or death" (Author unknown *Children Now* , 2001; cited from *Gentile & Anderson*, 2003. page 133). In this section of the literature review current theories regarding the nature of violence in computer games will be discussed in conjunction with the evidence found in previous studies which suggest possible symptomatic effects the violence may have on player arousal.

2.2.1: IDENTIFYING DIFFERENT LEVELS OF VIOLENT INTENSITY IN COMPUTER GAMES

Rosas et al (2002) claims that "*most videogames are at least aggressive, if not explicitly violent*" as many computer games encourage the player to overcome virtual challenges though performing (what could be perceived as) violent acts against other NPC's (non playable characters) or competitors avatars. For the purposes of this study it is necessary to establish what actually constitutes as a "violent computer game" and what does not. Therefore, the definition of a "violent computer game" will come from the "16" and "18" PEGI certification criteria (Pan European Game Information: a consumer advisory board which rates games on their suitability for certain age demographics):

16 Certificate – "*This rating is applied once the depiction of violence (or sexual activity) reaches a stage that looks the same as would be expected in real life. More extreme bad language, the concept of the use of tobacco and drugs and the depiction of criminal activities can be content of games that are rated 16.*" (PEGI, 2011)

18 Certificate – "*This classification is applied when the level of violence reaches a stage where it becomes a depiction of gross violence and/or includes elements of specific types of violence. Gross violence is the most difficult to define since it can be very subjective in many cases, but in general terms it can be classed as the depictions of violence that would make the viewer feel a sense of revulsion*" (PEGI, 2011)

This study will be examining the effects of the violence found within games typically awarded with these certificates. Any forms of violence which don't meet this criterion (such as fantasy or comical violence) will not be considered as violent material during this study however, they would provide an interesting outlet for further research.

Research by Ivory (2007) found that self reported arousal was higher when participants were exposed to more intense realistic depictions of violent imagery in addition to this in an analytical review by Dill & Dill (1998) it is suggested that more realistic human violence increases emotional reactivity. This would indicate that the explicitness of violence found in some computer games could influence the intensity of player arousal or emotional response. From a methodological stand point this highlights that explicit violence, typical of an 16 and 18 rated computer games, is a more significant area of research and more likely to produce a considerable emotional response from the player during exposure to it.

2.2.2: BEHAVIOURAL AND EMOTIONAL RESPONSES TO VIRTUAL VIOLENCE - CURRENT EVIDENCE

Many computer games are considered to be "violent", and it is often assumed that player behaviour within computer games is aggressive as a result of this. On the contrary, whether perceived acts of violence in computer games or player behaviour constitute as being "violent" or "aggressive" is debateable as they take place within a fabricated virtual existence devoid of real world consequence (Colwell, 2007). Although computer games may simulate situations such as warfare, the player is not actually harming anyone or anything tangible. In fact, simulating physical violence is usually a necessity for the completion of objectives in some games (Gentile and Anderson, 2003), which suggests that players have an ulterior, non-violent, motive for committing them. From a gameplay perspective, a player is essentially scoring points by shooting targets, so whether a player's behaviour can be perceived as "violent" could depend on whether the game arouses an aggressive response from the player. The following sections will discuss current evidence which implies that violence in computer games can induce certain emotional responses from the player and how they may contribute to their appeal. In this section of the literature review the researcher will be discussing the nature of violence in computer games, how it is perceived by the player and whether it contributes towards their overall arousal.

EMOTIONAL REACTIVITY TO VIOLENCE

To provide a global perspective on how people respond to violent imagery, the events within computer games must be compared to the effects of witnessing real world and movie violence. Violent films and television have been found to "prime" aggressive responses in the same way that witnessing them in real world would (p.446, Hogg and

Vaughan, 2002). That said, when discussing violence within a computer game context there is an issue of realism, although advances in technology are making them more and more realistic, some still consider computer game violence as relatively "abstract" (Dill and Dill, 1998) and "clearly distinguishable from real" (Cragg, et al, 2007, page 75). Assuming this is correct; one would expect the player's reaction to be less significant to virtual violence than its real world inspiration. Nevertheless, in a meta-analytical review by Anderson and Bushman (2001) the results of 3,033 participants from thirty-three independent studies showed the effect of violent computer game play on aggressive response was "positive and significant" (p.357, Anderson and Bushman (2001). To advocate that violence in computer games can "prime" an aggressive response would suggest that, to some extent, players are immersed enough within some games to react to virtual violence as though it was real. However, the extent of immersed emotional reactivity has been found to vary dramatically across different age groups.

The Byron Review (Byron, 2008) was a government (UK) sponsored investigation into the effects of video games on children which compiled and critically analysed the research of many previous studies. The evidence presented by Byron (2008) indicates that anxiety and aggressive response could be stronger in children than it is in adults when playing violent computer games. It has been suggested that, this is because their frontal cortex (a part of the brain which mediates behaviour) is underdeveloped meaning they find it harder to differentiate between reality and fantasy compared to adults who are (generally) much more sceptical towards the realism of computer games (Byron, 2008). If emotional responses to computer game violence are much stronger in children than they are on adults, one must take into consideration the participants used in previous studies, as the results will be relative. Furthermore, one must also consider the ethical implications of such studies, as some research (such as that by Graybill, 1985) exposed young children to video games that were considered unsuitable for their age group (by advisory boards such as British Board of Film Classification). Even though adults are more adept at distinguishing between reality and fantasy than children, research by Anderson & Bushman (2004) found that violent computer games can still "increase the accessibility of aggressive thoughts" amongst adults.

Research by Konijn and Bushman (2007) found that Players tend to rate realistic, violent games "more favourably" than unrealistic ones, which would suggest that the realistic presentation of violence could affect player excitement (p. 1039, Konijn and Bushman, 2007). One explanation for this comes from Byron (2008) theorises that the provocation of anxiety and aggressive reactions players during realistic, violent computer game play is a manifestation of an innate "fight or flight" response (p. 150, Byron, 2008). This behavioural reaction to feeling threatened activates many aspects of the brain, elevates heart rate and releases adrenaline, testosterone and endorphins which excite the player (p. 150, Byron 2008). Ballard and Wiest (1996) measured the cardiovascular reactivity of 30 male undergraduates whilst playing violent and non violent games. In accordance with the physiological symptoms of the "fight or flight" response, blood pressure and cardiovascular activity significantly increased in the violent condition. It should be taken into consideration that psychophysiological methods of

measuring emotion have been criticised by psychologists, such as Flick (2006), for lacking in "objectivity, reliability and validity" (p. 46-47, Flick, 2006) which makes it difficult to ensure that the reported physiological behaviour was a direct consequence of the "fight or flight" reaction. Despite this, in a different study, conducted by lynch (1994), it was found that playing violent computer games (in this case Mortal Kombat) was found to increase the level of adrenaline within their players. Although it cannot be confirmed that computer game violence can activate the "fight or flight" response within players, the evidence presented by both these studies presents a comprehensive case.

It should be mentioned here that aggression is not just a product of witnessing violence, but can occur from player frustration. Anderson & Dill (2000) studied the provocation of aggressive thoughts and feelings through violent computer game play by exposing participants to Wolfenstein 3D (a "violent" FPS - Id Software, 1993) and Myst (a puzzle game – Midway 1993)). They found that the non-violent control stimulus (Myst) was capable of encouraging similar aggressive responses to that of the violent condition through generating high levels of frustration. This introduces a significant variable in current research and identifies that gameplay design is a significant contributor to the interference of reliable data, because if a game is too difficult for the player's level of skill to overcome, it could inhibit feelings of frustration which Anderson and Dill (2000) claim can also lead to an aggressive response. To understand whether the fight or flight response is a significant contributor to player arousal variables associated with frustration would have to be addressed in future research to strengthen this theory.

Although there are many studies linking aggressive responses to the presence of violent material there is also some research with contradicts it. Goodson & Pearson (2009) conducted an experiment which measured 70 participants' symptoms of aggression generated by both a violent (First-Person-Shooter) and two non-violent (racing / table tennis) computer games. Contrary to the findings of previous research, their study found that higher levels of aggression were produced by a racing game rather than by the violent alternative. Aggressive response to computer game play may also be provoked by competitive activity or frustration (Wickens, 2005), which are behaviours closely related to computer game play (Vorderer, 2006). This presents the possibility that the "fight or flight" theory could be founded on misinterpreted data, as there is unfortunately a lack of research which addresses these variables, leaving this area of debate still open for discussion.

In conclusion, the evidence provided by previous studies would suggest that the presence of violence in computer games has the potential to provoke a deeper sense of emotional involvement within the player through eliciting an innate aggressive response to anxiety caused violent situations. However, variables associated with player frustration will have to be addressed to generate reliable data.

Aggression and anxiety are not commonly thought of as enjoyable emotions so why would "fight or flight" response contribute to player excitement? As previously stated the "fight or flight" response releases adrenaline, testosterone and endorphins to prepare the body for danger (Wickens, 2005). This chemical release counter-acts feelings of anxiety generated by situations of danger, often creating an exhilarated (in some cases enjoyable) emotional response; which explains why people find pleasure in activities such as skydiving and boxing.

In theory computer games are an ideal environment for someone to experience the chemical "rush" associated with the fight or flight response. In 2007 the *BBFC* published their research on the effects of, and reasons for, playing violent computer games. The key findings of their research, conducted by Cragg, (et al, 2007) suggested that some people find pleasure in violent games as they are a detached from real-life consequences. Colwell (2007) theorises that violent computer games appeal to players as they provide an "opportunity to engage in fantasy play" and exercise curiosity by simulating situations which would normally be dangerous to them such as warfare (Colwell, 2007, p 2075 (4). Therefore, an exhilarating release of endorphins and adrenaline could be experienced without players exposing themselves to any real danger.

Theoretically, the pleasurable effects of the "fight or flight" response may not be experienced by all. Exposure to virtual violent scenarios could result in players feeling increased anxiety and stress rather than exhilaration (Wickens, 2005). In a study by Ravaja (et al, 2004) 37 participant's preference were measured for different types of games in accordance with personality traits. It was found that participants with a predisposition to "sensation seeking" were more prone to enjoying violent games because they replicated "thrills and danger". Therefore, it could be suggested that players prone to sensation seeking source enjoyment from exposing themselves to virtual situations which provoke a "fight or flight" reaction. This means that in the researcher's study, each participant's reaction to violent stimuli may be highly subjective and determined by personality traits.

MORBID CURIOSITY

Another, perhaps less comprehensive theory is that violent imagery satisfies an innate morbid curiosity. Researchers such as Benenson (et al, 2008) and Goldberg (1998) have put forward a theory which suggests that violent media could perhaps satisfy a suppressed curiosity of death and violence in a safe and controlled manner. The "civilising process" is a term coined by Elias (1982) given to an era in Western history when events such as public executions were moved from being held in town squares to being held behind closed doors Elias (1982). Goldberg (1998) claims that at this point in history when public displays of violence fell, interest in images of death and bloodshed increased.

This is a plausible explanation for a preference to violent content in computer games however previous research shows that there is little evidence suggesting that players find sadistic enjoyment in violent imagery alone. **Goldstein** (1999) suggests that preference to violent media has less to do with witnessing violence or morbid curiosity, and more to do with scenarios of morality and justice. He claims that "there is little evidence to support that viewers identify with the aggressor" (**Goldstein**, 1999, page 5) which would suggest that the appeal of death and violence is contextual and not universally appealing which the Morbid Curiosity theory would suggest.

2.2.3: GENDER BIAS

In accordance with common belief many studies have shown that violent computer games are overwhelming popular with young males. In an online survey, conducted by Yee (2006), it was found that 85.4% of respondents who play violent computer games male (p.16, Yee 2006). In another study conducted by Funk & Buchman (1996) 76.8% of 11 – 13 year olds, who admitted owning at least one "violent" computer game, were male. The undeniable volume of evidence which suggests that violent computer games are more popular with males raises many questions as to why this is the case.

INHERENT THEORIES

One explanation for this gender bias is that are influenced by primal instincts which lead them to prefer violent content as it relates back to a point in their evolutionary history when they had to hunt: an act which requires violence (Colwell, 2007). He suggests that consuming violent media and observing acts of aggression is instinctual. This study is open to a lot of criticism though, as it uses a very reductionist approach, implying that all humans are merely instinctually driven and evolutionary cognitions and reasoning are not taken into consideration (Colwell, 2007).

SOCIOLOGICAL THEORIES

NURTURE: The more plausible explanations for male preference are sociological. A study by Pomerleau (et al, 1990) suggests a more nurture-based argument as to why males may prefer violent computer games more than females (as opposed to the nature-based argument above). Pomerleau (et al, 1990) observed the environmental influences of 120 children (male and female) up to the age of 12. He discovered that toys given young boys by their primary care givers or close relatives were much more likely to encourage their physical abilities (such as toy guns or footballs) than were the toys given to young girls. The males also had more opportunities to express their physically violent side in, described by Pomerleau (et al, 1990) as, a 'controlled environment' which included play-fighting or such

sports as martial arts and boxing. In contrast, girls were more likely to be given dolls and encouraged to partake in activities considered to be more feminine; such as dancing and horse riding.

Goldstein (1999) theorises that Western males are burdened with "social pressures" (which supports Pomerleau's theory, mentioned in the previous section) to be emotionally inexpressive. "Hyper-masculine" situations, such as aggressive sports and violent entertainment, provide a socially acceptable outlet for males to express intense emotion. Goldstein (1999) also suggests that violent media is particularly appropriate for "male bonding" and "communicating a masculine identity" to their peers. Zillmann (1998) supports and adds to this theory by suggesting that males and females respond differently to violence due to their differing social pressures. Zillmann speculates:

> *"Boys must prove to their peers, and ultimately to themselves, that they are unperturbed, calm and collected in the face of terror; and girls must similarly demonstrate their sensitivity by being appropriately disturbed, dismayed, and disgusted"*

> (Zillmann, 1998; cited from Goldstein, 1999, page: 277)

Another explanation as to why males have a higher preference to violent computer games than do females comes from a study by Skelton (2000). Newman (2004) claims computer games are (generally speaking) dominated by male protagonists and where women are present they are highly sexualised with exaggerated feminine features such as Lara Croft (Tomb Raider, Core Design, 1995). Therefore, Skelton theorises that males socially develop through their computer game experiences, viewing them as bonding exercises. Further to this, Jenkinson (2001) claims the gender divide is due to children imitating actions they witness on television. Since male-orientated computer games receive more media attention, children observe and believe that only boys can play them. However, Jenkinson's (2001) study is quite ambiguous in that it is unclear as to whether the media is the cause or effect of the gender preference: it could just as easily be the case that the media merely reports on the gender preference (effect), rather than actually influences who plays certain games (cause)

In conclusion there is a strong case to suggest that males are encouraged from a young age to participate in violent activities. The previously discussed research demonstrates that a person's sensitivity to violent content could be determined by social environments or gender. This should be taken into consideration as is suggests that arousal or emotional response to violent computer game content could be subjective and thus varied and contrasting. Furthermore, the sociological theories surrounding environmental gender stereotyping should be taken into consideration when analysing the behaviour of a mixed gender sample.

2.2.4: DESENSITISATION

Dill and Dill's (1998) analytical review puts forward a theory that computer game play portrays violence against NPCs (enemies) as justified which could result in reduced empathy if a player engages in this behaviour frequently. Desensitisation is a common theory amongst researchers, Carnagey, Anderson, and Bushman (2006) measured emotional response to watching a video of real acts of violence after 20 minutes of violent computer game play. They that found the participants who played a violent computer game before hand experienced less of an emotional response from the video than those who didn't. This could imply that the intensity of a person's reaction to violent imagery may depend on how pre-exposed they are to it, therefore, desensitisation could present itself as an issue in this study and must be respected as a potential variable.

2.2.5: CRITICAL ANALYSIS OF PREVIOUS RESEARCH

The manner in which many previous researchers have triangulated violent imagery as a catalyst for specific behavioural response could be considered speculative and unreliable due to numerous variables in their chosen methodology. This conclusion is confirmed by Dill and Dill (1998) stated in a review of violent video game research that there are many "methodological problems and inconsistencies" with many previous studies.

"The video-game violence literature should emulate the media violence literature in which pretesting is commonly conducted to determine empirically what constitutes an aggressive versus a nonaggressive film, and to equate aggressive and nonaggressive films on other variables of interest, such as excitement and action before using them in a study" (p18, Dill and Dill, 1998)

Visual presentation is just one of the ways in which computer games can excite players. Dill and Dill's (1998) aforementioned criticism of previous violent computer game research states the importance of "*other variables of interest*" which have been previously been neglected by researchers (p18, Dill and Dill, 1998). Therefore, it is necessary to understand what these "variables of interest" are and how they affect the player so that previous literature can be criticised appropriately and be eliminated or minimised in any further research. Furthermore, it is important to compare any effects violent imagery may have in relation to the other enjoyable aspects of computer game play to provide a global perspective of its significance in arousing the player.

Game Mechanics: Oxland (2004) and Wolf (2004) present a comprehensive case to suggest that gameplay influences the rewarding nature of a computer game and that the game mechanics are "significant contributors to defining a game's genre" (p. 27, Oxland, 2004). Gameplay determines how a player interacts with their virtual environment and places them in a situation of control. Research by Colwell (2007) shows that the potential to succeed or fail within a computer game generates tension which leads to a sensation of physiological arousal and excitement (Colwell, J. 2007, Page: 2075). Furthermore, most games provide players with the opportunity to develop their proficiency at playing them, which rewards them with feelings of mastery and control of the situation (Colwell, J. 2007, Page: 2075). Gameplay must be taken into consideration when trying to understand the role of violent themes and visuals as Wolf (2004) claims they contribute to the levels of excitement experienced by the player. It is worthy of note that many games perceived to be "violent" can posses considerably different gameplay mechanics depending on their genre therefore, the player could be interacting/reacting to completely different challenges, rules and reward mechanisms thus arousing the player in different ways (Wolf, 2004). This raises questions as to whether the evidence presented in previous studies (Goodson & Pearson, 2009 – Anderson & Bushman 2002) could have shown very different results had the researchers chosen a different game to represent the violent stimuli they used. Wolf's (2004) comments also highlight that gameplay design must be respected as an alternative variable of excitement when gauging the effect of violence in computer games.

Audible Stimulus: As the researcher is exploring whether the presence of violent imagery can influence a deeper emotional reaction, it is necessary to understand how the player might be influenced by other non visual aspects of the game (such as music and sound effects) and what psychological or physiological effects (if any) these factors may cause. Although ranging in complexity, audio is present in almost every computer game and must be taken into consideration as a variable of interest (Grimshaw, 2010).

"Sound is used in complementing and augmenting other stimuli, especially visual"

Grimshaw (2010)

The quotation above originates from Grimshaw's (2010) research into the implementation and behavioural effects of audio stimuli, it indicates that computer game audio is capable of invoking a range of emotions from the player through sound effects and music (particularly the latter). He claims that audio accompanied with a visual stimulus can enhance the arousal of the player by creating an atmosphere which can cause a deeper sense of immersion in an interactive environment (such as a computer game or movie). He states that in order to "successfully engage in an immersive experience, interaction must be achieved through one of the primary human senses" (p. 237). Grimshaw

(2010) claims that (to humans) hearing is immensely important in receiving information. Consequently, it can be argued that audio can significantly influence player arousal and immersion. Further to this, Beland & Fournelle (2005) found that emotional reaction to audio can be quantified through the measuring of physiological responses such as Heart-Rate (HR) and Galvanic Skin Response, (GSR) and Electroencephalography (EEG) claiming that elevated physiological responses can correlate with the hostility and rapidness of the music. Therefore, it should be noted that auditory stimulus could have been a variable in data presented in studies by Goodson & Pearson (2009), Wiest (1996) and Hogg and Vaughan (2002). In conclusion, in order for more accurate data to be obtained the effect of audio should be taken into consideration in future studies to accurately triangulate behavioural response with violent imagery.

CRITICAL ANALYSIS OF PREVIOUS METHODOLOGICAL APPROACHES

Many studies by researchers, such as Anderson & Bushman (2002), Goodson & Pearson (2009) and Giumetti & Markey (2007), which have explored behavioural response during violent computer game play, have relied on using different pre-existing computer games as "violent" and "nonviolent" stimuli.

Goodson & Pearson (2009) conducted an experiment which measured 70 participants' physiological symptoms of aggression generated by a violent (First-Person-Shooter) and two non-violent (racing / table tennis) computer games. Although the results suggested that the racing game generated higher symptoms of aggression, the two experiences were completely different in their design. Firstly, using a first Person Shooter in conjunction with a racing game as research stimuli is quite problematical, each would have different interfaces, sound effects, objectives and reward structures which Dill & Dill's (1998) research would argue, may have interfered with player arousal in each condition. Additionally, Goodson & Pearson's (2009) results could be deeply influenced by the individual differences associated with each of the participants used as some could simply prefer racing games to FPS's. In conclusion, the dissimilar gameplay mechanics in the conditions set by the researcher would have likely produced many variables in the researcher data and as a result of this the results are hard to associate with the presence or absence of violent content.

Another issue associated with using different pre-existing titles as research stimuli is that the researcher could be comparing a poor game with a superior one. Although the definition of a "good game" is somewhat subjective, the quality of a games gameplay structure can significantly affect a player's arousal leading to the presence of more variables in the research data. Sweetser and Wyeth (2005) compared player reaction to two computer games produced in the same year and of the same genre (Warcraft 3, Blizzard / EverQuest, Sony). The participants were asked to rate, on a scale of 1 – 5 (1 being poor – 5 being excellent), how enjoyable each game was, how immersed

they felt, the level of challenge presented and feedback gratification. Despite both games possessing similar gameplay mechanics and being of a similar level of graphical fidelity the results presented vastly contrasting reactions to both games. Warcraft 3 received an average of 4.8 (96%) across all categories whereas Lords of Everquest received 2.4 (48%). Although this is somewhat stating the obvious, this study underlines that even similar types of games mechanics can produce dramatically different reactions depending on how well the gameplay mechanics are implemented into the game.

In conclusion, the limitation of the methods used by researchers such a Goodson & Pearson stress the importance of standardising the fundamental gameplay mechanics to effectively monitor and analyse how violent imagery may influence the research sample.

ISSUES ASSOCIATED WITH PHYSIOLOGICAL METHODS

Physiological methods used by Goodson & Pearson (2009), Wiest (1996) and Hogg and Vaughan (2002) are a standardised formats for the measurement of emotional or behavioural response and, as previously stated, have been widely criticised. Physiological data is susceptible to the presence of many external variables, a study by *Tognettii et al* (2010) showed that a participant's movement can considerably affect physiological activity making it difficult to triangulate to a specific emotion. Turner (1994) also found that physiological data can also be heavily influenced by alternative emotions such as frustration and stress which, according to Anderson & Dill (2000), can occasionally materialise during computer game play. Finally, Coolican (2004) states that "statistical data can be variously interpreted" (p.49, Coolican, 2004) meaning that the conclusions drawn from physiological data could be influenced by researcher subjectivity.

RESEARCHER SUBJECTIVITY

It is worthy of note that Douglas Gentile recently came under heavy criticism from the *Entertainment Software Association* (ESA). Richard Taylor (Vice President of the ESA) accused Douglas Gentile of using "dubious instruments" to produce "trivial" data which he interprets "as negatively as possible" (Dutton, 2011). Researcher subjectivity can be an issue and it is important that Taylor's comments are taken into consideration when analysing previous researcher's findings. However, Coolican claims that when dealing with large amounts of data the researcher's must choose certain aspects of the information to "emphasize" specific issues which they want to address (p138, Coolican 2004). Therefore, it could be argued that researcher subjectivity can have negative effects on the clarity of the information presented conversely, it can also be necessary to the completion of focused and detailed studies.

2.2.6: SUMMARY

Explanations for why violent computer games have become a significant part of popular culture come from Biological to Sociological studies. Previous research would indicate that violent themes and imagery in computer games can have a significant effect on player arousal however; the nature of their response (positive/negative) can be dependent on their sociologically determined predisposition. This would imply that competitive arousal (i.e. winning or losing or the scoring of points) is not the only aspect of computer game play which contributes to player excitement or behaviour. However, there are many unaccounted variables in previous research which has resulted in an ambiguous literary grounding for this study. Nevertheless, given the findings of previous research one would cautiously expect that in this study violent imagery will have a noticeable effect on participant arousal.

2.3: MEASURING AROUSAL

As an entertainment medium, the primary motive behind computer game play is to seek enjoyment (Goldstein, 1999). Understanding the significance of player arousal in relation to the presence of violent imagery would perhaps provide an explanation for their appeal. In this section of the literature review the researcher will be exploring affective means for the measurement of player enjoyment.

2.3.1: QUANTITATIVE METHODS- PSYCHOPHYSIOLOGY

Psychophysiology is a theory which suggests that emotional phenomena can be observed and measured though physiological responses. For example, an increase in heart rate could be considered a physiological response to anxiety or fear (Wickens, 2005). Psychophysiology has become somewhat of a standardised method of measuring emotional or behavioural responses (Palmer, 2008).

Previous qualitative studies, by researchers such as Tognettii et al (2010), propose that enjoyment can be monitored through the collection of physiological data. Tognettii et al (2010) measured the physiological signals of participants playing a car racing computer game. The physiological responses measured were as follows: Blood Volume Pulse (BVP), Temperature (TEMP), Electrocardiogram (ECG), Respiration (RESP) and Galvanic Skin Response (GSR). By comparing quantitative data with qualitative data such as questionnaires, they were able to identify 3 classes of enjoyment (High, Medium, Low) and calculate that their methodology had an accuracy rating of 57%. Although physiological methods can produce objective data there are issues with the reliability, as previously mentioned, physical movements made by the participant can generate inaccuracies in the data, in particular the ECG and BVP readouts. Turner (1994) suggests that the physiological symptoms of enjoyment can also be heavily influenced by other emotions such as frustration and stress. Therefore the evidence presented by Tognettii el al (2010) doesn't clarify whether their recorded data was actually a physiological symptom of enjoyment. Finally, formulating conclusions based on HR and GSR data alone leaves analysis open to many criticisms. Coolican (2004) warns that statistical data can be interpreted in many ways as quantitative data can be too generalised to suit a specific area of study, meaning that different researchers could formulate different conclusions around the same data.

2.3.2: QUALITATIVE METHODS

Previous research has shown that qualitative methods, such as questionnaires and interviews, are a more reliable means of determining how enjoyable an activity is. Coolican (2004) argues that qualitative methods of measuring

hypothetical constructs produce "richer results and more realistic information" (p. 49, Coolican, 2004). In an experiment Sweetser and Wyeth (2005) which measured levels of player enjoyment, they found that the data accumulated was within 16% margin to that of professional reviews which is notably more accurate than the aforementioned psychophysiological methods. However there are issues which qualitative approaches as the results can be affected by researcher subjectivity, and participant individual differences.

2.3.3: SUMMARY

Enjoyment is considered to be *hypothetical* construct as we can observe and measure its effects however, enjoyment itself is considered by psychologists such as Coolican (2004) and Flick, (2006) as phenomena and therefore cannot be quantified or measured (p.29, Coolican, 2004). This would suggest that physiological data is speculative and requires the researcher to make assumptions. Furthermore, psychophysiology would provide a generalised response to the whole computer game experience, which allows for alternative variables of interest to interfere with the data.

Determining how violence may affect player enjoyment is a significant component of this study however, it would be beneficial to allow for the emergence of unforeseen behaviour to materialise to paint a more comprehensive picture of how people react to violence in computer games. Therefore, qualitative methods present the best case for an insightful reliable method of data acquisition.

3.0: Epistemology

Current evidence surrounding the effects of violent computer game play has been presented by many researchers, such as Murray (2005), through a positivist lens. To directly quote the title of a study by Murray (2005):

"MEDIA VIOLENCE: The effects are both real and strong"

Murray (p. 1, 2005)

However, the potential unaccounted variables and methodological flaws in previous studies denote that their findings should not be interpreted as unequivocal evidence, which the previous statement would suggest. Case in point, the data presented by Goodson and Pearson (2009) shows radically conflicting findings to that of Anderson & Bushman's (2002) study despite the implementation of similar research methods. This area of study principally spans social and cognitive sciences and thus requires epistemological flexibility for a successful fusion of the two disciplines. Hence the researcher has chosen to adopt a critical constructivist approach. This study will present comprehensive evidence whilst retaining critical accountability of subjective estimation and sociological applicability.

4.0: RESEARCH DESIGN

4.1: RESEARCH AIM

As previously discussed violent computer games have become a staple part of popular culture. However, the culminated ambiguity of previous research exhibits a large degree of uncertainty as to whether violent imagery significantly contributed towards their success. Accomplished violent computer games such as Doom (ID Software, 1994) and Call of Duty: Black ops (Activision, 2010) provide the player with unique gameplay mechanics, innovative ways of interacting with virtual environments, and alternative opportunities for competitive behaviour. To theorise that violence was the catalyst of their popularity would be need further, more precise, research. This study will address the inadequacies current literature through adopting new methods which are accountable for the "other variables of interest" in computer game play, which have been unaccounted for in previous research. This study aims to create a new research model to ascertain a more comprehensive estimation of how violent imagery may affect player arousal.

4.2: RESEARCH METHODS

To produce a balanced and accurate study, both qualitative and quantitative methods will be used to construct a deeper understanding the role of violence in computer games. Custom stimuli will be used in the experiment to provide two computer game experiences which share the same design but differ in how they visually react to player interaction. One game will feature realistic gory visuals whereas the other will be devoid of such imagery and use a fantasy context as an alternative to the violent themes found within the first game. After playing both stimuli each participant will complete a questionnaire and participate in a semi structured interview where they will be asked a series of standardised questions to try and determine if they preferred one game over the other. The Interviews will be recorded, transcribed and then analysed using Thematic Coding (Flick, 2006). The researcher will then accumulate and quantify the data produced from the questionnaires and triangulate this with the corresponding interview transcripts to formulate an explanation for the results. Any conclusions drawn from the accumulated data will then be grounded in previous literature to generate a comprehensive and empirical analysis.

4.3: SAMPLE SELECTION

The research sample will consist of both males and females, between the ages of 18 and 30. 22 participants will be chosen using opportunity sampling (Flick, 2006). Random sampling was considered however, a preliminary

experiment was trailed on a participant with no experience of playing FPS computer games. It was found that he lacked necessary skills required to use the control interface and quickly became frustrated whilst playing the stimulus. This meant this it was difficult to determine if their results corresponded with the presentation of violence or the participant's inability to use the control interface. Therefore, prospective participants will be selected to participate providing they consider themselves to have had regular experience playing most types of computer games. This will be measured by asking each participant whether they play computer games in their own time and how often (see appendix p65/66 questions 1.1-1.3). Although it could be argued that this will produce a narrower sample bias it must also be considered that the researcher is addressing what needs are met through consuming virtual violence. Therefore, the researcher will use participants who are not opposed to playing, or dislike, violent computer games in order for the results to be applicable to this consumer demographic. Conducting this experiment on people who don't play violent video games would produce irrelevant data and anomalous results therefore, they will be excluded from the research sample.

The participant's age was limited to 18 for ethical reasons. Research by Gentile & Anderson (2003) and Byron (2008) suggests that that violent computer games could potentially have detrimental effects on the mental health of children. One of the custom games built for this experiment will be designed to meet the criteria of a PEGI 18 certificate. Therefore, after taking this previous research into consideration the researcher has decided that it would be unethical to seek participants under the age of 18.

4.4: ETHICS AND PARTICIPANT CONSENT

To ensure that the research experiment follows ethical guidelines each participant will be briefed and debriefed before and after the experiment. Each participant will be asked to sign a form confirming they understand their withdrawal and confidentiality rights and they are fully aware of the nature and purpose of this experiment. All participants will be anonymised and the data retrieved from this experiment will be destroyed once within 6 month of submission.

4.5: DISCUSSION OF METHODOLOGY AND METHODS

"One should use a methodology best suited to answer the question at hand" (Egenfeldt-Nielsen et al, 2008).

Qualitative methods such as questionnaires and interviews will serve as the primary source of data acquisition for this study. Qualitative methods were chosen as research suggests that when measuring subjective constructs (such as enjoyment) the researcher is likely to acquire more accurate data than through quantitative methods (Coolican,

2004). However, many researchers consider measurement as "fundamental to scientific activity" (P.47, Coolican, 2004). For this reason the researcher has opted to use both a highly structured (multiple choice) questionnaire as well as semi-structured interviews however, this study will primarily lean towards qualitative data. Due to the small volume of participants there will be insufficient data to support any real statistics therefore; the quantitative data will be represented mathematically not statistically.

Data acquired from multiple choice questions can be quantified and effectively measured (allowing for an easier emergence of trends and statistical data). However, there are issues associated with using such a structured method, for example, there is little scope for the emergence of unpredicted data and researcher implications can influence the construction of the questionnaire which, in turn, influences the participant's response. Furthermore, it must be taken into consideration that fixed questionnaire designs offer a very narrow insight and can frustrate the participant as they may feel restricted by conforming to set responses (Flick, 2006). For these reasons, a series of standardised *semi-structured* conversational style questions will be discussed in an interview. The interview questions are standardised and are authored to correspond with the answers the participants provide in the questionnaire. A semi structured approach will encourage a natural flow of conversation between the researcher and the participant allowing unpredicted avenues of thought to be explored (p. 153, Coolican, 2004). Furthermore, all interviews and experiments will take place at each individual participant's home as Flick (2006) suggests that this will help generate a more natural responses. Therefore, a deeper understanding of the participant's preference will be acquired whilst generating responses which will compare or contrast with data received from other members of the research sample. The interviews will be recorded so that the participant's responses can be transcribed and analysed using Thematic Coding. However, this approach could produce unnatural responses from the participants as they may feel uncomfortable by the presence of a tape recorder (Willig, 2001). However recording them without their consent would be unethical and therefore not an option. Willig (2001) claims that it is important to explain to each participant why they're being recorded and how their responses will be used in the experiment; this alleviates feelings of anxiety and will be incorporated into the briefing of each participant. As the researcher will be using *Thematic Coding* to analyse the transcribed data non-linguistic features of speech will not be incorporated into the transcription.

In theory, by adopting these two methodologies the shortcomings of either method are compensated for by the alternative method. By synthesising these two methodologies the researcher hopes to obtain both a deep and empirical insight into each participant's experiences of both stimuli.

4.6: QUESTIONNAIRE CONSTRUCTION

The questionnaire used in the experiment was largely constructed using multiple choice questions. This allows for all the participant data to be quantified and measured effectively. The first section of the questionnaire (1:1 – 1:8) was

designed to produce data regarding the participant's computer gaming habits. Each question will provide data on their; overall preference to violent computer games, how many hours they spend playing them. The researcher will ask each participant to answer Question 2.1 immediately after they finished Condition 1 and Question 2.2 immediately after Condition 2. There is a possibility that the data could be influenced by the recency/immediacy effect, to minimise this variable half the sample will play Condition 1 first whereas the others will play Condition 2 first (Flick, 2006). Once the participant has played both stimuli, they will be asked to complete a series of written questions designed to shed light on why they may have preferred one game over the other or why they felt they were equally enjoyable. For the full list of questions see appendix p64 - 68

The structuring of the questionnaire was produced though an iterative process of trials. Early drafts were tested on a sample of 3 participants to ensure the researcher was acquiring effective data relevant to the research questions. Through gathering verbal feedback from the participants, some questions were removed as the data they produced lacked analytical worth, also amendments were made to the phrasing of some questions to ensure that they were understood and accessible. Through preliminary trials it was found that each participant's individual interpretation of key words led to the emergence of significant variables. For example, it was found that each participant had their own personal subjective definition of "violence" which meant that it was difficult to compare data from several participants which made reference to it. As this study focuses on the presentation of violence any misinterpretation of key words or could undermine the reliability of the research data. Therefore, standardised definitions (provided by Oxford Press, and PEGI) were incorporated into the questionnaire to ensure that all participants were informed with a similar, approved, understanding of "graphic violence" and "non-graphic violence".

4.7: DATA ANALYSIS

The data produced from the interviews will be analysed using *Thematic Coding* (Flick, 2006). In the interview each participant will be asked to provide explanations for the answers they provided in the questionnaire. Each interview recording will be transcribed and analysed for Meaning Units (specific phases or words which express rational thought) (Flick, 2006). All the Meaning Units from every transcript will then be paraphrased and cross referenced with the other 22 interview transcripts for evidence of these specific responses to establish reoccurring themes. Once all reoccurring themes are established then they will be categorised and super categorised (see appendix p 69 – 71 / 75 - 80). This will help isolate specific aspects of the research stimuli which the participants may be responsive to. Though the categorisation of interview transcript data any reoccurring themes may suggest an explanation for any trends presented by the questionnaire data. Thematic coding was chosen over alternative analytical methods as it will allow for the "comparability" of conversational data and to establish common themes (Flick, 2006). This will allow the researcher to formulate generalised explanations for any trends presented by the statistical questionnaire

data. This method could be criticised as the researcher will be generalising, and categorising transcribed data through a subjective means however, this approach is necessary to formulate universal explanation of trends.

4.8: REPEATED MEASURES DESIGN

For the purposes of this experiment a repeated measure design will be used for the following reasons. Although a matched pair design could be used to eliminate any possibility of learnt ability influencing the results interpersonal variables such as the skill, gender, and subjectivity of the participant will be more likely to influence the data (Coolican, 2004). Furthermore, a repeated measure design allows the participant to state a preference through direct comparison, for either the condition 1 or condition 2 which in turn provides more accurate results than a matched pair design. As there is a wider array of variables associated with the Matched Pair Design, a Repeated Measures design will be used for this experiment. However, the researcher will need to address the possibility of learnt ability influencing the data. Firstly, the participants will have been chosen based on a high proficiency, experience and familiarity with the FPS format therefore the effects of playing one game prior to the second is unlikely to influence the data collected from the following stimulus. Secondly, encounters with hostile NPC's will be randomised and driven by the games artificial intelligence (A.I) therefore the player will not be able to prepare for specific expected situations learnt from exposure to the previous stimuli. Although these measures do not eliminate the possibility of learnt ability influencing the result they do however significantly reduce it.

4.9 STIMULI CONSTRUCTION

4.9.1 UNREAL TOURNAMENT 3

As previously discussed in the literature review, many of the variables in previous research have been due to using two different games. In order to accumulate more effective data the researcher was aware that the game mechanics would have to be standardised. Therefore, custom stimuli was built for the purposes of this study. The stimuli used in this experiment were modified versions of Unreal Tournament 3 (Epic Games, 2007), an FPS computer game. Using the Unreal Editor (supplied with the game) and through customising the games code, using "mutators", the researcher was able to meet the requirements of the research aim by modifying the games content to provide two contrasting visual experiences, whilst retaining the same gameplay mechanics. Through doing this the alternative variable of interest present in previous research will be accounted for (Dill & Dill, 1998).

The benefits of using UT3 as a basis for the experiment were numerous. Firstly, UT3 is based on the Unreal 3 Engine which is a current generation computer game engine capable of rendering high quality visuals. The Unreal 3 Engine has been used to create a multitude of commercial computer games (see appendix p. 81 - 82); therefore it can be assumed that the visual fidelity of the stimulus will be representative current computer games titles.

4.9.2 FUNDAMENTAL DESIGN OF BOTH STIMULI

Each stimuli will last 5 minutes, or until the player has killed/deactivated 25 NPC's. The overall objective behind both games is to Kill/Deactivate more enemies than any other NPC or to reach 25 Kills/Deactivations first. They will both be presented in the first person perspective and use the same interface controls. The player will compete against 4 opponents in both stimuli all scaled to the same level of intelligence (difficulty) and the player will be given a choice of two weapons in both conditions.

The researcher chose to standardise the fundamental gameplay mechanics in both conditions to ensure that the presentation of violence in Condition 1 was the only aspect of the stimuli which contrasted with game Two. This was done to make the experiment as fair as possible leaving the presentation of violence the only aspect of both games which could influence an increase or decrease in the level of enjoyment experienced by the participant.

4.9.3: CONDITION 1 – VIOLENT STIMULUS

Stimulus One has been designed to fit the criteria of an 18-rated videogame. The PEGI criteria of both 18 and 16 rated certificates places emphasis on the "depiction of gross violence" and realistic presentation. Therefore, this condition reflects that Realistic weapons (such as AK-47s and MP5s) were specially made and implemented into the game, blood splatter effects were intensified and the enemies resembled humans. The players were also given a brief instructing them to "kill as many enemies as possible".

[For screenshots of in game footage see Appendix p. 60 – 61]

4.9.4: CONDITION 2 – NON VIOLENT STIMULUS

Stimulus Two will be essentially the same as stimulus one in terms of gameplay design. However, the gory visuals will be completely removed. The enemies' resembled robots not humans and the realistic weapons were replaced with fictional "Laser Guns".

Although this condition could still be considered violent the PEGI 7/12 certificates permit perceivable violence providing it is presented in an unrealistic manner and towards a "fantasy character". Once the player had

successfully "deactivated" an enemy they were programmed to fall to the floor and remain motionless. All references to killing and gory visuals were removed and a Science fiction context was implemented into the visual stylisation to provide a stark contrast how both games were presented. In this condition the participants were given a brief instructing them to "de-activate as many robots as possible"

[For screenshots of in game footage see Appendix p. 61 - 63]

4.9.5: INTERFACE

To ensure that the data produced from the experiment is as accurate as possible any influencing factors capable of distracting the participant from the stimulus should be addressed or compensated for. Should a participant be required to use an unfamiliar interface then their data could be influenced by external feelings of frustration or confusion which would be counterproductive in assessing levels of enjoyment Turner (1994). To address this, the participants will be given the option of using either Playstation 3 "Dual-shock" controller or a keyboard and mouse which are standardised formats for playing FPS computer games. Through doing this any potential variables associated with interface unfamiliarity will be greatly reduced.

4.9.6: GAME DIFFICULTY

A fundamental aspect of computer games is that they must challenge the player (Oxland, 2004). As the Researcher will be measuring emotional response within a competitive environment it is also important to be aware that the sensation of winning and losing can have a dramatic effect on a participant's state of mind. Research by Gonzalez-Bono et al (1998) suggests that participants could be more pessimistic of their experience if they underperformed or "lost" to an enemy NPC. This could have dramatic effects on the validity of the results. Research would suggest that, if the participant won one game and lost the other, they would be more inclined to favour the environment in which they won. This would have an adverse effect on the results as their preference would be based on success and not the presentation of violence. To address this issue, the stimuli will be designed to ensure a winning environment for the player. This has been achieved though scaling the artificial intelligence of the enemies down to increase the player's probability of success in both condition 1 and condition 2. However this does not mean the player cannot lose a confrontation (die) with an enemy NPC, if the researcher was to remove the possibility of dying then the game would not meet the criteria of Sweetser and Wyeth's (2005) Game-Flow Design (for example player skill would be irrelevant, the game would lack feedback and require less concentration to play). Although this reduces the competitive element of the stimuli (and of the computer game experience) it is necessary to ensure that the results are as valid as possible. Furthermore, this will ensure an abundance of "kills" thus exposing the participants to regular intervals of violent acts in turn providing more instances for data analysis. However, measuring the effects of

violent presentation in an environment where the player cannot win would present an intriguing outlet for further research.

4.10: STIMULI TRAIL

To ensure the effectiveness of the research stimuli, 5 participants were selected to take part in a pilot study. Unanimously they all agreed that the "graphic" stimulus was visually, more explicit and gory. This confirmed that there was a significant comparative difference between how violence was presented in both stimuli. However, there were some unforeseen external variables which influenced participant enjoyment. In earlier trials each stimulus featured a unique environment however, some participants claimed the "non graphic" stimulus offered a more enjoyable experience because they felt that the environmental design was more interesting. To address any variables associated with environmental design final iterations of the stimuli will use the same environment.

Another participant claimed the heads up display (HUD) distracted from the visuals and introduced violent themes into the "non violent" condition 2. For example, when an enemy or player is killed a text overlay appears on screen detailing the killer and the victim (for example, PLAYER 1 KILLED PLAYER 2). Under the PEGI guidelines the "non graphic" stimulus was designed to present violent acts within a fantasy context and without emphasis on injury or pain. As the textual overlays undermined how violence was presented in condition 2, the game was modified to prevent them from being displayed in both conditions.

5.0: RESULTS

As a result of using a mixed methodology the volume of data collected from this experiment was vast, therefore the prominent data has been summarised below.

[For a more detailed breakdown of the raw data see Appendix Pages 72 – 80]

5.1: Questionnaire Results

The fixed design of the questionnaire allows for the data collected from it to be quantified and measured which provides a generalised insight as to how the sample reacted to the stimulus.

RESULTS OBTAINED FROM QUESTION 2.1 – 2.2: "ON A SCALE OF 1 TO 10 (1 BEING THE LOWEST, 10 BEING THE HIGHEST) HOW MUCH DID YOU ENJOY CONDITION 1/2"

Table 1: Accumulated Sample Preference			
	Condition 1	Condition 2	Indifferent
Number of Participants	9	11	2

Table 2: Average Difference Between Rating Given to the Stimuli	Condition 1	Condition 2	Difference
Participant 1	7	6	1
Participant 2	8	9	1
Participant 3	5	6	1
Participant 4	6	8	2
Participant 5	8	6	2
Participant 6	7	8	1
Participant 7	9	8	1
Participant 8	8	7	1
Participant 9	8	9	1
Participant 10	7	7	0
Participant 11	5	6	1
Participant 12	8	9	1
Participant 13	8	6	2
Participant 14	5	6	1
Participant 15	5	4	1
Participant 16	8	8	0
Participant 17	7	8	1
Participant 18	8	7	1
Participant 19	9	8	1
Participant 20	6	8	2
Participant 21	5	6	1
Participant 22	7	6	1
Total	153	157	24
Average Difference in rating			1.0909

The experiment found that 50% of participants favoured Condition 2 (non-violent stimulus), whereas 41% preferred condition 1 (violent stimulus), and 9% claimed to have enjoyed both games equally. Although this suggests that the participants favoured condition 2 by a small majority, when one investigates deeper into the data, we can see that the difference between the scores given to each game was minimal. Participants were asked to rate each game on a scale of 1 to 10, the results showed that the average difference between the given ratings by each participant across the sample for both games was 1.0909, the average rating for condition 1 was 6.954, and the average for condition 2 was 7.136

RESULTS OBTAINED FROM QUESTION 2.4: "

Table 3: WHICH GAME PROVIDED A MORE IMMERSIVE EXPERIENCE?"	
	Total
Condition 1	6
Condition 2	2
Both Equal	14

64% of participants claimed that both games were just as immersive as each other, which is a considerable majority over those who thought Condition 1 (27%) or Condition 2 (9%) provided a more immersive environment.

RESULTS OBTAINED FROM QUESTION 2.5:

TABLE 4: "DO YOU THINK THERE WAS A SIGNIFICANT DIFFERENCE BETWEEN THE LEVELS OF VIOLENCE BETWEEN THE TWO GAMES?"	
	Total
Yes	16
No	6
Unsure	0

73% of research sample believed that there was a significant contrast in how violence was portrayed between the two games whilst only 27% thought that both games were similar in their presentation.

RESULTS OBTAINED FROM QUESTION 2.6:

Table 5: "WHICH GAME DID YOU THINK WAS THE MORE VIOLENT OF THE TWO?"	
	Total
Condition 1	22
Condition 2	0

Despite 27% of participants claiming that there wasn't a significant difference between the stimuli used in this experiment, the research sample unanimously stated that Condition 1 was the more violent of the two games. These results provide a good indication as to how effective the research stimulus was because condition 1 was specifically designed to appear more violent than its counterpart.

RESULTS OBTAINED FROM QUESTION 2.7:

TABLE 6: THE NUMBER OF PARTICIPANT'S WHO BELIEVE VIOLENCE AFFECTED HOW MUCH THEY ENJOYED EACH GAME	
	Total
Yes	6
No	10
Unsure	6

These results provide a general indication as to whether or not the increased intensity of violent themes in condition 1 had a positive effect on the sample's overall level of arousal. 46% said no, 27% said yes and 27% were unsure.

Table 7: "BETWEEN THE 4 WEAPONS FEATURED IN BOTH GAMES, WHICH WAS YOUR FAVOURITE WEAPON?"	
MP5	4
AK47	0
GREEN LASER GUN	8
PURPLE LASER GUN	10

The questionnaire data shows that 46% of the research sample chose the "Purple Laser Gun" as their favourite and 82% of participants preferred the weapons in Condition 2 over the weapons in Condition 1.

5.2: Interview Results

Using Flicks (2006) approach to thematic coding to analyse the interview transcripts, the following reoccurring themes were established and categorised. For a more detailed overview of the results see Appendix p. 75 – 80.

Table 8: Enjoyment Themes (SEE APPENDIX p. 75 - 77)	
Visual Imagery Increased Participant Excitement	
Morbid Fascination	2
Colourful visual feedback created a more exciting experience in Condition 2	12
The visual presentation of the weapons in condition 2 was more exciting	12
The visual presentation of the weapons in condition 1 was more exciting	4
Increased Sensation of being Rewarded Visually	
Visual Reward more satisfying in condition 1	2
Condition 2 was a more visually "Rewarding" experience for some Participants	4
Gameplay	
Identical gameplay mechanics in both games made both games equally enjoyable	14

During the interview many of the participants stated a range of explanations and discussed different aspects of the two games which they enjoyed. The above themes are summarisations of reoccurring themes, found across each of the transcribed interviews. These themes have been categorised as elements of both games which contributed towards each participant's sense of enjoyment. These results show various explanations for why participants claimed to have enjoyed one game over the other. One of the most pronounced findings is that many participants found both games to be just as enjoyable as each other due to the gameplay being fundamentally the same in both conditions. The results also highlight that the colourful presentation of Condition 2 was a major contributor to participant satisfaction, and for this reason most preferred it over Condition 1. Twelve participants cited the unrealistic science-fiction weapon design as "more exciting", conversely only 4 preferred the realistic weapon design of Condition 1. Finally, only two participants believed their preference for the violent condition came from an innate "morbid curiosity".

Table 9: Increased Immersion / Emotional Reactivity Themes (SEE APPENDIX p. 77 - 79)	
Increased Perception of Realism	
Condition 1 presented a more Realistic Experience	6
Participant could relate more to game one 1	6
Perception of violence intensified in Condition 1	8
Immersed Competitive Behaviour	
Increased Winning Motivation	1
Increased sensation of required skill in condition 1	2
Increased perception of risk in condition 1	4
Increased Emotional Response	
Increased sensation of anxiety	4
Human Enemies in Condition 1 provoked a higher emotional response - guilt / pleasure	6
Increased Perception of Threat	6
Positive / Negative Emotional Reactions to the Presentation of NPCs	
Presentation of enemies irrelevant in producing an elevated emotional response	5
Robot enemies produced feelings of Detachment	2
Human Violence provoked a higher emotional response	6

These themes suggest specific elements of the stimulus which may have had an effect on the samples level of immersion. Here we can see that a significant proportion of the sample found that the increased levels of in-game violence in condition 1 provoked a deeper emotional response. The results show that some participants felt more threatened, anxious and experience an intensified awareness of risk. Due to the Human appearance of the enemy NPC's in Condition 1, 6 Participants expressed during their interview that they had greater feelings of guilt for shooting them, conversely, 5 participants believed the presentation of enemy NPC's to be irrelevant.

Table 10: Variables (SEE APPENDIX p. 79 - 80)	
Natural preference for violent imagery	2
Participants claim to have become desensitised through frequent exposure to violent media	5
Over exposure to realistic FPS Computer Games (Apathetic to Violent Games)	3

The above category of themes is representative of any comments suggesting external variables which may have influenced a participant's reaction towards the stimulus. Five Participants stated that they had become to desensitised to violent imagery through previous over exposure to violent computer games.

6.0: DISCUSSION

The collective results obtained from both the participant questionnaires and interview transcripts highlight a series of interesting developments which both support and contrast with the previous research outlined in the literature review. The most notable and perhaps surprising result was that amongst the 22 participants in this study, the results indicated that there wasn't an overwhelming preference for either of the games used in this experiment, despite the presence of graphic violence in Condition 1.

6.1: GENERAL REACTION TO THE VIOLENT STIMULI

Little evidence emerged from the data collected in this experiment to indicate that there could be a significant direct relationship between exposure to violent imagery and a significant change (either positively or negatively) in player enjoyment. This is a somewhat surprising result, as previous research suggests that players tend to rate realistic, violent computer games "more favourably" (p. 1039, Konjin & Bushman, 2007). When researching the wider topic area of people's perceptions of violent computer games, the researcher found that the majority of research tended to favour this belief that games with increased violent content are generally more favourable than those without. The findings of this study found opposing results to this (it was, in fact, a more neutral result) whereby players generally showed little or no preference between the violent and non-violent games they played. Obviously, there may be many variables which could explain this contrasting result, so throughout the following sections of this analysis, the researcher will be exploring potential explanations as to why the presence or absence of gross violence had little effect on the sample's enjoyment or immersion levels.

When asked whether they felt that the depiction of violence affected how much they enjoyed each game (either negatively or positively), only 6 participants out of 22 (27%) believed that violent content was a contributor, a further 6 (27%) said they were unsure, and 10 (46%) said it had no effect. Despite this, the average rating (specifying how much they enjoyed each of the stimuli) given to condition 1 was 6.954 out of 10 and for condition 2 it was 7.136 out of 10. The difference between the two averages was only 0.182, hence it could be concluded that there was no significant difference between the players' enjoyment of the two stimuli. It should be noted though, that the small difference that was recorded between the players' enjoyment of the two conditions was actually in favour of the condition 2. Thus, these results could potentially suggest that the presence of violent imagery may have had a small but negative effect on player enjoyment, which is contradictory of previous research by Konjin & Bushman (2007), but supports the findings of Goodson and Pearson (2009). This leads the researcher to question what alternative aspects of the stimuli account for the overall majority of participant excitement, and why the results suggest that violence wasn't a significant contributing feature which is contradictory of previous studies (such as - Lynch, 1994 - Gentile and Anderson, 2003). The questionnaire data provides quantitative grounding for theoretical composition however; due to the nature of this highly structured method it would be difficult to provide an explanation for these results. Therefore, to fully realize an understanding of these findings, the researcher will triangulate the data produced from both methods used in the experiment with previous literature to provide rationale for the sample's response.

6.2: DISCUSSION OF SAMPLES REACTION TO VIOLENT STIMULI

6.2.1: GAMEPLAY

To build upon the initial findings that there was no significant difference for players' enjoyment between the violent and non-violent stimuli, the data collected from the interview transcripts provide an insight into why this may have been the case. Through a careful analysis (thematic coding) of the individual participant transcripts, a reoccurring theme arose which suggested that the gameplay mechanics were the predominant contributor to the samples excitement. This theme reoccurred a across 14 out of 22 individual transcripts, providing a majority preference. Representative of this theme was Participant 3, who chose condition 2 as his favourite by a margin of 1, and stated during his interview:

"The general gameplay of the games was, essentially, the same so I didn't really think that the blood and guts made it [condition 1] more enjoyable" [Participant 3, Line: 48 – 49]

"it was more about accomplishing what I was doing and that really contributed to how much I enjoyed the game" [Participant 7, Line: 28 – 29]

Participant 3 stated that he was unaffected by the increased intensity of violent themes in condition 1, and highlighted that the game play mechanics of both games were the major influence behind his overall level of enjoyment and consequently his reasoning behind his preference for the two games. Although this appears to indicate a reason as to why one game was preferred over the other, it must be remembered that the gameplay structure in both games was standardised. This does in fact reflect in the findings because preference between both stimuli was non-significant (as there was only a difference of 0.182 between the average rating given to both games).

As both games were virtually identical in design besides their visual presentation this would suggest that the visual displays of violence in condition 1 contributed very little to player enjoyment when compared to the overall affect that gameplay mechanics had on the sample's amusement. Evidence to suggest that gameplay was a more dominating stimulant than the violent content in both conditions is highlighted by participants Participant 6 and Participant 2 who provided an insight into why they were unaffected by the intensified human-violence in Condition 1.

"I've boiled both experiences down to 'I'm running around shooting targets' and the context of that, I don't think, [violent imagery] affected my enjoyment of it. They could be literally "pop-up" targets"

[Participant 6, Line: 51 – 52]

"What I'm shooting at is not humans or cyborgs its targets that I need to hit…. I need to accomplish my objective by eliminating these things. So, they're both practically the same objectives, this is why I didn't differentiate between the two"

[Participant 2, Line: 40 – 42]

6.2.2: AESTHETICS OF THE GAMES

Dill and Dill (1998) and Ivory (2007) have both put forth a claim that realistic human violence has been shown to increase player arousal and emotional reaction, such as excitement or aggressive response. A total of 5 participants mentioned during their interview that the presentation of enemy characters (in both conditions) was irrelevant and didn't produce any different response for how they reacted to the stimuli regardless of their human, or non-human, appearance. However, the interesting aspect about the above comments from participants 6 and 2 is that they mutually trivialised the enemies in both games as "targets". This is best emphasised by Participant 6 who states that the enemy NPCs *"could be literally pop-up targets"* [Participant 6, Line: 51 – 52]. This may suggest that these participants do not anthropomorphize the enemies, but that they are in fact seen purely as a gameplay mechanic or

"targets". Cragg et al (2007) states that videogames are "clearly distinguishable from real" (page 75, Cragg et al, 2007) , and Goldstein (1999) believes that "there is little evidence to support that viewers identify with the aggressor" (p.5 Goldstein, 1999) which could explain why these participants have such a practical, emotionally detached, perspective of the enemies featured in both research stimuli.

These comments highlight a fundamental philosophical issue regarding virtual acts of violence. The Oxford University Press (2009) defines violence as "*behaviour involving physical force intended to hurt damage or kill someone or something*". Virtual acts of violence may not meet the criteria of this traditional definition as fundamentally the enemies, environment, and every other aspect of the game are not real. They are polygonal or pixelated digital constructions which are designed to imitate characteristics of living organisms. It could be suggested that in order for an emotional response to be generated from committing acts of violence against a virtual character, the player has to interpret these digital entities with a certain level of personification or suspension of disbelief. If the characters within the game are not perceived by the player as "someone or something" then this would raise questions as to whether the player interprets their own behaviour as being (in a traditional sense) "violent" or "aggressive" as these "targets" are not real or tangible. If the player does not anthropomorphize the enemies or perceive the game as real through suspension of disbelief, then in turn, any display of gore could be considered as nothing more than visual feedback for a successful "hit". This could explain why, amongst some participants, the visual presentation of violence in condition 1 failed to produce a significant emotional response in relation to the non-violent visual presentation of condition 2. These findings also contradict many previous studies which put forward the notion that player behaviour can be "aggressive" (Anderson & Bushman, 2001 - Gentile & Anderson, 2003). The evidence presented in Participant 6 and Participant 2's comments would suggest that their behaviour is more gameplay enthused (i.e. scoring points / winning vs. loosing) as opposed to aggressive in response to the presentation of the stimuli. This explains why the participants' reactions to both conditions were relatively equal; the games were essentially the same, except for their differing visual presentation.

6.2.3: PLAYER'S EMOTIONAL INVOLVEMENT

In accordance with Dill & Dill (1998) and Ivory's (2007) research, some participants did express an emotional reaction to committing acts of violence against human NPCs. However, the nature of how these participants reacted to "killing" human enemies was varied. 4 participants such as Participant 4 and Participant 1 stated that they felt more empathy for the human enemies in condition 1, however both played the extent of this emotional reaction down, claiming their feelings were only "slight" - "I feel slightly more empathy to the human ones" - [Participant 4 line 65]. Participant 4 later claimed that the human violence in condition 1 "didn't faze" him, implying that committing virtual acts of aggression against human NPCs didn't negatively (or positively) affect his enjoyment of the. This differing of

reactions from the participant could be an indication of several variables that regularly influence both qualitative and quantitative research (Flick, 2006) and will be discussed thoroughly in the *Criticisms* section below.

One interesting theme which arose within Participant 4's interview transcript was that he claimed to have become desensitised to computer game violence after playing violent themed computer games for several years:

"I play these kinda games all the time perhaps it's because I'm used to it" [Participant 4, Line: 44 – 45]

Participant 4's statement would suggest that he has become desensitised to violence in computer games through frequent violent computer game play. This presents a potential variable in the data due to the nature of the chosen sample for this experiment: Depending on each individual's background and history with computer games, could depend on how they react to the stimuli presented to them in the experiment. For example, Participant 4 may have played many different violent computer games for over four years, but another participant may have only played a couple of violent games in the last 6 months. This was not a topic that was investigated with the participants and could certainly implicate the findings. Future research of a similar field should certainly take this into consideration.

Upon further analysis of the data, it was found that 5 participants exhibited signs of desensitisation during their interviews. Dill and Dill (1998) claim that computer game play portrays victims as deserving of the infliction of aggressive behaviour which could result in reduced empathy if a player engages in this behaviour on a regular basis. Firstly, this theory could explain why many members of the sample experience little or no emotional reaction as a consequence of killing human NPC's. Secondly, this suggests that the results could have been drastically different if the sample were not frequent players of violent computer games. It should be noted though, that when selecting participants for the study, the researcher was conscious of selecting regular players of FPS computer games due to the reasons outlined in the research design. Desensitisation within participants could be a somewhat unavoidable variable when using an experienced sample however, the issues associated with using inexperienced gamers could have been potentially been far more complex.

Only 2 participants' (Participant 10, Participant 18) interview transcripts suggested that condition 1's gory violent imagery provoked a pleasurable response. Both these participants explicated that this was due to having a "morbid curiosity", in turn it could be put forth that these participants did experience a direct, somewhat sadistic, response through exposure to gory violence in condition 1, which supports Goldberg's (1998) morbid curiosity theory. However, the difference between how these participants rated both games were still minor (Participant 10 rated both games as "7" and Participant 18 rated condition 1 with an "8" and condition 2 with a "7") suggesting that the extent of their "morbid" satisfaction was a relatively small contributor to their overall arousal. It should be

highlighted, though, that this was a theme common in only 2 out of 22 participants so can therefore not be classed as a significant result.

Although these results would suggest that the effect of violent imagery in condition 1 was fairly insignificant 91% of participants did have a marginal preference for either one of the games. Only two out of the nine participants who stated a preference for condition 1 directly claimed that violent imagery was the reason for why they preferred it over condition 2. For that reason, it should be considered that the visual presentation of condition 1 could have influence the participant arousal indirectly.

6.2.4: THE EFFECT OF REALISM ON PARTICIPANT AROUSAL

In contrast to the fantasy context and visual stylisation of condition 2, condition 1 provided a more realistic experience as it contained human enemies and real-world weapons (such as Ak-47s and MP5s). 6 participants positively commented on a heightened sense of realism in condition 1 claiming that it contributed towards their excitement. One explanation for why these participants reacted positively to increased realism comes from research by Colwell (2007) which puts forward a theory suggesting that computer games provide exhilarating opportunities for players to experience dangerous scenarios. This theory is supported by the claims of Participant 5 and Participant 10 who stated that they felt more "threatened" in condition 1 than in condition 2 due to its "realistic" and "violent" visual presentation. Participant 5 and Participant 10 both stated during their interviews that the presentation of violence in condition 1 increased their perception of realism and that consequentially their emotional response was amplified.

"The Realism made it more intense" [Participant 10, Line: 41]

"I like realism in a game it makes it feel scarier" [Participant 5, Line: 32]

These quotes suggest that the realistic presentation of condition 1 may have had a significant effect on player anxiety. The transcript data shows that 6 participants claimed to feel more "threatened" during condition 1 than in condition 2. The fact that these participants felt more threatened in condition 1 is evidence to suggest that they may have experienced symptoms of the "fight or flight" response (Byron, 2009). Byron's research indicated that exposure to realistic computer game violence can provoke feelings of anxiety or aggression. Although it is difficult to confirm that violent imagery triggered the "fight or flight" response without any physiological measurements, Participant 5

did mention in the interview that she experienced some of the physiological symptoms associated with it such as increased heart rate and an adrenaline "rush".

"It [condition 1] made my heart race which is always going to be better than just sitting there just clicking like in condition 2" / "It [condition 1] gets your adrenaline going"

[Participant 5, Lines: 53-54 / 52 - 53]

Increased heart-rate and the release of adrenaline are indicators of the fight or flight response (Byron, 2009), and although this cannot be confirmed through qualitative data there is some evidence to suggest that violent imagery in condition 1 provoked this response amongst some participants. In Participant 5's and 5 other participant's interview transcripts elevated anxiety was found to have a positive effect on their arousal thus contributing towards their excitement.

"it gets your adrenaline going which then makes you feel more motivated, which makes the game feel more fun"

[Participant 5, Line: 52 – 53]

"It was more stressful but when I killed them [the enemies] it was more rewarding because of that"

[Participant 16, Line: 43 – 44]

Other participants, such as Participant 9 who also mentioned that they felt more "threatened" in condition 1, claimed that similar feelings of anxiety had a negative effect on their experience. Participant 9 states that he perceived a higher level of risk in condition 1 and that there was "more at stake", for these reasons he chose condition 2 as his favourite. One possible explanation for these polarising reactions to increased threat comes from Ravaja (et al, 2004) who suggest that the nature of a computer game can affect how engaged a user is depending on their specific personality traits. Their research shows that their participants who had a predisposition to "sensation seeking" were more likely to enjoy video games which replicate "thrills and danger" (p. 8, Ravaja et al, 2004). This could mean that the role of computer game violence differs depending on the user's subjective predisposition and could also explain why, in this experiment, the questionnaire data did not show an overwhelming preference for either game (Condition 1 = 41% - condition 2 = 50%). However, the participants in this study were not categorised into sensation seekers and non-sensation seekers, although some participants such as Participant 5 exhibited signs of having a predisposition to sensation seeking, further research would be needed to clarify this theory.

Increased Anxiety and perceived realism in condition 1 would suggest that the some participants experienced an elevated state of immersion. Contrary to the evidence found in the interview transcripts, the data produced from the questionnaire does not show as strong of a trend to suggest a deeper sense of immersion in condition 1. In the questionnaire, 64% of participants stated that they felt equally immersed in both games, 27% claimed they felt more immersed in game one and only 9% claimed to be more immersed in condition 2. In comparison 77.272% of interview transcripts contained some evidence to suggest that they experienced a deeper level of immersion in condition 1, although researcher implication or subjectivity must be taken into consideration as a variable. One potential explanation for this may have been due to misinterpretation of the word "immersion". Or they may have been less consciously aware of being more immersed, by definition immersion is a state where self-awareness is diminished therefore, this would imply that self-assessment methods may not be the most effective means of measuring immersion which may suggest why the results are different. These results also justify the use of mixed methods for data collection because the interviews uncovered evidence which the questionnaire did not which therefore, allowed for greater discussion. An alternative theory for this difference of results could be the timing of when the questions were asked: This questionnaire was filled in directly afterwards, when the stimuli were still fresh in the participant's minds, whereas when asked in the interviews, the participants would have had to recall the two different stimuli and it is more likely that their recall would not be as accurate after a period of time has passed and they have been distracted by answering questions and thinking about other aspects of the game (memory displacement) (Thorndike, 1914).

Both conditions used in this experiment featured the same violent acts (shooting at targets), however they were presented differently. The sample has demonstrated that the increased level realism in condition 1 provided an environment which was more "intense" producing higher levels of anxiety amongst some participants; however, this was shown to have both a positive and negative effect on participant arousal. In game two however, many participants didn't take the experience as seriously.

"the second game was more light hearted and fun" [Participant 9, Line: 77]

As there was no mention across the interview transcripts of any sensations of anxiety experienced by the participants in condition 2, this could be considered significant evidence to suggest that Violence triggered a stronger emotional reaction.

6.3: EXPLANATIONS FOR WHY CONDITION 2 SCORED HIGHER

Generally speaking, the sample experienced a marginal but less positive reaction to condition 1. On the surface, the raw data would indicate that this is because of the more vivid violent content of game one, but on the contrary, there is evidence to indicate that the sample's overall preference for condition 2 was more of a direct consequence of its unique presentation rather than a result of aversion to the violent themes in condition 1.

6.3.1: COLOURFUL FEEDBACK

In condition 2, participants were exposed to "dazzling" [Participant 4, Line: 56] displays of colourful visual feedback in substitution for the gory imagery found in condition 1. 12 Participants in this study claimed that the colourful visual effects in condition 2 were one of the reasons why they preferred it over condition 1. Furthermore, 4 participants claimed the vibrant visual effects in condition 2 made the game more "rewarding".

"The visual Reward is what motivated me, made me feel good" [Participant 6, Line: 56 – 57]

"the rounds that it fired just looked a lot more dazzling and impressive the

impact on your opponents looked cooler" [Participant 4, Line: 55 -57

Rewarding the player is one of the key components of game design as it generates a sensation of accomplishment (Oxland, 2004) which motivates the player and maintains enjoyment; in this case the data shows that the vibrancy of the feedback in condition 2 created a more satisfying experience for some participants. These results are somewhat surprising as condition 2 was designed as a non-violent alternative to condition 1, and past research indicates that violent games are usually favoured over non-violent alternatives (Konjin & Bushman, 2007). On the contrary though, 12 (54%) participants preferred the non violent visual presentation of condition 2 over the gory visuals in condition 1. These findings may imply that for many of the participants, the colourful presentation and contextual setting of condition 2 had a more profound effect on the player's excitement than the violent imagery in condition 1.

6.3.2: SAMPLES PREVIOUS OVER-EXPOSURE TO VIOLENT FPS'

Previous over exposure to violent computer games similar to condition 1 was a reoccurring theme within the interview transcripts for why participants preferred condition 2. 8 participants mentioned that the science fiction concept in condition 2 appealed more because it provided a more unusual experience to what they would normally

play. This is best represented by Participant 9 who provided a personal insight as to why condition 1 was less appealing:

"Well I've grown up with games and I used to play a lot of FPS's, when I was younger, and I don't as much anymore. The reason for that was because I felt like, you know, you're achieving the same thing. There's this sort of standard now with FPS's, it's just constant run and gun and explosions" [Participant 9, Lines 39 – 42]

"I've grown accustomed to this through playing First Person Shooters" – *"I've grown accustomed to blood guts and gore"* [Participant 2, Lines 68-69 / 16-17]

Participant 9 and 2's comments suggest that through previous over exposure to violent realistic FPS's, they have become uninterested and apathetic towards them. Participant 9 later justifies why he chose condition 2 as his favourite by claiming to have a preference for "inventive" concepts which "offer different experiences" [Participant 9, Line: 36].

This highlights a significant variable in that Participant 9 claims to have become uninterested in violent FPS's through previous over exposure to them. This is an important variable to take into consideration as it undermines the potential potency of Condition 1's realistic gory presentation in provoking participant arousal or emotional response. This is potentially important variable which should be taken into consideration, as this may imply that the results could have been different if a less pre-exposed sample had been used as potentially they could be more sensitised to violence in condition 1. However, experienced gamers over 18 years old were asked to participate due to the reasons outlined in the research design.

7.0: CRITICISMS AND LIMITATIONS OF THIS STUDY

One of the main limitations of the study is probably the narrow participant sample. Only 22 participants volunteered for the research, all of whom were of similar demographics (Caucasian, aged between 18 - 30, and from the West Yorkshire area), and because participants were selected via opportunity sampling, one cannot generalise the results to the wider population. The results can, however, be used to indicate future findings for research within a similar field, or be used as a template for a larger study.

Another important criticism of the study is that although the researcher did have a set of standardised questions for the interview stage with participants, it was not always possible to stick to an exact structure due to the nature of conversation and the differing participants' responses. Some participants were very talkative and needed very little prompting and consequently tended to stray of topic from time to time resulting in some data collection which was not possible with other interviews. On the other hand, some participants needed a lot more input from the researcher and required many more questions and prompting in order to get an in-depth interview. It was in these conversations that the researcher found that because he was required to deviate from the set structure in order to extract more information from the participant's responses, it was more likely that the impromptu questions or prompts were verbalised as leading questions, or two questions were asked at once. This could easily have affected participants' responses and resulted in skewed data.

The use of a Dictaphone proved to be a limitation of the study as some participants may have felt uncomfortable being recorded and be more wary of what they say. Further to this, as is the case with any research conducted in the same manner, many aspects of conversation can be lost through verbal recordings (sarcasm, hand gestures etc.). There is no feasible alternative to this though, as Willig (2005) suggests that an alternative such as video recording would have produced much less ecologically valid data.

The answers provided by participants may not have been as truthful and reliable as possible due to the Mundane realism (or ecological validity) of the study. For example, the same conversation had between two close friends in a pub may have produced entirely different data to that collected in a much more formal manner where the participant was told their data would be recorded and analysed.

A good example of this comes was mentioned in an earlier section when one of the participants stated that he felt empathy for the human enemies in condition 1. When coming back to this topic later in the conversation, though, the participant played the extent of this emotional reaction down, claiming his feelings were only "slight" and that they "didn't faze" him [line 45]. This differing of reactions from the participant could be an indication of several variables that regularly influence both qualitative and quantitative research (Flick, 2006). The simplest explanation would be that the participant may have simply changed his opinion when discussing his experience with the stimuli post-experiment. This is an affect associated with memory and cannot realistically be controlled in such an experiment.

An alternative reason for this change of opinion could come from the participant providing 'desirable answers'; the participant may have edited his response based on what he thought was a 'correct answer'. Participants being interviewed like this can often edit their opinions and give desirable answers when they have to voice them in public as they feel they should conform to what is expected of them (Flick, 2006) and give a view which coheres to the public norm. Similarly, the presence of the researcher and the recording equipment may have been an issue. Having a male researcher interview female participants could have influenced what participants said and how they said it (thus implicating the results) as there is evidence to suggest that conversations between same-sex individuals flows more freely and is less restricted than conversation between different-sex individuals (Aries, 1996). So, the presence of the male researcher may have had an effect on the data gathered, but unfortunately there is no realistic way to overcome this problem without causing further problems by involving a second (female) researcher to speak to the female participants. This would affect the reliability of the study as it could not be guaranteed that the same questions and prompts were being asked. One researcher may use slightly different wording which may turn an open ended question into a leading question which would skew the results. Smith (2003) supports this theory and adds that because of uncontrollable biological reasons, males and females respond differently to each other because they want avoid undesirable social circumstances whereby they appear in a negative light to the opposite sex. This is obviously a very simple and fundamental basic view on human interactions, but the results should be noted regardless.

A final implication comes from the relationship between the researcher and the participant. In the majority of cases, the participants for the experiment were people known to the researcher. This facilitates the research as it tends to avoid any anomalous results from shy participants who do not feel comfortable discussing personal opinions with a stranger. This may have been an issue with the research, as out of the 22 participants, 2 were unknown to the researcher and participated by suggestion of a mutual friend. The rest of the participants knew the researcher and had all conversed with him before, so the researcher hopes that this problem was avoided as there was already a certain level of informality between participants and the researcher. It should be noted though, that the researcher felt there was no significant difference in the way the interviews were conducted between participants, whether they were familiar with the researcher or not. Likewise, the researcher felt as though there was no significant difference between responses from participants based on their familiarity with the researcher.

One of the main criticisms of the stimuli design is that both research conditions are based around the act of shooting weaponry, and therefore condition 2 is may not be considered by some as truly non-violent condition. The standardised gameplay in both conditions meant the gameplay mechanic of shooting enemies had to be retained. Therefore, could be considered that the difference between how both games presented violence wasn't significant enough to generate data worthy of note (i.e Condition 1 may have not been significantly more violent than Condition 2). However, this was foreseen and to address this issue each of the participants were asked a series of questions

aimed at assessing how effective the stimuli was. 100% of participants identified condition 1 as being more violent than condition 2 and 16 participants believed that there was a significantly large contrast in how both games presented violence. This data supports the validity of the stimuli and research process as it ensures that the participants were presented with two effective contrasting conditions. The data accumulated through the questionnaires would indicate that, in this case, violent themes and visuals were not a predominant contributor either negatively or positively to the samples enjoyment.

8.0: CONCLUSION

This study acknowledged and built upon Dill & Dill's criticism of current literature by eliminating as many "variables of interest" between violent and non-violent research conditions. This made for a more accurate, less speculative analysis as differences in participant arousal could be reliably associated with the presence (or absence) of violent imagery.

To summarise the results, there is evidence to suggest that some participants did experience a direct emotional reaction to violent imagery, but it is a non-significant result. There is in fact, a larger and more significant volume of data to suggest that participant arousal actually came from the gameplay mechanics instead. The results of this experiment show that the motive behind playing violent computer games was disproportionately more gameplay driven (i.e. winning loosing / hitting targets / scoring points) than sadistic. The standardised gameplay mechanics used in both conditions is the most conclusive explanation as to why the samples' reaction to both stimuli was so similar. These findings contradict the evidence found in previous studies by researchers such as Ivory (2007), Dill & Dill (1998), Anderson & Dill (2000) and Konjin & Bushman (2007) which theorise that violent content in computer games can influence player excitement, behaviour, and emotional response. For that reason, further research would have to be conducted to strengthen the reliability of this studies finding.

As stated at the beginning of this thesis, computer games entertain us in a multitude of ways, some more than others. Through adopting a perspective which accounts for these other sources of excitement (a global perspective) within computer game play, the findings of this study have shown that (in relation to the other sources of interest) violent imagery had an almost negligible effect on this samples arousal.

9.0: FURTHER RESEARCH

The implementation of custom research stimuli into the experiment instead of pre-existing computer game titles has presented significantly different results to that of previous literature. Further research would be needed to determine whether or not the stimulus provided effective research conditions.

One outlet for this would be to measure physiological response from participants playing both conditions this would provide adequate quantitative and qualitative research to begin crafting new theories regarding how violence in computer games affects players. Furthermore the findings of this study showed some evidence to suggest that violent imagery activated the "fight or flight" response amongst some participants, physiological measurements would be a more empirical way of determining whether this was the case.

The Female participants in this experiment were found to respond more positively to condition 1 than condition 2 (albeit marginally) this contradicts the environmental gender stereotyping theory by Pomerleau (et al, 1990) and Goldstein (1999). However, not enough evidence was generated from the 4 females who participated in this study to successfully substantiate a theoretical retort. Therefore, it could be beneficial to see how a larger sample of females would react to the research same conditions of this experiment.

Finally, analysis of the research data identified that the sample may have become desensitised to computer game violence through frequent exposure to it. It would be an interesting avenue of research for this research model to be a sample of casual gamers to address whether desensitisation was an issue in this experiment.

10.0: REFERENCES

Author Unknown. (*2007).* Call of Duty®: Black Ops™ Surpasses $1 Billion in Sales Worldwide. *Activision Press Release:* [accessed online at < http://investor.activision.com/releasedetail.cfm?ReleaseID=538246> accessed on 29/12/2010].

Anderson, C., Bushman, B. (2001). *Psychological Science: "EFFECTS OF VIOLENT VIDEO GAMES ON AGGRESSIVE BEHAVIOR, AGGRESSIVE COGNITION, AGGRESSIVE AFFECT, PHYSIOLOGICAL AROUSAL, AND PROSOCIAL BEHAVIOR: A Meta-Analytic Review of the Scientific Literature" Vol. 12, No. 5 pp: 353 – 359,* Iowa State University

Anderson, C., Bushman, B. (2002). *Violent Video Games and Hostile Expectations: A Test of the General Aggression Model,* Iowa State University.

Anderson, C., Dill, K. (2000). *Video Games and Aggressive Thoughts, Feelings, and Behavior in the Laboratory and in Life.* Journal of Personality and Social Psychology (April) Vol. 78, No. 4, pp. 772-790

Aries, E., (1996). Men and Women in Interaction. Oxford University Press, USA

Beland, H., Fournelle, D., (2005). *Physiological stress to video-game playing: the contribution of built-in music.* Life Sciences, 76, pp. 2371-2380

Benenson, J., Carder, H., Geib-Cole, S. (2008). The Development of Boys' Preferential Pleasure in Physical Aggression. AGGRESSIVE BEHAVIOR: Vol. 34, pp. 154–166

Byron, T. (2008). *Byron Report – Children and New Technology.* [accessed online at <http://www.dcsf.gov.uk/byronreview/> accessed on 17/10/2009].

Carnagey, N., Anderson, C., Bushman, B., (2006). *The effect of video game violence on physiological Desensitization to real-life violence*. Journal of Experimental Social Psychology (2006).

Colwell, J., (2007). *Personality and Individual Differences - Needs met through computer game play among adolescents.* Department of Psychology - University of Westminster. – UNPUBLISHED -

Coolican, H., (2004). *Research Methods and Statistics in Psychology*. Hodder & Stoughton Educational. ISBN-10:0340812583.

Cragg, A., Taylor, C., Toombs, B., (2007). *Video Games*. British Board of Film Classification.

Dill K. & Dill J., (1998). Video Game Violence: A Review of the Empirical Literature. Elsevier Science Ltd. Aggression and Violent Behaviour, Vol. 3, No. 4.

Dutton (2011). *Study to link gaming with mental illness*. [accessed online at < http://www.eurogamer.net/articles/2011-01-14-study-to-link-gaming-with-mental-illness > accessed on 15/01/2011].

Elias, N., (1982). *The civilizing process.* New York: Pantheon - Original work published: 1969.

Egenfeldt-Nielsen, S., Smith, J., Tosca, S. (2008). *Understanding Video Games: The Essential Introduction*. Routledge, ISBN:0415977215.

Flick, U., (2006). *An Introduction to Qualitative Research.* Sage Publishing, UK

Funk, J., Buchman, D., (1996). Playing Violent Video and Computer Games and Adolescent Self-Concept. Journal of Communication: Volume 46, Issue 2, pages 19–32, June 1996.

Gentile, D., Anderson, C., (2003) Violence and Children: a complete guide for parents and professionals. Chapter 7: Violent Video Games: The Newest Media Violence Hazard, Praeger Publishers Inc, ISBN-10: 0275979563.

Goldberg, V. (1998). Death takes a holiday, sort of. New York: Oxford University Press. pp. 27-52

Goldstein, J., (1999). *MEDIA PSYCHOLOGY 1: The Attractions of Violent Entertainment.* Department of Media & Communication. University of Utrecht.

Gonzalez-Bono, E., Salvador, A., Serrano, M., Ricarte, J., (1998). *Testosterone, Cortisol, and Mood in a Sports Team Competition*. Hormones and Behavior vol. 35, (1999). University of Valencia. pp 55–62

Goodson S., Pearson, S. (2009). There is more to video games and aggression than violent content. P*roceeding of the Annual British Psychological Society Conference.*

Graybill, D., (1985). *Effects of Playing Violent Versus Nonviolent Video Games on the Aggressive Ideation of Aggressive and Nonaggressive Children*. *Child Study Journal. v15.* pp 199-205.

Grimshaw, M., (2010). *Game Sound Technology and Player Interaction: Concepts and Developments*, Idea Group Inc.. ISBN - 10: 161692828X.

Giumetti, G., Markey, P. (2007). *Violent videogames and anger as a predictor of aggression.* Journal of Research in Personality, vol. 41, pp. 1234-1243.

Hart S., Binggeli N., Brassard M., (1998)*. Evidence for the Effects of Psychological Maltreatment*. *Journal of Emotional Abuse, Vol. 1.*

Hogg, M., Vaughan, G. (2002), *Social Psychology: Third Edition*, Pearson Education Limited, ISBN: 0130336327.

Jenkinson, S, (2001). *The Genius of Play*, Hawthorn Press, ISBN – 10: 1903458048.

Konijn, E., Bushman, B., (2007). *I Wish I Were a Warrior: The Role of Wishful Identification in the Effects of Violent Video Games on Aggression in Adolescent Boys,* American Psychological Association: Developmental Psychology Vol. 43, No. 4, 1038–1044.

Lynch, P., (1994). *Type A Behaviour, hostility, and cardiovascular function at rest and after playing video games in teenagers*. Psychosomatic Medicine, pp. 56-152.

Murray, J., (2005). *Media Violence: The Effects Are Both Real and Strong*, Kansas State University.

Oxford University Press, (2009). *The English Dictionary*, ISBN: 0198610572.

Oxland K., (2004). *Gameplay and Design*, Addison-Wesley, ISBN: 0321204670.

Author Unknown, (2011). About PEGI: What do these Labels Mean [accessed online at < http://www.pegi.info/en/index/id/33/ >, accessed on 13/01/2011].

Pomerleau, A., Bolduc, D., Malcuit G. and Cossette, L., (1990). *Pink or blue: Environmental gender stereotypes in the first two years of life*. Sex Roles Journal, Volume 22, Numbers 5-6, pp 359-367.

Skelton, C., (2000). *Dominant Masculinities and Primary Schooling. Sport, Education and Society, Volume 5, Number 1*, pp.5-18.

Sweetser, P., Wyeth, P. (2005). *GameFlow: A Model for Evaluating Player Enjoyment in Games*, The University of Queensland.

Thorndike, E., (1914). *The psychology of learning*, Teachers College, p. 4.

Tognetti, S., Garbarino, M., Bonanno, A., Matteucci, M., Bonarini, A., (2010). *Enjoyment Recognition From Physiological Data in a Car Racing Game, IT.*

Vorderer, P., Bryant, J., (2006). *Playing Video Games: Motives, Responses, and Consequences (Communication): Motives, Responses, and Consequences,* Routledge, ISBN-10: 0805853219.

Wickens, A., (2005). *Foundations of Biopsychology – Second Edition,* Pearson Education Limited, ISBN-10: 0131971387.

Willig, C., (2001) *Introducing Qualitative Research in Psychology: Adventures in theory and Method*, Open University Press, ISBN: 0335205356.

Wolf, M., (2007). *The video game explosion: a history from PONG to Playstation and beyond,* Greenwood Press, ISBN-10: 031333868X.

Yee, N., (2002). Understanding MMORPG Addiction, [accessed online at < http://www.Participant 16yee.com/hub/addiction/addiction.pdf >, accessed on 13/01/2011].

Zillmann, D. (1998). *The psychology of the appeal of portrayals of violence*, New York: Oxford University Press.

11.0: GAME - BIBLIOGRAPHY

Call of Duty: Black Ops, Released: 2010, Developer: Treyarch, Published by: Activision

Doom, Released: 1993, Developer: Id Software, Published by: Id Software

Gears of War, Released: 2006, Developer: Epic Games, Published by: Microsoft

Lords of Everquest, Released: 2003, Developer: Rapid Eye Entertainment, Published by: Sony Online Entertainment

Mortal Kombat, Released: 1992, Developer: NetherRealm Studios (Formerly: Midway Games Chicago), Published by: Midway Games

Myst, Released: 1993, Developer: Cyan, Published by: Midway Games / Brøderbund / Mean Hamster Software / Sunsoft

Newman, J., 2004, *Videogames*, Routledge, ISBN-10: 0415281911

Tomb Raider, Released: 1996, Developer: Core Design, Published by: Eidos Interactive

Warcraft 3, Released: 2002, Developer: Blizzard Entertainment, Published by: Blizzard Entertainment / Sierra Entertainment / Capcom

Wolfenstein 3D, Released: 1992, Developer: Id Software, Published by: Apogee Software / Interplay Entertainment / BAM! Entertainment / Atari Corporation / MacPlay / Imagineer / Zodttd / Id Software

11.0: APPENDICES

11.1: VIOLENT COMPUTER GAME TIMELINE

In 1965 Gordon Moore predicted that computer processing power would increase exponentially every 2 years. This is due to the on-going reduction in the size of the transistors found within microprocessors (Brock, 2006). As a result of this, the technology driving computer games has dramatically improved since the medium emerged in the 1970's. Consequently, the depiction of violence found within computer games has become increasingly realistic. As the industry strives to create computer games which mirror realism, the social implications regarding any behavioural affects they may have on their consumer base has become an increasing concern amongst the media and researchers alike. The subsequent literature provides an insight in to how violence in computer games has come to be increasingly popular, as well as controversial, over the previous 40 years. By analysing the historical context of violence in computer games it may be possible to find explanations as to why they are so popular.

In 1976, *Exidy* developed and published the computer game *Death Race*. The game was inspired by the cult movie *Death Race 2000* (New World Pictures, 1975) however, it was not licensed by New World Pictures and therefore not an official computer game adaptation of the film. The player controlled an on screen car and was awarded points for actively running over "gremlins", represented as stick men. Arguably it was the first mass produced computer game to actively encourage the player to commit simulated acts of unprovoked violence within a virtual environment (Herman, Horwitz, Kent and Miller, 2002; Gentile and Anderson, 2003). The game was also the first of its kind to inspire major public outcry in North America with the *American National Safety Council* condemning the game as "sick" and "morbid" (Koholer, 2007).

In 1983 the Atari 2600 game **Custer's Revenge** (Mystique, 1983) became the first home computer game to provoke multiple lawsuits against its developer **Mystique** (**Billboard Newspaper**, 1982). The player controls a pixelated depiction of the 19th Century American **General George Armstrong Custer**. Points are scored for guiding Custer though a series of hostile projectiles and engaging in sexual intercourse with a Native American Woman situated at the right-hand side of the screen (**Gonzalez**, 2004). Furthermore, the box art implied that the Woman was unwilling as she is seen to be tied to a pole, thus it could be interpreted that she is being raped. The violent sexual content and racist themes found in **Custer's Revenge** led to the game being withdrawn from the Participant 10et due to multiple lawsuits and protests from the American general public (**Billboard Newspaper**, 1982). The negative media attention led to many retailers in North America taking **Custer's Revenge** off the shelves, despite this the combined sales of Mystique's 3 releases that year (which include **Beat 'Em and Eat 'Em**, **Gigalo** and **Custers Revenge**) amounted to approximately 750,000 copies (**Lane**, 2000, p: 55)

In the early 1980's there was heightening public concern over how violent media was affecting British society. Spearheaded by moral campaigner **Mary Whitehouse** the "Video Nasty" campaign generated widespread "panic" (**Egan** 2007, *page 1*). In 1984, the **Computer Recordings Act** was introduced; imposing stricter censorship regulations. This meant that the **British Board of Film Classification** (**BBFC**) would be responsible for the classification of computer games with proscribed content such as "gross violence" (**SBBFC**, 2010)*.* The computer game classification would be bound by law preventing the sale of adult material to underage consumers. The American equivalent, however, the **Entertainment Software Rating Board** (ESRB), was not introduced until 1994. The ESRB assesses a computer game in a similar manner to the BBFC however, the ratings system acts only as consumer advice rather than law binding restrictions, as the **American Freedom of Speech Act** prevents any penalty being enforced for supplying mature material to young consumers.

In 1991, the computer games industry saw a huge shift towards 3 dimensional (3D) 1st person perspective games with the release of **Wolfenstein** 3D (**ID Software**, 1992) (**Wolf**, 2007, page 156). The game is considered to have "single-handedly popularised" and "established the first person shooter" (**Wolf**, 2007, page 156) now a common genre. The player assumed the role of an American soldier during the Second World War. The objective of the game was formulated around killing Nazis and Mutants. The game's violent themes were later modified or removed for the Nintendo Entertainment System port amid **Nintendo of America's** concerns over the presence of Adolf Hitler, the Swastika and the depiction of violence (**Schedeen**, 2010).

Wolfenstein's successor **Doom** (ID Software) was released in 1993. The game had many notable improvements such as a superior graphics engine, a modular design which enabled users to create custom levels more easily, peer-to-

peer networking features, multiplayer functionality and a new "death-match" mode which would soon become a staple concept in competitive multiplayer gaming (**Vorderer and Bryant**, 2006, page 26).

In 1995, the Sony Playstation was released, bringing with it an era of true polygonal 3D games. This was a significant step forward for the visual capabilities of future computer games, making games more cinematic, realistic and believable. (Herman, Horwitz, Kent and Miller, 2002)

On the 27th of February, 2004, Warren Leblanc murdered Stefan Pakeerah with knife and a claw hammer in Leicester, England. During a hearing, the mother of the victim claimed that Leblanc had "mimicked" scenes from the game, **Manhunt** (**Rockstar Games**, 2003), and that he was "obsessed" with its violent content. The news media companies responded with headlines such as:

- **Game blamed for hammer murder** - BBC News Online - Thursday, 29 July, 2004, 00:30

- **Retailer pulls 'murder' computer game** - CNN.com - Friday, July 30, 2004, 09:44

Despite affiliation with a murder investigation, Take Two published a sequel in 2007. In 2008 the Manhunt franchise had sold 1.7 million units (Take-Two, 2008).

In 2009 **Call of duty: Modern Warfare 2** (**COD: MW2**) was released amidst much media and political controversy for its portrayal of violence more specifically during the "**No Russian**" Chapter (A chapter in which the player assumes the role of a CIA double agent and has the option to gun down helpless civilians in an Airport). BBC **Reporter Marc Cieslak** voice his concern on a **BBC Radio 4** channel say that he felt "saddened" by COD: MW2 and that the game was "controversial for the sake of being controversial" (**Purchase, Eurogamer**, 2009). Despite this, the game becomes the best selling computer game of 2009 in the UK (**Author Unknown, BBC**, 2010). Its successor *Call of Duty: Black Ops* (Activison, 2010) would proceed to become the fastest selling computer game of all time in 2010.

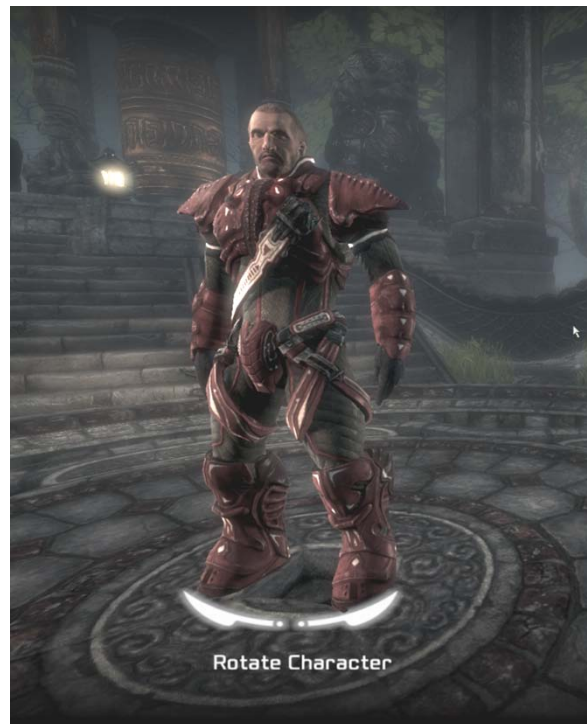## 11.2: STIMULI SCREENSHOTS

11.2.1: CONDITION 1

Fig. 1: Condition 1 screenshot

Fig. 2: Condition 1 screenshot

Fig. 3: Condition 1 Enemies
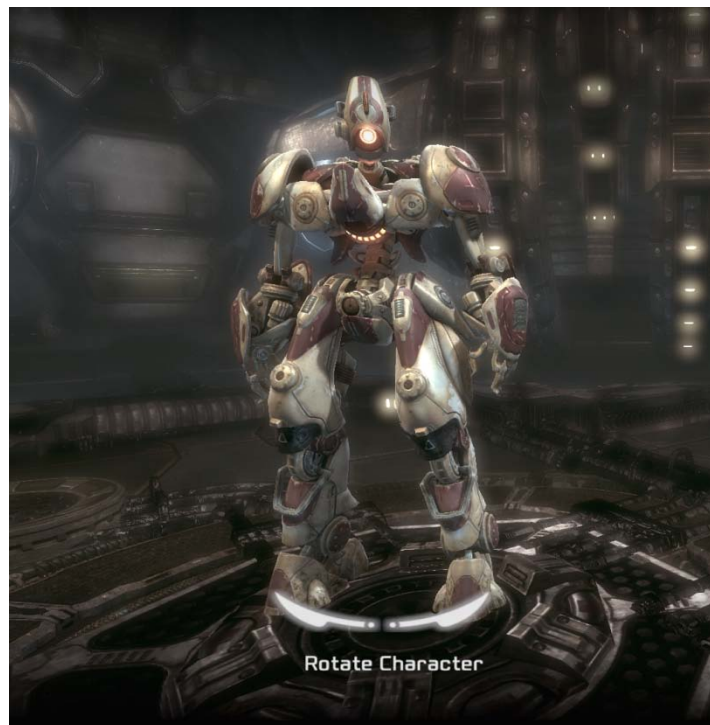

11.2.2: CONDITION 2

Fig. 4: Condition 2 screenshot

Fig. 5: Condition 2 screenshot

Fig. 6: Condition 2 screenshot

Fig. 7: Condition 2 Enemies

11.3: QUESTIONNAIRE

PERSONAL INFORMATION

Participant Name: _____   Age: _____

Address: _____

_____

Phone Number: _____   Gender: Male ☐ Female ☐

Which would you prefer to use during experiment?   ☐ Keyboard & Mouse   ☐ PS3 Controller

---

Thank you for participating in this study.

Please answer the following questions to clarify that you are willing to participate in this study.

Do you understand the nature of this study and that you have had the opportunity to discuss it with the researcher?

☐ Yes ☐ No

Do you understand that you can withdraw from this experiment at any time? ☐ Yes ☐ No

Do you agree to the interview being recorded? ☐ Yes ☐ No

Do you give your consent for any information which you may provide to be used and analysed for the purposes of this study? ☐ Yes ☐ No

Are you willing to being exposed gory violent imagery typical of an 18 rated (British Board of Film Classification certificate) computer game? ☐ Yes ☐ No

I _____ (Block Capitals) **have understood and answered the previous questions and am willing to participate in this experiment.**

Signed _____

Date _____

DEFINING VIOLENCE

The Oxford University Press defines *violence* as "*behaviour involving physical force intended to hurt damage or kill someone or something*" (Oxford University Press, 2009). In order to insure that the results of this questionnaire are valid it is important for you to understand that throughout this questionnaire the term violence will be used in reference to the above definition. Throughout this research experiment references will be made to *graphic* and *non graphic* violence which are defined below as using the *British Board of Film Classification* (BBFC) and the *Pan European Game Information* (PEGI) criteria:

*Graphic violenc*e: *Strong bloody detailed depictions of gross violence*.

Non graphic violence: *no emphasis on injuries or blood, and violent acts are justifiable though its contextualisation (for example, historical, comical or fantasy)"*

PROSPECTIVE PARTICIPANT EVALUATION

1.1: Do you play Computer Games?

☐ Yes ☐ No

1.2: Do you play violent computer games?

☐ Yes ☐ No

1.3:   How often do you play violent computer games?

1 = never 7 = all the time

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7

1.7.   When playing a game, which of the following do you think are most enjoyable aspects of the computer game experience? (Please tick 3)

☐ Collectables   ☐ Narrative   ☐ Other (please specify)

☐ Graphics   ☐ Sound   _____

☐ Objectives based   ☐ Artificial Intelligence
gameplay

1.8.   Which of the following computer game genres do you play the most?

(Please pick 3 and prioritise from 1 being the most played to 3 being the least)

☐ Role Playing Games (RGP - Fallout 3)

☐ Strategy (RTS – Command and Conquer)

☐ First Person Shooters (FPS – Call of Duty)

☐ Beat-Em-Up (Street-Fighter etc)

☐ Puzzle (Tetris)

☐ Massively-Multiplayer-Online (MMO World of Warcraft)

☐ Simulation (Microsoft Flight Simulator – Theme Park)

☐ Racing (need for speed)

☐ Action adventure (tomb raider)

☐ Platform (Mario)

Post Stimuli Questions

2.1:   On a scale of 1 to 10 (1 being the lowest, 10 being the highest) how much did you enjoy condition 1?

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

2.2:   On a scale of 1 to 10 (1 being the lowest, 10 being the highest) how much did you enjoy condition 2?

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

2.3.   If you have rated the games with different scores, what do you think made the higher scoring of the two games more enjoyable? (You may tick more than one)

☐ Environmental Design   ☐ Enemy Design   ☐ Weapons   ☐ Visual Reward

☐ Other (please specify)   ☐ Sound Effects

2.4:   Which game provided a more immersive experience?

☐ Condition 1   ☐ Condition 2   ☐ Both Equal

2.5:   Do you feel there was a significant difference in the levels of violence between both games?

☐ Yes ☐ No

2.6:   (If you have answered yes to the previous question) Which game did you think was the more violent of the two?

☐ Game One   ☐ Game Two

2.7:   Do you feel the different depictions of violence affected how much you enjoyed each game?

☐ Yes ☐ No ☐ Unsure

2.8:   Between the 4 weapons featured in both games, which was your favourite weapon?

☐ MP5   ☐ AK47   ☐ Green Laser Gun   ☐ Purple laser gun

11.4: STANDARDISED INTERVIEW QUESTIONS

1:       **(in response to question 2.1)**

What is your reasoning for the answer you provided for question 2.1?

2:       **(in response to question 2.2)**

What is your reasoning for the answer you provided for question 2.2?

3:       **(in response to question 2.3)**

What was it about the _____ that made the higher scoring game more enjoyable?

4:       **(in response to question 2.4)**

(if answered as "CONDITION 1/2") As regards to the design what made GAME _____ more immersive?

(if answered "BOTH EQUAL") Why do you feel both games were just as immersive as each other?

5:       **(in response to question 2.5)**

(if answered as "YES") What were the major differences in the presentation of violence between the two games?

(If answered as "NO") Why did you feel there was little (if any) difference between the two?

6:       **(in response to question 2.6)**

(if answered as "CONDITION 1/2") Why do you feel Game _____ was the more violent of the two?

7:       **(in response to question 2.7)**

(If answered as "YES") In what way did the depiction of violence influence your enjoyment? (For example, did it make you more aggressive, was it more satisfying or did it provide a more realistic experience?)

(If answered as "NO") Did you feel the depiction of violence was irrelevant to your levels enjoyment? Were the fundamental rules of the game or competition overwriting factors)

8:       **(in response to question 2.7)**

Why was it about the _____ that made it your preferred weapon?

11.5: CODED INTERVIEW TRANSCRIPT

Participant 6 - Interview Transcript

R: Researcher

P6: Participant 10

R: I asked you on the first question to rate on a scale of one to ten, one being the lowest, 10 being the highest, how much you enjoyed condition 1 and you gave it a 7. Why did you give it a 7?

P6: I enjoyed it. I enjoyed the competitive element of the game, I enjoyed running around shooting people, I don't know what that says about me. I felt that a 7 was deserving of that experience.

Competition / Enjoyment

R: ok, I then asked you to do the same for the second game and you gave it an 8, why did you give it an 8?

P6: It's far easier to answer that because I have a basis for comparison. Condition 2 compared to condition 1 was exactly the same idea, I'm running around shooting people and I find that fun, that's a fun thing to do. I found it more fun than the first one, it had more of a visual reward. The bright purple laser and the effect it had on the enemies was just more visually pleasing than the weapons in the first game so for that reason it raise the score just slightly above the first one.

Increased Rewarding Visual Feedback / Preference for Weaponry

R: I then asked you choose a few element of the higher scoring game which made it more enjoyable than the first game. You have already talked about a few of these but you picked enemy design and visual reward. So we'll start with the enemy design, why were the robots more appealing?

P6: They were just a bit more interesting, essentially the enemies were just targets in both games however, the robots made more interesting targets.

Enemies = Targets / More interesting Enemy Design

R: You also mentioned visual reward and bright colours on the questionnaire how do they contribute to your overall sense of enjoyment?

P6: It's a very simple way of rewarding the player through bright colours flashing all over the place, puzzle games will do that. It is a very simple reward mechanism but it's very effective means of giving feedback to the player.

Rewarding Visual Feedback

R: I then said which game provided the moset immersive experience and you said "both equal". Now you did rate one higher than the other, why do you feel that they are just as immersive as each other?

P6: With immersion were talking about how involved I got in the game. I was very aware that I was doing the same thing in both, I was running around a level shooting a weapon at targets. I found two more fun than the other but, thinking about immersion and how involved I'm getting, I didn't feel more emotionally attached or involved in two more so than the other. I found the same level of immersiveness in both games, if that's a word.

No Emotional attachment / Equally immersive

R: Right ok. I then said do you think there was a significant difference in the levels of violence in both games and you said yes. Could you just highlight a few examples of things that made condition 1 more violent?

P6: It's all contextual. In the first one you shoot them and they bleed everywhere and its people screaming and dying, where as in the second one you're doing exactly the same thing but your shooting robots with a purple laser and they just fall over, you're not even killing them really because they just fall over. So that was the obvious difference.

Contrasting levels of violence

R: In the second to last question I asked you "you do you feel that the different depictions of violence affected your enjoyment" and you said no. Could you embellish on why you said no?

P6: It's obviously very noticeable, one is far more violent than the other but I don't think it affected my enjoyment of the game at all. I've boiled both experiences down to I'm running around shooting targets and the context of that, I don't think, affected my enjoyment of it. There could be literally "pop-up" targets.

Enemies = Targets desensitisation

R: So what contributed most to your sense of enjoyment which these games produced for you?

P6: I think it was the reward for hitting a target successfully your given a reward, whichever of the two games your given a reward there just different. The visual reward is what motivated me, and made me feel good.

Visual Reward / Felt more motivated

R: Ok, so in the next question, I asked you "between all the weapons featured in both games which was your favourite" you chose the purple laser gun. No we already know that you liked the purple laser gun so what I'd like to ask you is why didn't you choose the MP5 or AK47

P6: The main reason for why I preferred the purple laser gun more so than any of the others was because purely down to the bright colours it generated.

Weapon design / colourful feedback

R: One last question. In the first game you were fighting against human characters in the second you were fighting against robots. Does the visual representation of the enemies make a difference in how you might treat them? Do you think you would treat a human enemy differently to any other fictional enemy?

P6: Broadly speaking in this game, no. There are games where you emphasise with other characters but they usually have a personality which are built up for you to emphasise with. If it's a game like this one or call of duty you have these faceless targets running around which don't have names or personalities. You're not supposed to emphasise with them and I don't they are just targets, and I think that's the point I think that if you considered for a moment that they are real people you probably wouldn't want to shoot them.

Enemies = targets / desensitisation

R: Have you ever emphasised with a computer game character, could you give an example?

P6: There are plenty of characters in fallout series which have names and personalities and you're supposed to be placed in these moral situations where do you act in their best interest or maybe your own. In that game you have the choice to kill everybody if you wanted. So that's a game where your presented with a scenario where your emphasising with real people, well "real people". I think that is a good example of where you emphasise with people who you know are not real, you could think of them as targets but in this case I'm not.
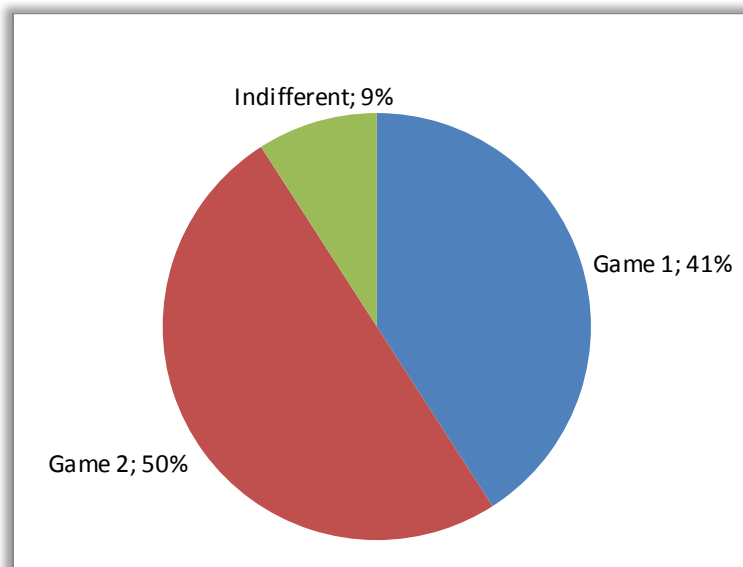
Personification of computer game characters

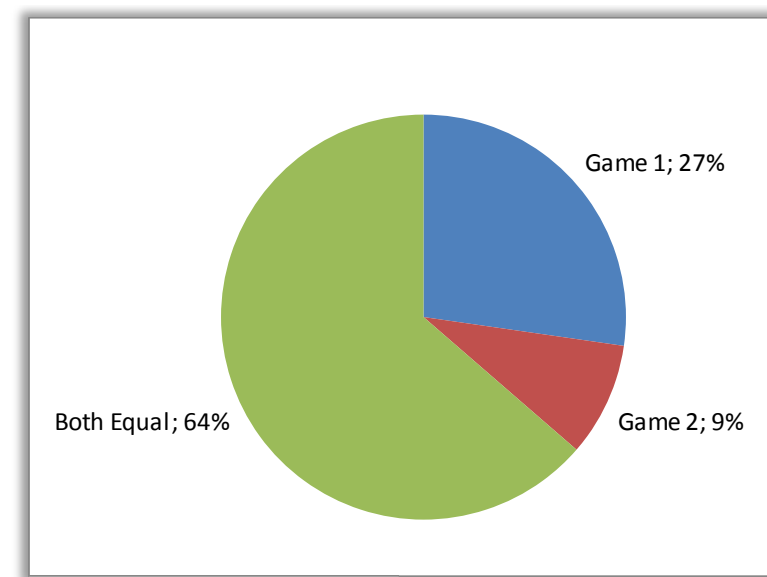R: Ok that's everything, thank you very much.

11.5: FULL RESULTS

11.5.1: QUESTIONNAIRE RESULTS CHARTS

Results obtained from Question 2.1 – 2.2: "*On a scale of 1 to 10 (1 being the lowest, 10 being the highest) how much did you enjoy condition 1/2"*
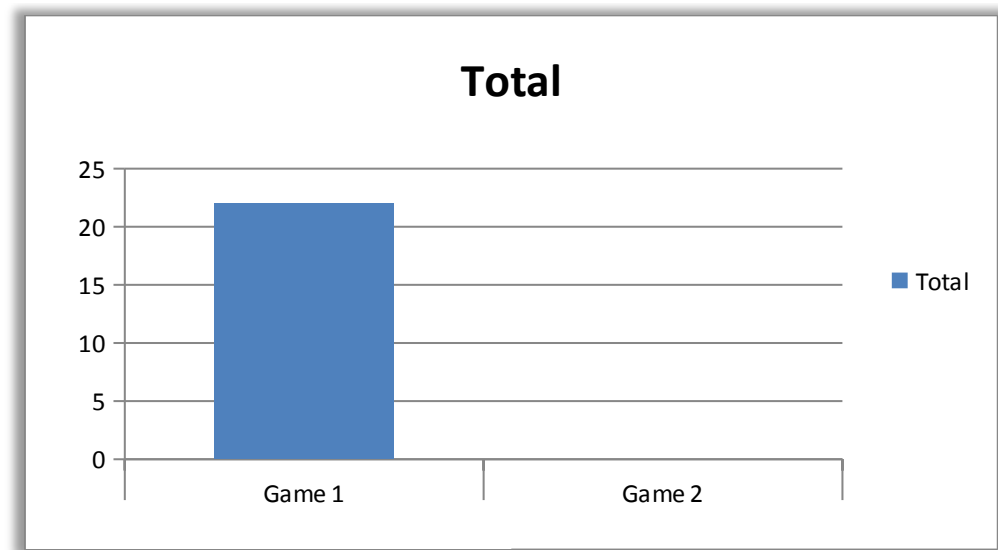

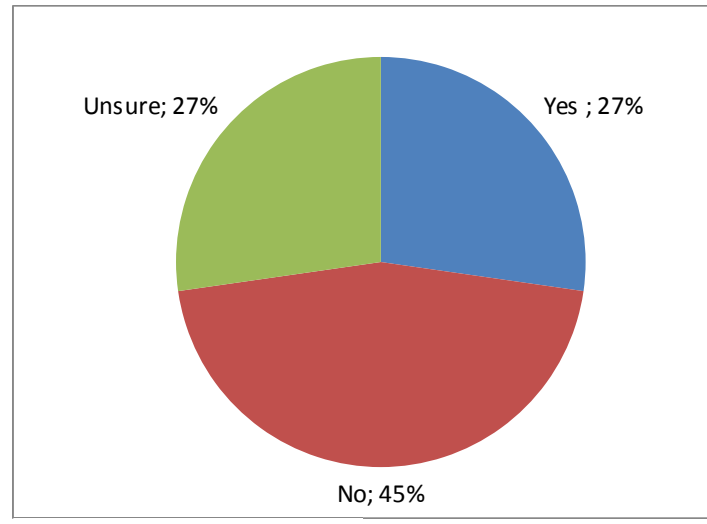**Results obtained from Question 2.4: "*Which Game Provided a more immersive experience?"***

Results obtained from Question 2.5: "***Do you think there was a significant difference between the Levels of violence between the two games?***"
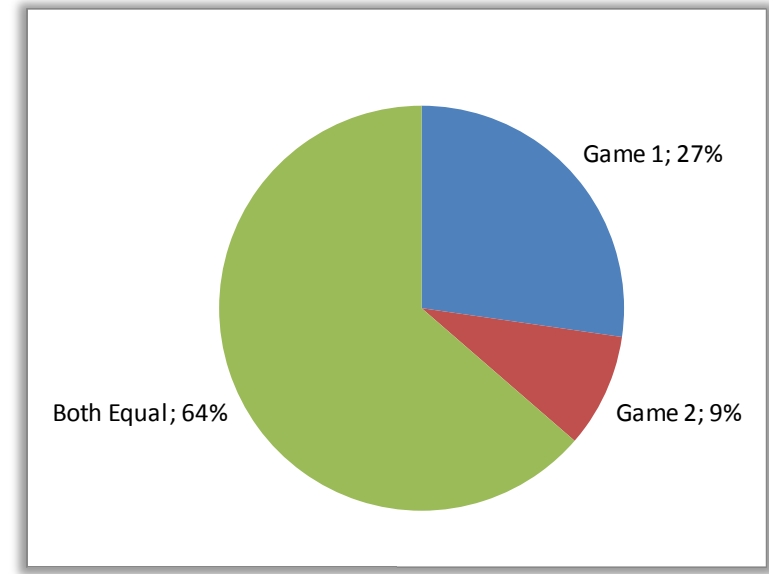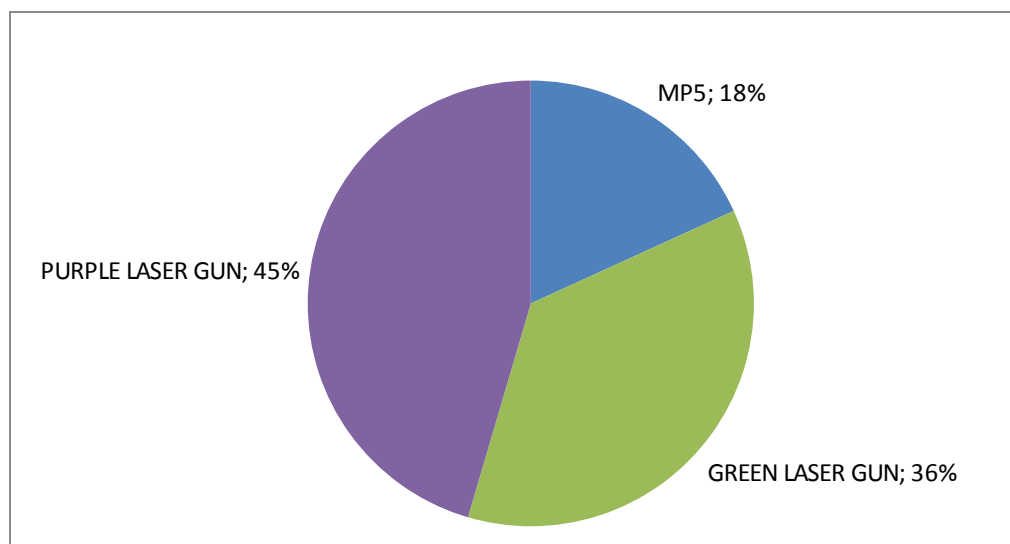

Results obtained from Question 2.6: "***Which game did you think was the more violent of the two?***"

Results obtained from Question 2.7: *"Number of participant's who believe violence affected how much they enjoyed each game?"*

Results obtained from Question 2.8: *Between the 4 weapons featured in both games, which was your favourite weapon?*

11.5.2: INTERVIEW THEMES AND QUOTES

Enjoyment Themes

Visual Imagery Increased Participant Excitement

Morbid Fascination

Participant 10	(asked why he prefers condition 1) "morbid fascination perhaps"
Participant 18	"I've always be drawn to overtly violent films and things, I guess its morbid fascination"

Colourful visual feedback created a more exciting experience in Condition 2

Participant 3	"The colour certainly did have something to do with it"
Participant 4	"The purple and the green were much more fun"
Participant 6	"I preferred the purple laser gun more so than any of the others was because purely down to the bright colours it generated"
Participant 9	"It was more colourful and sci-fi and cool"
Participant 10	"I think I just liked the colour to be honest"
Participant 11	"I liked the noises and the colours"
Participant 14	"The colours got me"
Participant 17	"for the same reason I love peggle so much, the colourful display when you shoot the gun"
Participant 19	"there's something really cool about the vibrant effects those guns made
Participant 20	"the purples and greens just made it that little bit more fun to play"
Participant 21	"the effects the guns made were really cool, the colours were really pretty"
Participant 22	"I was pulled in by the luminescent colours, a bit like a moth or something"

The visual presentation of the weapons in condition 2 was more exciting

Participant 1	"it was a bit more interesting to look at"
Participant 2	"a laser gun, that's pretty damn cool"
Participant 3	(There Preference) "was more to do with the weaponry"
Participant 4	"It's just a more imaginative weapon really"
Participant 9	"there was a bit more variety in the second one"
Participant 10	"I just quite like futuristic weapons"
Participant 14	"Ive used realistic guns countless times before so for that reason I liked the guns in condition 2 more"
Participant 17	"They new and different"
Participant 19	"the purple and green laser guns looked more exciting to use"
Participant 20	"unlike the guns in the first game I didn't know what to expect from the futuristic guns until I first fired them, so for that reason I liked them more"
Participant 21	"it always more interesting to use weapons which have a more creative design"
Participant 22	"They were more exiting"

	The weapon design contributed to some participants preference for condition 1

Participant 5	"the visceral feeling they produced was more fun"
Participant 8	"I felt as though that the guns I used in the first game had more of an impact because i can relate to the gun as a real world weapon"
Participant 15	"I just preferred playing around with the more realistic weapons in condition 1"
Participant 18	"I think its because the weapons in condition 1 were more fun"

Increased Sensation of being Rewarded Visually

	Visual Reward more satisfying in condition 1

| Participant 1 | "the more renounced visual reward in the first game just made it score slightly higher" |
| Participant 8 | "I felt that the blood splatter effects in the 1 first game contributed to why I preferred that game" |

	Condition 2 was a more visually "Rewarding" experience for some Participants

Participant 6	"The visual reward is what motivated me, and made me feel good"
Participant 4	"the rounds that it fired just looked a lot more dazzling and impressive the impact on your opponents looked cooler"
Participant 21	" the effects when you shot the gun and hit the bad guys we really striking and fun"
Participant 20	"when you shot the gun it was all bright and exciting, it felt really good to use them"

Gameplay

	Standardised gameplay mechanics resulted in both games being equally enjoyable

Participant 1	Fundamentally the gameplay was exactly the same
Participant 2	I need to accomplish my objective by eliminating these things. So, there both practically the same objectives, this is why I didn't differentiate between the two
Participant 3	The general gameplay of the game was, essentially, the same so I didn't really think that the blood and guts made it more enjoyable
Participant 4	I was still just as interested in both of them
Participant 7	it was more about accomplishing what I was doing and that really contributed to how much I enjoyed the game
Participant 8	you were doing the same kinda thing in both.
Participant 10	The way that games played seemed the same so it made it difficult to decide which was my favourite
Participant 11	they were basically the same game
Participant 12	The similar mechanics of both games seemed to level the playing field
Participant 16	The fundamental gameplay seemed exactly the same, the act of running around and firing a weapon was virtually the same
Participant 17	The hole nature of the games was the same really, so they were almost just as enjoyable as each other
Participant 19	They were both shooter games so I didn't enjoy one much more than the other
Participant 21	It was just as fun to play as the first game

| Participant 22 | To be honest I was just shooting I didn't notice many of the differences such as blood or how the enemies looked I just wanted to win |

Adrenaline High

| Participant 5 | "it gets your adrenaline going which then makes you feel more motivated" |
| Participant 18 | I gave me a bit of a adrenaline rush |

Increased Immersion

Condition 1 presented a more Realistic Experience

Condition 1 presented a more Realistic Experience

Participant 5	I like realism in a game it makes it feel scarier
Participant 8	I felt that the realistic gore complemented what I was doing more.
Participant 10	the realism made it more intense
Participant 13	There was more of a degree of realism in the first game (condition 1)
Participant 15	Condition 2 wasn't as realistic as condition 1
Participant 18	Condition 1 was more realistic

Participant could relate more to game one 1

Participant 5	if it's something that you know as being threatening in real life you more likely to listen out for it
Participant 8	I felt as though that the guns I used in the first game had more of an impact because i can relate to the gun as a real world weapon
Participant 10	because it featured human characters and although the gore was somewhat over the top it was still part of something I could relate to more than robots with forcefields
Participant 15	probably because it is visually something I am more familiar with
Participant18	Real world violence give me much more of a rush because, robot and laser guns are just fantasy
Participant 19	I couldn't relate as much to robots shooting each other

Perception of violence intensified in Condition 1

Participant 5	weapons were real and there was blood in the first game so it felt more violent
Participant 1	the fact that it was red and could be identified as blood that caused it to be more violent I think
Participant 2	the visual display that I can see made it seem like it was a little bit more violent
Participant 4	I said that because of the sprays of blood when you hit them whereas with the second one, for one your not fighting humans your fighting robots
Participant 10	because it was happening to human beings with blood
Participant 12	The first game certainly felt more violent
Participant 14	the visceral imagery of the blood and guts flying everywhere made it seem violent, more so than the second one
Participant 21	it looked like a more violent game

Immersed Competitive Behaviour

Increased Winning Motivation

Participant 5   it gets your adrenaline going which then makes you feel more motivated

Increased sensation of required skill

Participant 8   It felt like you had to duck and cover a wee bit more
Participant 21   I felt the second game was more strategic

Increased perception of risk

Participant 9   There was a bit more of a risk involved in the first game
Participant 16   it felt more violent feel which made it feel like there was more of a risk involved
Participant 22   It was a bit more risky
Participant 21   There was more of an element of risk in the first game

Increased Emotional Response

Increased sensation of anxiety

Participant 5   "the game makes your heart race its always going to be better"
Participant 9   (in condition 1) "I was more on edge which was good"
Participant 18   "It was a bit more of a nervous experience but because of this I felt I concentrated harder"
                  "when I came across an enemy it was more stressful but when I killed them it was more
Participant 16   rewarding because of that"

Human Enemies in Condition 1 provoked a higher emotional response - guilt / pleasure

Participant 1   "maybe I get a slight pang of conscience if you shooting at something which is human"
                  "I feel slightly more empathy toward the human ones simply because there is a degree of
Participant 4   attachment, simply because they look like us"
                  "However I feel better about killing something that's not human because its fake its not
Participant 7   realistic whereas when it's a human its like "oh Im killing somebody else""
Participant 10   "I get more of a reaction shooting an enemy which I can perceive as being human"
                  "For some reason, I don't know what this makes me, but I get more of a buzz from killing
Participant 12   human looking enemies"
Participant 21   "Sometimes, the more realistic the enemies are the more I feel slightly guilty"

	Increased Perception of Threat

Participant 5	(in condition 2) "I didn't feel as threatened"
	I like realism in a game it makes it feel scarier
Participant 9	"I felt a bit more threatened in the first game"
Participant 8	"I didn't feel like there was as great of a threat which made it feel less of challenging"
Participant 17	"Because the game to take a more realistic edge, there was more of an element of immediate threat"
Participant 18	"I was more intimidated in the first game"
Participant 19	"I had more of an urge to be careful in condition 1 because the guns and the enemies seemed more threatening"

	Positive / Negative Reactions to the Presentaion of NPCs

	Presentation of enemies irrelevant

Participant 2	"what I'm shooting at is not humans or cyborgs its targets that I need to hit"
	"I need to accomplish my objective by eliminating these things"
Participant 3	"None what so ever, no they were both just enemies"
Participant 5	"I'd kill anyone, regardless of what they look like"
	"I will kill them no matter what because I'm defending myself"
Participant 6	"essentially the enemies were just targets in both games"
Participant 8	"I didn't actually notice some were robots and some were humans"

	Robot enemies produced feelings of Detachment

| Participant 10 | "I couldn't relate as much to robots shooting each other" |
| Participant 12 | "With it being robots though I felt a little be detached from what was goin on" |

	Human Enemies in Condition 1 provoked a higher emotional response - guilt / pleasure

Participant 1	"maybe I get a slight pang of conscience if you shooting at something which is human"
Participant 4	"I feel slightly more empathy toward the human ones simply because there is a degree of attachment, simply because they look like us"
Participant 7	"However I feel better about killing something that's not human because its fake its not realistic whereas when it's a human its like "oh Im killing somebody else""
Participant 10	"I get more of a reaction shooting an enemy which I can perceive as being human"
Participant 12	"For some reason, I don't know what this makes me, but I get more of a buzz from killing human looking enemies"
Participant 21	"Sometimes, the more realistic the enemies are the more I feel slightly guilty"

	Variables

	Pre-existing preference for violent imagery

| Participant 10 | " I do like violent films and games" |

"I think I'm a sucker for gore really"

Participant 12   "most of the games I have you could consider as being violent"

Desensitisation

Participant 2   "like I've said, I've grown accustomed to this through playing first person shooters"

Participant 4   "because I'm used to it, it doesn't really phase me"

Participant 6   "I've boiled both experiences down to I'm running around shooting targets and the context of that, I don't think, affected my enjoyment of it. There could be literally "pop-up" targets"

Participant 12   "I don't really think of these games as being violent really its all about winning and loosing"

Participant 14   "At the end of the day im just looking at pixels and polys so, in my opinion, its not exactly that violent"

Previous over exposure to previous realistic FPS Computer Games

Participant 2   "I've grown accustomed to this through playing first person shooters "

Participant 4   "I mean I play these kinda games all the time perhaps it's because I'm used to it, it doesn't really phase me"

Participant 9   "I felt like, you know, you're achieving the same thing. There's this sort of standard now with FPS's, its just constant run and gun and explosions where as I like my games to be different now"

11.6: List of Unreal 3 Games

50 Cent: Blood on the Sand Swordfish Studios Vivendi Games

BioShock 2[25] 2K Marin 2K Games

 Alpha Protocol Obsidian Entertainment Sega

America's Army 3.0 US Army

Alice: Madness Returns

Army of Two EA Montreal Electronic Arts

Army of Two: The 40th Day EA Montreal Electronic Arts

Batman: Arkham Asylum Rocksteady Studios Eidos Interactive

Batman: Arkham City Rocksteady Studios Warner Bros. Interactive Entertainment

BioShock Infinite Irrational Games 2K Games

Black College Football: BCFX: The Xperience Nerjyzed Entertainment

Brothers in Arms: Hell's Highway Gearbox Software Ubisoft

BlackSite: Area 51 Midway Austin Midway Games

 Dark Void Airtight Games Capcom

Enslaved: Odyssey to the West Ninja Theory Namco Bandai Games

Frontlines: Fuel of War Kaos Studios THQ

 Gears of War Epic Games Microsoft Game Studios

Gears of War 2 Epic Games Microsoft Game Studios

Gears of War 3 Epic Games Microsoft Game Studios

Hour of Victory N-Fusion Interactive Midway Games

Kinect Adventures Good Science Studio Microsoft Game Studios

Lost Odyssey Mistwalker, feelplus Microsoft Game Studios

Mass Effect BioWare Microsoft Game Studios, Electronic Arts

Mass Effect 2 BioWare Electronic Arts

Mass Effect 3 BioWare

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