Press trigger for morality:

An exploration into the role of moral development, moral decision-making and video game play

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Abstract

Due to concerns over the psychological effects of playing video games, research into the role of morality and video games needed to be investigated. Some video games contain controversial, potentially morally questionable content, and numerous video games involve moral narratives or require the player to make moral decisions. Thus, both these features in video games show the importance of understanding the role of morality in this virtual space from a psychological perspective, to contribute to the gap in knowledge. Previous research suggests many inconsistencies in the findings; some research reported decisions in a video game were similar to moral decisions made in real-life, whereas other research found amorality in video games. The research contributed original knowledge, by addressing methodological issues, and examining the relationship with different aspects of morality and video game play.

Phase 1 examined a variety of video game play factors and moral development. Three hundred and one participants from a Secondary school, Sixth form, and a University, aged between 11 and 27 years completed a questionnaire, which included a measure of moral development (the Sociomoral Reflection Measure) and questions regarding videogame play. The results suggest that different factors predicted low and high moral scores: moral narrative and number of genres played predicted higher moral scores, whereas years playing, average content rating, and playing Grand Theft Auto predicted lower moral scores. Surprisingly, moral development was suggested to transition between ages 12–13, which has not been reported in previous research.

Phase 2 examined moral behaviour through the moral decisions of participants as they played a purpose-made game, which was designed and programmed specifically for this research. One hundred and fifteen University undergraduate participants participated. Decision-making was suggested to be slower than expected (not intuitive) which was influenced by the first encounter, suggesting participants were deliberating on their decisions. Overall the in-game instructions were suggested to be the strongest predictor for in-game decisions. Whereas real-life morality, previous game play and post-game measures (e.g. Positive and Negative Affect Schedule and Tangrams help/hurt task) did not significantly predict in-game moral decisions. The implications of the results, moral decision-making and using a purpose-made game was evaluated.

In conclusion Phase 1 and 2 of the research undertook the question of the role of morality in video games from two different but complementary approaches; through examining long term moral reasoning and video game play and short term moral decisions in a purpose-made game. Both Phases of the research demonstrated the complex interaction that takes place between the player, the game and morality; in terms of both moral reasoning and decision making with video game play (i.e. genres) and the design of the game (i.e. in-game instructions). Further research is needed to understand the factors which affect moral engagement and disengagement within this interaction, as these can have important short term and long term effects.

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Author’s declaration

I hereby declare that the work presented in this thesis has not been and will not be submitted in whole or in part to another University for the award of any other degree.

Signed: *Sarah Eileen Hodge*

Chapter 1. Introduction

Thomas (2006) makes an important distinction between video games and other types of media; video games allow for control in a Virtual Environment (VE) and involve the act of doing with the consequences of those actions, which is different to merely observing them when watching a film. Furthermore, a fundamental part of video games, that arguably make them different from other types of media, is the interactivity required and presence experienced (Grodal, 2000; Tamborini & Bowman, 2010). In addition, VEs can simulate real or fictional worlds, these worlds can offer many levels of social interaction and Artificial Intelligence (AI) with increasing complexity, while giving the player choice and control through agency (Frasca, 2001).

Due to the violent content of some video games, concerns about the effects of video gaming on individuals; research in the area started to examine the role of playing video games with violent content in the 90s. These media concerns then elicited concern amongst parents and teachers. Since the 90s video gaming remains a popular activity for many; 31.6 million play video games in the UK (UK Interactive Entertainment, 2017) In the U.S collectively those in the age categories of: aged under 18 and 18-35 make up over half of video game plays 56%, with a fairly even split between the categories as 27% of this being in under 18 (ESA, 2016). The industry is still expanding, the Entertainment Software Association reported the industry spend in America to be 23.5 billion in 2015 (ESA, 2016) which is 9% increase since 2014 (ESA, 2014).

Currently research on video games has expanded on violent content, to examine other factors with game play and design; such as identifying with avatars and other psychological processes i.e. morality. Many games contain moral narratives for example *BioShock* series (2K-Games, 2007-2013). Therefore, this interaction between game content and how it is processed by individuals is important to the research; morality is a fundamental and interesting process to examine in video games. Firstly, morality leads on from the research into the violent content and its effects on pro-social an aggressive behaviour. Secondly morality has the broader relationships with violence, for example, violent conduct is related to moral behaviour and judgments. Thirdly, the video game features, such as a number of

video games involving moral narratives or requiring the player to make moral decisions in video are related to morality, an example of such game includes *Until Dawn* (Sony, 2015). Finally, video games could have implications for moral development and moral education. Thus, the core of this research is to understand how people interact with technology; specifically, how young people apply morality in virtual worlds through moral reasoning and moral decision-making. Theories of morality will be examined models of ways that morality could be measured and applied in video games were will be discussed. Then methods of measurement and methodological issues will be outlined. The Chapter outline includes the following:

1.1 Media and violent content

1.2 Theories of morality

1.3 Models, media and morality

1.4 Research investigating the role of morality in video games

1.5 Methodological approaches for measuring video game effects

1.6 Developing games for researching morality in video games

1.7 Methodological considerations from the previous research

1.8 Chapter summary

1.1. Media and violent content

Even from the earliest forms of media consumption, such as newspapers, concerns about their impact have been continuously highlighted (Tamborini, 2013); Bowman (2016) reports how telephones and comic books have caused controversy. Television (TV) can also contain explicit and violent content, which there is a body of research into the effects of this content. The role of morality and TV usage with children has also been examined; an example of such work includes Rosenkoetter, Huston, and Wright (1990). The authors examined TV usage over, two weeks and moral reasoning and found no related negative effects on moral judgment. However, two weeks may have not been long enough to show effects. Krcmar and Vieira (2005) examined television violence and children's moral reasoning. The results suggested television violence was negatively related to children's moral reasoning as they were

more accepting of violence. Similarly, to TV, concerns raised about playing video games developed (Kocurek, 2012; McKernan, 2013). However, one of the ways that video games are different from TV and films is that video games are more interactive and include a behavioural component as Bowman (2016) highlights; it is the interactivity and the simulations of these behavioural acts that make video games controversial, specifically the violent content such as acts of murder. This section outlines (1.1.) first the history of video game research and then evaluates research into potential effects of video games (i.e. aggression).

1.1.1. Violent video game content

A number of games have caused public controversy including the *Mortal Kombat* series (NetherRealm-Studios, 1992-2016), which was criticized for very violent and gory fight scenes, in particular the scene when opponents were knocked out, and were then killed brutally, known as a finishing move (Kent, 2001). This led to an American Congress hearing in 1993 reviewing the content of video games and exposure of this content with children and adolescents (Kent, 2001). The media started to portray this content in video games as a threat due to children and adolescents being seen as an vulnerable population (McKernan, 2013). This resulted in the Digital Software Association being founded in 1994, and later in 2004 renamed Entertainment Software Rating Board (ESRB, 2015) created, to oversee the content in video games. Additionally, other rating systems were introduced to support individuals to judge the appropriateness of the content of video games, including; Pan European Games Information (PEGI, 2015) and Video Standard Council (VSC, 2015).

Thomas (2006) highlights the problem with using the film rating system to rate video games, as films and games require a different level of involvement and agency and interactivity. Agency is defined as level of control or choice players have in video games (Frasca, 2001). From a psychological approach an individual's agency was measured in Milgram's (1963) famous study about obedience and is also connected to morality (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996) It is the difference between watching someone kill a character and an individual pressing a button to kill a character; this difference is what makes video games unique from

other forms of media, and why there are further implications for morality. PEGI uses age rating with pictures representing content such as a picture of a fist for violence and consoles also have the option for parental control setting (PEGI, 2015). It is important to note video game content is rated according to type of content, such as 'mature content' and that includes the following: drugs/alcohol references, nudity, sexual and suggestive themes, language, gambling and mature humour (ESRB, 2015; PEGI, 2015). However, these rating systems have been criticised for producing conflicting and confusing ratings about video game content (BBCNews, 2008). However, since then PEGI has been merged with VSC to create one rating system (VSC oversees the ratings from PEGI) and this system integrated into UK law now known as Games Rating Authority (VSC, 2015).

Another example of a video game content that caused controversy included *Carmageddegon* (Stainless games, 1997). On its release it was censored and banned due to the violent nature of the game (Kocurek, 2012). The goal of this game is to drive as recklessly as possible to gain points; this includes crashing into other cars, pedestrians and other objects. When running over pedestrians, the bodies of the characters would be flung over the car and sometimes broken up but always with blood spray. The censor requested the change of the blood from red to green. This seemingly minor visual change could suggest a change in contextual meaning, with the aim to make the game more suitable. The game was given a rating of Mature (for 17 years plus) (Entertainment Software Rating Board, ESRB) (Kocurek, 2012).

Interestingly, some early games which contained violent content but also deviance and gore, had not been identified as questionable, this could due video gaming being in its infancy. An example of such a game is *Chiller*, (Exidy, 1986) this game required players to walk around different dungeon levels and harm the characters through torturing and shooting them. This suggests that the video game development and design has long had a tendency to produce games with violent themes.

A game which has been strongly criticized for its content is the *Grand Theft Auto* (GTA; Rockstar, 1997- 2015). In the first GTA the main character is a criminal whom is required to complete tasks for deviant groups. The content includes nudity, prostitution, guns, drug dealing driving recklessly (with the option for the character

to be intoxicated). An infamous example of game play allowed for targeting characters that were prostitutes and inflict violence on them either through the use of weapons or vehicles. Kocurek (2012) suggests that GTA (Rockstar, 1997- 2015) was inspired by *Death Race* (Exidy, 1976), an earlier game that raised controversy, as they are both based on similar acts of violence and moral violations such as running over pedestrians and damaging other vehicles. Furthermore Kocurek (2012) explains that the reason *Death Race* (Exidy, 1976) received controversy is due to the type of violent content. Violent content which is related to war is more socially and culturally acceptable as it is a part of history, whereas violence towards innocent people such as running over pedestrians would be outside the social and cultural norm of violence and does happen in real-life in the form of hit and runs (McKernan, 2013).

1.1.2. Research on video games violence and aggression

Concerns about violent video game content led to research into aggression and desensitisation. For example, research investigates whether; playing these violent video games would lead to post game effects of increased aggression, desensitisation and violence in the real world (McCormick, 2001). Violence can be defined by an extreme form of aggression including murder and assault (Anderson & Bushman, 2001). Aggression has been defined as an external behaviour in the form of intentional harm towards another, which may or may not include an emotional component (Baumeister & Finkel, 2010).

However, it should be noted that the research involving video games and aggression, has come under much criticism relating to research methodology and practice, including claims from the results being too strong and over interpreted (Elson and Ferguson, 2014). Prot and Anderson (2013) provide a useful outline of the research methods and designs used video game research, more specifically the research on aggression and video games. Therefore, the research included in this section has aimed to be representative of literature but selective. Much research has taken place, and a meta-analysis by Anderson and Bushman (2001) suggested links between violent video games and aggressive cognition and aggressive affect. Due to this Carnagey and Anderson (2005) examined affect, cognition and behaviour

outcomes when violent video games were played. The authors found that cognition had the strongest relationship with participants who played a violent video game with rewards were significantly more cognitively aggressive. The other components of behaviour and affect were also significantly related to playing violent video games. This suggests that many components, including cognition, could be related to post video game play effects.

Connected to aggression, research has also investigated physical desensitisation to real-life violence which was suggested to take place after playing a violent video game. Desensitisation is a reduction in emotion-related physiological reactivity to real violence. Carnagey, Anderson, and Bushman (2007) assigned participants to play either a violent or non–violent video game then participants watched a clip of real-life violence. Heart Rate (HR) and Galvanic Skin Response (GSR) were taken before and after playing the video game and while watching the tape of real-life violence. The benefits of using these physiological measures are that they are less subjective compared to the self-reported aggression measures. The result suggested that preference for playing violent video games was positivity correlated with self-reported aggression. Desensitisation was suggested to have occurred even after 20 minutes of violent video game play. Furthermore, the authors found no interactions for individual differences suggesting the majority of participants were similarly susceptible to desensitisation. Although the video games were not the most contemporary games, the authors suggest the desensitisation would be quicker for contemporary (Carnagey et al., 2007). This highlights another factor that needs to be considered, the effect of repeated exposure to violent video games.

More recently Brockmyer (2015) reviewed the research into desensitization to violent video games with adolescents through examining the different methodological approaches; questionnaire data, behavioural indictors (i.e. post effects of playing a violent video game) and the physiological measures (i.e. heart rate) and brain imaging (i.e. fMRI). Brockmyer (2015) concludes from the different approaches that desensitization could result from exposure to these games, but this relationship contains both risk and protective factors that can influence the outcomes. Barlett, Harris, and Bruey (2008) examined the effect of the amount of blood in video games with aggression, hostility and arousal. The results suggest that when the

level of blood was either maximum or medium, there was a significant increase in the hostility and arousal compared to the low and no blood condition which had no increase. In addition, the weapon was used more in the maximum and medium conditions. The authors suggest the important role of the content of games, i.e. higher levels of blood and arousal primed aggressive thought.

Although most research has been concerned with the role of aggression and video games, research has also investigated pro-social behaviour, to see whether violent video games could influence real-life social behaviour. Pro-social behaviour is defined as helping others and is connected to altruistic, selfless behaviour (Colman, 2009). Anderson and Bushman (2001) suggested a decrease in pro social behaviour with exposure to violent video games. Prot et al. (2014) found violent games had a negative relationship with pro-social behaviour and that pro-social games have a positive relationship with real-life pro-social behaviour and these were both mediated with empathy. A follow-up longitudinal study also replicated these findings (Prot et al., 2014). However other research has found no relationship between violent video game, pro-social behaviour and aggression (Jerabeck & Ferguson, 2013). Brockmyer (2015) suggests that desensitization from exposure to violent video games, lead further consequences of decreasing pro-social behaviour and increasing aggression.

A more recent meta-analysis suggested a causal link between violent video games and aggression for all three components (cognitive, affect and behaviour) with decreased pro-social behaviour and empathy (Anderson et al., 2010). However, Ferguson, San Miguel, Garza, and Jerabeck (2012) in a longitudinal study with adolescents suggest a lack of evidence of a causal link between violent video games predicting aggression. Furthermore Ferguson (2015b) suggests that playing video games is not related to rates of violence on a societal level, as youth violence has decreased.

APA (2015) also highlights issues with the methods used in general regarding the research with violent video games and aggression, thus, making it difficult to suggest outcomes and relationships between games and aggression, including how this has been overstated. It concludes no one factor leads to an individual to behave aggressively or violently however violent video games are included as a risk factor.

These results suggest the post effects of violent game play is manifested by aggressive behaviours, feelings and thoughts with a decrease in pro social behaviour, empathy and desensitization to aggression. Other factors such as criminal violence did not suggest enough support to conclude as an outcome from playing violent video games. More recent research has focused on other consequences of the violent content specifically the relationship between morality and playing video games.

1.2. Theories of morality

Morality has been defined as the creation and development of an individual sense of what is right and wrong which are represented by moral codes or standards (Colman, 2009). These moral codes are also referred to as an individual's conscience and the study of moral concepts such as: virtue, duty, obligation, freedom, rationality and choice, is known as ethics (Blackburn, 2008). Morality overlaps with politics as ethical principles and laws are applied to societies through government laws making certain acts legal or illegal, for example acts which can cause harm (Thompson, 2007).

1.2.1. Moral development

Psychologists have proposed theories of morality which often include milestones and stages for moral development. One of the most prominent theorists is Kohlberg (1971) who produced the cognitive-developmental stage model of morality summarised in Table 1 which built on the work of Piaget (1932). This model consists of three levels, each of which has two stages. The first level is called Pre-conventional morality where individuals learn right and wrong by way of rewards and punishment. Stage one in this first level, suggests obedience is developed through punishment: acts which are punished must be wrong. Stage two on the other hand is learning that rewarded behaviour must be right. An example of this includes, 'you will be in trouble' and 'the other person will be mad' if you do not tell the truth (Gibbs et al., 1992).

In level two, known as Conventional morality, depicts that the individual develops an awareness of other peoples' beliefs and understands that these are important and therefore, will seeking approval while avoiding fault and blame,

which is developed through Stage three, conforming to good behaviour, and stage four learning a moral sense of duty and obedience to authority. In level three an individual learns more abstract concepts of morality such as justice; where rights can overrule conforming to rules. Stage five consists of understanding that rules can be broken and the differences between moral and legal rights. At stage six an individual's conscience is formed and applied, meaning the individual is able to consider other people's viewpoints in situations. Although Kohlberg's (1971) earlier stages of development (stages 1 and 2) relate to childhood, stage 4 can be seen in some adolescents aged 16, however, other participants did not show stage 4 reasoning until they were older in the 20s or even 30s, with stage five reasoning developing around mid-twenties. These developmental trajectories are important as it demonstrates the extent of moral development covering a wide age range. Since Gibbs et al (1992) adapted the theory into a measure with the stages of development with corresponding age norms (see Table 11 Chapter 3 section 3.2.3.1).

Table 1. *Stage theory of moral development adapted from Kohlberg (1971)*

Level	Description	Stage	Description
Level one Pre-Conventional	Right and wrong = rewards and punishment	Stage One	Punishment and Obedience: Behaviour that is punished is wrong
		Stage Two	Rewards: Reward behaviour is the correct way to behaviour
Level two Conventional	Others views are important = avoiding blame and wanting approval	Stage Three	Good intentions: Seeks approval through confirming to good behaviour
		Stage Four	Obedience to authority: Understand the importance of one duty
Level three Post-Conventional	Abstract concepts of justice = Laws and rights can be overruled for rights of others	Stage Five	Understands the differences between moral and legal right: Rule should be broken in some cases.
		Stage Six	Individual principles of conscience: Considers all those involved in a decision

1.2.2. Alternative moral theories

Two theories of morality that have been contrasted with each other are Deontology and Utilitarianism (Ellithorpe, Cruz, Velez, Ewoldsen, & Bogert, 2015). Utilitarian theory suggests that decisions should be made to reflect the needs of the many and that the outcomes of the decisions are important, rather than process leading to the outcomes: key theorists are Bentham (1789) and Mill (1863). An alternative theory is Deontology where the focus is on an individual's agency and duties and people should never be used as the means (the process) for outcomes: key theorist Kant (1785). These theories and concepts of morality have also been discussed and applied in virtual spaces such as video games (McCormick, 2001; Young, 2014). This is connected to the concept of moral agency, this is an individual's ability to

make moral judgments and be responsible for these consequences of the judgments. Psychological agency is an individual's perception of control over actions (Caspar, Christensen, Cleeremans, & Haggard, 2016). Bandura (2002) suggests for moral agency both moral reasoning and moral action are required and that this process is self-regulatory and could be disassociated at time of conflict. Hardy and Carlo (2011) suggest that moral identity (the extent to which being seen as a moral person is important) is a predictor of moral action, however there is a gap in the research between moral identity and action; as moral judgment is speculated behaviour and the actual behaviour could be different (Haviv & Leman, 2002).

1.2.3. Moral disengagement

Bandura et al. (1996) propose that moral codes are not fixed; they are a self-regulatory system that is activated. Moral disengagement is the selective process of disassociation of behaviour that violates an individual's moral codes. Therefore, moral disengagement allows for an individual's morality to be flexible and to adapt in situations, when moral codes experience conflict. These moral codes can tolerate some conflict with some discomfort through interaction with thought, feelings and behaviour (Bandura et al., 1996). Therefore, moral disengagement happens through progressive disengagement of moral codes to avoid self-disapproval. Moral disengagement is composed of the following components: I. Moral justification, II. Responsibility, III. Disregard/distortion of consequences, and IV. Dehumanisation.

I. Moral justification is an individual's need to justify and give reason/ having a purpose. For example, this could be using advantageous comparison: for the greater good/ because I am bad or a moral imperative/ obligation. Euphemistic labelling is using language to reduce emotiveness of situation; for example, "they pass away" rather than "they have died". Euphemistic labelling and a reduction in agency are also connected to moral justification.

II. Responsibility has two elements that may happen; either the responsibility is displaced or diffused. Displacement of responsibility is when an individual knows they are contributing to harm are aware of having reduced agency, such as using authority as a responsible party. For example, Milgram (1963) took responsibility for the harm that participants led to believe they were inflicting in his experiment. Responsibility is rarely assumed but a balanced is needed

between own sense of duty and accountability of actions. Diffusion of responsibility deduces the feeling responsibility thus actions can become crueller; again, this is exasperated by a reduction of agency and group decisions.

III. Disregard/ distortion for consequences, this is where consequences are: ignored, minimised or the believed the there is no control (also avoiding self-disapproval). It is easier to hurt others when the harm or suffering is not visible. This also connects to the hierarchy, orders being passed down and is therefore removed from the person giving the order, by the end of the hierarchy, to the person doing the orders e.g. pushing a button to inflict harm rather than direct harm.

IV. Finally, dehumanization, seeing humans activates empathy therefore stripping people of human qualities with group dynamics having the potential to amplify, (the out group being seen as less human) contributes to this factor of dehumanization. However direct harm is still harder than remote/ indirect harm. This also connects to the attribution of blame (which can be a cycle), playing the victim and blaming others.

1.2.3.1. Moral management

Connected to moral disengagement, is moral management Klimmt, Schmid, Nosper, Hartmann, and Vorderer (2006) suggest that in violent video games moral concerns are managed through both the separation of the game world with real-life and justification of actions, from the narrative and set up of the games. It should be noted that Klimmt et al. (2006) specifically relate this to violent actions, however moral management could be applied to other behaviour that violates an individual's morality other than harm; i.e. see below for other moral domains as suggested by the Moral Foundations Theory (Haidt & Joseph, 2004)).

1.2.4. Moral Foundations Theory

Recent build on the earlier theories such as Kohlberg (1976). One of these theories includes the Moral Foundations Theory (MFT; Haidt & Joseph, 2004). The MFT attempts to combine two theoretical approaches to morality, Nativists and

Empiricists. Empiricists (connects to behaviourism) suggests morality develops from learning through the environment with a possibility of some inbuilt learning system. Nativists suggest moral development has been developed over time from evolution and has formed into an inbuilt process; Nativism also connects to evolutionary psychology (Haidt & Joseph, 2004).

Haidt and Joseph (2004) suggested that an individual's moral domain is both learnt and innate. The theory also connects to Virtue theory due to suggestions on an individual's character (Haidt & Joseph, 2007). The authors suggest that morality is composed from foundations (also known as domains and modules). Originally five moral domains were proposed: Care/Harm (C/H), Fairness/Cheating (F/C), Authority/Subversion (A/S), Sanctity/Degradation (S/D), In-group Loyalty/ Betrayal (L/B), with the more recent sixth domain of Liberty/Oppression (L/O) (Haidt, 2012; Haidt & Joseph, 2007). L/O connects to societal authorities and the role of bullying and freedom (Graham et al., 2008; Haidt, 2012). These domains are composed of the virtues and triggers of morality which connect to emotions and cognition. An example of a moral domain and its components, using F/C as an example, this can be triggered by cheating and cooperation in groups through such as actions as playing board game with others. The related emotions that could arise would be anger for cheating and gratitude for co-operation. The virtues associated with domain of F/C include: fairness, justice and trustworthiness see Table 2 all the components for each domain.

The domains are socially constructed and learnt into sets of related values. Haidt and Joseph (2004) suggest that the innate part is the domains, which could have been evolved into certain sets that humans would need for survival and would be enhanced with learning. For example, a mother who could recognise suffering would be able to produce healthier offspring (Haidt & Joseph, 2004). Also, within the domains are intuitions, these intuitions are known as the gut feeling, this is where quick decisions are made, such as when an individual is asked about moral dilemmas. This process has been suggested to be unconscious. However, these intuitions are not virtues but are triggers and are part of the development of virtues. As well as the intuitive system there is also a deliberative rational system, both the intuitive and rational systems produce moral reasoning (Haidt, 2001).

Table 2. *The six moral domains of the Moral Foundations Theory adapted from Graham, Haidt, & Nosek (2008) Haidt (2012) Haidt & Joseph (2004, 2007)*

		The six domains					
		C/H	F/C	A/S	S/D	L/B	L/O
The Components of each of the MFT domains	Adaptive challenge	Protect and care for young vulnerable or injured kin	Reap benefits of dyadic cooperation with non-kin	Negotiate hierarchy, defer selectively	Avoid microbes and parasites	Reap benefits of group cooperation	Being free and not dominant or bullied
	Triggers	Seeing suffering of others	Cheating and sharing	Physical strength authority	Disease, parasites and waste	Group processes	Threat of freedom
	Emotions	Compassion	Anger, guilt or gratitude	Resentment, fear or respect/ awe	Disgust	Respect, pride, belongingness or anger	Reactance, aggression
	Virtues [and vices]	Kindness and compassion [or cruelty]	Fairness, Justice and trustworthiness honesty [or dishonesty]	Obedience deference and loyalty [or disobedience uppitiness]	Cleanliness purity and piety chastity [or lust intemperance]	Patriotism and altruism loyalty [or treason and cowardice]	Dominating oppression bullying

Haidt and Joseph (2004) suggested the importance of moral feedback (such as from parents, teachers and television) being consistent to reduce conflicting moral messages. Plus, supporting the child's moral experiences such as providing an environment with plenty of morally engaging opportunities through stories to help support and trigger the innate moral domains. In addition, the theory also considers the cross-cultural differences in morality, and suggests these differences can happen develop four ways. The first is exploiting moral domain such as the domain of S/D, stigmatising certain groups as being unclean, as seen throughout history. Secondly, the way that the domains are used and applied can be different for example which domains are reinforced as more important. Thirdly, the meanings and the domain of the virtues can vary; the example Haidt and Joseph (2004) the authors give is how loyalty varies depending on it is between peers and/or authority. Finally, how these virtues are combined into moral domain can vary, for example, which virtues are perceived as important and therefore, how they form the structure of the moral domain. Interestingly, Haidt and Joseph (2007) draw on moral narratives such as the moral tales of past such as Jesus' teachings and suggest moral narratives are needed to join and integrate moral conception into actions (build on the innate domain/domains).

1.3. Models of processing media and decision-making

The term media is used here as the following models have been applied to many forms of media including TV and video games. From the previous section examining morality, how moral is then applied into video game and the media processed, needs to be addressed. In order to address this, models of media processing will be discussed. One such model of how media can influence moral decision-making and has a reciprocal relationship with media exposure was proposed by Tamborini (2011) Model of Intuitive Morality and Exemplars (MIME; Tamborini, Prabhu, Lewis, Grizzard, & Eden, 2016; Tamborini, 2013). The model is a multi-stage and is suggested to have reciprocal relationship between the individual and the environment, when media is processed. The model is divided into short term (including micro level processes) and long term components (including both micro and macro processes). There are six stages in total; the first four stages are involved

in short-term processing and the last two in long-term processing (see Table 3 for the individual stages).

The short-term components suggest that when an individual is exposed to content which is an exemplar of one of the six moral domains it is activated. Note that the long-term components can account for variance with cultural differences of the salience of the each of the MFT domain, and its sequent influences in the processing of the content. Part of the short term component was formed using both MFT (previously mentioned moral domains) with the Disposition theory and Exemplification theory (Zillmann, 2000, 2002). Disposition theory, suggests that in narratives there is a desire to want moral behaviour to be rewarded and immoral to be punished (Zillmann, 2000). The Exemplification theory suggests that the following can affect the judgment of media: content with specific moral exemplars that are recent and frequent and emotional and concrete exemplars will have a stronger effect on the individual (this includes iconic images and influence tends to increase with time) (Zillmann, 2002).

From this exposure to media (which contains exemplars in the relevant moral domains) connects and influences the salience of individual's own moral domains and their exemplars. Once the domain is activated gut and intuitive processing would be used, unless there is conflict, such as from content that is perceived to be a moral violation. In the case of conflict, the other reflective and deliberation processes are needed. This includes the re-deliberating decisions previously made, but this does not necessarily result in decision being changed. If media has the potential to influence moral judgments made then this could be suggested to affect behaviour (Tamborini, Prabhu, et al., 2016). An example of how moral salience can reflect in media consumption and content is if an individual has a high salience C/H domain they would potentially avoid and dislike content with graphic violence compared to an individual with a non-salient C/H domain (Tamborini, 2012).

To explain these thinking process the model draws on the dual-process theories in decision-making such as Hartmann (2011b, 2012) who specifically examined the processing of violence in video games and stated that this consists of experiential and rational processing (this is similar to other dual processing theories). This connects to the dual theory of processing information quickly and slowly, such

as the Cognitive-Experience Self Theory (Epstein 1994). One system is experiential: automatic, fast and intuitive (this is connected to the initial stages in the MIME). Whereas the other system is rational: reflective, slower and deliberate. It is suggested that these systems work in parallel. Hartmann (2011b, 2012) applies this model specifically to violent content and suggests that the rational system could be responsible for an individual's assessment of reality within the game, if the actions could happen in real-life. Whereas the experiential system is more primitive thus what is experienced (violent content) is believed.

The long-term process on a macro level is connected to how the media is received and appraised by the audience that in turn influences the production of media. Within the long-term processes are moral sub cultures; these are domains which have the same salience and hierarchy. Thus, moral domains are not necessarily equal; some cultures/sub cultures may have more emphasis on domains than others and this applies to exemplars also. In addition, on a micro level individuals' exemplars and moral domains are suggested to influence on a macro level as well as by media exposure. This process goes full circle as Tamborini (2012) suggests that it is salience and hierarchy in the moral domains that influence the selections of an individual's media exposure.

However, questions remain to the underlying processes of the MIME theory (Grizzard, Shaw, et al., 2016) and how the MIME can be applied to morally complex and ambiguous scenarios (Bilandzic, 2011). Eden, Grizzard, and Lewis (2012) suggests as moral disengagement is a cognitive bias therefore, the process moral engagement and disengagement could be explained by the role of emotions and the dual- process theory (Hartmann, 2011b, 2012). For example, negative emotions could be triggered in one system and are then rationalised through such mechanisms as moral disengagement in the other system, to reduce the negative emotions. However, this process of moral disengagement within the model could be built upon, such as if content and exemplars can trigger MFT domains it would suggest activation of the system. Thus, by adding the role of moral disengagement would further develop the process of morality in video games. Also, the dominating and hierarchy and structure of the domains may not always have a trade-off. If this trade-off is taking place and more research is needed to understand this process in relation to media content.

Table 3. *The six stages of the Model of Intuitive Morality and Exemplars model*

	Stage	Description
Short-term	Stage 1	Content provides cues through exemplars and domain that are activated. An example of moral behaviour is heroes and villains. This assumption of this stage is media content can be affirmative and transgressive.
	Stage 2	The automatic processes from exemplars and domain salient of evaluating the content. Attention is given to content that is morally salient The MFT concepts of domains and salience are applied in this stage which connect to the disposition and Exemplification theory (Zillmann, 2000, 2002), Reactions will be positive to media if this matches and is consistent with their domains and negative if not. If conflict arises, deliberation is required this then moves along the next stage (Stage 3).
	Stage 3	At this stage deliberation occurs through a rational process of deciding how consistent the content is with all or some of the domains. This can occur when content both upholds and violates domain and/ or competing domain (liberty vs freedom). In this case it is suggested that there is bias for upholding one domain (normally the most salient) even when others have been violated. This is where influences on long and short term processing can happen from media; as an individual evaluates the conflict and resolves it by sublimate domain(s) to accept the content.
	Stage 4	The implications of domain being sublimated and other being more dominant are connected to this stage. The assumption is media consumption leads to one domain dominating and others being overridden. Individuals will select media content that uphold the domains or at least the dominant domain(s) as there is preference for media to match values. (This leads on to the long-term processes as the short term process are suggested to create pattern of selection that connect to long term processing (e.g. media selection)).

Table 3. *Continued*

Long-term	Stage 5	Media is selected that matches and agrees with the dominant domains and individuals will seek out content that matches their domain salience. This leads the media to produce matching content.
	Stage 6	This stage is connected to the first stage, reciprocal nature of the model. Media is shaped to match individuals' moral values and provide morally relevant cues for the environment.

The MIME model is, in contrast to, the Affective Disposition Theory (ADT) Randy (2003) that focuses on enjoyment and emotional responses. This suggests enjoyment is related to how an individual's preference for the media characters for example if good things happen to a morally good liked character it is enjoyed by the individual more through positive emotions such as liking and happiness than if the opposite was taking place (Raney, 2011). Raney (2004) goes on to further explain that schema relating to expectations and interpretations of the characters if this matches then a positive reaction occurs and vice versa. However this approach has been criticised, Hartmann (2011a) suggests the model cannot account for how individuals apply moral values to protagonist as identifying is different to empathising and may not be moral emotions that are being elicited. Plus, video games require the individual to play as characters rather than observe, thus how do they feel about playing the villain? Consequently, how morality is applied in a virtual world still needs research to understand this relationship.

Recently Tamborini et al. (2013) applied the MIME model to examine the moral judgments of characters in from film summaries for each of the five foundations. The authors suggest that domain salience influences and predicted the perception of the character and therefore the appeal of that character. This in turn would influence an individual's selection of media, for example it was suggested those with salience for F/C domain could have a preference for crime and law genres. Conversely those with less salient domains for S/D could have a preference for the horror genre.

However, the authors note that this needs more research. Related to this Tamborini, Lewis, et al. (2016) examined exposure to media with can altruistic (MFT foundations) and egoistic (competence, autonomy, relatedness, hedonism, power and security) motivations would be related to accessibility. The results suggested accessibility was increased but this was by the medias narrative but this was limited in the altruistic motivations as was not shown to be accessed. Further evidence for media content increasing the short-term access of moral domain was found again the C/H and F/C domains had a significant increase accessed (Tamborini, Prabhu, et al., 2016). The authors suggest the reason these two domains were more accessible was due to the content of the media shown, a TV drama film clip *Harry's Law* (Kelley, 2011-2012). However, it should be noted that Harry's law, also falls into the comedy genre, which could influence the outcomes i.e. how meaning is interpreted from the comedy elements (Kelley, 2011-2012). This also highlights validity and process for the selection of media in research. Tamborini, Prabhu, et al. (2016) suggest more research is needed with MIME model and the different types of media including video games and films and to examine the role of long term influences of media on the individual.

1.4. Literature review on morality in video games

Previous paradigms on moral dilemmas include the "trolley problem". This requires individuals to think about a hypothetical situation, it involves a trolley on a track which is heading towards a group of people on the track and the trolley can be changed to another track a/or stopped by sacrificing one life (Thomson, 1985). Navarrete, McDonald, Mott, and Asher (2012) created a virtual reality environment for the trolley problem where participants had the choice to pull the lever. Participants were assigned to either, action condition (using the lever to change the path from the group to the single person). Or the omission condition (not pulling the lever leading to trolley to single person. An interesting design feature of the VE is the scream of the virtual people as the trolley approached. The results suggested the majority 90% pulled the lever in the action condition. Whereas the omission condition 88.5% did not pull the lever. However, 35 participants did pull the lever but then changed their mind and then put it back and 8 pulled the lever as they didn't notice the 5 people. Thus, in both condition the utilitarian option was selected.

However, the trolley problem has been criticised for how effectively it measures moral action (Kahane, 2015). In addition, the trolley problem is restricted to examining harm and video game content includes other content of which is related with morality.

As mentioned previously some of the more deviant content in video games such as *Chiller* (Exidy, 1976; see Figure 1 a screenshot of the game) as led to research examining moral behaviour in video games. Young (2013) postulated the role of deviant and tabooed acts and behaviour in video games, such as murder and paedophilia. Young (2013) argues that in a virtual space both these acts and motivations are not morally distinguishable and suggests that these actions are just the manipulation of pixels and the player rationalise it is just a game. Therefore, no moral violation has been carried out. Young and Whitty (2011) suggested that behaviour in video games may not be morally concerning as long as the behaviour was only carried out in a virtual space and the individual is able to cope with the game play. The authors argue this is more important that judging the behaviour as right or wrong. However, Young (2013) takes a philosophical approach accordingly would be interesting to test these theories. Chittaro and Sioni (2012) using physiological measure (e.g. Facial electromyography (EMG)) found higher brain activity, and positive emotional response, with violent behaviours against insects. The authors suggest this to be more socially tolerable compared to harming humans, which could be seen as taboo. This has implications with regards to how virtual harm is processed.

Figure 1. A screen shot taken from the game *Chiller*

This connects to a long-standing argument within the literature with video games, the ideas that when an individual engages in a virtual space that real-life norms may not apply. This connects to the idea of a magic circle (Huizinga, 1949), in that video games are not constrained by the norms and rule of real-life but instead are governed by the rules of the game that exist within the game (Salen & Zimmerman, 2004). Thus, the implications on real-life are not of concern. However Consalvo (2009) argues the existence of a magic circle due to the overlap with real-life and the gaming world as players bring in real-life aspects into the game, such as expectations and interpretation of the gaming world.

To address the role of real and unreal, Cushman, Gray, Gaffey, and Mendes (2012) examined the role of simulating harm, to examine human aversion to harm. The first study suggests a physiological response (measured through total peripheral resistance which is suggested to represent a negative stress response) to the aversion to harm. In the second study participants were shown five actions that simulated harm, asked to carry out five actions of simulated harm or carryout five non-harmful actions. The PANAS-X (Watson & Clark, 1999) was administered with five moral dilemmas involving utilitarian themes and harm. It was also made clear that this was

pretend, and no harm was actually going to happen. Interestingly one participant chose not to be involved with any actions and was removed.

The results suggested participants with an aversion to harm were less likely to select the sacrifice of one life for more lives for the dilemmas. Participants who had to perform harm like actions compared to those that watched were reacting more physiologically, suggesting more aversion. The authors highlight aversion might not be triggered such as pushing a button for a bomb, in other words moral disengagement factors such as disregard/distortion of consequences. Instead the authors suggest the role of pretend harm triggering imagination of harm outcome, needing the behavioural component. Using MFT it could suggest that these actions and observations are triggering the moral domain of harm (C/H). In addition, what are interesting are the differences between action and observation, this could be similar to media experiences that video game involves actions and television involves observation. The authors also suggest that the moral dilemma used hypothetical and involve moral judgement whereas more is needed and moral behaviour. Thus, potentially what the authors may not have considered is the relationship this has with video games, due to the content simulating actions of harm; having both the observational and behavioural components.

Triberti, Villani, and Riva (2015) investigated the moral positioning in video games; the authors suggested moral positioning can be implemented in four ways.

1. Players are asked to select a side of good or evil before the game starts, such as *Starwars: The Old Republic* (BioWare, 2011-2012).
2. Players are asked to select a character which represent good or evil, such as *Mortal Kombat* (NetherRealm-Studios, 1992-2016).
3. Players can morally customise a neutral avatar, such as *Fable* series (Lionhead-Studios, 2004-2014).
4. The game required moral choices which related to and changes the narrative in the game and has no avatar customisation, such as *Until Dawn*, (Sony, 2015).

The results suggested that if participants self-reported preferred to play with an evil character, this was negatively associated with empathy, extraversion and agreeableness. Physical aggression was only partially correlated with a preference for evil characters. This study was very informative, but was restricted by the

potential difference between what participants would say they were do compared with what they actually do; self-reported game play references for example participant's may have suggested to have a preference for good, because they feel it would look bad on their real-life moral identity if they had preference for evil, even its VE. Furthermore, what is interesting about this categorisation is the player is more involved with choice for the first three as the last one is more restrictive.

However, there is an issue with this categorisation as in the game *Fable* (Lionhead-Studios, 2004-2014) that is listed under point 3 there is also a narrative component that related to point 4, thus *Fable* (Lionhead-Studios, 2004-2014) fits under both. This is also the case the game *Fallout* (Bethesda-Softworks, 2008) which allows for customisation of the avatar and the moral choices changes the narrative. When studies have looked at moral alignment of characters in games this is related to game design concepts such as Avatars and Non-Player Characters (NPC), both these concepts will be discussed in Chapter 4 with regards to how they related to the game design. For this section, previous literature on moral behaviour in video games will be discussed to understand how morality is applied in video games.

1.4.1. Video game play and moral development

Bajovic (2012) examined if playing violent video games is related to moral reasoning and attitude towards to violence with eighth grade (year 9 aged 13-14) students. Bajovic (2012) used the Sociomoral Reflect Measure-Short form (SRM-SF; Gibbs et al., 1992) to measure morality. Much of the previous research has examined short-term morality, i.e. moral decisions made in present time whereas this measure can measure moral development, longer-term moral processes, how moral reasoning develops over time. The results suggested playing video games is a popular pastime for adolescents. Participants were categorised into the violent group by meeting the following criteria: playing 1-3 hours every day, one violent game included as a favourite, and the declaration that they played and enjoy violent games. The only variable to correlate negatively with moral scores was the length of time playing violent video games. There were no significant differences between the violent and nonviolent group on moral scores (non-violent had higher scores) A

gender difference was females spend less time playing video game and played less violent games (Bajovic, 2012, 2013).

1.5. Methodological approaches for measuring video game effects

1.5.1. Using commercial games for measuring video game effects

Much of the research examined post-game play effects e.g. participants will play a game then after will be given psychometric measures to see if playing the game has had an effect. This section outlines and discusses research about morality in video games. To measure morality some research (Boyan, Grizzard, & Bowman, 2015) has used known commercial games and examined the participants' reports (self-reported) of their experiences of game whereas other research has administered a commercial game for participants to play.

1.5.1.1. Studies using self-report measures of commercial game play

Research that has used commercial games and examined participants reports for game play and psychometric test include Boyan et al. (2015) who examined the relationships between the Moral Foundations Questionnaire (MFQ) (Graham, Haidt and Nosek, 2008) and the decisions made in the video game *Mass Effect* series (BioWare, 2007-2012) if they played as the hero or anti-hero. Participants were gathered from an online forum for *Mass Effect* (BioWare, 2007-2012). The results suggested that only F/C, S/D and C/H correlated with the decisions made in the video games, however only C/H predicted moral decisions. However, these results are limited as participant's self-reported game play and demand characteristics could have influenced the results.

1.5.1.2. Research using game play of commercial games

To examine game play studies have administered a commercial game for participants to play with psychometric measures and include, Hartmann and Vorderer (2010). The authors wanted to examine if moral disengagement could explain enjoyment of violent video game content. The game *Half-life II* (Valve-Software, 2004) was used for participants to play. The results suggested that more familiarity with the game

used in the experiment the less negative affect and guilt but greater enjoyment was reported. The authors conclude that moral disengagement could be the mechanism to explain these results.

Gollwitzer and Melzer (2012) examined the role of moral cleansing after playing a violent video game. The study approached morality from the idea of Shakespeare's Macbeth; in which lady Macbeth tried to morally cleanse by physically wash her hands after what she perceived to be an act of immorality. Participants were randomly assigned to either play *FlatOut 2* (Bugbear-Entertainment, 2006) or GTA: *San Andreas* (Rockstar, 1997- 2015). *FlatOut 2* (Bugbear-Entertainment, 2006) is a car game and the level selected involved participants to be violent towards other cars and objects. Whereas the level of GTA required violence towards human characters and objects. The authors did make sure gaming experience: inexperience and experience were evenly distributed between the two video game conditions. After participants had played the video game they were asked to rate the attractiveness of 13 hygiene and 13 non-hygiene produces on a 5-point scale. The participants were also asked about the game play, enjoyment, conscience and guilt. The author suggest that the results were influenced by video game experience, this has important implications for future research especially examining what these experiences and exposure are and how it could influence morality. Furthermore, the authors did not consider that the research could be suggesting the higher level of video game experience could relate to level of desensitisation participants have. This could then suggest that desensitisation relates to morality post play. This connects to gaming experience as this was not measured in depth and was vague, thus the effects of content exposure should be considered when measuring gaming experience. The findings were that inexperienced players were more morally distressed when being violent against humans and playing GTA compared to *FlatOut2* (Bugbear-Entertainment, 2006) and violence towards objects. Experienced players reported less moral distress overall, in both games.

This study on the one hand has an interesting approach to measuring morality, especially as it examines potential strategies used in moral processing of immoral acts and the potential connection between in game play and post-game effects. Plus, the additional connections to the purity domain in MFT that need to be researched further (Haidt & Joseph, 2007). However, on the other hand the study is

limited in the approach of morality assuming the negative effects of game play. However, an important consideration is needed for future research, which is the balance between manipulations of the variables and still getting natural behaviour, in other words reducing laboratory effects.

Alternately Grizzard, Tamborini, Lewis, Wang, and Prabhu (2014) examined if being bad in a video game related to feelings of guilt and moral salience with MFT (excluding Liberty/Oppression domain). Participants were either assigned to a memory recall task (either a guilty memory or ordinary memory, the control group) or played a modified version of the first-person shooter, *Operation Flashpoint* (Bohemia-Interactive, 2001) (either a guilty inducing level, playing as a terrorist solider or a UN solider). MFQ (32 item) and a guilt measure (3 item) was also completed. The results suggested participants playing as terrorists felt significantly more guilt than those who played as UN soldiers. This correlated the significantly with MFQ domains of C/H and F/C, but not with L/B, A/S. The authors argue this is what is to be expected however what is interesting as authority was a theme for the players as they were soldiers, thus another theme other military would have been interesting to compare to. Also, there was a female gender bias in the participant sample. Also, it was unclear about participants' previous game play and how much previous experience they had. The authors suggest that antisocial behaviour in video games could relate to pro-social behaviour as the participants who violate the module could become more morally sensitive (higher ratings of guilt). However, if the domain is being activated and stimulated this does not necessary lead to change in behaviour. For example, killing innocent characters if a play felt guilty would it lead them to stop doing it or change behaviour; this is assumption as behaviour was not measured. The post-game effect of pro-social behaviour need more research. However, questions remain around how individuals make immoral decisions in virtual worlds.

More recently, Grizzard, Tamborini, Sherry, and Weber (2016) used both *Call of Duty* (Activision, 2005-2015) and *Operation Flashpoint* (Bohemia Interactive, 2001) and found that repeated exposure to the in-game violence reduced feelings of guilt during game play; as players gained more experience with the game's content, they felt less guilty when committing violent acts. As the study

incorporated two commercial games this could potentially improves the generalizability of the findings to other video games.

Ellithorpe et al. (2015) examined the concept of moral licensing in video games. Moral licensing is similar to moral disengagement components, where an individual will rationalise immoral behaviour by the fact they have been good, they can afford/allowed to be bad. An example of potential moral licencing in a video game; a player may choose an evil option if they felt that they had been good previously and could be allowed/afford to be evil for this choice. Participants were assigned to have either the mind set of Deontology (you must save as many people's) lives or Utilitarianism (you must win against the enemy no matter what cost). An additional manipulation was perceived choice, as half the participants were asked if they would be happy to take on a mind-set than ordered to do so. The authors explained the different approaches to the participants before game play and short description of the game level they were playing. Participants played around 20 minutes of *Mass effect 2* (BioWare, 2007-2012), the avatar gender was matched to the participant's gender. The post-test included the noise blast task, with competition for money as the reward and blast of noise as punishment, thus participants set the reward and punishments for the hypothetical partner. Then the participants were given post questions about their choice and were asked to pled money to charity. This is where the role of moral licensing could be happening those that were good in the game may accept more aggressive post choices. Participants who felt more moral were suggested to be less likely to reduce the reward and change to higher level of noise and pledged more money to charity. The results suggested that the utilitarian option was rated as more moral even when participants were not given a choice. The authors suggest this was identity simulation as participants adapted the mind-set they were assigned (avatars and identity will be discussed in the next Chapter). The post-game aggression effect was suggested to be only for short time after game play. The authors conclude video game play is a complex process which depends on game play experiences.

These results are interesting as utilitarian theory has been found to not be selected in real-life (Cushman et al., 2012), but was selected in VR environment (Navarrete et al., 2012). Thus, it is interesting it could have been influenced by the game level used such as the backstory or that morality in virtual worlds differs from

that in real-life. However, this could have been due to demand characteristics, participants wanted to choose the right decision. Also, adapting a mind-set could have interfered with participants own moral judgements especially the role of aversion to harm as is seen in the utilitarianism. This should have been incorporated into the game to measure the effect of in game choices with in game action. Furthermore, it would have been fruitful to not have the assignment of mind sets and see if there was a preference for positioning. The authors point out the limitations of Mass effect level chosen and acknowledge the difficultly of matching the pro-social and aggression post-test measures.

Many studies have used *Fallout 3* (Bethesda-Softworks, 2008) to examine the role of morality and game play. Due to the high relevance of the paper, a short summary about the game play can be found in Chapter 4 section 4.2.3. Krcmar and Cingel (2016) conducted an interesting study into moral reasoning through decisions made in *Fallout 3* (Bethesda-Softworks, 2008). Using the think aloud protocol reasoning for decisions could be recorded and were coded with MFT (excluding L/O domain). Participants were told it was important to record the reasons they made a choice rather than which choice had been selected. The research was important to demonstrate the role of in game choices and if it was strategy or moral as oppose to moral or immoral. The authors then coded responses to either moral (these were irrelevant to progression in the game) or strategic (these were beneficial to the character and progression in the game). The results suggested that in game decisions were 54% moral reasoning, the C/H, F/C and A/S domains being applied the most. With regards to salience of these domains only F/C and A/S were suggested to be used in game play. The authors conclude in game reasoning was more moral and further suggests participants responding to characters in a social way and an overlap with real-life reasoning and game reasoning. The authors suggest that *Fallout* (Bethesda-Softworks, 2008) provides a slow pace game play with moral reflection which other games like GTA does not have. While more detailed is needed on moral reflection in games this suggests the difference between genres or games and moral decisions.

Additionally, the coding of choices as being strategic or moral could have been subjective as a response discussing the greater good was coded as strategic but this also connects utilitarian theory and potentially the C/H domain. This could also

be restricted by using MFT and not including newer the liberty domain. Using an in-depth measure of moral reasoning would have been interesting. However, the authors could have additionally included was analysis of the content of *Fallout 3* (Bethesda-Softworks, 2008), to understand how that content could trigger morality (e.g. which domain(s) were activated) and the structure of choices (what specifically was the situation in which participants made their choice). Through researchers providing more detail of the video game content being reported and described, how this content is then evaluated and responded to, by the individual, within the context of morality can be more effectively investigated.

Weaver and Lewis (2012) wanted to examine how participants make moral decisions in video games. *Fallout 3* (Bethesda-Softworks, 2008) was the games chosen for participants to play, only the up to the first act which lasted about 30 minutes. The Data of the participant's game play was recorded from an Xbox 360 onto a DVD. Participants were also given a Moral Foundations Questionnaire (MFQ; the L/O domain is not measured in this). 75 participants took part in the study the age range was 18-24 with a good representation of gender (40 female and 35 male). Participants were asked how often they played video games per week, 68% reported at least two hours per week. After the game play participants were asked questions about the video game experience. The authors made efforts to disguise the connection to morality to reduce demand characteristics, they told participants the study was about video game enjoyment and used dummy questions to conceal study in the MFQ. Also, the study measured direct moral behaviour and game play. The results suggested that 20% mentioned using a strategy and 12% mentioned curiosity. The authors note the relationship between the content of the game and MFT domains as C/H and A/S were suggested to be domains used in decision-making. Plus, participants who made anti-social choices felt more guilt as found previously (Hartmann, Toz, & Brandon, 2010). Weaver and Lewis (2012) authors conclude a "strong moral presence" in the game and did not seem to act as if it was just as game (p.613). Furthermore, it is suggested that moral presence may be increased or decreased in games. This is in contrast to the research that suggested moral disengagement occurs (Hartmann & Vorderer, 2010).

Using commercial games for research has limitations. A general limitation of the research with commercial games is the amount of control there is over the game

aspects; for example, *Fallout 3* (Bethesda-Softworks, 2008) is restrictive such as the choices that are given, would participants act differently if given another choice or other aspects of the format of the choice changed). In general, the reporting of game play needs to be explained further, including, if the game was played in first person (hands and weapon seen) or third person (watching the character move from behind). This connects other procedural information reported; more information is needed about video game content, what specifically happens in the commercial game used for research. Especially those studies using Fallout 3 (Bethesda-Softworks, 2008) a short summary of the game play would have been useful to readers; to understand in more detail the structure of the decisions points (including the options and the outcomes). Furthermore, in some of the studies mentioned it was unclear how much of the game was played in the experiment (at what point in the game did participants stopped playing the game).

1.6. Developing games for researching morality in video games

Joeckel, Bowman, and Dogruel (2012) examined the role of moral salience in real-life and in game choices using the MFT (excluding L/O domain). Salience for the module was established from the highest score and a non-salient module had a lowest score. In order to measure this, the *Neverwinter Night's* (BioWare, 2002) was used that includes an AUORA engine. This was a toolset within game that gave players the opportunity to develop their own adventure game scenarios, with many making own adventure game scenarios (Greig, Muzyka, Ohlen, Oster, & Zeschuk, 2002). Six scenarios were created: five related to the original five moral domains and the sixth was a foil scenario. A foil scenario was used to reduce demand characteristics and examine the violations and the salience of a moral scenario compared to a non-moral scenario. To avoid gender bias all five moral domains contained male NPC and the foil contained a female NPC. The scenarios were text based small paragraphs with the last line the relating to the violation. These scenarios were piloted to check they were related to the relevant domain. The participants could select the gender of their avatar. When participants had interacted with a NPC they were then given a choice to violate or uphold the domain connected with the scenario. If a participant chose the option to violate, it was scored as 1 and the option to not violate was scored a 0.

Two groups were selected to play the video game from Germany and U.S. and included adolescents (aged 12 to 15) and older Adults (aged 49 to 86). Research with this age group is crucial as this is lacking in the literature especially also cross-cultural research with this age group (APA, 2015). The results suggested, moral salience was related to the in-game domain being upheld and overall moral intuitions were used to make decisions in the game. C/H was the most salient module and S/D was the least. A/S domain had the most violations. The researchers suggest random, amoral decision-making and not disengagement was taking place for non-salient domains. The adolescent U.S. group were suggested to have the most random decisions in the game for a violation of a salient domain, whereas the German older adult had the most violations of a non-salient domain.

However, this could have been influenced by other mechanics of the game such as context. Furthermore, the difference in the age groups could be due to moral development rather than virtual experience. A further issue with this study was the lack of agency for the player as the NPC was the protagonist. They were a moral observer rather than a moral agent; the scenarios were text based and the player was asked if another character should violate a scenario rather than the player selecting to violate the scenario. Yet the benefits of making a game means the researcher had control over the content in the video games however the engine that they used means there were still some restrictions, such as the fantasy appearance of the game. This could have led to morality may disengage or participants could have felt amoral and it was not real or just a game. In addition, it would be good to know how much of a trigger the content was for the domains; this could also explain the differences in results of the violations made.

A follow up study by Joeckel, Bowman, and Dogruel (2013) also used the game with two groups of adolescents' age ranging from 12-14 from the U.S and Germany. In the study, there were two conditions which were moral agency (NPCs actions matched choice) and moral violation (NPCs actions would violate anyway). The results suggested differences between the two age groups that were similar to the earlier study. The U.S. group seemed to be more random in violations (salient domains violated) compared to the German group in which salience of moral domains suggested less violations made. C/H was the most salient domain and S/D

the least. A/S had the most violations for the German group, whereas the U.S group had both C/H and A/S having the most violations.

Additionally, enjoyment was found not to be related to moral agency or violation conditions, thus the authors conclude no effect of the condition. This could be due to participants being told that interactions in the game would influence the game narrative; this could have influenced decisions made as it implies consequences. As a result, the moral violation condition may have left participants feeling a lack of agency and power in the game and could have affected their choices. This condition may have been better with a measure of consequences or just measuring moral decisions in the game. Alternatively examining re-playability with participants' experiences with both conditions could have been interesting to see how decisions are made the second time. Presence was also measured as a control variable, but this analysed with enjoyment not with moral choices. Using a presence measure is good as it demonstrates the experience of playing the game for participants; enjoyment was related to presence for both groups and experience for U.S. However, it would have been interesting to know if presence and experience related to moral decisions especially as game experience has been suggested influence outcomes (Gollwitzer & Melzer, 2012). Furthermore, the authors suggest intuitive responses were made however it would have been fruitful to have reaction times to see if this was the case. Thus, more research is needed to include reaction time and moral decisions in video games.

Tamborini, Bowman, et al. (2016) recently used the same developed game (Joeckel et al., 2012; Joeckel et al., 2013) to examine in-game decisions and the MIME model. Tamborini, Bowman, et al. (2016) examined the role of short term (temporary) and long term (chronic) access of the MIME model (MFT used excluding L/O domain). Two hundred and nineteen undergraduate students took part, the authors found that morality is not necessarily disengaged while playing a video game, and that these intuitions do influence in game decisions, however this influence is affected by game design features. The results suggested that players were more likely to uphold than violate a moral domain. C/H and F/C had the least violations; C/H was suggested to be driven by temporary access compared to L/B and A/S which seemed to be chronically accessed.

The authors suggest S/D and F/C may not have been accessed due to the nature of the choice and what the player expects to happen when making moral choices. Or specifically in the case for S/D the non-moral concerns such as safety could have been triggered by the scenario. Additionally, it could also be due to a third-party request as mentioned previously and this therefore changes the context of the game compared to the player was making these choices. The authors discuss limitations of the game, firstly being the C/H is the first scenario after training. Thus, it could have been triggered and applied to the rest of the game. Also, the role of order effects are discussed as the game was open world (also known as Sandbox games where the player can move around and explore the VE freely). The authors also suggest how involved with the game play an individual is could relate to decisions made. This suggests a question of presence and engagement with the game and this could be due to genre, both of which are discussed in Chapter 4.

Questions still remain with regards to if the domain C/H activated the most as these domains are particularly prevalent in the content of video games participants would be playing or was it primed by the task? The authors (Tamborini, Bowman, et al., 2016) address the need for more research for in game decisions including situational cues. This also connects to the role of fairness in game design this will be discussed in more detail in the next section about game design concepts. Although some previous research has found that video games could be amoral places as moral disengagement was suggested to take places (Hartmann & Vorderer, 2010). Recent research has found morality seems to be potentially engaged in video games. Thus, more research is needed on how and when morality is engaged in video games.

1.7. Methodological considerations from the previous research

1.7.1. Measuring morality

Morality like many psychological processes, it has been suggested to be made up of components. The MFT proposes both emotional and rational processes to be involved in moral decision-making (Haidt, 2001). There is also a four-component model of morality that contributes to quantifying morality which has been suggested: moral focus, moral sensitivity moral judgement and moral action (Narvaez & Lapsley, 2005; Narvaez & Rest, 1995; Rest, 1986). Therefore, measuring morality can be categorised through using these components. The measures of morality

including those that aim to understand the psychometric properties of morality, such as the Moral Foundations Questionnaire (Graham et al., 2008) and Moral Disengagement Questionnaire (Bandura et al., 1996) have been developed from the theories of morality discussed in the Literature Review. Additionally, measures of moral development have been created including the Sociomoral Reflection Measure (SRM) by Gibbs et al. (1992) this was built on Kohlberg's (1976) theory of moral development.

The Moral Foundation Questionnaire (MFQ) is a questionnaire which contains the five moral domains of: Care/Harm (C/H), Fairness/Cheating (F/C), Authority/Subversion (A/S), Sanctity/Degradation (S/D) and Loyalty/ Betrayal (L/B). There is currently no standardised measure of the sixth module, Liberty/Oppression (L/O). The domains can be measured through using the MFQ (Graham, Haidt and Nosek, 2008) which is composed of questions for each of the five domains. The individual rates how relevant and important they feel the statement is which in turn measures the relevant and importance of the domains for the individual. Another way to measure the MFT domains are to measure the moral domains through examining the triggers, emotions and virtues. An example of this was done by Clifford, Iyengar, Cabeza, and Sinnott-Armstrong (2015) who created scenarios from the six MFT domains. Each scenario would be a trigger as they contained behaviour that violated the relevant moral domain. It is important to note that for the domain of C/H, Clifford et al (2016) propose that C/H, also applies to emotional hurt.

Currently the measures of morality can be compromised when they are applied in virtual worlds, for example, some scenarios may not be applicable in video games, and therefore, these measures may not transfer into the video games. This is demonstrated in Clifford et al. (2015) scenarios did not relate to both video games and real-life, therefore the application in virtual worlds may not be appropriate. Furthermore, these inadequate measures of morality are also reflected in commercial video games; what the video game content represents morally for the individual. Therefore, more research is needed on how morality can be measured virtually.

1.7.2. Methodological issues from previous research

The literature review highlighted a number of methodological issues, two of which will be discussed in this section. The first information gathered about participant's game play is lacking, both the nature and amount of information reported. The limited examination of gaming exposure at a detailed level, such as the types of games participants are playing and comparisons among non-gamers.

The second issue is connected to the use of commercial games in the research which creates biases. The biases include the following familiarity with the game and favourite characters. Due to the prevalence of *Fallout* (Bethesda-Softworks, 2008) being used in literature, this is a good example of the biases. Familiarity is gauged from participants having played this game or a similar genre of game before, as well as the concept of re-playability (how many times the games been played). As a result, the previous research has been reliant on data which is limited and inherently biased.

1.7.2.1. Measuring an individual's video game play and experience

Video game play is the term used in this context to define an individual's video game habits and includes an individual's experience and exposure to video games. Video games are complex and, therefore, the game play is also complex. These complexities are demonstrated through the genres and content of the game and manner of playing (i.e. length of playing, playing mini games and whether it can be played solo or with others). There is a general lack of game play data gathered, thus the present study elected to gather more information to understand the relationships it has to psychological processes such as morality. Furthermore, the results of desensitisation, suggest that it is important to investigate the degree of exposure participants are experiencing and the content of video game. Ellithorpe et al. (2015) confirm the importance of exploring this experience. The reviews of the literature lead to the development of specific questions and the use of measures of engagement.

Previous research has mostly reported length of time per week spent on video games as a main variable. Gentile, Lynch, Linder, and Walsh (2004) calculated the weekly hours played. On average secondary school students played for 9 hours per week (8^{th} and 9^{th} grade in the USA and year 9 and 10 in the UK). Other variables are

the preference and content of games played. Many studies have included favourite games (Bajovic, 2012) however they were limited to only two options. The current research undertakes to utilise more options as this shows the frequency of the content and genre of games played. Measuring the content of video games can be attained through, the level of maturity and violence in the games. This can then be gauged by using the PEGI and ERSB.

An example of this was a scale created from the ERSB by Ferguson et al. (2012) to measure the average age rating of the video game content. This scale was developed as the rating systems (e.g. PEGI and ERSB) have criteria for each of the age ratings, such as, the ERSB category of 'Mature' (ages 17 and up) classifies content which includes any of the following; intense violence blood and gore, sexual content and strong language; whereas the category of 'Everyone' (suitable for all ages) classifies content which includes; minimal cartoon/fantasy violence, occasional use mild language (ESRB, 2015). Each of the categories can correspond to a Likert scale point, starting with the lowest age rating to the highest. Then when participants report game they play using the scale, this can represent the level of content in their game play.

Another important variable is engagement in video games. The term engagement encompasses many definitions and components such as: Immersion, Presence Flow, Psychological Absorption and Psychological Dissociation. Brockmyer et al. (2009) have developed a comprehensive questionnaire to measure engagement and address these components. Immersion is described as being engaged in video games but still aware of surroundings. Presence is described as still retaining a normal state of consciousness whilst experiencing being inside a virtual world. Flow is defined by feelings including enjoyment from VE which provide a balance between challenges and skill. Flow is also related to control and time distortion (slight influence of consciousness). Psychological Absorption is an altered state of consciousness where thoughts, feelings, emotions and experiences are separate and are less accessible. Psychological Dissociation can be the consequence of psychological absorption for example when in an altered state of consciousness to cope with unpleasant feelings. Another example of Psychological Dissociation is doing an activity such as driving but thinking about something unrelated to driving. Henceforth Engagement is used as an overarching component to describe these

phenomena. As such, Engagement could be a core experience with regards to moral behaviour in a video game.

Finally, another important aspect of game play, is to examine how participants would categorise their game play, as this is informative to their perception game play; whether they would label themselves as player, or not and if they would consider themselves as gamers. This self-identification of game play habits could also have been a confounding variable in previous research, as this relates to the participants' game play habits i.e. experiences, and there could be large differences between those that are very experienced compared to those with little experience. Gathering this information is important as this has also been lacking in previous research, it unclear to what extent participants play games and describe their gaming habits. In turn through gathering more data about video game play this will support the understanding of the relationships gaming may have with other factors such a morality. The relationship between these gaming variables is explored in this research.

1.7.2.2. Commercial video games in research

The second issues or inconsistency in the methodology of the research findings could be due to methodological issues with using commercial video games. Firstly, these games contain biases such as familiarity with the game and favourite characters. Secondly, they are restricted to how they have been made and programmed including the characters and backstory. Therefore, the video game selected for the research could have influenced participants' moral decision as they would be doing what they think they are expected to do from the game and/or have done before due to their previous experiences (familiarity and favourite characters).

When using a video game in research it is important to pick an appropriate game such as level of difficulty and ensuring the content is measurable and appropriate for participants. How this is achieved in the research is not always clear and could also be restricted by the games design. For example, the beginning of the game could have a predefined level of difficultly which could be too challenging with no options to change.

The research using commercial games has previously investigated what this could represent morally and if it would trigger moral processes and domain(s). For example, as *Fallout* 3 (Bethesda-Softworks, 2008) has been used previously, it highlights the following the question; does content trigger morality and if so what specific domain does this content trigger. In addition, the content may not be moral and more specifically applying MFT, the question of which domain(s) are being triggered by the content is of interest. An example of this the A/S and L/B domain could have been triggered as the participants were playing as soldiers (Grizzard et al., 2014).

Similarly, in Ellithorpe et al. (2015) the game content could have influenced the preference for the utilitarian choices made. As mentioned above when commercial video games are used in research, not only is a description of the moral content helpful for the reader to understand moral choice selection, but, there is a further methodological issue, analysis on the content is needed. Questions remain to what these moral choices and moral themes represent video games and therefore, what specifically is being are measuring from these games. For example, when a player makes a choice has moral domain even been triggered and if so what specifically been triggered. This current project aims to explore these issues and questions raised. In addition, Tamborini (2012) suggests how more than one domain could be activated simultaneously, therefore the overlap of domains also raises issues of what is being measured. Furthermore, the MIME model suggests one domain would dominant in the case of conflicting domains; therefore, it is even more important to understand the content triggers and the moral outcomes. Thus, these factors have implications for validity. Both the internal validity, that is, did playing the game actual measure morality. Also, external validity, how would this compare or be biased by participants' game play.

Another issue is video games are complex and consist of many aspects; the research has mainly focused on content and amount of time played whereas the other dimensions may play an important role in morality in video games. Gentile (2011) describes the five dimensions of video games; for each dimension a description of the dimension and an example of research undertaken is outlined:

I. Amount of time, is the length of time video games are played for and associated outcomes, such as the amount of time spent playing video games

correlates with poor school performance (Gentile, 2011). Prot et al. (2014) found an increased time spent playing video games were related to less pro-social behaviours.

II. Content of play is what happens within the game play including themes or scripts and includes the amount of violence. This has been the focus of the research and content effects have been reported earlier in Chapter 1 in section Media and violent content. Prot and Anderson (2013) suggest that there are issues in the way in which with researchers have defined violent content, as level or blood and gore as opposed to harm. However, this is a wider issue for the research; video game content should be defined, to include all content rather than just the focus on violent content.

III. Context or format of video games includes the rules of the game or scenario in which the game is set. For example, the mini multi-player games of the same game can change the context of the game, as the rules which define it change; some games may require the players to work in a team, whereas other games may require the focus on the players' character to get the highest score e.g. Halo mini games, the difference between playing capture the flag or slayer (Gentile, 2011). For example, Grizzard et al. (2014) carried out research using Operation Flashpoint (Bohemia Interactive, 2001) where participants played as terrorists, the results from this could have been influenced by the game context rather than content. Another example of context in games is World of Warcraft (WOW; Blizzard-Entertainment, 2004-2015) which has a social context; players need to join a guild to access some of the gaming content (Gentile, 2011). Jerabeck and Ferguson (2013) found playing cooperatively regardless of violent content was found to be related to less aggressive behaviour. Sauer, Drummond, and Nova (2015) examined the role of narrative context and rewards on post-game aggression. Participants played Counter Strike: Source and either played as a hero or antihero in one of three reward conditions (control, reward and punish). The majority of the sample was unfamiliar with this game. The results suggested that punishment condition had significantly less in game aggression (fewer shots fired) but not post-game aggression. Those that played as an anti-hero were significantly more aggressive post-game (grams of hot sauce) but not

in-game aggression. These results are interesting as they suggest the role of the different aspects of the game dimensions (or mechanics effecting) in game and post-game effects. However more research is needed to understand these dimensions, in particular the role of morality.

IV. Game structure is how information about the game is constructed for players to receive it or find it. Including the meaning taken from what happens in the content; most games are programmed in a similar manner; individuals have expectations of games and this could be triggered by the dimensions of the game; such as if a level is derelict looking players would expect enemies. Other examples include games where the player is a soldier such as Call of Duty, the player would expect enemies, and normally a soldier from another team with the assumption of more kills made, the more points received. Note the influence of context and structure with assumptions of kills, thus it could be argued that in Sauer et al. (2015) the manipulation of avatars and story is a game structure manipulation rather than just context manipulation. Participants' expectations of the game and they construct information could have varied; especially as biographical narratives of the character background were given to participants, due to the interpretation of the information. This demonstrates the restrictions using between-subjects design. There could be individual differences occurring with the meaning derived from the information and could explain the lack of differences between conditions. Thus, within-subjects design could be more comparable as individual differences in interpretation would be accounted for.

V. Game mechanics is how the players play the game, using a controller or key pad (Gentile, 2011). Recently research into the type of controller was used to examine the impact of aggression. Participants were given a typical PlayStation 3 controller or a gun controller. The results suggested using a gun controller increased realism, which in turn connected to immersion, but also increased cognitive aggression (McGloin, Farrar, & Fishlock, 2015). Thus, demonstrating the potential influence of the way in which the video game is played.

Although the dimensions and mechanics of video games cover different aspects of the game play, they are connected by feedback between what is seen on the screen and how this changes through using the controller. These dimensions directly relate to how the game is made, therefore game design. Anderson, Gentile, and Dill (2012) suggest that the multidimensional nature of video games may suggest inconsistencies in the research; the results could be more consistent within dimensions and may be associated with specific / certain effects but these effects may not be comparable between the dimensions.

Furthermore, dimensions may also be the reason why genre may have a relationship with morality, the design of the game therefore dimensions could relate and contribute to the classification of the games genre. For example, guilds normally occur in Role Playing Games (RPG), these games tend to contain moral choices; this could also explain the use of strategy in moral choices, for example if the presence of goals may influence moral behaviour. The APA (2015) identifies, that further research into games properties including narratives as this can relate how information is presented and framed, such as aggression.

As previously mentioned the APA (2015) suggested methodological issues with drawing conclusions from research even experimental controlled research, this could be due to the limitations of commercial video games. One way to overcome some of these methodological issues is to make a game to specification. Designing a new game also addresses some of the validity issues. An example is the content that would be programmed into the game, will be piloted to check what the content is measuring. Therefore, allowing more control over and applying manipulations in the game.

1.8. Chapter summary

This Chapter outlined the progression of video game research; from the origins of the controversy of the content and the role of post-game effects including aggression to the more resent direction of video game research such as morality. In order to understand how morality is applied in the virtual setting, theories of morality were examined, including how morality could be measured. These theories were then discussed with reference to how these fit within in models of media processing. Then a literature review was conducted on research examining video games and morality with specific reference to methods used to measure morality. Overall the literature suggested some inconsistencies with how morality was applied in video games. Some research suggested potential overlapping with real-life morality whereas other research suggested moral disengagement was taking place (Hartmann & Vorderer, 2010; Weaver & Lewis, 2012). It was suggested that adolescents playing violent video games had a small negative relationship with moral development (Bajovic, 2013). MFT C/H was suggested to be the most consistent salient moral domain in video games (Joeckel et al., 2012; Tamborini, Lewis, et al., 2016; Tamborini, Prabhu, et al., 2016). However, questions remain regarding the other MFT domains. From the literature review, the next Chapter focuses on development of the rationale and the outline of the PhD project.

Chapter 2. Outline of thesis

This PhD research aims to answer questions about morality and video games. The Literature Review provided an interesting insight; however, there are a number of methodological issues which need consideration. This section gives a background to the methodological issues and outlines and justifies approaches applied to measure video games and morality to answer the research questions and the contribution to the research. Finally, outputs from the research including publications are in the section thesis outputs. The Chapter outline includes the following:

2.1 An overview of the thesis

2.2 Ethical considerations

2.3 Contribution of the research

2.4 Thesis outputs

2.5 Chapter summary

2.1. An Overview of the thesis

In previous research on aggression and morality, the focus of the design and methodology has been predominantly quantitative. This method was selected for the current research as by using the quantitative approach trends and differences could be examined between this research. Thus, the design for the research has been developed to address some of the methodological issues highlighted from the literature review such as gathering more game play data (including engagement as mentioned in the literature review) and creating purpose-made games for research. The PhD was divided into two Phases. The Phase 1 focused on the longer-term role of the relationship of video game play and moral development. The Phase 2 was focused on the short-term processes of applying and making moral decisions.

2.1.1. Phase 1

From the literature review much concern has been raised with regards to the effects of video games, specifically the violent content. The connection between violence and morality (e.g. MFT domain of C/H) and previous research examining violent content, highlights that more research is needed to understand the role of potential

video game content and its potential effects on morality. Specifically, if video game habits including the content of video games have a relationship with moral development. Therefore, this not only connects to the previous research with violent content but is also an extension by examining the role of morality.

The aim of Phase 1 is to examine what the relationship is between; game play is related to moral development and age. In Phase 1 the focal point of the methodology was measuring moral development (see Table 4). This study encompasses about a third of the PhD.

Table 4. *Phase 1 research overview*

Phase 1 research plan:	
Research Question	What is the relationship between video game play, age and moral development?
Aims	To explore the long-term relationship and differences between video game play and moral development through reasoning.
Objectives	To measure several variables of game play and compare moral reasoning cross-sectional.

2.1.2. Developing Phase 2 from Phase 1

Phase 1 was critical for understanding the development of an individual's morality, by exploring participant's moral development by the age. This was very informative for conducting and designing Phase two of research, for the following reasons: firstly, for selecting the target population for this phase, if moral development was in a transition stage it could be too unstable for measuring and could produce an extra confound of moral development being in transitioning stage. Secondly, it was helpful to examine game play variables to support the development of the game, such as the types of games being played, the content of those games including any moral content and particularly the results of genre being a consistent positive predictor. Thirdly, it was informative to examine the role of the processing that could be activating more long term processes to then expand on this by examining the short term moral

decision-making process. Finally, Phase 1 informed both the importance developing a purpose-made game for research, and the direction/design of the purpose-made game to measure moral outcomes.

2.1.3. Phase 2

Due to the conflicting results around how morality may be applied in video games (i.e. disengaged or not), more research is needed to understand these short-term processes, the role of moral decision in games. Furthermore, research into participant's game play and moral development was critically to the design of a game to measure moral decision-making. In addition, by providing a controlled environment through creating a game; both moral and game design factors could be investigated. Moral action and behaviour are key aspects of video games as many required the player to act and behave. This further lends itself to measuring morality as the outcome of their moral decision can be measured through, the buttons that are pressed. This was demonstrated in the research using commercial game and purpose-made games and recording the choices made. This study encompasses about two third of the PhD.

As Phase 2 is a large study it is divided into two stages. The first stage analysed previous game content and developed the game content for the purpose-made game. The second stage is then using the game for data collection examining how moral decisions are made. Phase 1 and the first part of Phase two helped to support the development of the game design and measuring morality for the second part of Phase two.

The aim of Phase 2, stage 1 is to investigate a variety of factors (moral and game design) related to moral decisions in video games. The aim of the Phase 2, stage 2 is to test hypotheses based on these factors (moral and game design), to examine how they influence moral decisions in video game play. Phase 2 took a different methodological approach and developed a research tool in order to measure morality. The game was administered and used for data collection to measure moral decision-making. Through using quantitative methods, the relationship and differences between, in-game moral behaviour with real-life morality and previous game play was explored. Although morality consists of many components as

mentioned earlier the main focus of this research was on behavioural outcomes in the game; participants were required to make decisions, this is developed further in Chapter 4 (see Table 5).

Table 5. *Phase 2 research overview*

Phase 2 research plan:	
Research Question	How are moral decisions made in video games? What influences these decisions?
Aims	To explore the short-term processes of moral behaviours through decision-making in games. Plus, what factors both moral and game design influences this.
Objectives	To measure moral decision-making through a designing and creating a purpose-made game and examine if these choices can be manipulated.

2.2. Ethical Considerations

Throughout the research the University Research Ethics Code of Practice and the British psychological Society (BPS) guidelines (BPS, 2013, 2014) were followed. Therefore, additional ethical considerations that arose in the research are discussed here and divided into the two Phases.

Phase 1 has additional ethical considerations around the sample; specifically, the participants under the age of 18s. As well as this age group is known for playing games that are rated higher than their chronical age. This ethical issue of underage players although not new, needed raising and extra consideration and hence taken to conferences and workshops (Hodge, Taylor, & McAlaney, 2017).

Phase 2 the ethical considerations were mainly around the game design, making sure it was appropriate for the participants (e.g. the content of the game) As result it was decided that, it was more appropriate to use University sample first, almost as a pilot. After which other samples such as children and adolescents could be considered for future research.

2.3. Contribution of the research

The core of this research is the relationship between real-life moral development and decisions with game play. Much research from different disciplines has investigated this. One of the key factors of this research is that video games are representations and not real, therefore, examining the psychological and game factors surrounding the application of real-life processes, such as morality in virtual worlds, is of great value. Therefore, both Phases investigated and measured morality with a different approach to contrast and complement each other, such as comparing short-term decision-making with longer term moral development. Hence, aiming to greater encompass processes of morality, while extending the research to examine video game a whole rather than just the violent content and post-game effects. An additional contribution to the research was, cross-collaborating with other disciplines, game design to unite approaches and create novel methodology, through developing a game to measure morality. The contribution of the PhD research can be shown through the next section of the outputs that have been and will be completed.

2.4. Thesis outputs

The following section outlines the parts of the thesis that have been or are in the process of being published (see Table 6 and 7). For a list of conference attendance and submissions see Appendix A.

Table 6. *Summary of the publications for each Phase of the research*

Publications by Phase of research
Phase 1
Gathering video game play data with the under 18s raised some ethical considerations with this age group and was submitted to a workshop. Hodge, S. Taylor, J & McAlaney, J (2017). Restricted Content: Ethical Issues with Researching Minors' Video Game Habits. Human in Computer Interaction (CHI) May, Denver USA
Phase 2
The early concept and rationale of developing a game to explore morality was presented in a poster. Hodge, S., Taylor, J., McAlaney., J. & Gatzidis, C. *(2016).* Design of a Videogame to Explore Morality. British Human Computer Interaction (HCI), July, Bournemouth University, UK The theory and rationale to measure morality in a video game as described in Chapter 4 was adapted and developed into a book Chapter. Hodge, S., McAlaney, J., Gatzidis., Anderson, E.F., Melacca, D. & Taylor, J. (in press). Applying psychological theory to in-game moral behaviors through the development of a purpose-made gameIn N. D. Bowman (Ed.), *Video games: A medium that demands our attention*. New York, Routledge.

As result of Phase 2 a game was produced in conjunction with an Undergraduate Research Assistant programme (URA): Morality game (2016) Hodge, S., Melacca, D., Gatzidis, C., Anderson, E.F., McAlaney, J., & Taylor, J. Bournemouth University

Table 7. *Outputs post PhD and future research*

Outputs post PhD
Chapter 3 - The research project of the Phase 1 will be submitted as a journal article in a psychology journal. Chapter 5 - The development of the Liberty/Oppression scale, items and process will be submitted as journal article to journal in morality and/or psychometrics. Phase 2 - Chapters: 4, 5, 6 and 7 will be condensed and will be submitted as a journal article in a psychology and media journal. The game will be used future research, for example, examining the role of moral disengagement in the game and choices made.

2.5. Chapter summary

The Chapter outlined the methodology underpinning the PhD research. Approaches to measuring morality were discussed with reference to measures. The Chapter outlined the methodological issues from the literature. Specifically, self-reported video game play, using commercial games, and game design in the research. Subsequently the two Phases of the PhD were outlined and the selected methodological approaches outlined. The next Chapters will discuss and present the results of the each of the Phases 1.

Chapter 3. Phase 1 - Moral development and video game play

The main aim of Phase 1 was an exploratory investigation of the relationships between levels of morality and video game play. This includes examining demographic differences (such as age and gender) and video game playing (such as experience and favourite games). The results this Phase helped to develop Phase 2. The Chapter outline includes the following:

3.1. Rationale

Much of the literature has focused on the violent content; but it is important to consider other content in video games, such as the mature content, to understand the potential relationship between morality specifically moral reasoning. It could then identify whether other content or specifically violent content related to moral judgments. Furthermore, the research has not examined participants' video game play in sufficient detail and it is unclear how video game play relates to morality; for example, games with moral narratives. Most of the previous research has focused on adults however adolescents need to be included in the research as this group make up around a third of gamers (ESA, 2014, 2015). Also, the focus of previous research has been on short-term moral decisions, rather than longer-term influences especially on, moral development and moral reasoning. Plus, morality is still developing for both adolescents and adults age groups, this study, therefore, aims to look at how moral reasoning developed with age and video game play; using quantitative methods (see Chapter 2 for an outline).

3.1.1. Aims

The main aim of Phase 1 is an exploratory investigation of the relationships between moral development through reasoning and video game play. Therefore, this Phase of the research aims to address both the focus of violent content and amount of detail on game play by including an inclusive but broad gaming questionnaire (such as favourite games and genre of game). Moral reasoning was selected, due to previous research such as, Carnagey and Anderson (2005) suggesting the strongest relationship with video games was cognitive, moral reasoning was examined in this Phase. Demographic differences (such as age and gender) will also be examined. The results from this will help to develop Phase 2.

3.1.2. Objectives

Existing research has focused on certain age groups, mostly University students with only a few studies investigating adolescents. However more research is needed for adolescents as under 18s make up around a third of people who play video games (ESA, 2014, 2015). In a recent report the American Psychological Associated (APA) highlighted the need for more research with this age group and with how video game relate to development (APA, 2015). In addition, not enough information has been gathered about video game play. This is important as it could give an indication of types of video game players and how this relations to moral development. The objective for Phase 1 is to explore and compare: video game play and age with morality scores using a cross-sectional design, using mainly a quantitative approach. Although the measure has a mainly quantitative approach, there was a qualitative element. Participants will include school, Sixth form and University students ranging from early adolescents to adulthood. This will also suggest if a particular age group and type of video game player should be selected in the next phase of the research. The following research question was proposed:

I. What is the relationship between video game play, age and moral development?

3.1.2.1. Hypotheses:

Due to the research being exploratory, a two-tailed hypothesis was been proposed.

There will be differences between video game play, age and morality scores. Video game play will predict moral scores for all ages and groups.

Null hypothesis - There will be no differences or predictions between video game play and morality. Any interactions that may occur are not due to one factor alone.

3.2. Method

3.2.1. Design

This study used a cross-sectional design of investigating moral development and video game play, through the use of a questionnaire. The dependent variables are SRM scores (moral A scores). Gaming variables (continuous) included: Length of time, Genre (number of genres played of games played), Content rating (mean ESRB rating of favourite games), Years playing and Engagement. For categorical variables see Table 8 and for variable coding (see Appendix B). COD (24%) and GTA (25%) were selected as variables due to frequently reoccurring in participants' favourite game list[1].

[1] It is noted that this game play is a representation of the reported games at the time the data was gathered and therefore, could be different depending on the popular games of the time. This also highlights the dynamic nature of video game play

Table 8. *Predictor gaming variables (categorical)*

Gaming variables (categorical)
Game statuses -Gaming status (Yes, No) -Gamer[2] (Yes No) -Overall gaming Status* (Gamer, non-gamers and non-player)
These variables were created from Favourite[3] games listed: -Grand Theft Auto (GTA) -Call Of Duty (COD) -Violent (Yes, No) -Mature (Yes No) -Moral narrative (Yes No)
Length of time median split (high and low)

[2] This was only for University group, to avoid confusion with the younger participants

[3] This was obtained by using ESRB and PEGI see Appendix B (ESRB, 2015; PEGI, 2015)

3.2.2. Participants

A total of 301 participants took part in the study, 135 University and 166 Secondary and Sixth form students. See Table 9 for demographics of the sample.

Table 9. *Participants' demographics for both samples*

Age Group		*N*	Gender	Ethnicity[4]	Free school meals[5]
Secondary/ Sixth form	Completed responses	166	Male 47.0% Female 53.0%	White 94.0% Other 6%	Yes 36.1% No 63.9%
	SRM scorable responses*	133	Male 47.4% Female 52.6%	White 93.2% Other 6.8%	Yes 36.1% No 63.9%
University	Completed responses	135	Male 42.2% Female 57.8%	White 85.2% Other 14.8%	Yes 25.2% No 74.8%
	SRM scorable responses*	121	Male 39.7% Female 60.3%	White 86.8% Other 13.2%	Yes 25.6% No 74.4%
	Adjusted for outlier	120	Male 40% Female 60%	White 86.7% Other 13.3%	Yes 25% No 75%

*Not all responses yielded a scorable moral judgements, see unscorable answers (see Appendix C)

Table 9 reports the overall demographics of the sample and the responses which yielded a SRM score used for further analysis. A total of 47 participants (33 from Secondary and Sixth form 14 from University) responses were discarded from

[4] Due to the majority white ethnicity this was coded in SPSS as white and other for regression analysis

[5] University students were asked if they at any point received free school meals while at school.

analysis due to unscorable answers (see analysis section 2.6). The demographics of the scorable responses report a fairly even gender divide, with a third of sample entitled free school[6] meals. Free school meals were taken a measure of Social Economical Status (SES). The majority of the sample had a White (Scottish, Irish English or other) background.

3.2.2.1. University sample

Students from Bournemouth University were selected through opportunity sampling and using SONA system for undergraduate psychology students to gain course credits. The age range of the participants was 17- 41 years. One participant aged 41 years was subsequently removed as an outlier on the basis of their age leaving the sample; updated age range 17-27 years.

3.2.2.2. Secondary school and Sixth form sample

Convenience sampling was used to access schools. In the local area were contacted about the opportunity to take part in the research. One local Secondary school was used in the study which included a Sixth form college. The school sample age ranged from 11 to 18 years. The schools' demographic was majority working class and white. The areas that feed in to school are classed as deprived areas (Ofsted, 2015). Participants were selected from years 7 to 13. 30% in years 7 to 11 returning a parental consent form.

3.2.3. Materials

An online survey tool, SurveyMonkey© was used to create an online questionnaire for administration to participants. The online questionnaire was slightly different or the Secondary and Sixth form sample, thus two questionnaires were used (see Appendix D for questionnaire which includes consent forms).

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[6] About 42.1% of the pupils are eligible for FSM which is higher than the national average of 28.5% (Ofsted, 2015)

3.2.3.1. The Sociomoral Reflection Measure (SRM)

Gibbs et al. (1992) developed the Sociomoral Reflection Measure[7] (SRM) to measure moral development from Kohlberg (1976). This measure of morality categorises reasoning into stages of development. The first two stages transferred well into stages of development However changes were made during the development of the SRM from Kohlberg's theory; the last two stages did not transfer well and were dropped thus the stages range from stage 1 to stage 4 (see Table 10 and Appendix C). Gibbs et al. (1992) also changed the name of the level to mature and immature (called it moral A) instead of conventional level. In addition, another type of reasoning was found by Gibbs et al. (1992) known as moral B. Moral B reflects different types of moral reasoning. Moral B reasoning suggests more of an expression of moral principles as opposed to moral A which suggested more of an embedding of the ethical principles from social conventions.

Table 10. *SRM stages of development adapted from Kohlberg (1971)*

Moral A				Moral B
Maturity	Description	Stage	Description	Yes/No
Immature	Right and wrong = rewards and punishment	Stage 1	Unilateral Physicality	No
		Transition 1.5		No
		Stage 2	Exchanging and Instrumental	No
		Transition 2.5		Yes
Mature	Others views are important = avoiding blame and wanting approval (latter stages including societal thinking)	Stage 3	Mutual and Prosocial	Yes
		Transition 3.5	Relativism of Personal values	Yes
		Stage 4	Systemic and Standard	Yes

[7] Short-form version was used

Moral B is described as more prescriptive and internal with an awareness of what ought to be (Gibbs et al., 1992). Moral B consists of three components; Balancing, Fundamental Valuing and Conscience. Balancing was shown by individuals recognising own and other view point for example 'treating other how you would like to be treated'. Fundamental Valuing was shown by individuals understanding intrinsic value of concepts such as promises and life. Conscience was shown by individuals having an awareness of how they would feel about their actions, for example feeling guilty. Moral B components are available from transition stage 2/3 to 4, thus suggest higher reasoning.

Participants' qualitative written responses for each question were categorised in to a stage of development and moral A or B. A response is scored by matching a written response it to the appropriate Criterion Justification (CJ). Moral B components exist within some of the Moral A CJs. For responses to have moral B type morality participants had to have two or more moral B components that could be specifically matched to the relevant sub-section within the Moral A CJs. The CJ were written responses grouped by moral concepts, such as; empathic role taking, intrapersonal approval and prosocial intentions. Within the concepts were written responses that represent the concept for matching, for example "you may become friends" (Gibbs et al., 1992, p71). The authors argue that the language used to represent moral reasoning changes with development. For example, reasoning starts with absolute notions like 'this will happen' and later change to a more relative notion like 'could happen'. Transition stages represented participants starting to develop into the next but not fully and still have lower reasoning; for example, understanding other behaviour (empathic role-taking) but still pragmatic in consequences (advantages). More mature reasoning will start to understand society implications. The eleven questions were split by themes: question 1 to 4 'Contract and Truth', 5 and 6 'Afflation', 7 and 8' Life', 9 and 10 'Property and Law' and finally 11, 'Legal Justice'. There are four stages of development (1-4) with three transitional stages in between each stage. Once the response had been matched to a CJ the highest stage was used and a score was derived by averaging the highest stage from the eleven questions. This gave an average score of development ranging from 1-4. This score could then be matched to a global stage (see Table 11).

Table 11. *SRM norms of Moral A adapted from Gibbs, Basinger and Fuller (1992)*

School Age UK (American)	Age	Global Stage	Score boundary of Global stage	Maturity
Year 5 (Fourth Grade)	10.05	2	1.75 - 2.25	Immature
Year 7 (Sixth Grade)	12.06	2(3)	2.26 - 2.49	Immature
Year 9 (Eighth Grade)	14.11	3(2)	2.50 – 2.74	Immature
Sixth form (High School)	17.30	3	2.75 – 3.25	Mature
University	19.18	3	2.75 – 3.25	Mature
Adult	50.66	4(3)	3.50 – 3.74	Mature

Gibbs et al. (1992) found that morality continues to development throughout University age, with norms of University students being at stage 3 (see Table 11). The authors also found a significant difference between male and female scores; for the sixth and eighth graders. Females scored significantly higher than the males, proposed to be a result of female's maturation into puberty occurring earlier than males. Note the connection of the subheading "Pro social Intentions" in the SRM (Gibbs et al., 1992) to Chapter 1 the literature review on violent video games and the pro-social behaviour. Therefore, how moral processes relate to video games is important to investigate.

This measure was chosen for the present study as it is applicable to a wide age range (from early childhood to adult) compared to the Moral Foundation Questionnaire (MFQ) (Graham et al., 2008) which the authors recommend only to be used on ages 15 above. Additionally, the SRM is not time consuming for administration (completed in about 25 minutes for participants 12 and older). This is less time consuming compared to other similar measures of morality that require moral decisions and evaluation to be made, such as the Moral Judgment interview (Colby & Kohlberg, 1987; Gibbs et al., 1992). It also allowed for an individual's in-depth moral reasoning without the restrictive responses of a tick box. The measure has also been used previously in a similar study (Bajovic, 2012, 2013).

The measure required participants to answer 11 questions with qualitative answers (Gibbs, Basinger and Fuller, 1992). These answers were then matched to criteria within a stage of development. Gibbs et al. (1992) suggest around 30 hours of training (study and practice) to use the measure (in the training manual) this was carried out before scoring responses for this study. SRM has good concurrent validity, *r* =.69 and test retest *r* = .88 (Gibbs et al., 1992). The scores of the researcher and the scores of Gibbs (et al 1992) were compared for reliability before scoring own responses, *r* =.98[8].

3.2.3.2. Game Engagement Questionnaire (GEQ)

Brockmyer et al. (2009) developed the Game Engagement Questionnaire consists of 19 questions about how the participant usually feels when playing a video game and a score is given to represent the level of engagement (yes = 2 maybe = 1 and no = 0), with a maximum score 38. The measure was also reviewed (Fox & Brockmyer, 2013).

3.2.3.3. Video game play

Video game play questions were developed from the researcher's undergraduate project Hodge and Taylor (2010) and from the literature, including Bajovic (2012). This questionnaire was different from previous questionnaires about game play as it included in-depth questions regarding participant's video game play; questions covered exposure and experience of video game play, such as favourite games, and how participant s play video games including who they play with and what type of system they play on (for example, consoles, PCs etc.).

[8] Gibbs (et al 1992) suggests that acceptable reliability to be at least r = .80

3.2.4. Procedure

The following section outlines the procedure of developing the questionnaire and data collecting. The procedure has been divided into University and secondary school participants as the procedures were different for these groups (see Appendix E).

3.2.4.1. Pilot

The questionnaire was piloted with two secondary school students and one Sixth form student, to make sure the language and timings were appropriate. Only minor changes were applied, the questionnaire was shortened for participants in the secondary and Sixth form sample due to time restrictions and age appropriateness.

3.2.4.2. University students

Questionnaire was administered to University students first. This also acted as a pseudo pilot for the Secondary and Sixth form group. As due to time restrictions for the secondary and Sixth form sample the questionnaire had to be shorter and only some of the gaming questions were included. Psychology students were first participants in the data collection. As the students could earn credit for their participation all the SRM questions were reviewed to ensure they were scorable. This was only carried out with psychology students for preliminary analysis on the answers, including which questions were more frequent for prompts and to see how much a prompt would influence answers.

3.2.4.3. Secondary school and Sixth form students

The questionnaire was shorted for Secondary and Sixth form students due to time restrictions. The gaming section was shortened as this was in depth for University students, who could spend more time answering the questions. The minimum responses included the SRM and if they play video games; 50% completed the entire questionnaire across all year groups (demonstrating the variability within the classes).

3.2.4.4. Administration in the school

Paper copies were used to overcome technical problems with the delivery of the questionnaire (e.g. availability of computers and internet issues). Data from paper copies were manually entered through SurveyMonkey©. All participants were verbally debriefed at the end of the lesson and were informed about the morality and were told to speak to the research or appropriate teacher if they were not happy. Due to the variance, both within and between year groups, the questionnaire was designed to allow for differences in ability. Some students were able to finish and some only completed the SRM and whether they play video game. As such most students even the younger ones, were able to get to the gaming section.

The researcher walked around the classroom while the students completed the questionnaire; firstly, to make sure all students taking part could access the link. Then to look at participants answers for the SRM to make sure they were scorable and legible. Gibbs et al (1992) explain that when the measure is administered it is helpful to prompt participants to think about why they think the question is important or not, to support scorable answers. Some participants were given prompts to help them answer the SRM. A minority of participants still could not answer the question after a prompt. This also allowed the researcher to answer questions and confirm word definition or spellings. The sample also had some variance with how participants responded to the questionnaire; some were happy to start and some needed prompts.

3.2.4.4.1. Administration Sixth form participant's

Participants had the questionnaire administered during an assembly as this is a time they were all together. However, the assembly lasted for 30 minutes and due to slow start and late arrivals this resulted in less time to complete. Thus, this was taken into consideration during coding to ensure the responses could be used for analysis, which was the case.

3.2.4.4.2. Administration Secondary participant's

The questionnaire was administered during lessons. For the participants in years 7, 8 and 9 the researcher was assisted by one teacher. These lessons had a starter task for the participants. They were given a scenario in groups where they were shipwrecked had to choose four out of eight people to go on a life raft. Each person had a small back story such as a scientist who discovered the cure for cancer and pregnant mother with 6 children at home. This exercise was done to support the students thinking for the questionnaire. Students then gave feedback as a group as to who they would save and why as part of a small class discussion. Then the researcher delivered a small presentation about the research and how to take part in the questionnaire. The researcher spoke about why the research was important and briefed the students. All instructions were administered including; general information about students completing the questionnaire individually. Then the parts of the questionnaire were explained (demographic, SRM and video game questions). Next the instructions for the SRM were read aloud with a fictional example used to aid understanding. Finally, the first question of the SRM was read aloud for the participants to think about to illustrate that this is the part that required decision-making.

The first session was used to understand the format of the lesson, from this lesson the start was shortened to about 10 minutes and the rest of the lesson was used for the questionnaire. All instructions were administered before participants were accessed computers. It was initially thought that breaking instructions up may have been easier for students, however this was not the case once the students were on the computers it was difficult to get full attention and also, students were at progressing at different rates through the questionnaire.

3.2.5. Ethics

The study had full ethical approval. University and Sixth form participants could consent for themselves, as long as they were aged 16 or over. The Secondary school students consented for themselves but needed a parental consent form returned as well. Deception was used in the questionnaire to reduce demand characteristics.

Participants were informed at the end of the questionnaire and those in Secondary and Sixth form were also verbally debriefed.

3.2.6. Analysis

Due to the nature of the measure, some responses were unscorable (see Table 9 and Appendix C). Normality tests were carried out on all variables before inferential statistics were carried out. SRM scores interval level data and met the parametric assumptions. Due to time restrictions and personal choice, the gaming information has many missing cases in the Secondary and Sixth form data. Also, the term 'gamer' was removed for this group and participants were asked if they played video games to avoid confusion with the term (see Appendix B for coding gaming variables and Appendix F for data labels).

3.3. Results

The section includes descriptive and interferential statistics for moral scores and video game play.

3.3.1. Game play statistics

Table 12 and 13 shows there is a gender difference for the continuous and categorical video game variables; males playing more than females. Independent t – tests for the continuous gaming variables showed a significant gender difference for all gaming variables for the University sample, males playing more than females (p <.01). The Secondary and Sixth form sample also showed a significant gender difference for the gaming variables, males playing more than females (p <.01) except engagement (p > .05). Chi-squared analysis for the University sample showed a significant gender difference between the categorical gaming variables (p <.01) except gaming status (p >.01). The Secondary and Sixth form sample also showed a significant gender difference for all categorical gaming variables (p <.01).

Table 12. *Descriptive statistics for continuous gaming variables and gender*

Gaming variable (continuous)		Secondary and Sixth form *N* = 133			University *N* = 120		
		Male	Female	Total	Male	Female	Total
Years playing	*M*	8.12	4.75	6.50	13.17	9.24	12.02
	SD	3.35	2.94	3.57	3.23	4.96	4.18
Number of Genres played	*M*	8.64	5.47	7.10	10.52	4.49	6.9
	SD	5.37	4.14	4.94	4.98	4.11	5.36
Content	*M*	2.95	2.09	2.57	2.91	1.79	2.28
	SD	0.67	0.92	0.90	0.74	1.11	1.11
Length of time	*M*	19.37	9.19	14.19	13.57	4.22	7.96
	SD	11.51	11.05	12.34	9.15	5.20	8.39
Engagement (GEQ)	*M*	20.18	16.65	18.51	16.96	9.83	12.68
	SD	7.51	12.42	10.21	7.64	9.08	9.19

Table 13. *Descriptive statistics for categorical gaming variables and gender*

Gaming variable (categorical)		Secondary and Sixth form *N* = 133			University *N* = 120		
		Male	Female	Total	Male	Female	Total
Gaming status	Yes	63	61	124	47	64	111
	No	0	9	9	1	8	9
	Total	63	70	133	48	72	120
Gamer	Yes	-	-	-	43	17	60
Violent	Yes	53	18	71	38	18	56
	No	5	27	32	7	31	38
	Total	58	45	103	45	49	94
Mature	Yes	52	18	70	36	16	52
	No	6	27	33	9	33	42
	Total	58	45	103	45	49	94
Grand Theft Auto (GTA)	Yes	26	5	31	19	6	25
	No	32	39	71	26	43	69
	Total	58	44	102	45	49	94
Call of Duty (COD)	Yes	36	8	44	6	3	9
	No	22	36	58	39	46	85
	Total	58	44	102	45	49	94
Moral Narrative	Yes	45	15	60	38	15	53
	No	13	30	43	7	34	41
	Total	58	45	103	45	49	94
Length of time (median split)	High	41	20	61	41	21	62
	Low	15	38	53	7	51	58
	Total	56	58	114	48	72	120

3.3.2. Moral developmental stage of the sample

Table 14 shows the overall SRM stages of the Secondary and Sixth form sample. The majority of sample (67.8%) had immature morality and were in stage 2. Only 31.6% participants had mature morality.

Table 14. *SRM stages of the Secondary and Sixth form sample*

Stage	Global stage	Frequency	Percent %	Maturity
1	1	0	0	Immature
1	1(2) upper 1	0	0	Immature
1	2(1) lower 2	1	0.8	Immature
2	2	32	24.1	Immature
2	2(3) upper 2	29	21.8	Immature
2	3(2) lower 3	28	21.1	Immature
3	3	39	29.3	Mature
3	3(4) upper 3	3	2.3	Mature
3	4(3) lower 4	1	0.8	Mature
4	4	0	0	Mature

Table 15. SRM stages of the University sample

Stage	Global stage	Frequency	Percent %	Maturity
1	1	0	0	Immature
1	1(2) upper 1	0	0	Immature
1	2(1) lower 2	0	0	Immature
2	2	0	0	Immature
2	2(3) upper 2	0	0	Immature
2	3(2) lower 3	5	4.2	Immature
3	3	60	50.0	Mature
3	3(4) upper 3	38	31.7	Mature
3	4(3) lower 4	16	13.3	Mature
4	4	1	0.8	Mature

Table 15 shows the overall SRM stages of the University sample. The majority of sample (95.9%) had mature morality and were in stage three. 4% of participants had immature morality. Only one participant had the highest level of mature morality.

3.3.3. SRM scores, gender and gaming status

Gaming status suggests that participants who played games (yes/no) were a Global stage higher than those who do not play video games (Table 16). However, the non-gaming group (N= 9) was small in comparison the gaming group (N = 124) Table 16 also suggests in the Secondary and Sixth form sample that males had high moral scores than females: males reaching a higher developmental Global stage

Table 16. *SRM scores, gender and gaming status Secondary and Sixth form sample*

Secondary and Sixth form		*N*	*M*	SD	Global stage
Gender	Males	63	2.62	0.38	3(2)
	Females	70	2.47	0.35	2(3)
Gaming status	Yes	124	2.55	0.38	3(2)
	No	9	2.49	0.27	2(3)

Table 17. *SRM scores, gender and gaming Status University sample*

University			*N*	*M*	SD	Global stage
Gender		Males	48	3.27	0.24	3(4)
		Females	72	3.21	0.23	3
All Gaming status	Gaming status	Yes	11	3.23	0.24	3
		No	9	3.29	0.20	3(4)
	Gamers	Yes	60	3.28	0.25	3(4)
		No	60	3.19	0.21	3
	Overall	Gamers	60	3.28	0.25	3(4)
		Non-Gamers	51	3.17	0.21	3
		Non-Players	9	3.29	0.20	3(4)

Table 17 shows that males in the University sample had high moral scores than females which equated to a stage higher in moral development (Global stage 3(4)).Overall gaming status variable for the University sample is composed of the following; if they would describe themselves as gamers[9] Non-gamers are individuals who play video games but would not describe themselves a gamers and non-player

[9] This was not included with the Secondary and Sixth form sample to avoid confusion

have describe themselves as not playing video games at all/very rarely. Table 17 shows for Gaming status, participants that selected 'No' had higher moral scores and Global stage of moral development than those who selected 'Yes': whereas participants that had selected 'Yes' to being a Gamer, had higher moral scores and Global stage of moral development than those who selected 'No'. This pattern is reflected in the overall Gaming status variable see Figure 2.

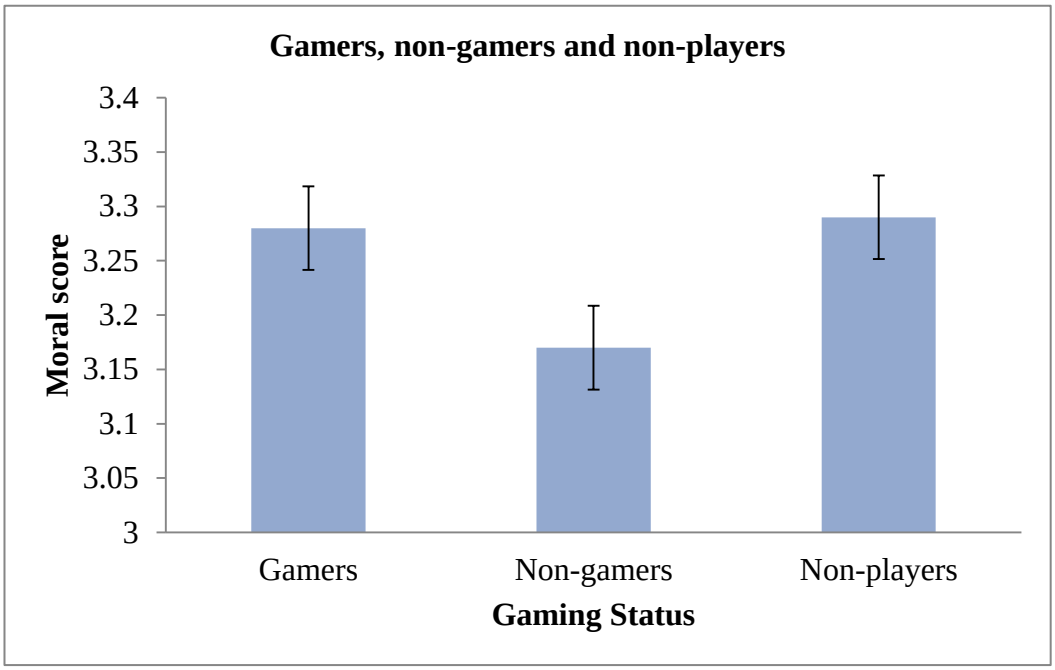

Figure 2. Overall gaming status variables with SRM scores

Figure 2 suggests that gamers and non-players had similar moral scores which were higher by a global stage of development than the participants who were non-gamers. However, there were only 9 participants in the non-players group, therefore the variable or gamer (yes/no) was used (see Table 17 above). A one-way between-subjects ANOVA was conducted to examine if these difference between gaming status and moral scores was significant different. The results suggested there was a close to significance but not significant result of gaming status and morality scores $F(2, 117) = 3.05$ $p = .051$.

3.3.4. SRM scores and age

Age was selected for analysis rather than year group because the two variables would be too similar to analyse together and for University age group year of course is not connected to age (mature students). This is categorical variable, for other analysis continuous variable was used.

Table 18 shows the SRM scores for each of the age groups and suggests that overall moral development is gradual and in the immature stage for secondary school students. However, there does seem to change between, 12 and 13 (see Figure 3). Only the 17 year olds had mature morality into stage three but 18 year olds were not but this could be due to a small sample size

Table 18. *SRM scores of participants by chronological age*

	Age	*N*	*M*	*SD*	Global stage	Maturity
Secondary and Sixth from	11	26	2.43	0.33	2(3)	Immature
	12	40	2.37	0.30	2(3)	Immature
	13	26	2.64	0.41	3(2)	Immature
	14	18	2.73	0.32	3(2)	Immature
	15-18	23	2.73	0.34	3(2)	Mature
University	18[10]	19	3.11	0.21	3	Mature
	19	37	3.23	0.22	3	Mature
	20	27	3.23	0.20	3	Mature
	21	20	3.35	0.24	3(4)	Mature
	22plus	17	3.23	0.29	3	Mature

*due to low number in the age groups these groups were merged for further analysis 15 -18 and 22plus

[10]This group contained one 17 year old.

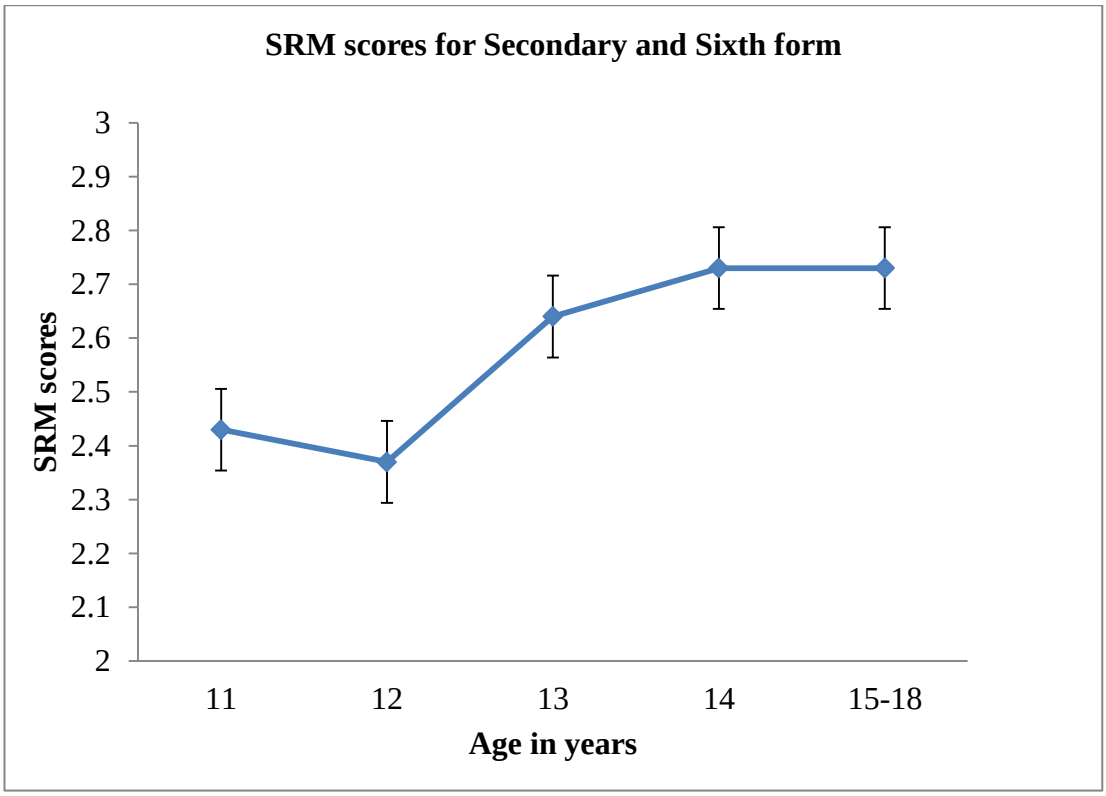

Figure 3. SRM scores for Secondary and Sixth form groups

Figure 3 shows the increase of SRM moral scores with age in the Secondary and Sixth form sample; in particular, there is a change between 12 and 13 years.

3.3.5. Regression

Three multiple regression analyses were carried out using the enter method with missing cases exclude pairwise[11]. This method was chosen due the lack of previous research in the area (see Appendix F for data labels).

[11] due to the amount of missing data for the Secondary and Sixth form students

3.3.5.1. Regression analysis, combined data set

The combined data set includes both the Secondary, Sixth form and University samples. Table 19 suggests that moral type, age, gender, years playing, moral narrative, genre, content, playing GTA and data set all significantly predicted moral scores. Moral narrative and number of genre played predicted higher moral scores. While years playing, average content rating and GTA predicted lower moral scores.

Table 19. *Regression model of the SRM scores for the combined data set*[12]

	B	SE B	β
Constant	2.07	0.49	
Moral Type	**0.20**	**0.06**	**0.21***
Age	**-0.19**	**0.08**	**-0.20***
Gender	**0.07**	**0.02**	**0.60****
Ethnicity	0.09	0.09	0.06
FSM	0.02	0.06	0.02
Violent	-0.17	0.19	-0.23
Mature	0.10	0.20	0.14
Years playing	**-0.06**	**0.02**	**-0.62***
Moral Narrative	**-0.25**	**0.11**	**-0.35***
Gaming status	-0.38	0.19	-0.21
Number of Genres played	**0.04**	**0.01**	**0.41****
Content	**-0.11**	**0.06**	**-0.25***
GTA	**0.17**	**0.08**	**0.26***
Engagement	0.00	0.00	-0.08
Length of time (median split)	0.06	0.07	0.07
Sample	**0.38**	**0.12**	**0.41***

$R^2 = 0.69$, $\Delta R^2 = 0.64$ ($p < 0.01$). *p<.05 **p <.01

[12] Note: data labels: Moral Type 1 = A; 2 = B. Gender 1 = Male; 2 = Female. Ethnicity 1 = White; 2 = Non-white. Free School Meals, Gaming Status, Violent, Mature, Moral Narrative 1 = Yes; 2 = No. Length of time 1 = Low; 2 = High. Sample 1 = Secondary; 2 = University.

3.3.5.2. Regression analysis, combined data on gaming variables

Gaming variables were analysed to examine how much variance was explained by video game variables without the demographic variables. 34% percent of the variance was explained by only gaming variables (see Table 20). Years playing and engagement were significant predictors of moral scores.

Table 20. *Regression model of the SRM scores and gaming variables only for the combined date set*[13]

	B	SE B	β
Constant	2.48	0.48	
Years playing	**0.07**	**0.01**	**0.66****
Violent	-0.36	0.25	-0.48
Mature	0.33	0.27	0.45
Moral Narrative	-0.03	0.14	-0.05
Gaming status	0.15	0.22	0.08
Number of Genres played	0.00	0.01	-0.05
Content	0.00	0.06	0.00
GTA	0.10	0.10	0.16
Engagement	**-0.01**	**0.00**	**-0.25***
Length of time median split	-0.14	0.09	-0.15

$R^2 = 0.40$, $\Delta R^2 = 0.34$ ($p < 0.01$). **p*<.05 ***p* <.01 *** *p* <.001

[13] Note: data labels: Gaming Status, Violent, Mature, Moral Narrative 1 = Yes; 2 = No. Length of time 1 = Low; 2 = High.

3.3.5.3. Regression analysis for Secondary and Sixth form data

This regression was carried out to compare the two samples as sample was a significant predictor of moral scores. Table 21 shows that in the secondary and sixth form sample, genre significantly predicted moral scores. Moral type was just above significance (p = 0.07). Although not significant playing violent game suggested higher moral scores whereas mature content suggested lower moral scores, with high Beta values.

Table 21. *Regression model of the SRM scores for the Secondary and Sixth form data set*[14]

	B	SE B	β
Constant	1.56	0.60	
Moral Type	0.23	0.13	0.23
Gender	-0.18	0.12	-0.25
Age	0.04	0.03	0.22
Years playing	-0.02	0.02	-0.15
Number of Genres played	**0.04**	**0.01**	**0.50***
Content	0.05	0.08	0.11
Violent	-0.60	0.46	-0.76
Mature	0.80	0.45	1.01
Engagement	-0.01	0.01	-0.21
GTA	0.10	0.12	0.13
Moral Narrative	-0.02	0.14	-0.02
Length of time (median split)	-0.09	0.11	-0.13

$R^2 = 0.38$, $\Delta R^2 = 0.23$ (p = 0.015). *p<.05 **p <.01 *** p <.001

[14] Note: data labels: Moral Type 1 = A; 2 = B. Gender 1 = Male; 2 = Female. Gaming Status, Violent, Mature, Moral Narrative 1 = Yes; 2 = No. Length of time 1 = Low; 2 = High.

3.3.5.4. Regression analysis, University data

Table 22 shows that in the University sample none of the variables predicted SRM scores. This suggests that variables do not significantly account for variance in SRM scores; in addition, the two samples are different.

Table 22. *Regression model of the SRM scores for the University data set*[15]

	B	SE B	β
Constant	2.96	0.58	
Moral Type	0.12	0.07	0.25
Gender	-0.03	0.09	-0.07
Age	0.01	0.02	0.10
Years playing	0.00	0.01	-0.06
Number of Genres played	0.00	0.01	0.07
Content	-0.02	0.05	-0.09
Violent	-0.04	0.21	-0.11
Mature	-0.03	0.25	-0.08
Engagement (GEQ)	0.00	0.01	-0.11
GTA	0.18	0.11	0.65
Moral Narrative	-0.14	0.15	-0.45
Gamers	-0.03	0.12	-0.07
Length of time (median split)	0.00	0.13	-0.01

$R^2 = 0.21$, $\Delta R^2 = -0.04$ ($p = 0.61$).

[15] Note: data labels: Moral Type 1 = A; 2 = B. Gender 1 = Male; 2 = Female. Gaming Status, Gamers, Violent, Mature, Moral Narrative 1 = Yes; 2 = No. Length of time 1 = Low; 2 = High.

3.4. Discussion

3.4.1. Aims and hypothesis

The aims of the study were to examine the relationship between moral development and video game play for University and Secondary and Sixth form age participants; and to explore the relationship of morality and video game play to help develop for the next stages of the PhD. The overall results suggested that were differences in moral scores and game play. Supporting the hypothesis: There will be differences between video game play, age and morality scores. Video game play will predict moral scores for all ages and groups. To avoid over interpretation of video game variables demographic variables including age were removed from the model and only gaming variables were entered, and the explained variance did reduce but still account for around 35% of the variance. The predictors of video game play suggest interesting trends.

3.4.2. Summary of results

For secondary and sixth form Genre significantly predicted moral scores. For the University sample: none of the variables predicted moral scores however there were differences between gamers, non-gamers and non-players (participants who do not play). In the combined data set the following variables significantly predicted moral scores: moral type, age, gender, years playing, moral narrative, Genre, content, GTA and data set all significantly predicted moral scores. These variables are described below. However, some gaming variables predicted higher moral scores (moral narrative and genre), while others predicted lower moral scores (years playing, content and GTA). Thus, it would suggest that content of video gaming as a whole may not straightforward unidirectional effect on morality, but instead contain variables with opposing effects.

3.4.3. Age, gender, and moral development

The results that the two data sets are different as the University age group did not have age as a predictor of moral scores. Although none of the variables predicted moral scores for the University data, age did for the secondary and sixth form

suggesting morality could be more impressionable. An explanation could be that age span is smaller at University (4 years groups) compared to secondary and sixth form education (7 year groups). Furthermore, morality was suggested to change rapidly between the ages of 12 and 13 (years 7 and 8). This could have important implications for future research with morality, age and video game play. In addition, this demonstrates the contribution of research by including a wide age range, with adolescents, an age group that is lacking in research (APA, 2015). Gender was an overall predictor of moral scores; males were predicted higher scores than females. This would somewhat oppose Gibbs et al (1996) who suggest that moral development for secondary school age children has a gender gap, possibly due to puberty, but that females are expected to be higher than males; this also relates to ages puberty tends to develop further around the 12 and 13. Therefore, age and stage of moral development could be an important factor to consider for the phase 2 research.

3.4.4. Video game play and moral development

Through examining many video game variables was demonstrated the complex and mixed nature of video game play and moral development; video game play variables had both positive and negative relationships with moral development. Therefore, this research suggests, much like what Gentile (2011) argues in that video game research should move on from polarising the effects of video games into purely either positive or negative outcomes. Therefore, this demonstrates the contribution of research by including many video game play variables to support understanding of the relationship with morality and highlighting the previous methodology limitations. Years playing video games was showed as being a fairly strong predictor of SRM scores; with more years playing leading to lower scores. This variable is under researched and more research is needed to understand directly how years playing connects to morality. However indirectly could be suggested that years playing could relates to length of time, those who have played for longer in year could play for longer session of game play. This then could connect Bajovic (2012) who found negative correlation with SRM scores and length of time. Gentile et al. (2004) found that more time spend on video games was related to poor school performance. It

could also connect to the amount of experience/familiarity with video games; participants who were familiar with the game experienced the less negative affect and guilt reported but the greater the enjoyment (Hartmann & Vorderer, 2010). Length of time played links to Bajovic (2012) who found that SRM scores and length of time playing violent video games were significantly negatively correlated. However, when examining the averages of this variable from the results of this research, it suggested that higher length of time had a higher average SRM score than lower groups; suggesting it could a more complex relationship.

Whereas the results of Moral narrative and number of genres played are interesting as it suggests potential that content, context and structure of the game is important as well as content (Gentile, 2011). Although Engagement measured through the GEQ was not significant in the model with all variables, the model with the gaming variable suggests it could have a relationship with morality. This relationship was suggested to predict lower moral scores with increased engagement; this could be answered by examining the short term moral decisions with engagement which connected to Phase 2 of the research.

3.4.4.1. Types of gamers

Playing video games (both gaming status and gamers) was a not significant predictor of moral scores; although the relationship suggested that those who play video games would have higher moral scores than those who do not. This could be due to the small number of participants in the 'No' group for gaming status. However, the ANOVA from the University group suggested that gaming status could be composed of different groups, gamers, non-gamers and non-player. Bajovic (2012) grouped participants who do not play video games with those who play non-violent games; the results of this study suggest they could be two different groups and combining may not be appropriate. Thus, even though Bajovic (2012) non-violent group had higher scores it could be unclear which group had the high score non-violent game player or non-players Furthermore it is important to note that non-violent group had violent content, but this was classed as mild/ fantasy violence by the (ESRB, 2015) whereas the mature rating is classed as intense violence, this was used as the

classification of violent games for this study, but many games contain some level of violent content.

Previous published research seems to assume all video game players are the same, a homogenous group. However, the results suggest the opposite, that there is more variance within the group of video game players. The results suggest video game players are a mixed bag; there are those who describe themselves as gamers and some that do not but still play, then the group who do not play. This suggests that previous research may be over reliant on the stereotype of gamers. This has also speculated elsewhere Galyonkin (2015) argued about the misconceptions around video game players. With the rise of mobile gaming (gaming on phones, tablets, and other portable devices), many people will have some exposure and experience of games, without being considered 'gamers'. This clearly demonstrates the importance of gathering in-depth information about game play.

3.4.4.2. Gender and video game play

As a gender differences in video game play was found it could be connected to the gender difference in morality or alternatively other factors could be influence in particular for the moral development of secondary and sixth form females. The gender difference was similar to Bajovic (2012) that female played video game less and violent games less than males this was also found by other research has found this gender differences with violent games and length of time and video game play (Gentile et al., 2011; Hartmann, Möller, & Krause, 2015). Ferguson et al. (2015) found gender difference adolescent females, showing they experience more stress from video game play than males. The results also suggested a gender difference in video game play, has important implications for results. The results of Grizzard et al. (2014) could have been influenced by gender rather than video game play. In addition to gender difference this demonstrates the importance of gathering more data about video game play. Individuals who play video games should be categorised by how what and when they play games. For example, it could be the difference between comparing casual mobile gaming and a PC or console gaming, which Ferguson (2014) also highlights the importance of this. Engagement also demonstrates, as it seemed to connect to SRM scores and previous game play both in

which report a gender difference, but engagement does not report these gender differences suggesting this difference lies with the game play and moral development.

3.4.4.3. Moral learning and exploration

The results suggest that moral narrative and genre predicted higher scores this could suggest that video game could be morally stimulating. Bergen and Davis (2011) discuss role of play for moral development and technology including video games. Play connects well to Kohlberg's (1971) theory of moral development due to the social component and building on Piaget previous work with play and cognitive reasoning. Bergen and Davis (2011) argue that technology has the potential for individual to explore playfully and video game can provide a medium in which to explore morality. However, the authors also acknowledge the potential barriers such as the violent content could have with morality, for example the role of desensitization could affect morality through lower empathy levels and moral disengagement. Gentile et al. (2011) suggest how morality is reinforced in video games could oppose morals in school for example competitiveness and aggression could oppose sharing and tolerance. Furthermore Thompson (2007) suggests decisions can be made through curiosity and the importance of exploring, arguing that more flexible and morally deeper scenarios in a video game environment would allow for this. This also connects to the agency; individuals have control and make choices in video games (Frasca, 2001).

Alternatively, Triberti et al. (2015) found video game players tend to have a preference for moral decisions made rather than exploring but still suggest video games could be used to educate. Furthermore, Khoo (2012) also suggests video games could be moral educators; the example used is that the guild this is community of players within the game which has the potential to develop moral values, for example *World of Warcraft* (WOW) (Blizzard-Entertainment, 2004-2015). Khoo (2012) argues that video games have the potential for individuals to learn skills such as working in teams and could a tool of moral education. Although Khoo (2012) applies Kohlberg's (1971) moral development theory to video game with guilds requiring cooperation however from the results of this study it could be that guilds and community could stimulate higher moral reasoning, transition stage

three and stage 4 when individuals starts to consider the societal implications for reasoning (Gibbs et al., 1992). Alternatively, video games tend to reward certain behaviours (Heron & Belford, 2014), which connects to immature reasoning. Overall if video games could be morally stimulating and this is connected to moral development, this future raises questions about how short term morality connects with video game play and this this what phase 2 and 3 aims to investigate.

3.4.4.4. Moral disengagement

Another possible explanation could be moral disengagement. Hartmann, Krakowiak, and Tsay-Vogel (2014) found that many violent games contained factors which can disengage morality such as distortion of consequences. Thus, the process of moral disengagement could be taking place and in some cases this could be morally stimulating as the individual would be evaluating the situation and engaging where necessary. However, if something has disengaged an individual's morality it would have had to been activated in the first place into order to be disengaged. However, it could also be the case that once morality is disengaged it is not re-engaged and morality no longer being exercised or simulated. Therefore, how individual's respond to content in a video game is suggested to be important. Furthermore, video games with a moral narrative could be engaging, as playing games with a moral narrative is suggestive of higher moral scores. This links to the findings of Hartmann and Vorderer (2010), who found that familiarity with the game used in the experiment led to the less negative affect and guilt but greater enjoyment and is suggestive of the results connecting to the findings of this study where morality maybe being exercised. This could explain the inconsistency with the relationship morality scores have with video game play, in particular the content of video games.

3.4.4.5. Violent content

Violent content seems very prevalent within video game players with 68.9% of secondary and sixth form students and 59.6% of the University sample (total 64.5%[16]) listing at least one violent game among their favourites. Bajovic (2012) reported that 86% of participants play violent video games. This shows that violent

[16] This is the percent from number of participants that responded to the question

games are popular across age groups. This also connects with Kocurek (2012) who proposes that the violence is a fundamental part of the video game medium. Interestingly the opposite trend was found in this study with players of violent games having higher moral scores players who only play non-violent titles compared to Bajovic (2012).

The results from the playing GTA (*Rockstar,* 1997- 2015) were interesting as this game containing both mature and violent content as a favourite game significantly predicted lower SRM moral scores. This variable is interesting firstly due to the controversy around this game, and secondly because a single game was suggested to be a predictor of moral scores. Thirdly the other content variables such as violent and mature content did not significantly predict. Furthermore, even though it was not significant, the variable of violent content suggested higher moral scores, whereas mature content predicted lower moral scores for the combined data set and secondary and sixth form data. This could suggest different types of content have different relationships, this suggests that the mature content could be of more concern to moral scores than violent content. This is interesting as normally games with mature content also contain content violence. In addition, it would seem that this is particularly important for secondary and sixth form students due to the beta values. This important as it shows the complexity of video game play and how this relates to moral development and that video games play is more than content and violent content. Plus, this has implications for the previous research, as the violent content has been the focus of the broad concern, so could it be the case that individuals are desensitised to the violent content and not to the mature content (Carnagey et al., 2007). In addition, it could suggest long-term desensitisation from violent content.

However, Bajovic (2012) found that SRM does not predict violent video game play but it would have been interesting to find out if type of game (violent or non-violent) would have predicted SRMs scores. Violent video games have been shown to decrease pro-social behaviour (APA, 2015; Ferguson, 2015a). This connects to the results of this project as part of the SRM CJ included prosocial intentions and this could connect to the predicted lower scores on SRM, however more research is needed. This also connects to the potential different effects of types of content such as violent and mature. However due to the non-significant findings

this can only be interpreted tentatively as more research is needed to support this. This then could further suggest that different content may have different relationships with morality. This potentially could connect to the secondary and sixth form group as this group were playing video game with a rating higher than their chronological age and this could be impacting on moral scores.

3.4.4.6. Moral decision-making

The results suggest a mix of potential stimulating and disengaging of morality. However, if video games can be morally stimulating and this is connected to moral development (in terms of long-term morality) this raises questions about how moral decisions (short-term morality) are made in video games. Understanding short-term moral decisions that are made in video games would help support understanding of long-term influence of morality or moral development. For example, if some content/ decisions made can be morally stimulating or educational this could support longer term moral development. This connects with video game play and will be addressed in Phase 2.

3.4.5. Limitations

While the measures and design were selected to reduce limitations and address some of the methodological issues, there were still some limitations.

3.4.5.1. Limitations of the measure

One of the limitations of the SRM which the researcher noted while scoring the responses is the role of vocabulary in the measure. Most of the University students were in the higher matures stages due to the moral related words they used for their reasoning, for example using words such as: respect, responsibility and society. The potential limitations for measuring morality are that some participants struggle to express their reasoning verbally (in particular the participants who have literacy difficulties). However, Gibbs et al (1992) did control for verbal IQ to reduce the bias in this measure. Furthermore, the school's intake was in the majority working class from deprived areas however SES was not a predictor; also, the majority of the

students were able to do the questionnaire. This could suggest that this measure is not connected to SES and language ability. However, the results still may be influenced by academic ability more specifically written language ability. Another language based limitation could be the way individuals use language in the modern day compared to the 1990s when this measured was created. For example, some of the students were using text language such as YOLO (You Only Live Once). This could create a confound, as the measure uses language as interpretation for reasoning. The authors suggest it could be used a conjunctive however the meaning of words evolve and change.

Measuring morality is not straightforward, Haidt and Joseph (2004) argue individuals make quick intuitive moral decisions and this measure may not be sensitive to these types of moral decisions. As these quick decisions have been suggested to be limited in conscious access, thus individuals may not be able to easily justify the response or potentially express moral reasoning verbally (Haidt and Joseph, 2004). An example of this where participants explained a concept such as "stealing is wrong" this answer is unscorable (Gibbs et al,. 1992, p114). Many participants included these responses; however, it could reflect intuitive quick moral decision, that stealing is just a moral absolute.

Although there are limitations with the measure, there are limitations in general to measuring morality. Morality is a complex construct, but the SRM-SF was simple to administer to groups with a wide age range. Also, the moral responses were data rich; something not true of 'checkbox' questionnaires. It also quantified written responses into a stage of development which for the purposes of this study was very useful.

The limitations of the administration include: group dynamics, working together, distraction, sabotage and copying, however compromises had to be made when data collecting in schools. There was a noticeable difference in typing speed; the youngest were the slowest (year 7) this was reflected in the missing data of gaming rather than the moral section of the questionnaire. Some had help from teaching assistances and the teachers could have given extra prompts. The researcher was very careful with the prompts given.

3.4.5.2. Limitations of design

A Cross-sectional design was used for time restrictions however this not as effective as a longitudinal design especially for predicting relationships. Therefore, it is acknowledged that causation cannot be determined. Only one school was used for data collection; Brugman et al. (2003) found that norms of development are influenced within the school classes and can become similar. This was noted by researcher and it was found that many of the justifications were similar, for example "stealing is wrong". There were also missing cases for secondary and sixth form on game play due to some participants not completing or not giving a response to the question, thus limiting the analysis that could be conducted. In addition, participant numbers were low for years 10 and 11 due to parental consent forms not being returned. Ethnicity was unrepresented in the sample as the majority were white British. Also, one rater was used to code SRM data, it would have been better to have more than one rater to compare coding of the SRM, confirming inter-rating reliability. The GEQ was created to focus more on violent video games and could have been restrictive for a general measure of engagement.

3.4.6. Summary of results

The results suggest that some gaming variables would predict higher moral scores (moral narrative and genre), and other would predict lower moral scores (years playing, average content rating and GTA). Thus, this suggests that video games and moral development are connected. However more research needs to be carried out to understand this relationship, in particular, examining which gaming variables may support or hinder moral development.

For moral development, future research could examine the issue of females in secondary and sixth form being predicted lower moral scores. In addition, an exploration of whether a change occurs in moral development between the age of 12 and 13 (years 7 and 8) could be conducted. The results in general suggest, in support of previous studies, that the relationship between morality and video games is a complex one. Further research in this area is needed to gather in-depth gaming information from participants and investigating these variables such as years playing. As it seems self-identification of game play (i.e. a gamer), content of games and

years playing could all have roles in morality in differing ways. Development or long-term morality and video games seem to have a complex relationship however the results suggest that video game with moral narratives were related to moral development. As this research was exploratory, future research could extend this by examine the mediating factors and relationship between morality and video games, for example using linear models.

3.4.7. Developing the next Phase of the research

The results from this Phase of the research were important to develop the next Phase of the research that will be discussed in the next chapter. Phase 1 suggested how video game play could relate to moral development, however, questions still remain to how these moral processes interact in the short term, such as during game play. Phase 1 also highlighted the importance of the age ranges included in the research with regards to their moral development; if morality is transitioning this could make it unstable to measure. The results of the game play variables and moral development has supported the importance of making a purpose-made game to measure morality. This in turn has influenced the direction of the design of that game to measure short term moral decision making such as considering the content and genre of the game with the role of engagement. Furthermore, designing a game to measure moral reasoning, translated less effectivly in to a game environement, such as how could these data be recorded without priming answers through options or requring a large input from the participant into the game.

3.5. Chapter Summary

The findings from Phase 1 suggested that video game play and moral development had both a positive and negative relationship. It would seem that there could be a long-term relationship between video game play and moral development, however questions still remain regarding how in morality is applied in the short-term, such as making moral decisions. Phase 1 has been valuable in informing the future direction of the PhD and forms the basis for the hypotheses in Phase 2. Phase 2 of the research is focused on short-term moral decisions are made in video games; it would seem that morality can be engaged in video games, but it is unclear how this relationship works. The next chapter will outline the methodological issues of measuring short term moral decisions and the rationale for Phase 2. In summary Phase 2 aims to explore the relationship between playing video games and short-term morality.

Chapter 4. Phase 2 - Psychology and Game Design

The necessity to create a synthesis between psychology and game design resulted in this Chapter, which aims to examine both the psychological and the game features involved when video games are played. In order to develop moral content and other design features. The Chapter outline includes the following:

4.1 Psychology and Game Design Concepts

4.2 Current Moral Content in Commercial Video Games

4.3 Applying Moral Theories to the Content

4.4 The Process Making Moral Choices in Video Games

4.5 Core Design Concepts

4.6 Rationale

4.7 Chapter summary

4.1. Psychology and Game Design Concepts

This section will outline the connection between game design concepts and psychological research, specifically, how these game design factors affect the player, which is important for both game design and measuring psychology phenomena in a game.

4.1.1. ‘Purpose-made’ and bespoke games

A ‘purpose-made’/bespoke game refer to a game that is designed and created with and/or to a specific specification. Creating and designing games for research allows for some of the biases of commercial games to be reduced, such as familiarity with the game and favourite characters. Therefore, using game engines to create games is well-suited to research; as there is much more control over each aspect of the game, and these variables can be manipulated, which in turn allows for further rigor and in-depth design (Lewis & Jacobson, 2002). The function and focus of a ‘purpose-made’ game is not primarily on entertainment, are also related to the concept of serious games. Serious games are developed for a purpose and function other than entertainment, usually with a focus on learning and behavior change (Connolly,

Boyle, MacArthur, Hainey, & Boyle, 2012). While creating ‘purpose-made’ games can fit the definition of serious games, when the focus of the design is on measuring psychological phenomena this could be suggested to be taking a different approach to the definition of serious games. Rather than developing games to invoke change in participants, the focus in this case is on developing a game to observe and record current behaviour. Although taxonomies of serious games has been proposed (e.g. De Lope and Medina-Medina (2016), an aspect that could be utilized more with ‘purpose-made’ games, is using games specifically for psychological measurement in research. Taxonomies tend to focus on the player’s outcomes, such as the assessment and feedback, rather than the measured outcomes used by researchers.

When creating a ‘purpose-made’ game, an important consideration is how similar they are to commercial video games. If the created game was very different from commercial games, then the question of how generalizable the results would be needs to be considered. Similarities and generalisability can be addressed at the design stage, as well as through comparing participants’ experiences with commercial games.

Therefore, at the design stage, it was decided to develop a game that included the key features of commercial games, such as the choice mechanics and engagement. For example, familiarity with the game has been previously found to influence affective outcomes (Hartmann & Vorderer, 2010), therefore, a ‘purpose-made’ game would be able to control for familiarity. Moreover, by creating ‘purpose-made’ games for research, not only are some of the biases mentioned addressed, but this also has implications for the research methodology used in video game research, and specifically for measuring behaviour outcomes.

4.1.2. Defining dimensions and mechanics of video games

The dimensions and mechanics of video games are defined differently. Sicart (2008) defined mechanics as methods used by the player (agent) to interact with the game environment. This definition Sicart (2008) suggests encompasses the ability to study the actions given to players, how these actions are represented in the game, and finally how mechanics can be used to create specific outcomes, such as emotional responses. This is important for psychologists as it helps them to understand the

interaction between mechanics and game play. However, as mentioned in Chapter 1 (section, 1.7.2) Gentile (2011) includes mechanics within described five dimensions of video games as: amount of time, content, context, structure and mechanics. By in this instance mechanics is used to describe how players physically play the game, such as the effects of using a gun controller (McGloin et al., 2015), which is also an example of how dimensions can influence the experience of the game.

Gentile's (2011) dimensions terminology overlaps with much of Sicart (2010) definition, as Sicart (2010) describes mechanics to include the context, content, and structure of the game, but also the participants' experiences, which is also connected to definitions of play. This suggests that Gentile's (2011) term mechanics should be relabelled as physical mechanics, and other dimensions should be under the sub heading of game mechanics. In addition, structure and context may need reorganising. Firstly, context consists of many components such as narrative, goals, and number of players. Secondly, structure overlaps with context, such as avatars, as there is both a context and structural component. This highlights the conceptual issues with using the definition of mechanics, as there is much confusion between many disciplines over the terminology used to describe the video game components. The components of the definition also show that there is an interaction between the player and the game, with some variables related to the game (content, context) and some to the player (experiences, interpretation), and some being connected to both. An example of this includes amount of time, genre and engagement, as they are influenced by both the game design and the player. Kaye (2017) addresses this by suggesting the importance of understanding the role of the 'gaming context', which is made up of the game play experience, which would be influenced by individual factors (such as traits and emotions) and game factors (such as type of games) that lead to outcomes.

However, rather than being a linear process as suggest by Kaye (2017), outcomes of playing are an interaction between the game dimensions, mechanics and the player. Thus, these outcomes can be divided into three types of variables, with the potential mediating role that the interaction variables have on the video game and player variables (see Figure 4). Player variables include preferences, previous experiences, and traits, whereas gaming variables include design, genre, and dimensions and mechanics of play.

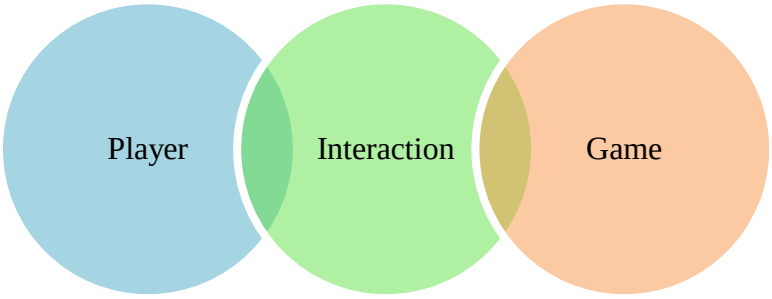

Figure 4. The role of interaction between player and game

4.1.3. Interactivity

Much debate has surrounded the role of what actions mean in virtual spaces. Schell (2014) makes the distinction that the game not being the experience, but what allows, creates, and enables the experience. This is important for game design, and how the experience of morality is defined and designed into the game to produce the interaction. An example of this interaction between player and game is emergent game play, which is defined as where the mechanics of the game are flexible, and the player's actions are not necessarily thought of by the developer (Schell, 2014). This interaction is also connected to the experience of engagement, as outlined in Chapter 1 section 1.6.2.1, which is an important aspect of game play and to be measured.

Sicart (2009) highlights the importance of determining if actions in a game are moral. In order to do this, Sicart (2009) suggests the role of games exists within an 'infosphere' (adapted from Floridi (2002). This idea of games existing within a 'infosphere' links to the discussion in the literature review of virtual spaces being potentially connected to the idea of a magic circle (Consalvo, 2009; Huizinga, 1949). Within the games 'infosphere', Sicart (2009) proposes that in order to design ethical game play[17] requires both procedural representations (e.g. game mechanics) and semantic representations (e.g. the meaning given to the mechanics). Both sematic and procedural representations can leads to tension for agency within game play (Sicart, 2012). Therefore, Sicart (2009) suggests that at the core of understanding moral and ethical implications in video games is how the player interacts within this 'infosphere'.

[17] Ethics in this instance is more general and is referring to wider connections to morality through structures such as design and laws.

4.1.4. Agency

Agency, as previously mentioned, is defined as the level of control or choice players have in video games (Frasca, 2001). Thomas (2006) discussed game design and development of video games and how this impacts on the content of video games, and the amount of agency which video games provide. Thomas (2006) goes further by explaining how the design and development is restricted by economical, technological and authorial factors. An example of this includes how much gaming content has similar themes, i.e. the importance of gaining points and where actions are more important than consequences, (e.g. to kill an enemy and receive points).

When considering agency and morality; both the culture and the content of video games needs to be taken into account (Thomas, 2006). Thompson (2007) identifies how morals are formatted and defined when developing video games, and argues that video games should therefore, be seen as a separate medium, to other mediums (e.g. films), which has its own moral rules. Many video games give the player the opportunity to make decisions, which have in-game behavioural outcomes, and are a fundamental part of the video game experience. Agency is therefore not only unique to the medium of video games but is also directly related to understanding in-game behaviours. It was suggested that interactivity and presence are a fundamental part of video games and is what makes video games different from other forms of media (Grodal, 2000; Tamborini & Bowman, 2010). This interactivity in video games allows for players to experience immersion and engage within the virtual world.

Considering the role of agency and interactivity in video games, Bowman (2016) suggests that the experience of playing a video game requires demands from the player; these demands include: social, emotional, behavioral and cognitive. Specifically, Bowman (2016) highlights the role of the behavioral demands that are required in order to progress in video games; for example, the player is required to make choices. This is not only represented in the game play, but also through the games set-up (such as navigating the menus).

It is also important to understand interactions and processes which occur in this medium, where there is the potential for complex interaction, and how this connects to moral choices. In *Fable 2* (Lionhead-Studios, 2004-2014), a NPC asks

the player if they feel the weight of the responsibility of the choices made. This could be seen as way to make the player feel the choices are important, and so add to agency in the game. Furthermore, Schulzke (2009) suggests that players in *Fallout 3* (Bethesda-Softworks, 2008) make autonomous decisions, while Sicart (2012) suggests that players are agents within the game and are also responsible for engaging ethical game play. Thus, it is suggested that there is a possibility that video game environments create agency, or the illusion of agency, as seen in the game *BioShock* (2K-Games, 2007-2013), which draws on the processes of compliance and obedience in order to complete the game.

4.1.5. Compliance

Colman (2009) defined compliance as: "A form of social influence in which a person yields to explicit requests from another person or other people" (p. 55). Connected to compliance is obedience, which is a form of social influence where an individual commands others to perform certain actions (Anderson & Bushman, 2001). It should be noted that conformity is related to compliance, it is a form of social influence related to group influences but without explicit requests (Colman, 2009).

An infamous example of how compliance and authority can have a strong impact on behaviour was the series experiments conducted by Milgram (1963) where participants thought they were administering electric shocks to another participant, when they had made an error (but this was an actor and the electric shocks were not real). The experimenter (authority figure) encouraged the participant to increase the voltage of the shock each time an error was made. The actors would react to the pretend shocks, make screams and complain about heart problems as the level increased (responses to the pain were tailored and predefined). Findings suggested participants conformed to the experimenter's requests to increase the voltage of the shocks, to the point that the shocks were so high it would have caused injury and death (Hogg & Cooper, 2007). This experiment demonstrates the potential level of compliance and conformity when an authority figure is present.

A recent study by Caspar et al. (2016) examined the role of Milgram's study using an EEG and found that brain waves were different for participants being coercive, compared to the non-coercive group. The implication of this is that

individuals who are coercive were suggested to have reduced agency, or a sense of reduced agency, and this was suggested to be psychologically as well as physiologically, as the EEG outcomes were related to passive actions, when coercive. The authors therefore argued that the role of agency was related to obedience rather than personality factors.

Milgram (1963) experiment has been replicated many times as well as virtually, by Slater et al. (2006), who developed a Virtual Environment (VE) in which participants interacted with a female NPC. The participants then had to administer increasing levels of virtual electric shocks to the NPC, who was programmed to react with distress, through verbal and physical responses. The conditions were divided between communicating through text or seeing and hearing the NPC. The participants continued to shock the NPC even when the NPC was experiencing discomfort and distress. Furthermore, the participants that saw and heard the NPC responded in a way that suggested that it was real, on both the behavioural (Autonomic Perceptions Questionnaire; APQ) and physiological measures (Skin Conductance). This study was limited as the realism of the NPC could have been improved. In another virtual context, Weger, Loughnan, Sharma, and Gonidis (2015) examined the role of compliance with judgments made on a computer task. The results suggested that participants were more likely to choose the incorrect person for the Job, which was previous suggested by the computer. However, more research is needed to understand the requests and virtual behaviour. This study shows the potential role of compliance in virtual contexts.

As discussed in Chapter 1 section 1.4, the debate around the role of harm in games; compliance could be an influencing factor to in-game behaviour, with compliance having a potential association with doing harm. Young (2013) suggests all acts of harm are the same in virtual worlds in respect of the situation in the game not being perceived as a violation of morality. Therefore, little motivation is required for individuals to choose to harm, as if it is perceived it is ‘just a game’, harm will not matter. As previsouly mentioned, Sicart (2009) argues that when the players make choices in video games, they are just following the procedural rules, rather than ethical rules. However, this raises important questions about how morality is applied in video games. If players are following the procedural rules of the game, compliance could be an important factor in the moral decisisons made. Furthermore,

this links to Lange (2014) who found that half of the sample self-reported that in their game play they had never been in a scenario where they refused to carry out an act in a game, which could be seen to be due to compliance. Although players may be restricted by choice and mechanices of the game, questions remain as to how this influnces choices and the role of compliance and obedience within the virtual space.

4.1.6. Avatars and characters

Video games involve virtual forms of social interaction, whether with other people using avatars/characters, or interacting with NPCs. Thus, research on group processes has been applied to understand these virtual worlds. Much research has taken place trying to understand how individuals engage with avatars, link with the both the avatars identity within virtual space and their own identity, which can both within virtual space and real-life. As avatars can both represent players and their behaviour, it is important, to understand how avatars relate to players in-game behaviour. This suggests, therefore, that the avatars or characters that players use, may relate to both morality and game mechanics. Triberti et al. (2015) found that players selecting a good or evil character showed how moral positioning can be implemented in virtual spaces, with the choice of avatars representing a player's means of interaction and their moral positioning. This has led to research into avatar identity, choice and behaviour.

Identity with avatars and real-life behaviour was investigated by Yoon and Vargas (2014), and they found that after only 5 minutes of game play, the players in their research identified with the avatars they played, and this then influenced their post-game real-life actions. After the game, participants were given the choice how much chocolate or chilli sauce to give another person (this was fictional, but participants were unaware). Participants playing the hero Superman increased the amount of chocolate they would give to the other person, compared to those playing the villain Voldemort, where they increased the amount of chilli sauce they would give. Yoon and Vargas (2014) further explored this effect in the second experiment with an extra manipulation, where some participants observed game play were asked to imagine themselves as the hero or villain. The results showed that participants who had played the game were influenced post-game, compared to those that just

observed. When participants were playing the villain, the players served significantly more chilli sauce than those just observing. The Hot sauce paradigm to measure anti-social behaviour has been criticised such as invoking demand characters from the participants (Ritter & Eslea, 2005). Nevertheless, this research is interesting as it suggests playing as avatars, in VEs, can have an influence on post-game real-life behaviour. It also suggests the differences between playing and observing a game, observing a game could be similar experience to film and TV viewing. Therefore, being in control and the interactivity of video games has more implications than other forms of media.

In addition, what is interesting about the design features of avatars is their relationship to the dimensions of game play. Players can select a pre-defined or customise avatars, which could influence the structure and context of the game. For example, with a predefined character such as Voldemort, the structure of this character is evil, and in the context of playing against Voldemort, the player's character would be seen as courageous, rather cruel. Furthermore, Happ, Melzer, and Steffgen (2013) examined playing a 'beat-em' up fighting game, *Mortal Kombat vs DC Universe* (Midway-Games, 2008) where participants either played Superman or Joker. The results suggested that participants were more pro-social after playing Superman. Participants also played against a random NPC, which could have influenced the results, as any related backstory between the characters could have led to bias. In addition, for empathy condition, half the participants read a fake article about the Joker and Superman which included empathic themes (i.e. the Joker having a negative childhood and suffering), and it was suggested that hostility was increased for the Joker and decreased for Superman. This manipulated condition was found to be significantly different from the neutral condition (reading the original backstory describing the character with less empathic themes) as hostility was similar for both Superman and Joker. Although the authors suggest the importance of empathy being a mediating factor; this research can be criticised as this is a manipulation of backstory, and participant's previous knowledge about this could still be influencing responses. However, it still continues to suggest that the role of characters and avatars influence perceptions and behaviour.

4.2. Research into moral content in video games

To demonstrate the importance of video game content on morality, the most relevant commercial games involving morality are outlined below, to give context to specific aspects of game play, and how it relates to morality. Games which have less relevance are cited, however only the specific aspects that illustrate a certain point are discussed, rather than being outlined in full. In order to understand how video games potentially trigger moral decisions and behaviour, analysis of the video game content and game mechanics were carried out. Moral triggers relate to stage 1 of the Model of Intuitive Morality and Exemplars (MIME) model, and it is important to understand where the moral domains are being triggered, and how moral content is processed (Tamborini, 2012). This section outlines examples of relevant games which contain moral decision-making and/or the moral themes within the game.

4.2.1. *Until Dawn*

Until Dawn (Sony, 2015) is a horror survival game with moral choice mechanics; the premise of this game is eight friends are in a lodge in the mountains. The aim of the game is to make it to dawn, however throughout the game the decisions you make have an impact on who lives and who dies. The game uses the idea of the 'butterfly' effect, in which each key decision will create a certain path within the game, but there are also some constant events in the game. One of the interesting mechanics in this game, with regards to morality, is the choice 'to do nothing'; this is sometimes the 'right thing to do'; for example, a NPC not investigating a bear trap. The choices presented seemed to rely on intuition, as the consequences were not always obvious.

Another mechanic that makes the game morally interesting is the character information; each character has character traits and a relationship status with other the characters, predefined at the start of the game, which changes throughout game play. This is interesting as there are 9 playable characters in the game but only one character is playable for the prologue, while 8 characters are playable for the rest of the game. As the narrative develops the player plays as each of these characters. In addition, this game is not an easy game to play, in the sense of trying to keep the characters alive, as it is not always obvious to the player how to do this, through the narrative, and the mechanics of the game. The player is given slight clues through

totems (objects in the game that show a small video of a potential future event which is connect to the NPC at that point in the game) which show potential dangers to the characters. Often in video games, the instinct is to investigate, as normally done in other games, however, in this game there are many examples where the players has to override their instinct to investigate, for example, the bear trap.

4.2.2. *Spec Ops: The line*

Spec Ops: The line (Yager-Development, 2012) is a third person shooter game, in which certain aspects of the game seem similar to *Call of Duty* (COD) (Activision, 2005-2015), for example, in the game, the player, is a soldier and shoots the other enemy team. Due to the similarity with other games in this genre, such as COD the player expects to be the hero through the game. However, this game differs in that the more you progress in the game, the structure and context of the game changes so that rather than being the hero, the player's character is criticised for actions that would normally be rewarded, hence a change of expected context and structure. The game play of *Spec ops: The line*, feels like the player has a lot of agency within the game, even though the narrative is programmed in a way that the choices do not alter it (excluding the last choice for the alternative endings).

The further through the game the player is, the more the actions become morally questionable, for example, in level 8 (known as Chapters in the game) the players deploys white phosphorus (a chemical weapon that is banned in real-life, that causes burns to human skin, causing severe injury) against what the player is led to be believe is an enemy army. However, it turns out the army was helping the civilians, and the player has horrifically killed everyone. Then, the player progresses onto the next level which is unlike the previous levels, but this is not stated or obvious in the game play. These design features highlight to the subtlety of how the game is made, and how this influences the experiences of the player. For example, in the game, the loading screens, between the levels and sections of the game play, that begins to judge the player on their decisions made and reflect on these decisions. An example, of this judgment can be seen in Figure 5 and reflection in Figure 6 (note the top right of the symbol is the loading symbol).

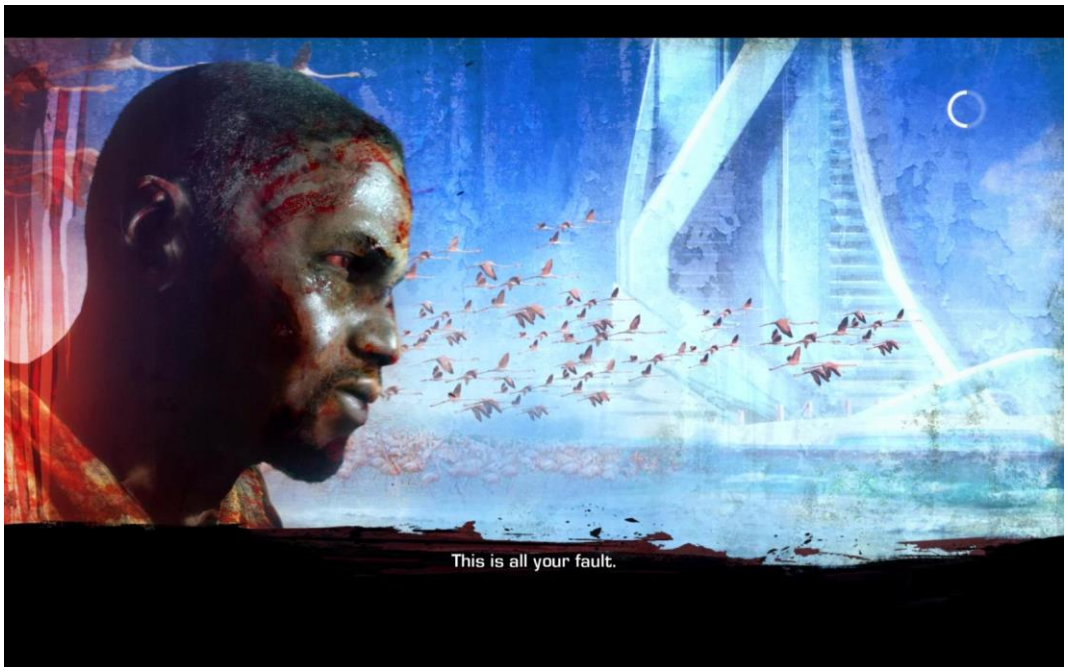

Figure 5. The loading screen blaming the player for the current situation

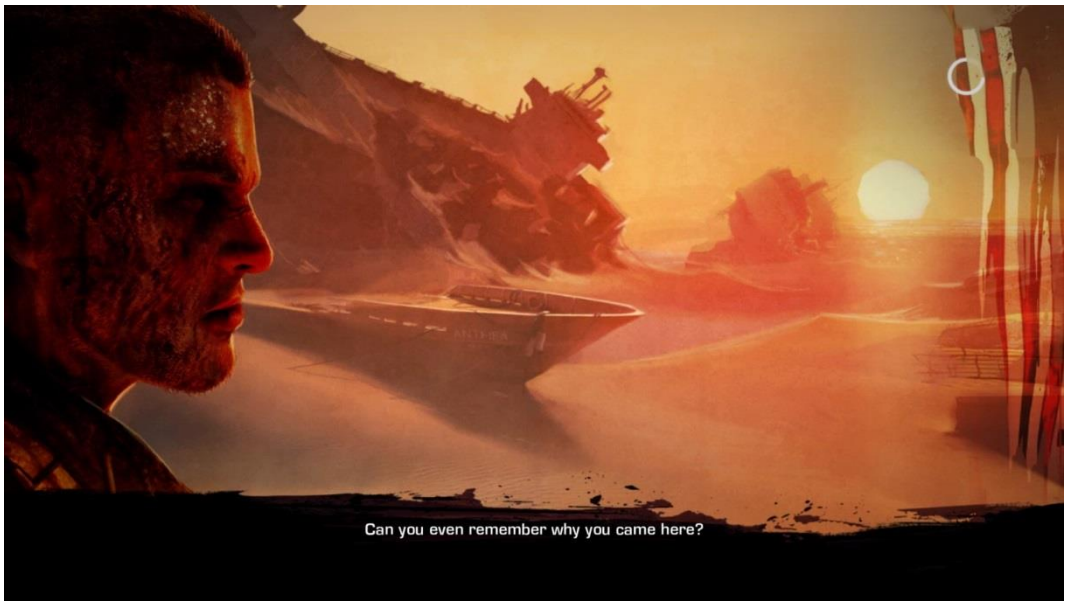

Figure 6. The loading screen suggesting reflection for the in-game actions

Another example of a moral choice in the game is when the player chooses, to either kill a soldier or a civilian, who have their hands tied and are hanging above the character: the soldier has murdered an innocent family and the civilian has stolen water. Interestingly, the players character is not a villain/bad guy, but the actions of the character and the game, is set to highlight the consequences of committing

horrific things by trying to be a hero. Thus, this change of expectation is part of game design and is meant to be increasingly shocking for the player, whilst also trying to show the player the horrors of war (moral education and future research is discussed in Chapter 8 section 8.4). This game demonstrates how changing the game's dimensions and expectations can change experience, and therefore, potentially influence decision-making.

4.2.3. *The Fallout* series

Due to the frequency of the *Fallout* series (Bethesda-Softworks, 1997-2015) being used in research, the premise of the game is outlined below. The narrative of the *Fallout* series is about an apocalyptic world which has experience nuclear fallout, where people fled to the safety of 'vaults' (nuclear shelters). In *Fallout 3* the people have returned to surface, except for one vault, 101, which was shut and never to be opened again. However, the player's character exists within vault 101. The narrative starts as the player's character, who is a newborn baby, and who can choose the characteristics of their character including: gender, name, race, and general look. The game then skips to the character as a 1 year old, and then skips again to their tenth birthday then 16 and 19 which all takes place in vault 101. At ten, the character receives a BB gun and specific game equipment (known as the Pip-boy 3000) which is used as an in-game inventory and menu for the player, the character also gets to kill 'Radroach' (looks like an oversized cockroach). At 16, the character's tasks are to undertake what is called a GOAT (Generalized Occupational Aptitude Test) exam. The GOAT exam was multiple choice with 4 options but the last question had the same answer for each option. This exam is for characters to be classified to jobs. It requires the player to answer 10 questions. At 19, the character's father escapes from vault 101, and the officers and leader (known as the 'Oberservor') of the vault 101 are trying to track down the father, who escaped. The observer's daughter is friends with the player's character and helps the character to escape. In order to escape a key is required to be taken from the Observor's room (see Figure 7).

Figure 7. A screen shot when the player is required to obtain the key from the Observer.

The interface of the game is that the player's character could talk to other NPCs, with optional responses (through dialog trees) that have various consequences, for example characters knowing that the player was lying. The decisions made are trivial and some without consequences, an example includes the character could fight off a bully, but the bully did not like the player's character anyway, thus did not change the game play or have moral implications. The moral decisions were not obvious, with no explicit options to make a choice. For example, stealing and anti-social behaviour was not obviously a negative action. The stealing could be seen as salvaging and no warning came up to confirm it was seen as stealing in the game, which other games do. When playing this game, if the 'Observer' is killed by the player, it might be realised by the player that on reflection that there was another way, so the choice presented was more of an implicit, rather explicit choice. The role of making choices such as these in video games is highlighted later in this Chapter in section 4.5.

4.2.4. *The BioShock* series (2K-Games, 2007-2013)

The *BioShock* series is a first person shooter, with a strong narrative throughout the games and series. The first two games are set in the city of 'Rapture' and the third is mostly set in the city of **'**Columbia'. Sicart (2012) provides a comprehensive description of the first *BioShock* game therefore only a brief outline is given. In the first *BioShock* game, the player is the character of Jack, who discovers the underwater city of 'Rapture', which was created as a utopia for the elite of society by a NPC called Andrew Ryan. Political tension was developing between Andrew and another NPC, Frank Fontaine. Due to 'Rapture' being the city of the elite, research within the city had discovered a genetically modifying substance known as ADAM. ADAM was extract by implanting sea slugs into orphan female children known as Little sisters, who were protected by genetically altered humans known as Big Daddies. 'Rapture' falls into dystopia, and a civil war breaks out due to political unrest and the effects of consuming ADAM.

At the beginning of the game, when Jack arrives, most of the citizens of 'Rapture' have died, and the rest have become genetically altered humans, known as 'Splicers'. A character called Atlas is introduced, who seems to be helping the player, through requests with the phrase starting with the words, 'Would you kindly'. When the player progresses through Rapture, they discover more about the political unrest, and the plot twist; the game narrative is that the player Jack kills the NPC Andrew, and finds out that the NPC Frank has faked his own death, and is really the NPC of Atlas. It is also revealed that the player's character, Jack, has been conditioned to respond to anything that is said with the phrase "Would you kindly". This is an interesting concept in the game as it deals with requests, and compliance, and connects to the technique known as foot in the door technique of starting the requests small and building up to larger ones (Baron & Branscombe, 2012). What is interesting about this game is the role of conditioning and compliance from the player's character and well as the player being confronted with potential moral violations in the choices made throughout the game, e.g. to save or harvest the little sisters for ADAM (this choice will be discussed in more detail later in this Chapter section 4.5.3.1).

4.3. Applying moral theories to current commercial video games

In this section, each of the moral theories outline in Chapter 1 will be applied to and discussed in relation to video game content discussed in section 4.2. This is to illustrate the connections between game content and design to moral theories: firstly Moral disengagement (Bandura et al., 1996) will be discussed, followed by MFT (Haidt, 2012; Haidt & Joseph, 2004, 2007).

4.3.1. Applying Moral Disengagement to commercial video games

As outlined in the literature review, Moral Disengagement (Bandura et al., 1996) is composed of the following components: moral justification, diffusion of responsibility, disregard/distortion of consequences, and dehumanisation, and these are used to understand morality in video game design and content. Hartmann et al. (2014) found using content analysis of popular First Person Shooters (FPS), from a gaming website, that video games do contain these moral disengagement components and found them to appear frequently in the content of FPS games; with distortion of consequence, moral justification and dehumanisation being the most frequently. This shows how moral concepts can be portrayed in and are related to video games. However, to extent this research these factors could be present in other genres of games and in other video game content.

It can be suggested that ‘moral justification’ in video games is manifested through the players explaining ‘It’s just a game’ which has been found to be regularly reported in the research on video games (Hartmann et al., 2010; Hartmann & Vorderer, 2010). Hartmann et al. (2014) violence could have justified as enemies were aggressive. The moral alignment of a character, in a video game, could be related to Moral Justification, for example, if the player’s character is a villain, such as Voldemort, the actions could be justified through this character being a villain/evil. Thus, this relates to the role that characters and avatars have in video games and the moral choices made, as previously discussed.

Diffusion of responsibility for the decisions made, as previously stated, ‘it’s just a game’ can be related to that all actions are virtual and therefore responsibility can be either displaced or diffused. An example of this, *Spec ops: the line* (Yager-

Development, 2012), trying to create a feeling of responsibility for the actions taken by players, within the game. Hartmann et al. (2014) found that this occurred if orders had been given to the player and team members in the game would influence this, for example being with team members who were aggressive.

Disregard/distortion of consequences may not be important in video games, because you can restart the game. However, there are games such as *UnderTale* (T. Fox, 2015), that remember the choices and actions of the previous game play. Other games such as *DayZ* (Bohemia-Interactive, 2017) only allow for one play through of the game and then the game restarts. Games like *Fallout 3* (Bethesda-Softworks, 2008) have consequences that are not always clear, and related to this is *Spec Ops: the line* (Yager-Development, 2012) level 8, and the use of white phosphorus (as mentioned). In addition, the act of playing a video game can remove consequences as the player is pressing buttons to make choices, which is similar to military contexts where the decision-making is removed from the consequences of the action, such as controlling a drone, or pressing a button to release weapons. Interestingly a recently developed game, *Killbox* (Biome-Collective, 2016) was made to represent the role of using drone warfare, from a military perspective and from the prospective of those on the ground. Whereas, Hartmann et al. (2014) reports that consequences in the FPS games that were analysed, were mostly not visible and was a very prevalent theme in the content of video games.

Dehumanisation can also occur in video games due to graphics creating less realism. However, as the graphics and facial expressions in the technology improve, dehumanisation could potentially be more difficult as the game environment becomes more realistic. For example found that face not being visible to the player and non-distinguishable enemies (Hartmann et al., 2014) Euphemistic labelling appears in video games frequently, such as in GTA V (Rockstar, 1997- 2015) where ‘Wasted’ is used rather than ‘Killed’ and *BioShock* (2K-Games, 2007-2013) ‘HARVEST’ – ‘the little sisters’ is used rather than ‘KILL’. Hartmann et al. (2014) also found euphemistic labelling with the FPS examined.

Another component is the reduction of agency, which can happen in many ways, including from how the game is programmed (for example if choices within the game are restrictive then the player has only meta-decisions to keep playing) to

how the game is played. A good example of a game which uses game design to reduce agency is *Spec Ops: the line* (Yager-Development, 2012), in this game the narrative and game play is fixed and therefore the player restricted on the level of agency they have and feel in the game play.

While an example of a game that reduces agency in a more subtly is the *BioShock series* (2K-Games, 2007-2013). This game uses the idea of the illusion of agency and choice in video games through the narrative. In this game, the narrative creates the illusion of having choice, by requiring the player makes decisions throughout the game, but the player is forced to follow a mostly fixed narrative with these choices not affecting the game play. *BioShock Infinite* (2K-Games, 2007-2013) has a good example of this, the player chooses a brooch for an NPC, either a bird or cage but this choice has no bearing on any part of the narrative. Furthermore, in *BioShock 1* (2K-Games, 2007-2013) the player is guided by an NPC called Atlas who would request 'would you kindly' this is almost ironic as the player has to complete the goal/mission/ level to progress in the game. Then the game makes explicit references to the idea that there is an illusion of choice in the game. The game increases these references of the illusion of choice as the game progresses especially during the goal where the player is required to kill a main NPC called Andrew Ryan. This is interesting as it relates to social influence and Milgram's (1963) study of compliance within video game mechanics and could explain certain moral decisions in a video game. Both *Spec Ops: the line* (Yager-Development, 2012) and *BioShock* (2K-Games, 2007-2013) also provide an example of reduction agency from game play when the game forces the player to make choices, this relates to compliance and how factors which could influencing morality decisions.

As a general point for moral disengagement, it has been reported that participants will respond with 'It's just a game' (Hartmann et al., 2010). However, this is a justification that connects to all components of moral disengagement. Sicart (2009) argues that players, of video games that have restricted choice, are limited to the banality of simulated evil. This could explain how moral processes are affected in video games, and the difference between amoral and immoral outcomes. Klimmt et al. (2006) suggested that 'it's just game' is actually a form of moral management in video games, which is related to Moral disengagement (Bandura et al., 1996)

Moral Disengagement and moral management could therefore, result in morality not being activated or switched off, thus potentially resulting in amoral outcomes.

4.3.2. Applying Moral Foundations Theory to commercial video games

The domains in MFT (Haidt, 2012; Haidt & Joseph, 2004, 2007) appear prevalently in video games. From the analysis of the content of video games, examples are identified for each of the six moral domains. This was carried out to understand how moral content could be represented in a game, in order to support the development of the scenarios and make a game. The six moral domains are: Care/Harm (C/H), Fairness/Cheating (F/C), Authority/Subversion (A/S), Sanctity/Degradation (S/D), Loyalty/Betrayal (L/B) and Liberty/ Oppression (L/O). It should be noted that domain overlap did occur, for example, the domain of C/H overlapped with the domain of S/D; harm was implied with dead bodies. This overlap is discussed in more detail in Chapter 5.

4.3.2.1. Care/Harm (C/H) in commercial video games

This theme is very important in video games, e.g. the use of weapons, conflict and defeating enemies. Most games have a conflict, and the objective is to use weapons to shoot enemies. This is especially the case for certain genres; Core and Hard-core game, FPS, RPGs and action/adventure all contain violence and harm (Mitchell, 2012). Also, the level of intensity and graphics defines the content rating of the game from the level of violence in that game.

Care is also present in video games such as caring for other NPCs, including humans and pets. An example of these games includes Until Dawn and River Crossing. In Until Dawn, the choices made determine to who lives, and who dies, out of the 9 playable characters, which relates mostly C/H but also to the friendship and group processes L/B.

Another example of C/H domain is in Resident Evil, where NPC, Richard, is hunched on the floor and holding his abdomen and this is how you find the character in the game play. He has been attacked by a snake, off screen, and the player can

save him by getting the serum to him. Plus, the game mechanics of a health bar, that can be drained and filled, connects directly to the C/H domain. An example of a more controversial C/H scenario includes COD *Modern Warfare 2* (Activision, 2005-2015), with the "No Russian level" taking place in an airport. The player has a choice to open fire and kill civilians in an airport or go through causing no harm to civilians. This is controversial due to the terror threats that have happened in real-life at airports and relates to the concern of behaviour in virtual worlds being shown and replicated in real world.

4.3.2.2. Sanctity/Degradation (S/D) in commercial video games

This is also a prevalent domain in many games, e.g. when they contain: dead bodies, blood splatter and some reference to diseases. *Until Dawn* (Sony, 2015) has many references to sanctity due to the level of gore, such as a dead pig's head hanging and an amputated hand. This is partly due to the game being a part of the horror genre. *Chiller*, (Exidy, 1986) with the amount of gore, could potentially trigger the S/D domain, and finishing moves (the brutal killing of a knocked out character) in the *Mortal Kombat* series (NetherRealm-Studios, 1992-2016) do also apply here.

However, other genres which contain violence, especially intense and realistic, also contain blood spatters, such as in genres of FPS and RPG. An example of a game within the genre is the *BioShock* series (2K-Games, 2007-2013) where dead bodies and blood is present within the VE, as well as graphic violent fight scenes. In addition, a slightly less obvious example is the NPC 'splicers' within this game, who inject genetic material into themselves, which also relates to S/D (domain overlap Chapter 5). Additional games that contain S/D, include *Fable* series (Lionhead-Studios, 2004-2014), which, as part of the moral scale, includes purity. Games such as *infamous* (SuckerPunch-Productions, 2009-2014), *Fable* (Lionhead-Studios, 2004-2014), and *Fallout* (Bethesda-Softworks, 1997-2015) encourage polarisation of choice where if only the good options are selected, this is connected to the moral purity of the character. With reference to disgust in video games Young (2014) discusses the role of disgust being a triggered in virtual worlds as some games have been described as disgusting. Thus, this suggests video games could be triggering moral emotion, which is connected to the S/D domain.

4.3.2.3. Fairness/Cheating (F/C) in commercial video games

Cheating, in addition to working with others (both NPCs and other people) is predominant in video games, with examples including *Fable* 1(Lionhead-Studios, 2004-2014), where there is a bully. Another good example is the *Left4Dead* (Valve-Corporation, 2008-2009) series where fairness and in turn loyalty is demonstrated through having to share out limited supplies, such as health supplies to team members (includes other people with avatars, which also demonstrates co-operation and overlap with other domains). F/C also connects to the prevalent role of trading, in games such as *Assassins Creed* series (Ubisoft, 2007-2017) and the *Fable* series (Lionhead-Studios, 2004-2014). An example of co-operation within a game with NPCs is in *BioShock Infinite* (2K-Games, 2007-2013), where the player's character is helped out by an NPC, who will locate and give ammunition and health for the player and have share common goals.

4.3.2.4. In group Loyalty/Betrayal (L/B) in commercial video games

A strong theme within video games is working in groups, including selecting a side, being assigned to a team and/or being a part of a group. Games with more complex narratives and social elements can develop group dynamics, such as the role of politics in group loyalty e.g. giving allegiance to a group as seen in *Fable 3* (Lionhead-Studios, 2004-2014). Therefore, parallels can be drawn to real-life group process such as conflict, conformity and cohesion behaviours which relate to in-group loyalty and betrayal (Baron & Branscombe, 2012). For example, *Fable 1* (Lionhead-Studios, 2004-2014) has the following scenario a male NPC having an affair with another NPC; the player is asked by the NPC having an affair to keep it a secret, choice (yes or no) and money is offered as a bribe. Then the player is asked by the wife NPC if the male is having an affair, the player's choice is again (yes or no) to tell her or not. This scenario could potentially relate to the following moral domains L/B, C/H (emotional) and arguably the F/C domain (the male NPC behaviour could be seen as unfair).

The L/B domain of group loyalty is explored further in *Fable 3* (Lionhead-Studios, 2004-2014), as the game focuses on gaining alliances from other groups in the game world of 'Albion'. *Tom Clancy's Splinter Cell* series (Ubisoft, 2002-2013),

particularly the game *Double Agent*, portrays a really interesting example of L/B as a NPC called Lambert is caught by terrorists (the secret service boss), and in the game, the player has a choice to kill Lambert (who is also the double agent and a close friend and mentor to the players character) to show the terrorists, that the players character is not a double agent or blow the players character's cover by asking for mercy. Another example is *Halo* (Microsoft-Studios, 2001-2017), where players are assigned to teams, which can include teams of: aliens, humans and a combination.

Until Dawn (Sony, 2015) has strong L/B themes, as there are 9 playable characters (which are also NPCs when not in play) who are all friends. There are additional mechanics of the game that includes "character information" on the game menu, which explains the relationship status (positive and negative) for that character being played, with the other characters (as some NPCs are family members, and some are in relationships).

Also, this menu contains personality character traits for the NPC (e.g. Honest), in the game, explicit references to loyalty vs honesty and loyalty vs charity are made, when one of the characters, Josh, is asked about how he feels about the other characters (query friends). Another example of betrayal is in *BioShock* (2K-Games, 2007-2013) where the player is guided through the majority of the game by an NPC called Atlas, to later find out that this NPC has betrayed the player by lying about who he was and the situation the player is in.

4.3.2.5. Authority/Subversion (A/S) in commercial video games

This is a strong theme of having a military or authority presence in games e.g. police and army. Games which are military based include the COD (Activision, 2005-2015) series and *Spec Ops: the line* (Yager-Development, 2012). The *Hitman* series (IO-Interactive, 2000-2016) game play includes many different types of NPC in authoritative roles, such as guards and security personnel, as in the *Hitman* series (IO-Interactive, 2000-2016), where the player's character, Agent 47, can take their costumes and impersonate them. Also, GTA contains police and authority figures that will oppose the criminal behaviour. This also happens in some racing games such as the *Need for Speed* (Electronic-Arts, 1994-2015) series, where the police will intervene if driving is reckless. *Fable 2* (Lionhead-Studios, 2004-2014) explores the

role of A/S in more detail in the ‘Spire’ level, where the player gets a choice to obey or defy the authority of the guards.

4.3.2.6. Liberty/Oppression (L/O) in commercial video games

This is a fairly prevalent theme in video games, however, is normally heavily embedded within the context of the game and overlaps with other moral domains. This is found in games such as the *Fallout* series (Bethesda-Softworks, 2008), where liberty is restricted due to nuclear fallout; people are being restricted to living in vaults, and there is an apocalypse state of affairs (overlap with C/H domain). Another example of a game which has L/O as a strong overarching theme is the *BioShock* series (2K-Games, 2007-2013). This series emphasises the role of creating and maintaining civilisations, which are in a state of anarchy and oppression, for example, in *BioShock Infinite* (2K-Games, 2007-2013) includes a dictator, called Comstock. Furthermore, the first and second *BioShock* (2K-Games, 2007-2013) games were based on a book by Ayn Rand called Atlas Shrugged, which deals with concepts and strong themes relating to morality, philosophy, political and societal functioning (Rand, 1957). This domain also relates to the mechanics of the actual game play such as level agency in the game, but also the game mechanics of design and genre of the game such as sandbox games (where players are given the freedom in game play), for example, games that allow access to all areas of the level compared to those that the players have to work through, to get access to other parts/area of game.

4.4. Core design concepts

In order to create a purpose-made game, video game design concepts were researched, that will support the development of the Game Design Document used in this research (Appendix G). According to Schell (2014) the game is not the experience, but instead allows, creates, and enables the experience. What is important for game design is how the experience is communicated, and the interaction between the three features of the game: genre, VE and game context and structure, as these design factors could influence the outcomes of the game, such as the decisions made.

4.4.1. Genre of video games

Due to the importance of genre, as highlighted in (Phase one of the research Chapter 3) and its role in game design, genre is discussed here in detail. Players tend to prefer a particular type of game, and a game play style which is connected to genre, therefore, are inclined to keep playing the same genres of games (Mitchell, 2012). The player usually has a goal that they are trying to achieve within a game they are trying to complete. Players make decisions during game play, which relate to achieving these outcomes, which usually involves defeating an enemy, collecting items, or gaining points through repeating certain actions in order to progress in the game, and move to the next level or to achieve the final goal (usually winning the game). Mitchell (2012) discusses a number of genres (Action games, Action-adventure, Role Playing Games (RPG), Shooters, Simulations and Strategy games) and these categories and what they represent are important to understand, in order to create a purpose-made game that was similar to the specific genre required for the research. See Appendix H for further description of each of genres.

4.4.1.1. Categorising players from genre

Three categories of players have been suggested which are: Casual, Core and Hard-core, however genres can also be categorised under the same three categories creating a hybrid (Mitchell, 2012). These three hybrid categories are important and are why grouping game play and games can be problematic. Such as WOW (Blizzard-Entertainment, 2004-2015), which is considered a core game, but the category is debated due to the size of the game and players play for many hours which connects to the ideas of the Hard-core category but lacks the dark and violent games mechanics associated with Hard-core games.

The Casual category normally includes mazes, puzzles and hidden object games, for example *Angry Birds* series (Rovio-Entertainment, 2009-2017). Whereas the hard-core category requires a time commitment, and includes violence, that tend to be action and adventure games, for example the *Halo* series (Microsoft-Studios, 2001-2017). However, there are action casual games and as well as action hard-core games, which are separated by how much intensity and immersion for the player, there is in the game. Core (also known as mid-core) is similar to hard-core, but this

category are less dark and intense, and the violence is more cartoon like, and this is connected to the rating systems, as cartoon violence is rated lower (ESRB, 2015; PEGI, 2015).

Connected to the core category are Massively Multiplayer Online Games (MMOG) and Massively Multiplayer Online Role Playing Games (MMORPG). These are complex worlds within real time, with puzzles, narrative and completion of quests, and with social interactions through the avatars. An example of a core MMOG is the *Neverwinter Nights* (BioWare, 2002), there are also casual MMOGs that include *FarmVille* series (Zynga, 2009-2016); both MMOGs are known as social games as they are accessed via social networks.

4.4.2. Game context and structure: rules and goals

Schell (2014) discussed the role of rules and goals in games as they are a considerable part of game design and play. Salen and Zimmerman (2006) suggest games are defined as the guidelines to obey, and to be able to move forward within the game, with rules defining the games. They argue it is the tension between goals and trying to meet them, that games offer, that is unique to them and the means of reaching the goal is important, however, reaching the goal could be inefficient or completed through cheating. Mitchell (2012) explains that these rules provide structure to communicate context, such as how to play and how to complete goals/win. In addition, all games need a mechanic, which are to develop the game and includes; what is possible in the game, and how the game going to work. An example is, if the game allows for magic, how this magic can be used and replenished, which would be part of the game's mechanics. Thus, mechanics and rules are interconnected.

Sicart (2009) suggests it is the interaction between the player's understanding of the relevant information, and the boundaries within the game that lead to mastery. Whereas, Mitchel (2012) argues that game mechanics are both subtle and tend be what the player does not see, but can also be more obvious, such as how much freedom and control the player has. In sandbox games, as previously mentioned, players are given more freedom in the game play, which can create emergent game play (doing things in the game that the designers had not necessarily planned for).

4.4.2.1. Narrative and Lore

Connected to the rules and context is whether the game has a narrative. Narrative is also connected to the concept of Lore which is produced from detailed backstory and in-game story, (Mitchell, 2012). Many games include Lore, such as *Halo s*eries (Microsoft-Studios, 2001-2017), *Fallout* series (Bethesda-Softworks, 1997-2015), *Neverwinter nights* (BioWare, 2002), *Mass effect* series (BioWare, 2007-2012) and WOW (Blizzard-Entertainment, 2004-2015). Narrative and its associated lore, is related to genre, as RPGs game play tends to be narrative focused, with lore. Lore also connects to the experience of the game, including excitement and engagement, but many games are designed to be played without understanding the lore (Mitchell, 2012). Taking the previously mentioned series as an example, the *Halo s*eries (Microsoft-Studios, 2001-2017) the whole series does not need to be played and the players can/be able to play one game within the series.

Certain games include a moral narrative, and other includes decisions to be made which can be moral in nature. Sicart (2012) suggests how the narrative and plot twist in *BioShock 1* (2K-Games, 2007-2013) shows how designers can create put ethical structures in games, through such game features as the narrative for the players to potentially have moral experiences[18]. The way video games design ethics structures and communicate morality, is interesting, as Haidt and Joseph (2007) explain traditionally moral narratives, such as the moral tales of past i.e. Jesus' teachings, which suggest moral narratives are needed to join and integrate moral concepts into actions, as video game content could be communicating moral concepts which relate to in-game actions. Furthermore, Haidt and Joseph (2004) suggest the importance of television programmes not providing conflicting moral messages. Therefore, this can also be applied within video games content, that moral message should not conflict.

It is important to note here Sicart (2009) would argue that designing and including moral choices are not necessarily produce ethical game play and moral players; it is suggested that players, are agents, and are playing by procedural rules rather than ethically. Nevertheless, other research suggests there are moral processes

[18]Morality in this instance is more specific and is referring to individual level, whereas ethics more general and is referring to wider connection to morality through structures such as design and laws.

that could still be activated for the players, thus how this content is interpreted is important to understand, and how it connects to the MIME model (Tamborini, 2012).

4.4.3. Virtual environment (VE)

When creating a game, the design of the VE space needs to be considered as they are a major component of video games. This includes many features within the VE, and Mitchell (2012) suggested are key. The first feature is Location; the type and appearance of the environment, which also connects to the genre of the game. The second feature is Level design including: Spatial design (time to navigate), Size of level and objects within it (also applies to the NPCs), Number of levels, Avatars and objects in the games, Mood (hostile or friendly), and Context (including structure with awareness of nuances). Other features include the purpose of the level (goal, narrative and context), re-playability (does anything change if it is played more times) and interactivity (how interactive is the game).

Once these features have been considered, Mitchell (2012) discusses the importance of wayfinding and navigation through the VE. More complicated VEs would need to have signposts and/or maps, to avoid players becoming lost and frustrated. From a design perspective, determining waypoints supports the development of levels, for example the start point for the player. The need for signposting supports the progression through the level, but this is a balance between making the game too easy or too challenging. The way the VE is navigated, and players start point, connects to genre such as in strategy games. For example, linear games encourage the player to follow the narrative and achieve small goals rather than exploring the VE. The type of VE is also connected to immersion and interaction the players can have with the VE and both is related to enjoyment.

Initial design of the level can be sketched for layout, key interactions and events in the game and with experienced designers being able to work out the time it will take for game play, for the players, from the layout and events. To help the design process, sketching imagining the level including considering floors within the level, e.g. if players can go up or down stairs. To support navigation, Mitchel (2012) highlights the use of toolbars, for accessing any of the following: an inventory, exit options, general options and help. This list is not exclusive but gives examples of the

use toolbars, which are useful for game play including if the player wants to stop, needs help or to access an item.

How long the players take to navigate and complete the game is the next consideration, this also connects to ‘amount of time’ which is one of Gentile (2011) dimension of video games. Commercial video games, with a large budget, are known as AAA (Triple A games), these games usually take 10-20 hours to play; video game players have grown accustomed to this amount of time (Mitchell, 2012). Schell (2014) also discusses how length of game play should be balanced for the player, too long could result in boredom, and too short could compromise game play.

4.4.3.1. Avatars and characters

Avatars tend to be characters that represent the player in a virtual world, however, the term character is also used to reference non-customisable/predefined characters/ NPCs. NPCs are computer programmed characters and are used in many games. Adams (2013) suggests that characters in video games fall into the three categories of: Humanoid, Non-Humanoid and Hybrids, in their visual design, but characters can be a disembodied voice or animate objects.

Connected to characters, the role of using empathy in video game design can be applied in problem solving activities (Schell, 2014). Schell (2014) discusses the power of faces and the focus on the character eyes. This is connected to the ‘uncanny valley’; something that is made to look/be more realistic becomes odd, creepy and unreal. Küster, Krumhuber, and Kappas (2015) discuss the balance between realism and an individual’s expectations; if these expectations are violated, thus, the ‘uncanny valley’ arises. Whereas Robots with skin are seen as repulsive (both human like and familiar) can be perceived as being at top of the valley, zombies are not seen as repulsive (human like but not familiar), and therefore, at the bottom of the ‘uncanny valley’. To avoid uncanniness, and the game feeling odd, designers such as Swink (2009) have made suggestions to designers about how a game should feel, in many different aspects, including the interaction between human and computer.

4.5. The process making moral choices in video games

The process of making moral decision connects to the role of the behavioural demand of the player (Bowman, 2016). An analysis of moral choices in video games suggests that these choices, on the most part are: absolute, utilitarian and focusing on the action, with reward structures which are juvenile, explicit and binary (or ternary) (Heron & Belford, 2014). These types of choices create issues with moral choices in video games, and make measuring morality difficult and potentially biased. This section will examine the following concepts: moral activation, number of choices, presentation of choice, meta-choices, consequences and karma meters. Thus, this section highlights how this process from a researcher's perspective, to measure a player's morality because the choices may be influenced by design features.

4.5.1. Moral activation

Švelch (2010) found two factors that led the players to morally connect, through emotions, with the game; the first, was the fixed justice and the second, accumulation of deeds. Fixed justice is defined when the players have no choice in the actions required from the game. Accumulation of deeds is the consequences of many actions in a game and connects to the moral alignment scales. Whereas Schulzke (2009) examined making moral choices in *Fallout* (Bethesda-Softworks, 2008), from a game studies perspective, they argue that in order for moral choices to be made, these choices need to have weight and meaning to them. Schulzke (2009) gives two examples of a choice in *Fallout 3* (Bethesda-Softworks, 1997-2015); the first example is the mission 'The Power of the Atom' for this level the player has a choice to detonate a nuclear bomb or not. Schulzke (2009) argued that this level is not a good example of the moral choice mechanic in games, as the choices are polarised at the extreme. This is in contrast to the mission 'Free Labor', in which the choice is less clear, either: kidnapping a baby which allows for freeing slaves and curing a disease, or defending the baby and the slaves stay oppressed, while scientists try and find an alternative cure. Schulzke (2009) suggests the value of the moral choices is from getting the player to think about doing the right thing, and how this is not always easy and/or straightforward. How this weight and meaning is

defined in the game and for the players, is of great interest to understand and demonstrates the importance of this research.

Therefore, it is important to understand how much meaning can be can be taken from the moral decisions made. Interestingly Bowman (2016) suggests that in *Spec Ops: the line* (Yager-Development, 2012). the game may have not have actually challenged the player's morality as the designers intended, as the players could have, instead, aligned their moral compass to the game (rather than creating conflict with an individual's moral compass), therefore, more research is needed.

4.5.2. Moral positioning and alignment

Moral positioning, mentioned in Chapter 1 (section 1.4) , can be shown in video games through features such as Karma meters e.g. *Fallout* (Bethesda-Softworks, 1997-2015), others have an alignment or morality scale e.g. *Fable* series (Lionhead-Studios, 2004-2014). These are normally in addition to power meters and health meters. Interestingly, in *Fable 2* (Lionhead-Studios, 2004-2014), the moral scale consists of two components, good to evil, and purity to corruption. These games focus on moral behaviour from the player and/or avatar. Moral positioning and alignment are useful ways of quantifying moral behaviour, for example, the previously *Fable 2* (Lionhead-Studios, 2004-2014) how good or evil the player is can be calculated from this scale, good and evil acts cancel each other out. If a player had a preference for the good option then moral alignment would be higher at the good end of the scale, however if that player were to act in ways defined as evil, in the game, these acts will lower the scale closer to the neutral point and if evil acts were to outnumber the good acts then the moral alignment would be shifted to the other end of the scale.

Triberti et al. (2015) reports players tend to have a preference for moral decisions in their game play. Lange (2014) explored these choices in video games and found, amongst gamers, a preference for the good option (when presented with a binary decision), on the first play through, whereas the second play through suggested an increase in playing as the evil option. Lange (2014) goes on further to explain that over half of the sample had never been in a scenario where they refused to carry out an act in the game; reporting that participants suggested that the evil acts

remained in the game and ‘it’s just a game’. Although the majority of participants, 69%, had felt guilty demonstrating not all participants feel guilt when playing video games, what also, interesting is most players also reported that they wanted to make the right choice in the game. This suggested that decision-making in video games could be connected to compliance with the game, as mentioned previously. Therefore, other factors regarding the format and process of these decisions need to be considered.

4.5.3. Designing choices

As shown from the previous sections, many games require the player to make decisions; therefore, when creating a purpose-made game with choices, design consideration about these choices is required. Morris and Rollings (2000) suggest the importance of symmetry in game design; with all choices available being the same, to make it fair. Furthermore, all options must be worth using, and all options must be equal with the payoff. Note, there are circumstances were asymmetry does not impede on fairness, for example if the designer wants the player to feel more power than others in the game (Schell, 2014).

Schell (2014) discusses the important of balance in game design, fairness is a mechanic similar to symmetry, which is interesting as it connects to the MFT domain of F/C, and demonstrates its applicability, not only in the game content, but also the game design. Schell (2014) further explains that choices should be meaningful; players feel this has an impact and that these are choices the player would want. This applies if a player has found a dominant strategy, which is continuously applied to choices, thus no choice is required to be made from the player (Schell, 2014). Especially, as some games require strategies, such as Civilisation (Meiers, 1991-2016). Also, with regards to moral choices, making them meaningful is important, as this could explain some of the previous research with moral behaviours in games, such as potentially participants may have felt the choices made were not meaningful.

Recently Oliver et al. (2016) found through an online questionnaire that meaningful experiences were related to both in-game narratives and agency as the example given by the authors is crying in a video game and this can be both caused

and resolved by the player. It should be noted that the authors found that these meaningful experiences did not detract from enjoyment and entertainment in the game (Oliver et al., 2016).

Another component of balance, which needs to be considered, is how much control and freedom the player has (Schell, 2014). This is a good example of how the game may restrict freedom and thus choices, for example, if players only have two choices, but only one will need to be selected for progression. Finally Schell (2014) discusses the role of how much the designer leaves to the players imagination, in contrast to the level of detail given. This is important for the game design because it is determining how much the player is constructing. Difficulty also connects to balance, creating a game which has some challenge and inquiry, without being too difficult. This is especially important as players need to be able to complete/play the game. Morris and Rollings (2000) suggest the game should be fun to learn and play, and should be even more fun with progression/mastery included. Schulzke (2009) discusses the role of moral content being biased by the developers' own morality, for example the morality in the game and how this is attributed and appraised could be biased towards the developer own moral values, which further suggests how prominent moral processes are to humans.

4.5.3.1. Number and presentation of choices

The number of choices in video games is normally binary i.e. 'Yes' = A 'No' = B (Heron & Belford, 2014). However, some games can give the player three or more options, such as the *Mass effect* series (BioWare, 2007-2012). However, how these choices are presented can influence the choice made, for example in *Spec Ops: The Line* (Yager-Development, 2012) there is, what appears to be, a binary choice, between shooting either a solider (that murdered an innocent family) or a civilian (that has stolen water). If the player does not make a choice, then the game will, which is that one of their team members will be shot, in turn leading to failing the mission and it will be restarted. However, there is a third option for the player which is to shoot the sniper. However, this third option is not stated as a choice in the game, and therefore, the player may not know this is an option. Also, shooting the sniper has to be accurate, otherwise the player or other members of the team will be

shot, and therefore resulting in deaths, and a failed mission. Therefore, the choice not being stated and the accuracy required, plus if a choice is not made the game will intervene, all could influence the choice the player makes.

Commercial video games present choices in a certain manner; these include explicit choices, such as in the *BioShock* series (2K-Games, 2007-2013) the choice of havesting or recusing a 'little sister' both the choice and controls are presented (see Figure 8). To more implicit choices, where the player is presented with options for responses, such as in the *Fallout* (Bethesda-Softworks, 1997-2015) series, where the objective is given and the player finds a way to complete the objective. Commercial video games have tended to present choices more explicitly. *Until Dawn* (Sony, 2015) provides an interesting example, as the player is informed the decision made was a key decision in the game play, by a symbol in the top of the screen appearing.

Figure 8. BioShock choice of harvesting or rescuing a 'little sister'

4.5.3.2. Embedded moral choices

Moral choices in video games are usually surrounded by other information, such as the context, or choices that are embedded within other choices. An example of an embedded choice is found within each of the first three *Fable* series (Lionhead-Studios, 2004-2014), with the context of this game being an RPG, which starts with the player as a child going around the town interacting with NPCs. The first in this series, the previously mentioned affair scenario contains a two-part choice see section 4.3.2.4. These embedded choices are a problem for research, as this in itself, can create confounding variables. However, many commercial games also contain moral decisions that are embedded in context, and the structure of the situation which presents as an overlap with the other moral domains, thus creating further confounds (i.e. in Fable 1 example of the overlap of domains L/B and F/C). Thus, the research, using previously made commercial video games, may contain many confounding and extraneous variables regarding the choices.

4.5.3.3. Forced choices

Some games will force the player to choose. One way this is done is by including a time limit, as seen in *Spec Ops: the line* (Yager-Development, 2012) and *Fable 3* (Lionhead-Studios, 2004-2014). In *Fable 3* (Lionhead-Studios, 2004-2014), the player is presented with a choice to save the love interest/friend, or a group of protesters, the one not chosen will be executed. However, if the player does not make a decision, the player is rushed, and a countdown is begun. If the player still does not decide, at the end of the countdown, the game, through an NPC, will make the decision for the player. Similarly, as previous mentioned *Spec ops: the line* (Yager-Development, 2012), if player takes too long to make a decision, the team members will be shot at, until the decision is made, or the team members die and the level will be restarted. These are a couple of examples of forced choices, but this feature is interesting, as the player is forced to make a quick, potentially intuitive, response, but this also connects to compliance and agency in games.

4.5.3.4. Meta-choices

Meta-choices in video games are the choices above that of the game; for example, it is the choice to play, to stop playing or cheat. A game which challenges the players with the meta-choice to stop playing is *Spec Ops: The line* (Yager-Development, 2012). In this game, the more the players play the game, the worse the in-game situations become, through the horrific actions of the player's avatar. This meta-choice is also suggested to the player through the loading screens (e.g. Do you feel like hero yet? Can you even remember why you came here? This is all your fault?). The meta-choice in games is also interesting, as this game appears to use and follow the typical game design mechanics of the third person 'shoot em ups', but instead uses the narrative to challenge both the way the players would normally play and their expectations of the game (completing the game). Meta-choices, therefore relates to agency within the game; as shown with *Spec ops: the line* (Yager-Development, 2012) as agency within the game is limited, the player could make the meta-choice to stop playing the game at any point in the game and the games even suggests to make this meta-choice to stop playing.

Another game where the choice is connected to the meta-choice is *Until Dawn* (Sony, 2015). In this game, not investigating something, doing nothing is important, and could be the 'right thing to do'. For example, if the player interacts with a waving amputated arm, the NPC gets their hand stuck in a bear trap; similarly, if the player interacts with a jolting trap door, the NPC will be killed. In another situation, the player needs to use the 'Don't Move' option to stay alive from a hostile enemy. This is an interesting feature, as it counters game play expectations, and previous experiences, which encourages exploration.

4.5.3.5. Consequences of choice made

Once a choice has been made in video games, how the consequences are presented needs to be considered. These consequences can range in how explicit they are to the player; for example, in *BioShock* (2K-Games, 2007-2013) the 'Little Sisters' explicit choices are provided, that makes the consequence clear, in that the girls will be saved or killed. Other games make the consequences unclear and ambiguous; this was the case for some of the choices within *Until Dawn* (Sony, 2015). For example, if when

the players switch between playable characters, they upset another NPC that the player's character is in a relationship with, they will not let the player's character into the chalet and the player's character will be killed.

In *Fable 2* (Lionhead-Studios, 2004-2014), when the player makes a decision, they are informed that the choices will be remembered, which could be suggested to be the game designers trying to add relevance and responsibility to the moral decisions made. This also relates to trying to make choices meaningful, as mentioned previously. An example of a game with no obvious consequences, was *Spec Ops: the line* (Yager-Development, 2012), where part of the narrative suggests the player is helping rather than making the situation worse. Schulzke (2009) references the role of consequences in *Fallout* 3 (Bethesda-Softworks, 2008), as being out of the players control, and how this relates to real world moral decisions, where the consequences are not always in the individuals control, and this connects to autonomy and agency.

4.5.4. Moral choice or strategy?

As previously mentioned, the role of the player's choice could involve strategies. Sicart (2010) argues that players of *BioShock* (2K-Games, 2007-2013), play the game strategically not morally and this is due to the fixed narrative, which is an interesting argument, as it suggests that players will select the option for better game play. However, if this was the case, players would be always harvesting the little sisters and would not be avoiding harm in games (as discussed in Chapter 1 the literature on harm in virtual worlds is mixed (Cushman et al., 2012; Young, 2013). Research is needed to examine what participants select, and/or whether participants use strategies., Krcmar and Cingel (2016) examined if choices made in *Fallout 3* (Bethesda-Softworks, 2008), were strategic or moral, they concluded moral (see Chapter 1 section 1.5.1.2 for more detail on the study).

As suggested earlier with reference to MIME (Tamborini, 2012) and Moral Disengagement (Bandura et al., 1996) it would seem that content could be activating and triggering specific MFT domains, but if the moral processes are not activated or disengaged at some point in the process, then the situation could be seen as not moral and instead a strategy is applied while. Hence, in the decision-making process,

the role of morality and strategy the needs of exploring, examining the design features of commercial games; how morality is applied in video games and then how the players interpret the information.

4.6. Rationale

Phase 1 examined the role of moral development and video game play, and the longer-term relationship and impacts of playing video games on development. As shown in Phase 1, an investigation into participants' previous video game play is critical to understanding what participants experience and, also the moral decision-making that takes place in game. As mentioned previously all video game content needs to be considered, not just violent content, especially when investigating the role of moral decision-making in games (see Chapters 1 section 1.7.2.1 for more detail). Therefore, in contrast to Phase 1, which was examined how morality developed with age, Phase 2 is focused on the short-term decision-making processes, to examine moral behaviour in game play. As Anderson et al. (2012) suggest, there are both short term and long term effects from violent video games and the same needs to examine for morality. As a general issue within the previous research, Tamborini, Bowman, et al. (2016) suggests more research is needed on these VE factors (dimensions) and to develop a "...dynamic understanding of in-game decisions..." (p. 13). More research is needed to understand how these decisions relate to in-game and post-game effects.

Much of the previous research has either not included a game for participants to play (behaviour is self-reported), or the game included could be confounded or biased by other variables in that game (such as familiarity with the game). Even the accuracy of self-reported morality can be unreliable as there has been previously found a gap between moral judgment and action (Haviv and Leman, 2002). Thus, this makes measuring morality in video games difficult. Therefore, creating a purpose-made game would be beneficial to the research, as participants can play as if they were playing in their natural environment. In addition, a purpose-made game would allow for the behavioural and cognitive demand of making choices to be examined (Bowman, 2016), therefore, moral actions could be measured. The demands of behaviour and cognition are important in the video game context as it

was found that cognitive demands, such as skill in video games overlap with behavioural demands, such as performance in the game (Bowman, Weber, Tamborini, & Sherry, 2013). Both moral action and judgment were suggested to be required for moral agency (Bandura, 2002).

Using a purpose-made game also addresses in part another key problem in much of the research, controlling type games. Ferguson (2014) gives an example of potential differences between the genres of games, action-adventure games and platform games (see Appendix H for examples of genres); therefore by creating a game a specific genre of game could be isolated and examined. Furthermore, video games are complex and are composed of many dimensions, other than content, such as context and game structure (Gentile, 2011; Kaye, 2017). These aspects may be important for morality, for example, could context (the rules of the game) be more important for morality than content in the decision-making process. Thus, the research needs to consider both other game content (i.e. mature as suggested in Phase 1 Chapter 3 section 3.4.3.5), and other dimensions of game play (i.e. rules of the game), that may be important for moral decision-making. Finally, it would also be of great benefit to include the MFT sixth domain of L/O, as this is very relevant to game mechanics and potentially moral decision-making (as previously discussed in this Chapter section 4.3.2.6).

4.6.1. Aims of phase 2

The literature review, suggests morality either mirrors real-life morality, or is different (this includes moral disengagement). To address this, it is important to understand the factors underlying this as is demonstrated when considering the debate, and the mixed results of the role of harm in video games. The debate around virtual harm has suggested that individuals can either respond to virtual harm as it is real and have an aversion to it, or conversely, distinguishing that the virtual harm is not real, it is therefore, different from real life and morals do not necessary apply (Cushman et al., 2012; Young, 2013).

Using commercial games means a lack of control over the dimensions and mechanics; this phase aims to address the gap in the research literature, by designing and developing a video game to measure moral decision-making. Phase 2 of the

research aims to create a game which aims to trigger morality and measure it; as making a game carries many benefits for researchers, such as, the control over all aspects of the design and reducing some of the biases and validity issues. These benefits connect to the contribution of the research to bridge the gap between video game research and psychology. Thus, this aims research to also examine the factors in moral decision-making (such as moral content, genre, avatars, harm, and in-game requests) that are involved with the interaction of the player making choices. Additionally, this research aims to build on the MIME model, by analysing the moral decisions made and how morality is applied in the medium.

These factors are important, as how this interaction occurs, and could also relate to the inconsistences in previous research. Sicart (2009) highlights, how the player interacts with the gaming environment is important in order to understand the ethical and moral implications. Hence, both psychological and game design concepts were examined, together; as previous research suggested the game design concepts, to be influencing moral decisions made (Hodge & Taylor, 2010).

4.6.2. Objectives of Phase 2

The objectives of this phase were divided into two parts. The first part was researching and designing the game (including the content), and the second part was to collect data with the game. Overall the aims and objectives were to create a game to that could measure moral decision-making, and to understand how video games can trigger moral processes with the following research questions:

I. How do individuals apply and drawn on the MFT domains in a video game?
II. How do participants make moral decisions in video game?

The first part was to design, develop and pilot the content of the video game. In order to carry out the development of the content, the literature reviewed in this Chapter and in Chapter 1 was drawn upon. The MFT (Haidt, 2012; Haidt & Joseph, 2004, 2007) was chosen as it contained interesting moral themes in the domains, which could be applied in a virtual world and decision-making. Other theories such as, Moral disengagement (Bandura et al., 1996), Deontology (Kant, 1785) and Utilitarianism (Bentham, 1789; Mill, 1863) as discussed in Chapter 1 (section 1.2)

were also considered, but not selected for the game design, for the following reasons; firstly the MTF had also been used previously with a similar methodology (Joeckel et al., 2012; Joeckel et al., 2013). Secondly, it was important to incorporate the new MFT (Haidt, 2012) sixth domain of L/O into the research due to the domain relevant with video games (as previously discussed). Thirdly MFT (Haidt, 2012; Haidt & Joseph, 2004, 2007) provided a framework and structure of the moral domain that could both measured and applied virtual worlds. This was further supported by the research on how to design video games, core design concepts, and other dimensions of play and game mechanics and MFT (Haidt, 2012; Haidt & Joseph, 2004, 2007) could be synthesised through the design and creation of the video game stimuli and also allowed for manipulation of the game features, such as context of the game (in-game instructions) (Gentile, 2011) that could be examined with regards to decision-making. By incorporating manipulations of game design features such as in-game instructions and meta-choices in the game, moral decision-making, could be examined including participant's responses to virtual harm. These in-game instructions connected to moral and avatar identity which was found to be related to moral action (Haviv and Leman, 2002).

Finally the role of moral action and judgment through the process of these decisions that were taking place could be examined, specifically if they were intuitive as suggest by the MFT (Haidt, 2012; Haidt & Joseph, 2004, 2007) and MIME (Tamborini, 2011, 2012) model which could be utilising experiential system (automatic, fast and intuitive system; Hartmann, 2011b, 2012).

Although not used for measuring morality, Moral Disengagement theory (Bandura et al., 1996) was still applied in the design of the game. For example, the VE of the purpose-made game will be a 3D RPG, with the VE was based in real-life, as the fantasy element could create the possibility moral disengagement (i.e. dehumanisation; Bandura, 2002). Once the design was developed, the game was constructed with the support of game developers and the second part of Phase 2 could commence, which was data collection with the game.

In summary, the objectives of this Phase are to design all aspects of the game, including creating the video game content through scenarios for the game, that measure moral decision-making in a virtual world. This will be supported by

undergraduate student programmer at the University, through the Undergraduate Research Assistant (URA). For more information of the game design and development process see the next Chapter and Appendix G).

4.6.3. Summary of the rationale

From the research into previous literature, and the methodological issues highlighted, Phase 2 aims to create a game for psychological research, to try and address some of these issues. The research into game design suggests these design features (meta-choices, MFT domain triggers, harm, and in-game requests through instructions in the game) could influence moral behaviour and alignment. Thus, drawing on all aspects of the research so far, the following hypotheses were developed for Phase 2 in predicting in-game moral decision-making behaviour.

4.6.3.1. Hypotheses

H1 - Real-life morality will predict in-game moral alignment, for Level 1, when there are no manipulations in the game.

H2 - Participant's previous game play will predict in-game moral alignment.

H3 - Both types of in-game instructions, avatar and goal instructions, will predict in-game moral alignment.

H4 - Post-game measures; engagement, PANAS-X, Tangrams help/hurt task and in-game experiencequestions, will predict in-game moral alignment.

H5 - Response times will be quick and intuitive[19] (<1500 milliseconds) to in-game moral decisions.

H6 - In-game instructions will predict the in-game harm score in level 6.

Null hypothesis - The regression models for: real-life morality; previous game, in-game instructions, post-game measures, and harm score, will not predict in-game moral alignment. Responses times to the in-game moral decisions will not be quick and intuitive. Any interactions that may occur are not due to one factor alone.

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[19] See section 5.7.6.2 for measuring and quantifying intuitive decision-making

4.7. Chapter summary

To summarise this Chapter, video games design and morality in video games was examined to develop a design of a game. This Chapter demonstrated the connection between content of video games and design, and how other dimensions of video game play are important factors in moral decision-making. Hypothetical situations are difficult when assessing morality, as the behaviour is speculative, thus, the predicted behaviour could be different from actual behaviour. The benefits of purpose-made video games that are designed to measure moral decision-making are that they require the player to make moral choices. From this, it means firstly, the purpose-made video game can be designed for moral content, and secondly, the VE allowed morality to be measured.

Chapter 5. Phase 2 - Method

This Chapter is the product of the synthesis of the previous Chapter, using both psychological and video game design literature; the method of developing and using a 'purpose-made' game. This Chapter outlines the process of developing and constructing the game, through developing and validating the content. Then preparing and data collecting with the game including the game testers and developing and testing Liberty/Oppression (L/O) scale. The Chapter outline includes the following:

5.1 Designing a purpose-made game

5.2 Developing the video game content (scenarios)

5.3 The pilot process of the scenarios

5.4 Developing the game

5.5 Game testers

5.6 Liberty/Oppression scale (L/O)

5.7 Data collection with the game

5.8 Chapter summary

5.1. Designing a purpose-made game

As outlined in Chapter 2 and 4 designing a purpose-made game addressed many of the biases and allowed for experimental control and rigor. This section outlines the process of developing the purpose-made game. First, an essential part of this game, the games content (including how morality would be measured) was created. Second, the content was created and it was piloted to check the validity of the content. Third, once this process was completed the game was then programmed and developed by an undergraduate student from the University's games programming course through the Undergraduate Research Assistant (URA) scheme. Before the game was used in the main study, game testers played and evaluated the game. The final part of this Chapter discusses and outlines the other measures and scales that were obtained and created in preparation for the main data collection.

5.2. Developing the video game content (scenarios)

Moral Foundations Theory (MFT) (Haidt & Joseph, 2004) was chosen as it has been used previously in research (Joeckel et al., 2012; Joeckel et al., 2013) and Tamborini (2011) suggests the applicable nature of MFT to research in media studies. Furthermore, due to the nature of theory scenarios could be developed from each of the six moral domains. The concepts and research discussed in the previous Chapter, video game design and current video games, was drawn on to develop the scenarios. Therefore, the game content was designed to be a representation of each of the MFT domains, to understand how game content can overlap with the real-life moral domains.

Clifford et al. (2015) created vignettes to violate the each of the moral domains put forward by MFT. These moral domains include: Care/Harm (C/H), Fairness/Cheating (F/C), Loyalty/Betrayal (L/B), Authority/Subversion (A/S), Sanctity/Degradation (S/D) and Liberty/Oppression (L/O) (Haidt and Joseph, 2004, Haidt and Joseph, 2007, Haidt, 2012). These vignettes were examined to help support the development of the scenarios. Other scenarios that were pre-developed and created including Clifford et al. (2015) vignettes were used, as they were not appropriate to use for the following reasons. Firstly, there were too many extraneous contextual details, such as references to family in scenarios that were not for the L/B domain. Secondly, the vignettes contain information about gender such as, a women and a boy, whereas the scenarios created for the game needed to be gender neutral, to reduce the biases that could be produced from gender. Finally the Clifford et al. (2015) scenarios were created for neuroimaging research and it was felt it was not applicable in a video game. Clifford et al. (2015) created each vignette to be range 14-17 words and 60-70 characters and used the Flesch-Kincaid reading level and reading ease indices (through a function available in Microsoft word; Kincaid, Fishburne, Rogers, & Chissom, 1975). It should be noted that for the C/H domain Clifford et al. (2015) included two types harm scenarios: emotional and physical. Due to the prevalent nature of harm in video game physical harm was selected for this research.

5.2.1. Creating scenarios

In order to create scenarios for each of the MFT domains the previous Chapter were drawn on. Scenarios were developed to be domain specific only one domain would be triggered; this was to examine the moral domains individually. More than one scenario was created for one domain; this was to pilot extras scenarios in case of failed manipulation (more than one domain activating). The scenarios had to be applicable in a virtual world as well as real-life to support the comparison between real-life and video game. With the additional aim of reducing the moral disengagement; this was further met by the research on current video game content.

The scenarios were created with caution to reduce biases from situational cues context and structure. Such as the scenario and the format of the choice could not be a moral violation but triggering this was making the situation neutral as possible, as a situation that was a moral violation could trigger different actions to a triggering situation. An example of the difference between moral violation and triggering scenario for example L/B trigger would be group membership whereas a violation would be something which betrayed the group. The difficultly was creating scenarios that were triggering enough without being a moral violation. In addition, explicit reward structures were not included to bias choices made, although completing a goal could be seen as a reward this was controlled informing participants if the complete or not, with no additional information that could be seen as rewarding, such as including an exclamation mark.

The scenarios for this research were created to be in a similar range to Clifford et al. (2015) of 14-17 words and 71-87 and Flesch-Kincaid reading level and reading ease indices were checked (Kincaid et al., 1975; see Appendix I). Even though these written scenarios were going to be transferred in a video game and were not going to be purely written, the length and characters of the scenarios were still going to be controlled for, as then the scenarios would be in an equal format to reduce bias and for experimental rigor. The scenarios conveyed a brief narrative, to reduce biases from lore and having to follow a typical narrative (Opening, Build up, Conflict, Resolution; Mitchell, 2012). It should be noted that scenarios provide some narrative information, but this is not as typically in-depth as video game narrative normally are (as shown in the previous Chapter).

5.2.2. Format of the scenario and decision

In the written versions of the scenarios were created, “You see” was added to the beginning of scenarios, as this would help the participants create an image of a scenario (this was then removed when programmed into the game). Each scenario and the decision followed the same format to reduce biases, thus the only difference was the content of the moral domain. Due to binary choices being a typically feature of video games this was adapted for the format of a decision. The scenarios were created for a situation to be unresolved and in need of resolution. The binary choice the participants were presented with was to act in an anti-social way and creating a violation to the MFT domain or act in pro-social way and resolving and upholding the MFT domain. This choice would reflect if the MFT domain was decided to be upheld or violated. By including both, an anti and pro-social option, both spectrums of the moral domain could be represented, an example of this the C/H scenario, the left option would relate to Care and the right option to Harm. This also connects to the research on co-operative and completive behaviour in-games (Crouse Waddell & Wei, 2014; Ewoldsen et al., 2012).

As the game require participants to make decisions two options were created for each scenario to follow the same format including the range of words (7-10) and characters (39-55). For the pilot the C/H scenario had to three options, care and two harm options; the two harm options were use harm more or kill. This was done to examine the differences between the two options, including differences in level of violation. In order for participants to make a decision, a main NPC for the scenario would trigger the specific moral domain for the scenario, from the object in the scenario. All scenarios involved an object that would either lead to pro social or anti-social outcome, this was to avoid hurting NPCs directly. Even in the C/H situation the books and case are used to harm. This was important as it meant all the scenarios had an object to represent the scenario and kept the format the same. By using objects as the point of focus of the scenario, it meant the last level could specifically look at harm with reference to the NPCs, and compared this choice to the other choices where the MFT violations occurred with objects. The format of the choice connects to Saleem, Anderson, and Barlett (2015) who suggest that helpful and hurtful behaviours in virtual worlds are both connected to and apply in real-life;

therefore by the scenarios including both pro-social and antisocial options post-game helpful and hurtful behaviours could be compared.

Foil scenarios are useful to compare a moral decision to a non-moral decision. If L/O scenarios still did not work, the scenario could be kept and used in a similar way to foil. It would have interesting to compare the difference, between scenarios that triggers a specific domain of morality and a scenario where the trigger of the moral domain is less clear. It could suggest that not all content is equal and only some could be a trigger. However, it was decided that due to the level of agency (participants are required to make decisions in game), including this scenario may have produced unclear results as it was unclear what it was triggering. Also, due to time restrictions such scenarios were not included.

5.3. The pilot process of the scenarios

When creating the scenarios for the pilot, participants were required to rate the domain the scenario represented therefore, word matching was avoided by not using the same words, thus participants would be matching content not by visuals for example for a fairness, a person is trying to be fair. Using the word fair would be word matched to question 'Fairness was involved in the scenario'. Then the scenarios were then piloted to check the validity of each one; each scenario is specific to one MFT domain, and cannot overlap with other domains. However, some domains were difficult to separate and had much overlap (see Appendix I for detail on the overlap); L/O was particularly difficult to separate from the other domains, such as F/C. The scenarios went through many stages of piloting to try to resolve this overlap, a total of four pilot studies and two follow-up studies were conducted to examine the overlap, and the scenarios were adjusted accordingly (See Figure 9 for the piloting process). Please see Appendix I for a detailed account of each pilot stage with analysis, this section will focus on the summary and key points of outcomes the pilot process However due to restrictions and the extra length of time it would have taken participants if screeners and manipulation were included it was decided that during each stage of piloting process each individual response was checked for obvious inattention in responses, forced ranking (participants only selected one scale point for each question).

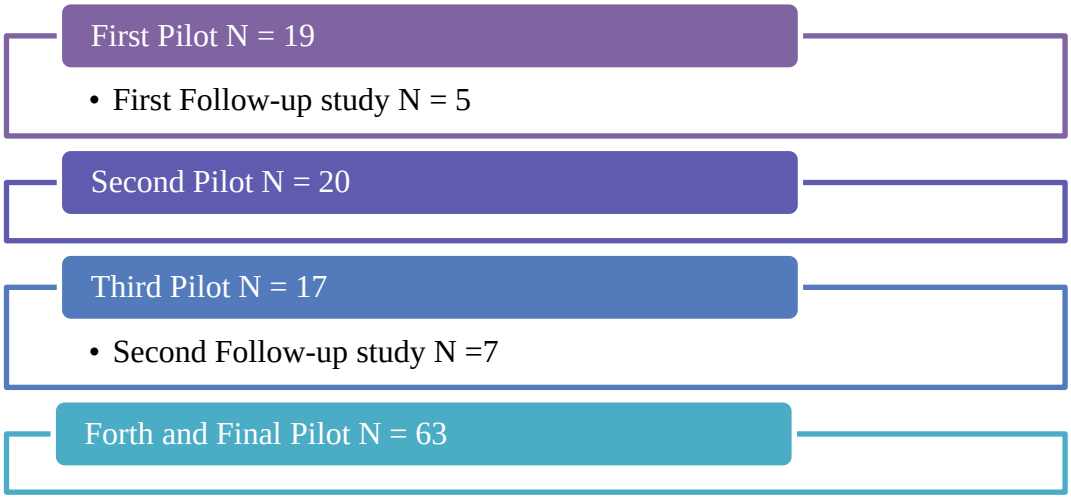

Figure 9. The overview of the piloting process of the scenarios

Figure 9 shows an overview of the piloting process; see Appendix I for a description of each of the stages of the process, as the following section will outline the final pilot of the scenarios.

5.3.1. Final Pilot

The final six scenarios were selected based on following: being significantly different from other domains, the effect size and how well it would transfer from the text based scenario into the game scenario. T-tests were carried out to check the two domains rated as the most relevant was significantly different from each other, the one rated the most relevant was significantly different from the second domain rated relevant. Effect size r was calculated, this was useful when selecting the A/S scenario as General scenario was higher than the Police Officer scenario and therefore, the General was selected (see Appendix I). Finally, as a minor consideration, the scenarios that more applicable to video game content and design and that would have the most efficient transfer from text into a game. For example, had the bridge scenario been significant for L/O as well as the stage scenario and other aspects of the scenarios were similar such as effect size, the stage would have transferred better and appear more in commercial game play. Table 23 outlines the six written vignettes that were selected (including word count and character range).

Table 23. *Summary of the MFT written six vignettes that were selected*

Final N = 63		Scenario	Option 1	Option 2[20]
MFT Domain- Final written vignette		Words (Characters)		
C/H	You see a person is injured and holding their abdomen, crying while they are slumped on the ground.	18(99)	8(40)	7(39)
S/D	You see a person is trying to maintain the waste system that contains sewage, which is leaking out.	18(99)	10(58)	9(57)
L/B	You see a person is giving others each a chest containing a written private promise, and all swear to secrecy.	20(110)	10(48)	9(52)
A/S	You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.	20(96)	8(46)	8(45)
F/C	You see a person is struggling to share out coins equally, because some are damaged, smaller and worthless.	18(107)	9(53)	10(54)
L/O	You see a person is trying to construct and open a stage to allow for people's free expression	18(95)	9(51)	9(54)
Total range		18-20 (95-110)	8-10 (40-58)	7-10 (39-57)

[20] C/H had a 3rd option, which was in the same boundary see Appendix I for more detail. Harm had two options to ensure that harm would be triggered; one option involved the NPC being hurt more whereas the other option would have killed the NPC.

5.3.2. Summary of piloting

Once the final piloted was completed and the scenarios analysed for specific domain trigger, the scenarios were then ready to be transferred into the game. During this time, research into game design had taken place to create the game through the Game Design Document (GGD) and develop the other features of the game including the levels design outlined in the next section (see Appendix G).

5.4. Developing the purpose-made game

Once the piloting was completed the content could be transferred into the game. This section highlights the development of the game, including how the core design concepts applied, and how morality was measured. Mitchell (2012) suggests to include a logline about the game, this is defining the game in one sentence; this game is exploring moral decisions in a real-life type environment. A Game Design Document (GDD) was made to outline the design of the game the process of making the purpose-made game (Appendix G). This document was then used to support and explain the specification of the game. An Undergraduate Research Assistant (URA) from a game programming course was hired to develop the game over a six week period. In order for this project to be undertaken full ethical approval was obtained from the University's Research Ethics Code of Practice.

5.4.1. Purpose-made games specification

Unreal 4 (4.11) was used to develop the game. The game is a single player; First Person (FP) that participant sees hands of the avatar. Avatar was used to describe the player's character (Hitchens, 2011). Schell (2014) suggests FP is more powerful at projection for the players as creates a blank slate for the character, an example of this is when characters have masks cover their face. To enhance the avatar being neutral (blank state), only the avatars hands can be seen for the player. The purpose-made game would be classified as a RPG with a moral narrative from the scenarios, which has a slight connection to adventure games; with the participant being the protagonist of the game. This genre was selected as firstly due to the popularity; Collins and Cox (2014) found most popular genre for the sample of 18-70 years olds were FS

shooters, followed by RPGs. Secondly due to appropriateness of implementing morality and the manipulation into the game.

5.4.2. Purpose-made game Virtual Environment (VE)

The purpose-made game VE was based in a real-life setting and was similar to a University environment, and contained six levels as these were used as manipulations (see paragraph on manipulations). Originally transferring the scenarios into the game was going to be all six scenarios in one room; however, this would have been odd as it would not have worked together. For example, C/H domain the NPC who was injured surrounded by other NPCs who would be acting like bystanders. Thus, the programmer proposed that each scenario should be placed in a room (see Figure 10 and 11). Thus, rooms were created for each of the scenarios that were related to the scenarios content. For example, Sewage works were in the pipe room (see Table 24 below for a description of all the scenarios and rooms).

Table 24. *In-game objects and room for each of the MFT vignettes*

MFT Domain	Object in the game	Room	Related content to the room
A/S	Damaged boots	Surveillance	An area for authority to be expected
F/C	A pile of coins	Office	An area to divide money
L/B	Locked chests	Social Area	An area for people to discuss and be in a group
S/D	Sewage works handle	Pipe room	An area for sewage works
C/H	A bookcase	Library	An area where an accident could occur
L/O	Sign on the stage	Garden	An area for a stage

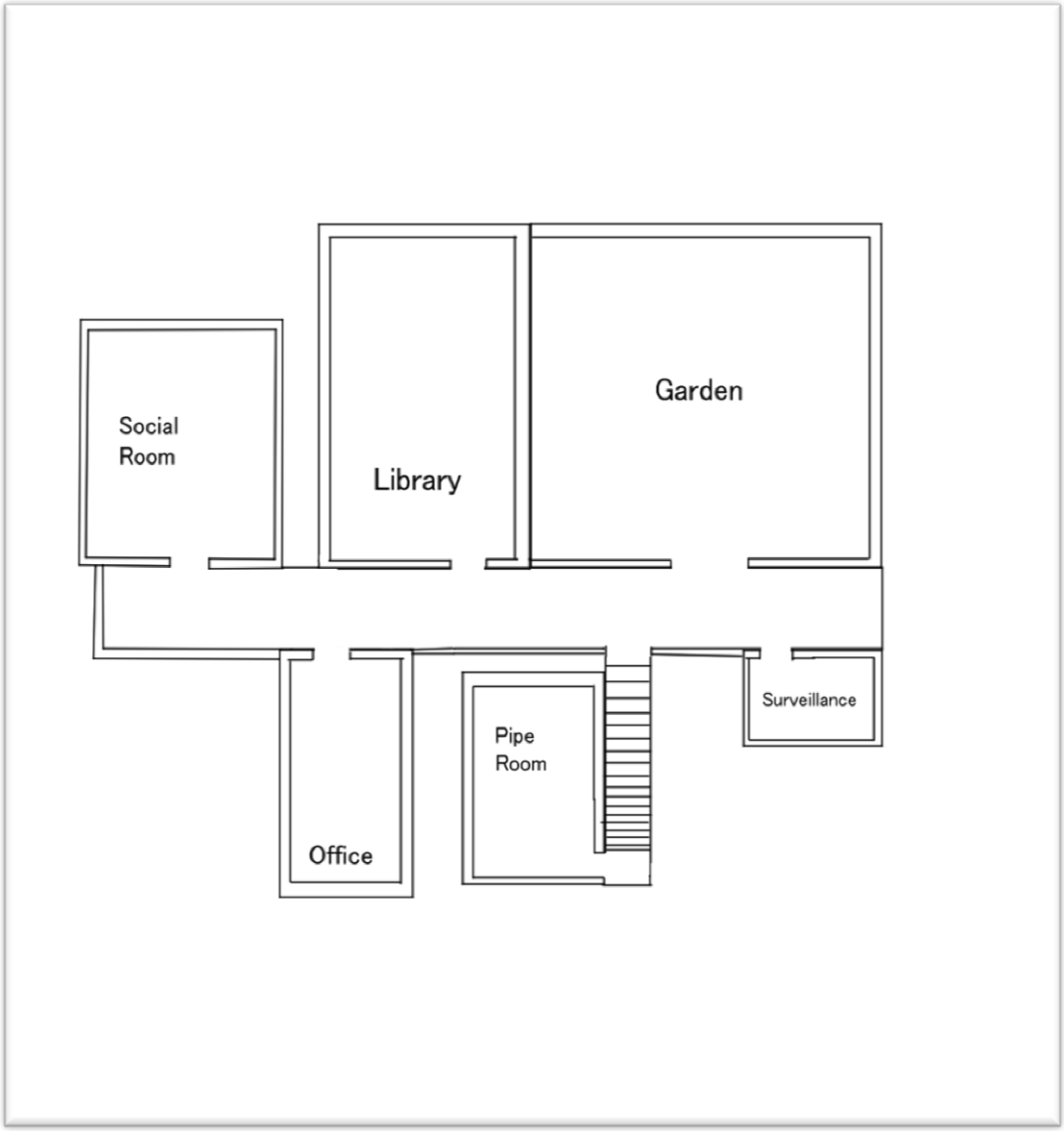

Figure 10. The floor plan of the VE levels with the 6 rooms representing the MFT scenarios

5.4.2.1. Progression through the game

Progression through the game was linear; players would complete a level and move the next (see Figure 10 and 11). The game consists of a tutorial and 6 level. Each level has the same format and layout, each scenario was in allocated in a different room, 6 rooms in total. Each of the 6 rooms was related somewhat to the scenario for example in the office, sharing out money, F/C domain. Participants progressed through the game by navigating through the level, into each room and interacting with an NPC for that scenario. The participants can choose in order, in which they

visited the room, all six interactions have to be completed before participants can leave the level and progress to the next level. Participants are notified how many interactions have been completed on the exit level door (Number/6). Once a decision had been made and a level was completed players could not move back, this is known as dead loop (Mitchel, 2012).

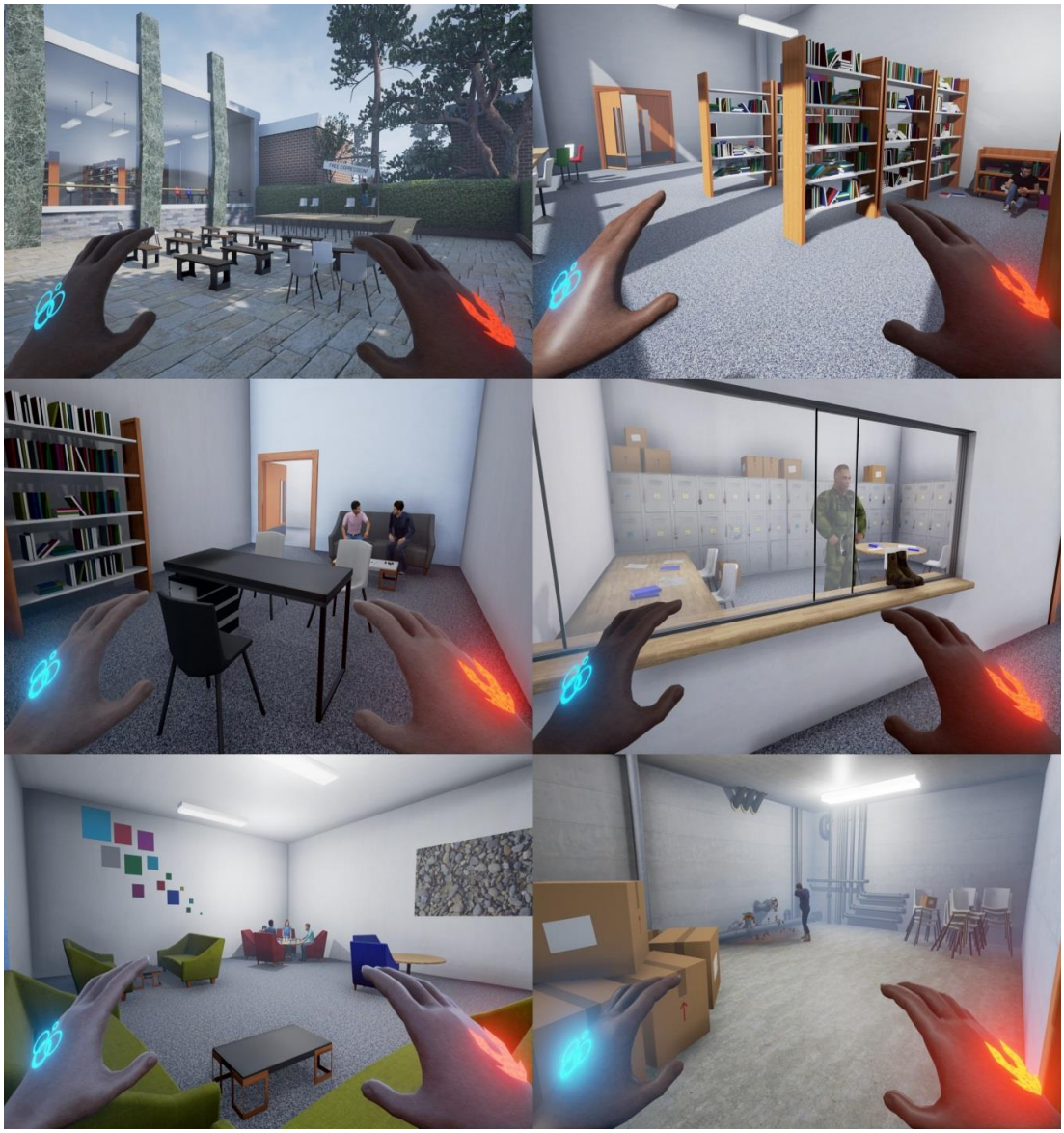

Figure 11. Screen shots taken from each room within the game: top left clockwise; Garden, Library, Surveillance, Pipe room, Social Area and Office.

5.4.3. NPCs

The NPCS were created for the participants to interact with, and have the scenario explained for them to then make their decisions. It has been suggested the NPCs have roles within games, the NPCs in the purpose-made game would be classed as the following: a provider and storyteller as the NPCs provided the means of the scenario to participants (Warpefelt & Verhagen, 2016). Although the other NPCs were in the game a part of the scenario, (i.e. F/C needed to be in a dyad and L/B required a group) these NPCs served an indirect storytellers and also made the place look busy, which (Warpefelt & Verhagen, 2016). All NPCs that players interact with were white male to avoid biases from race and gender, in the L/B scenario there is one female and a non-white male as these characters were not the main NPC that the players had to interact with. In addition, all the NPCs in the L/B scenario are all wearing similar clothing including the colour of clothing to enhance the suggestion group membership. The main NPCs were also given soft facial features to avoid looking untrustworthy and creating a bias (Oosterhof & Todorov, 2008).

The NPCs gestures in the game both pre and post-decision were animated to be salient with body and language and gestures that happen in real-life and were therefore keeping with the scenario. For example the general had hands on hips to show dominance (Pease, 1981; Pease & Pease, 2004). In addition, the triggers, emotions, virtues and vices of the MFT was used for the animations (see Table 2 Chapter 1 section 1.2.4, for the six moral domains *(*Graham, Haidt, & Nosek, 2008; Haidt, 2012; Haidt & Joseph, 2004, 2007).

An example of this F/C domain, if option 1 pro-social was chosen the NPCs shook hands for gratitude, whereas if option two was chosen the unfair dividing the NPC with fewer coins was angry/ upset and NPC with more coins was happy. However, the animation for the gestures, caution was applied to not the make them rewarding, for example S/D if the NPC was sick in response to the MFT violation in the situation, option 2 creating more leakage, this could have been rewarding. As a result, the NPC animation for S/D was to turn away and cover mouth (See Appendix G for NPCs specifications). Due to moral disengagement with dehumanisation, only human NPCs were created for the game (Bandura et al., 1996).

5.4.4. Making moral choices in the game

The aim of this current project was to trigger the specific MFT domain of morality to examine how participants would make decisions. To examine whether they would choose to violate the domain, once triggered. This was chosen as incorporates to pro social and anti-social behaviour which is connected to current video games as binary choices are present and are usually a positive or negative choice. The connects to commercial video games as binary choices are present and are normally split into pro and anti-social/ good or evil (This also reduced both tyranny of choice and decision fatigue by including too many options). Plus, due to violence being a strong overarching theme in video games the choice was between pro social and anti-social choices to mimic the content in previous games (see Chapter 4).

In order for a participant to make a choice the avatar was wearing gauntlets one on each hand (this is how participants would choose an action). The difference between the two hands was the energy in them, the left had helping energy and the right had hindering energy. This was selected due to previous games such as Mass Effect using this format for the decision-making. In the purpose-made game the MFT domains the positive is put of the left and the violation on the right i.e. C/H. The symbols on the gauntlets were different, to help participants to be able to differentiate between the two types energies within the gauntlet.

Once the participants had to interact with the main NPCs for the scenario, a text box would appear next to the NPC to inform the participants they could interact. Once the participant had chosen to interact with the main NPCs a short dialog in a text box (the vignettes, a description of what was happening) was presented to participants. Then when participants had read the vignette they pressed space bar to continue (this meant participants to choose when they had finished reading). Then they were presented with the choice, this was a small text box by each gauntlet, with the related to command for the gauntlet (see Figure 12)

Figure 12. The decision-making process for the MFT domain of C/H: top left the vignette, top right the two choices (corresponding to the side of the gauntlet) bottom left, pro-social left choice outcome and bottom right anti-social right choice outcome.

This was done to ensure participants were given enough information about the choice to know what they were choosing, as participants may try and disengage from consequences, by explaining they would not selected if the consequences were less clear. Once the choice had been made, through the selection of the energy has been selected the animation of the energy was the same to avoid bias, but the colour matched the gauntlet (blue for left gauntlet, helping energy and red for the right gauntlet, hinder energy). Then the NPC(s) has an animation to match the consequences of the choice. For more information on the development of the energy (See appendix G for GDD). Scoring the game, it was recorded when participants made a choice to use left (option 1 pro social) or the right (option 2 anti-social) along with response time. Two separate columns recorded which option was selected. It was decided that a participant would not have scoring system that they could see in

the games heads up display, as this could have been a bias as it could have been interpreted as a reward structure.

5.4.5. In-game manipulations through in-game instructions

Gentile (2011) outlined five dimensions of video game play as previously discussed. These included: amount of time playing, content, context, structure and mechanics. A summary of the purpose-made game designs dimension are outlined here, including the manipulations that were added into the game. Of the five dimensions two were manipulated and these manipulations were applied in levels 2-6. By including more than one level, re-playability could be examined (how these decisions change if played again). Total amount of time playing was measured this was fixed, however participants could choose not to complete. Content of the game went through extensive research and piloting before being transferred into the game. Context and structure were manipulated, these two manipulations were selected as previous research on these dimensions is lacking and these dimensions could suggest variance in the moral decisions made (see Chapter 4 section 4.6). The game physical mechanics of the game were programmed to normal PC controls. However, a console controller and key pad could be programmed into the game to be used. See Table 25 for a summary of the dimensions.

Table 25. *Summary of the designed dimensions in the purpose-made game*

Dimension	Description	Manipulation (level)
Amount of time	Approximately 13 minutes	No
Mechanics	Played on a PC in a VR lab with one screen	No
Content	Moral relevant/triggering scenarios	No
Context	Avatar and goals	Yes (2-6)
Structure	Instructions	Yes (2-6)

The structure of the situation through the instructions was the most efficient way to manipulate the dimension of structure, as this was meaning given to

characters narrative rather than changing the environment future. Context was manipulated by including goals and avatar; see Table 26 below for the manipulations applied to each level. The aims of the implicit rules are players will act as they do when normally playing a RPG/FS game, including completing the game. The aim explicit goals are named in the relevant rooms. Note that achieving a goal could be related to rewards however it is indirect and part of the manipulation. Thus, participants were informed after the last decision on the level either 'goal complete' or 'goal not complete' this was to be as neutral as possible. This was the game for when the game was finished.

Table 26. *Level manipulations in the purpose-made game*

Level	Level manipulations - instructions given to participants	
	Instructions	Type (avatar or goal)
L1	None	N/A
L2	The avatar for this level helps situations	Avatar
L3	The avatar for this level hinders situations.	Avatar
L4	Only use the left gauntlet, the help energy.	Goal
L5	Only use the right gauntlet, the hinder energy.	Goal
L6	The avatar for this level completes goals.	Avatar
	Only use the highest amount of energy.	Goal

5.4.6. Level 6

As shown in the Table 26, Level 6 had both an avatar and a goal manipulation this allowed for the design of this level and the game play to be more restrictive and examine the role of choice and meta-choices and compliance. This was chosen to focus on the right gauntlet, to examine the role harm in video games. This was done as participants could have avoided the MFT moral violation in the previous levels; using the right choice, the right gauntlet. Therefore, level 6 required two decisions both with a meta-choice option; choice right or stop playing the game.

This was presented to participants by only having the right gauntlet as an option when the dialog box came up. This also meant the manipulation mechanically reduced agency. The instructions at the beginning of the level explained why the left gauntlet was no longer an option. The choice was to see the participants would pick the right options with regards to the scenarios, whereas the second choice was to hurt the main NPC.

A harm scale was given using gauntlet and gauge (adapted from the abbreviated injury scale, Greenspan, McLellan, & Greig, 1985) starting with a mild shock to killing the NPCs (Scale: Minor = 1, Moderate = 2, Serious = 3, Severe = 4, Critical = 5 and Killed = 6). This scale was selected as it quantified the level of harm. However, it should be noted that due to time restrictions the animations of energy for harm scale of Minor 1 to Critical 5 were the same. The main NPC reacted with animation of shock and disproval (with head shakes and covering face). For the scale point of 6, killed, this animation was different in that the main NPCs would become lifeless, by either being slumping over or falling down, with puddle of blood appearing. This was done to show the difference between fatal and non-fatal harm. With more time, each scale point would have had a different animal that matched the severity.

5.4.7. Game content

The content rating systems for commercial games include: the Entertainment Software Rating Board (ESRB, 2015) and Pan European Game Information (PEGI, 2015). Content in commercial video games are determined by the level of violence and mature themes. Mature themes include themes such as: mature humour, references/use of drugs, sexual references. Mature themes are assigned mild or intense for the frequency. Violence is rating by the level of realism (cartoonish or graphic) and is also assigned mild or intense from frequency (ESRB, 2015; PEGI, 2015).

Applying the ESRB and PEGI criteria, the content of this purpose-made game would likely to be rated a Teen, for ages 13 and up (ESRB) and 12, for ages 12 and up (PEGI). The mature themes are mostly not applicable, or would be classed as mild e.g. the option to hinder situations, such as break a waste system to cause more

leakage. The violence in the game would be mostly in the last level; this will not intense or too graphic (a rating of realistic and intense the rating would be Mature (ages 17 and up; ESRB) and 18 (ages 18 and up; PEGI). All of which the participants would still be old enough to play; as the participants are University students are aged 18 and over, the highest rating which is 18 and over which the purpose game is unlike to fulfil these criteria.

Due to the results of the First Phase, adolescent age group would be good to research with the game as the PEGI and ERSB potentially would classify it as 12 and Teen (aged 13). However, as the last room is examining harm and compliance in more depth and requires meta-choices, it may not be appropriate for this age group to take part. Once the University students have taken part, this could act as pilot, to see how they respond to the game and a decision could be made on the appropriateness for the younger age group. Furthermore, some parents may also be concerned with the content of the game; this could be address by either explaining the requirements of the game or getting the parents to play the game, but overall more consideration is needed with this age group.

5.4.8. Dialog and audio

The entire dialog was written to be the similar length and characters (see Appendix G for the GDD and Appendix I for the scenario piloting). The dialog in the game was the instructions and the scenario vignettes (including options for the choices). See Table 27 for the in-game written dialog of the vignettes and choices. The entire dialog was checked for reading ease and Flesch-Kincaid reading level and reading ease indices (through a function available in Microsoft word; Kincaid et al., 1975). Overall the reading age was appropriate for University students (see GDD Appendix G). If this was to be administered to younger ages then, it potentially would need rewording, however some of the harder sentences could be due to the using specific gaming terminology i.e. Avatar. Music was selected for the game to give some audio input for the players, as commercial games have sounds effects and voices. Due to restrictions the vignettes were not voiced, the music chosen was non-specific background music e.g. elevator music. This was to avoid biasing with background music (Cassidy & Macdonald, 2009).

Table 27. *The dialog for the vignette and choices*

MFT domain	Vignette dialog	Left choice dialog	Right choice dialog
C/H	[Sobbing] Ouch, ouch I am injured; these heavy books fell on me, ouch.	Help the injured person, pick up books and help them up	Hurt the injured person more, drop more books on them
F/C	[Sighs] These coins are difficult to share out equally, some are damaged and worthless.	Help restore the coins' value and divide them equally	Damage more coins and divide the coins unequally
L/B	[Whispers] In these chests is a private promise, all agreed to swear to secrecy.	Put locks on the chests and protect the promise	Destroy the chests, open and display the promise
A/S	[Commands] You! This scuffed pair of boots on the windowsill, sort them out!	Mend and polish the boots, to sort them out	Damage the boots more, not sorting them out
S/D	[Sighs] This waste system needs to be maintained and is leaking sewage.	Fix and strengthen the waste system and cleanse the area	Destroy and damage the waste system causing more leakage
L/O	[Sighs] This stage is difficult to construct and open for people's free expression.	Help create the stage to allow for free expression	Destroy the stage to control and stop free expression

5.5. Game testers

The purpose-made game was piloted to understand how it was received; Mitchel (2012) suggests recruiting individuals to test the game is important for understanding the experience of and the excitation of the game. Mitchel (2012) suggests this can be done through, including questions that connect to, how participants respond to the game (usually observed and asked likes and dislikes) and well as game play. This is also specifically important for purpose-made games, as there is a need to check the role of ecological validity with purpose-made and commercial games. The reason why this comparison is important to explore is due to the purpose-made game representing the gap between controlling and manipulating variables and replicating commercial video games. This comparison can then allow for understanding how different or similar the game is from commercial games. If the purpose-made game was too different from commercial games, then how the purpose game would generalise, would need to be considered, and applied tentatively.

Hence, before the game was used with participants for the main data collection, participants who could not participate in the main study were gathered to test and review the game. These participants who could not take part included: knowing details about the study or taking part in previous research. Gamer testers for this research were required for main two reasons. The first being that most games needed testing for bugs and problems, this included making sure the data was recording. Second to collect data from a player's point of view on how the game was experienced and compared to commercial games, testers; including rating engagement in game they normally play and engagement with this game to compare scores. This was also very useful as it gave the researcher experience of the procedure of administering the game to participants.

5.5.1. Design

This was a quasi-design questionnaire study, as participants were categorised in to gamer or not by their responses in the question about identifying with the label of gamer. Previous game play and in-game experience variables were measured. See the measures section for descriptions of the scales used and the variables produced.

5.5.2. Participants

Participants were gathered through an email advert. Participants who did not know about the study were not included as they were saved for the main data collection. Full ethical approval was obtained from the University's Research Ethics Code of Practice. A total of 31 participants took part, 26 (84%) were male with 8 (26% receiving) Free School Meals 21 (68%) had a white background. 30 participants reported played video games and 11 participants described themselves as gamers. One participant reported not currently playing video games but has previously played video games and was therefore kept in the data set. One participant was removed due to withdrawing on the second level thus their experiences of the game were limited and different compared to other participants.

5.5.3. Materials

An online pre and post-questionnaire were developed using an online survey tool, SurveyMonkey© (See Appendix J). The pre-questionnaire was about the participants' game play. The post questionnaire was about the participants experience and included the Adapted Temple Presence Inventory (TPI) The Game Engagement Questionnaire (GEQ) was included in both the pre and post questionnaires to allow for a comparison between how the participants normally felt when playing video game and while playing the purpose-made game.

5.5.3.1. Adapted Temple Presence Inventory (TPI)

Lombard et al. (2007) developed the Temple Presence Inventory (TPI) that was adapted for the game testers. The sub scales include: Spatial Presence, Para-social Interaction, Passive Interpersonal, Engagement, Avatar, Social realism and Perceptual realism $\alpha = .87$. All scales included a range of 1 to 7, 1 representing the least and 7 the most applicable items

5.5.3.2. Adapted Game Engagement Questionnaire (GEQ)

The GEQ (Brockmyer et al., 2009) measure has been used previously in Phase 1 of the research and was found to be an appropriate measure (e.g. length of time to complete). The GEQ consists of 19 questions about how the participant usually feels when playing a video game (items changed to past tense for post-game play) and a score is given to represent the level of engagement (yes = 2 maybe = 1 and no = 0) with a maximum score of 38, $\alpha = .85$. The measure was also reviewed (Fox & Brockmyer, 2013).

5.5.4. Procedure

Participants were led into the VR lab and given information sheet to read, once they were happy had no questions they signed the consent form. The researcher also explained the purpose of the participants' role as game testers; this was to make them aware that the decisions made in the game were not the focus. The focus instead was on their experiences rather than the moral choices made in the game. Then the questionnaire began and the participants completed the first half, then participants played the game. Then the researcher set up the game and explained the controls and that observation chart would be used. Then the participants played the game. Once the game had finished, the post-game questionnaire was started and this was about the participants experiences of the game. When the questionnaire had been completed the participants were debriefed and asked if they had any questions then they were thanked for their participation.

5.5.5. Results of game testers

The descriptive statistics of game play ($N = 30$) 33% of the sample reported they were Gamers, Years playing was reported as $M = 17.03$ years $SD = 8.39$, Ability $M = 4.23$ $SD = 1.19$ and Experience $M = 4.53$ $SD = 1.53$.

5.5.5.1. GEQ

The GEQ (Brockmyer et al., 2009) was measured for their level of engagement with normal game play (taken before game) M = 16.13 SD = 6.00 was GEQ measured for the purpose-made game (taken after game) reported M = 12.10 SD = 6.61. A paired samples t-test suggested this difference was significant t(29)3.67 p = 0.001. This is important to consider the results as it suggests that participants' engagement in the game was significantly lower levels engagement compared their normal game play. In spite of this a score of 12 out 32 for a purpose-made game is a positive of outcome, considering it was developed to be as similar to normal game play as possible.

5.5.5.2. TPI

Adapted Temple Presence Inventory (TPI; Lombard et al., 2007) Table 28 suggests all sub scales seem low with the Passive Interpersonal, Engagement and social realism were OK with an average rating falling on the middle of the scale at 4. With the other subset scored lower with an average of three. The standard deviations were low this suggests that there was low variance and more agreement among participants. Overall this suggests that the game was ok at creating a presence but this could be improved. A reason for the lower values could be due to NPCs not having voices; this was why tone was removed in the Passive Interpersonal item. If the NPCs did have voices this would have enhanced the realism. This is important to consider when interpreting the results from the main data collection and are discussed further in the results.

Table 28. *The descriptive statistics of the adapted Temple Presence Inventory (TPI)*

The sub scales N=30	*M*	*SD*
Spatial Presence	3.44	1.13
Para-social Interaction	3.44	1.10
Passive Interpersonal (Passive Interpersonal no tone item[21])	4.03 (4.41)	1.35 (1.34)
Engagement[22]	4.18	1.24
Avatar	3.60	1.57
Social realism	4.24	1.26
Perceptual realism	3.43	1.20
Empathy	3.85	1.25

[21] This was tone item was removed as it was not applicable for the game

[22] Excitement was removed as it was including in the other scale items

Table 28. *Continued*

Adaptive descriptive words:[23]	*M*	*SD*
- Easy to play	6.33	1.03
- Uncanny	3.37	1.65
- Real	3.73	1.84
- Violent	3.47	1.93
- Boring	3.53	1.41
- Artificial	4.30	1.66
- Dead	2.33	1.56
- Enjoyable	4.53	1.36
- Lively	3.90	1.49
- Relaxing	3.67	1.81
- Exciting	3.73	1.28
- Responsive	5.27	1.20
- Sociable	2.77	1.52
- Emotional	3.33	2.04
- Similar to games I normally play	2.83	1.82
- Similar to commercial games	3.00	1.68

Table 28 suggests that the game was easy to play, scoring the closest to 7. The standard deviations were low which suggests that low variance and more agreement among participants. The game was rated on average fairly highly for being responsive, but also for being artificial and enjoyable. The game was rated fairly low for the rest of the items. Uncanny, dead and boring were rated low which is positive. However, the game was also rated low on the rest of the items, note the

[23] This adapted from the original as the sub scale. The original subscale set these descriptive words against each other on end of the scale and would be better to have a single rating of the ach of the items.

game was rated different from the games participants would normally play and commercial games. The implications of these results are expanded on in the discussion.

5.5.5.3. Observation summary

Giving participants verbal instructions for level 6 were unnecessary and interrupted game play and participants could work it out from the instructions. In spite of this the verbal instructions of the written text at the beginning of the game was needed as these instructions were being skipped over by participants (were incorporated in the briefing for the main data collection). The observation chart was adapted to also include in-game behaviour. Those with less experience of playing video game will take more time, than those with more experience. Understanding the instructions in the follow up harm choice was need in the post questionnaire for main data collection as some participants reported not understanding this. Two rooms should be used for administration rather than using one room for everything, a separate room for the questionnaires.

5.6. Liberty/Oppression (L/O) scale

This section outlines the development and testing of the MFT L/O scale for the main data collection. By developing a sub scale for L/O, this meant that in game responses to liberty scenario could be compared to a liberty score. This section summaries the development and results of the scale (see Appendix K).

5.6.1. Moral foundations questionnaire: L/O domain

The current Moral Foundations Questionnaire (MFQ) (Graham et al., 2008) does not include items for L/O to have a sub set scale and therefore score. Due to the items were constructed and piloted that could measure participant's real-life L/O domains. These L/O items were created to follow the same format as the pre-existing MFQ. The MFQ contains six items in total for each domain, three for the first part, Moral Relevance and three for the second part, Moral Judgment (Clifford et al., 2015; Graham, Haidt, & Nosek, 2008; Graham et al., 2011; Haidt, 2012). Using the MFQ,

a list of statements relating to L/O were created and these were then grouped into 6 underlying concepts around L/O (Haidt, 2012). For Moral Relevance, concept sub-groups included Choice, Bully and Restriction. The concept sub-groups for Moral Judgment were Power Reactance and Autonomy.

The process of developing L/O items included the following process, first items were created for each L/O concept and these were reviewed and ones which were too similar or overlapped and these were removed. This reduced the total number of items from 36 to 24. After this each concept sub-group had four items for piloting for analysis to select items. Due to time restrictions, the concepts that sub-grouped the items were not tested this was not critical as a total score was required. Therefore, as long as the items were analysed on their fit with L/O (future testing could break down the items further).

During the piloting stage, it was noted participants reported wanted the definition to be either liberty or oppression rather these two concepts being on a spectrum. The minimum number of participants required to rate and rank the statements was 24; this equates to at least one participant per questionnaire item (Rust and Golombok, 2009). The data were then analysed, central tendency and inter quartile range were calculated to the select the two sets for three items, then Principle Components Analysis (PCA) was carried out on the selected items (See Appendix K). See Table 29 for the final six items that were selected for the L/O scale.

Table 29. *The final six items of Liberty/Oppression scale*

L/O items
Part 1- Moral Relevance
Whether or not someone was controlled by another person. Whether or not someone was restricted by their government. Whether or not someone was free to choose how to live their life.
Part 2 – Moral Judgment
People should not be oppressed by their government. People should not be forbidden to make their own decisions. People have the right to disagree with those in power.

5.7. Data collection with the game

This section will outline the method of administering the game for data collection. The aims and objectives of Phase 2: part 2 was to use the created game for researching moral decisions made in a video game. The game would measure in-game morality and this would be compared to pre and post-game measures taken.

5.7.1. Design

A within-subjects quasi-experiment was carried out; due to the IV of participant's previous game play cannot be pre-assigned to a group. A between subjects-design was used determined by self-reported game play habits and experience/ ability. Dependant variables and independent variables are reported below. DVs: were the choice made (left right and moral alignment) and Response times. IV: were divided into four types, video game play, real-life morality (MFQ plus L/O scale), in-game manipulations (instructions and room order), and post-game measures (i.e. Tangrams help/hurt task and PANAS-X). See material section 5.7.3 for more information on the variables scoring see the analysis section.

5.7.2. Participants

Full ethical approval was obtained from the University's Research Ethics Code of Practice. As some deception was required participants were fully debriefed and verbal asked if they were happy for the data to be included in the study. The participants were recruited through opportunity sampling through flyers and adverts (including adverts on the University's psychology study credit system, SONA). All participants ended up being recruited through SONA.

One hundred and fifteen undergraduate students took part. One participant withdrew during data collection. Ten participants were excluded for the following reasons: MFQ exclusion criteria (7 participants), having to leave the room during the game play (5 participants) or the game crashing (3 participants). Note some of the participants had more than one exclusion factors; this took the total to 101 participants. The demographics of the sample; the majority reported a white background (78%) and not receiving Free School Meals (76%). Gender was 45% male, nearly half. All participants were either in their first or second year undergraduate degree course and this was split evenly between the two groups. The age range of the participants was 18-31 year olds. Although the study was advertised to all students at Bournemouth University the sample were all from Psychology.

5.7.3. Materials

An online pre and post-questionnaire were developed using an online survey tool SurveyMonkey©. Listed below is an outline of the measures included. The materials required for the game are also outlined. The questionnaires and measures included the following: game play habits, the MFQ plus L/O scale, PANAS-X, Tangram help/ hurt task, adapted GEQ, and in-game experience questions. The game play habits, MFQ plus L/O were administered before the game. The PANAS-X Tangrams, GEQ, and in-game experience, measures were administered after the game was played.

5.7.3.1. Video game play

Participants completed the phase one questionnaire, developed by the researcher, to understand previous game play. Table 30 outlines the variables gathered the

response/range and the type of data. From Chapter 4 (see section 4.4.1) the complex nature of categorising Genre of video games is difficult due to the hybrids, which is why it is useful to number of selected boxes to get an idea of range. Also, to address this game play style was recorded; Causal, Core and Hard-Core. Participants could select none to all three categorises. The questionnaire was updated to move *Minecraft* series (Mojang, 2009-2017) to action adventure rather than strategy puzzle also updated to include chart and popular games. Simulation and racing were separated as this was a large genre and would be better to separate. Amount of time is useful on a matrix and it gives the participants a cue to support the production of their answers (see Appendix M).

Table 30. *Game play variables; response, range and data type*

Game play variables:	Response and Range	Date type
Gaming status	Yes/No	Categorical
Gamers	Yes/No	Categorical
Moral narrative	Yes/No	Categorical
GTA	Yes/No	Categorical
COD	Yes/No	Categorical
Previous alignment (good, evil and neutral)	Yes/No	Categorical
Length of time	0-52.50	Continuous
Years playing	0-26	Continuous
Number of genres played	0-19	Continuous
Game play style	0-3	Continuous
Experience	0-7	Continuous
Ability	0-7	Continuous

5.7.3.2. MFQ and L/O scale

The MFQ (30 item) was administered to students, with the additional items for liberty that were developed and piloted. The scoring applied to the MFQ was a 6 point scale ranging from 0-5 (Graham, Haidt, & Nosek, 2009; Graham et al., 2011). Cronbach's Alpha for each module: Care/Harm $\alpha = .69$, Fairness/Cheating $\alpha = .65$,

Loyalty/Betrayal α = .71, Authority/Subversion α = .74, Sanctity/Degradation α = .84 (Graham et al., 2011) and Liberty/Oppression α = .62 (when this was included in the 6 item analysis, not divided into Moral Relevance and Moral Judgment). See Appendix K for L/O scale.

A score on the MFQ ranged 0-30 (0-36 including the L/O scale). Moral salience of the domains can be calculated from the highest and lowest scoring domains (this can be more than one domain) therefore high scores, salience is judged to be the most important/relevant for the individual, whereas low moral salience is judged to be the least important/relevant for the individual. Due to the other domains undergoing more testing moral salience is reported both with and without the L/O. Note that moral salience can be more than module as the highest score is taken. Binary dummy variables were created for each of the domains (yes/no) if it was salient for C/H, F/C and L/O if it was non-salient for L/B A/S and S/D.

5.7.3.3. PANAS-X

The PANAS-X (Watson & Clark, 1999) was selected as it included positive and negative affect as more comprehensive than Hostility scale (Anderson, Deuser & DeNeve, 1995). Plus, hostility is included one of the 6 sub-measures of negative affect; therefore the PANAS-X was more encompassing and this has been used previously (Hartmann & Vorderer, 2010). The scale range for all scales: 1 very slightly or not or all, 2 a little, 3 moderately, 4 quite a bit, and 5 extremely. The Positive Affect contains 10 items and the score range 10-50 (α = .88), the Negative Affect is the same format of 10 items and the score range of 10-50 (α = .85). Guilt score can also be obtained through on the sub measures of negative affect (6 items score range 6-30).

5.7.3.4. Adapted GEQ for ‘purpose-made’ game

The GEQ consists of 19 questions about how the participants reported how they felt when playing the purpose-made video game (items changed to past tense for post-game play) and a score is given to represent the level of engagement (Yes = 2

Maybe = 1 and No = 0). Score range 0-38. The measure was also reviewed (Fox & Brockmyer, 2013) and has been used previously.

5.7.3.5. Tangram help/hurt task

To measure pro-social and antisocial behaviour simultaneously, the tangram help/hurt task developed, tested and published by Saleem et al., (2015) and was chosen for this research (see Appendix N for example of tangram puzzles). Participants were led to believe they were assigning and completing tangrams puzzles (fitting smaller shapes into a larger shape to solve the puzzle) with another participant, however this participant was fictitious. Participants were told if the 'other' participant could complete 11 tangrams in 10 minutes they won a prize. Participants could select how easy or difficult they made the task for the 'other' participant. This measure was selected has been used previously to measure helping and hurting behaviour (Gentile et al, 2009) and this task is similar to the choices presented in the game to help or hinder/ hurt. Although the tangram have been suggested to have small correlations with other trait measures of pro and anti-social measures, (Saleem et al., 2015) the measure has still undergone previous testing and was felt that its application was suited to measuring post-game helping and hurting behaviour. This measure also contained a post questionnaire about participant's intentions and levels of suspicion.

Scoring the tangrams included a separate score for helping and harming (Saleem et al., 2015). To derive a helping score is defined as the number of easy puzzles greater than one (minus 1, max score 9). To derive a hurting score is defined as the number of hard puzzles greater than one (minus 1, max score 9) therefore to create a hurt/ harm score the difference between the two scores were calculated by subtracting the helping score from the hurting (score range -9 to +9).

5.7.3.6. In-game experience

These in-game experience items were post games questions and were grouped for further analysis, Principle Components Analysis (PCA) was carried out on the data (see Table 31). KMO test suggested values were all above the acceptable value of

0.5 (the sample size was adequate for analysis). The Bartlett's tests were all significant suggesting that factor analysis was appropriate on the data (Field, 2009). To ensure reliability of the constructs reliability analysis using Cronbach Alpha was conducted on all items. All except control produced good results. This was originally 3 items however due to poor Cronbach Alpha, $\alpha = .34$ this only two items were applied (the third item was then separated into responsibility). Therefore, for further analysis these items were grouped and an average score[24] was generated from each item within the group.

[24] For consistency with other variables the factor scores that were generated were not used.

Table 31. *In-game experience items grouped for analysis*

Items grouping (title of the variable followed by the grouping)	KMO	χ^2 (df)	α	Scale range
<u>Avatar (3)</u> How much did you identify with your avatar? How attached did you feel with your avatar? Did you feel that avatar was you?	.71	131.95 (3)***	.84	1 Not at all, 2, 3, 4, 5, 6, 7 Very much
<u>Empathy (2)</u> How much did you empathize with the characters in the game? How connected did you feel with the other characters in the game?	.50	74.55 (1)***	.84	
<u>Compliance (5)</u> I wanted to follow the rules of the game I wanted to complete the goals I did things because I thought I had to I wanted to be like the avatar description I wanted to complete the game	.82	348.89 (10)***	.89	
Just a game (1) - Its just a game	N/A	N/A	N/A	
<u>Regret (3)</u> How often did you feel regret? How often were you sorry about something you did? How often did you feel like you did something wrong?	.65	164.14 (3)***	.86	1 Rarely/never 2 Occasionally 3 Sometimes 4 Often 5 Very Often
<u>Control (2)</u> How often did you feel that you were in control Did you feel you could influence how the game unfolded?	.50	18.49 (1)***	.59	
<u>Responsibility (1)</u> How often did you feel responsible for your actions?	N/A	N/A	N/A	

*** $p < 001$

5.7.4. The purpose-made game

The purpose-made game ran on Unreal Engine (4.11) in the VR lab. Due to the models and NPCs used in the game, the computer in the VR lab was the only computer with enough capacity to the run the game. Participants were told a short summary of the game and then the controls were explained to them from a printout sheet, then this given to participants as a point of reference while playing the game (see procedure and Appendix O). The purpose-made game recorded the data in a CSV file that could then be transferred into the relevant programmes.

5.7.5. Procedure

Due to the setup of the Virtual Reality (VR) lab, it is common practice for the researcher to sit in the room with the participants while they undertake the task for any technical support if needed. Hence, it was decided it that the researcher would stay in the room to ensure there were no problems with the game, it was also useful for the researcher, know if there were any issues with the game, such as not loading up correctly. Additionally, if participants had any problems or questions these could be raised (prompts were minimal) and thirdly participant's experiences of the game could be recorded. If participants wanted to stop the game, the researcher stopped the game with a specific combination of controls, which would bring up the end screen "Game complete".

All data was collected in the psychology experimental labs in one session. Therefore, there were restrictions on timing of the session, as this way the most efficient way to collect the data within a one hour session. This allowed for more participants to be tested in one day, and was not too load on the participant. Minor deception used rather than cover story, as it was felt that this would have reduced suspicion.

Two rooms were used for testing an interview room and the VR lab. Firstly, participants were led into the interview room where they were given the brief and information sheet to read, if they were happy and had no questions they were given the consent form. Once the consent form had been signed a participant code was put into the pre-questionnaire on the laptop and if they were happy the started the first questionnaire. After this had finished they were led to VR lab were the game

instructions were verbally explained, with the opportunity for participants to ask questions. As part of the ethical procedural participants can withdraw at any time mentioned at serval points, one of which being before participants played the game, this was to highlight that participants could stop playing the game with making, it seemed the focus and point of the study, which could have created bias If they were happy, the participants played the game. Once the game had finished participants were led back into the interview room and once they were happy to continue, they undertook the post questionnaire on the laptop. Then once participants had finished the researcher told them there was one thing before they left before the debrief, which was the Tangram task (see Appendix O for the procedure). As the interview room was set up with extra chairs and table it made appropriate for administering the Tangram task as well as the questionnaires. Once this was finished participants were debriefed and informed of the study purpose and details, the opportunity to ask questions and withdraw (See Appendix O).

5.7.6. Analysis

This section will outline the process of extracting and aggregating the data from the game. Each of the measures were coded and scored (see materials for score range), for both the variables and dummy variables.

5.7.6.1. In game responses

The game recorded; the choices made (left and right), response times, and the order of the choices made by room in the level. This variable was recorded in milliseconds from when the two options were presented to participants to the time taken to make a choice (left or right gauntlet). Therefore, it is the time taken for the participant to respond through making a choice. This variable was recorded once participants interacted with an NPC and make a decision. Participants could walk around the level and rooms it was only at the point of the decisions that it would be recorded.

The main DV was the choices made included: the number of left choices made, number of right choice made and moral alignment (left choices minus right choices). Moral alignment was calculated by subtracted pro-social scores from the anti-social scores (the same as the Tangram task). The alignment scale indicates: a

negative score more right, anti-social choices, a zero score is neutral, combination of left and right choices and a positive score more left, pro-social choices made (see Table 32). The total number of choices made in the game was 36. This was then also divided by level (1-6) and in game MFT domains (C/H, F/C, A/S, S/D, L/B and L/O). Note alignment was calculated on level 6 but there was no left choice due to the meta-choice required (the range was -6 to 0). Overall alignment for the whole game was calculated, and also alignment for levels 1-5, removing level 6 due to the meta-choice to examine how much this level had an impact on behaviour, as agency was mechanically reduced through the design of the choice (see Chapter 4 for more information).

Table 32. *The variable information for in game manipulations*

Level		Total (if instructions followed)	Dummy variable Instructions followed	Moral alignment per level
L1		N/A	N/A	-6 to 6
L2		6 Pro-social choices	Yes/ No	-6 to 6
L3		6 Anti-social choices	Yes/ No	-6 to 6
L4		6 Pro-social choices	Yes/ No	-6 to 6
L5		6 Anti-social choices	Yes/ No	-6 to 6
L6	L6a	6 Anti-social choices	Yes /No	-6 to 0
	L6b	36 score (harm score)	Yes/ No	N/A
Total 1-5		-6 to 6	Yes/No	-30 to 30
Total 1-6a		0 to 6	Yes/No	-36 to 30
All game instructions completed		(See above)	Yes/No	N/A

5.7.6.2. Quantifying the response time data

It has been suggested that considering all process that need to take place to make a decision, from the sensory imputed, to the muscle response, that this process is quick and takes around 240 milliseconds (Swink, 2009). Tamborini, Lewis, et al. (2016) used the Intuitive Motivation-Affect Misattribution Procedure (IM-AMP) task (R

Tamborini, Prabhu, Hahn, Idzik, & Wang, 2014), which required participants to judge if something was pleasant or unpleasant (similar to this research, participants make a binary choice). The suggested boundary for a decision-making task that quick response times are categorized from 500 to 1500 milliseconds. Although this does not exactly match the task presented to participants in the game, the larger time boundary is a useful guide for in-game decisions. Therefore, this boundary was selected to quantify the response time the intuitive of the decision-making process for participants.

5.7.6.3. Observations notes during the game play

It would seem that, a small number of participants were ignoring instructions on second level to invert the decisions made on level 1. The exact mirroring (where opposite choices on the second level were made to first level) only happened for 4 participants (4%). Some participants took a while to find the library NPC, but this scenario seemed to provoke the most responses on the observation notes. Some participants also, inquired rhetorically about the consequences.

5.8. Chapter summary

This Chapter outlined the stages of the creating the game to measure moral decision-making, and then piloting process undertaken to validate the content. The first part discussed the how the content of the purpose-made game was developed and piloted. Then, the Chapter discussed constructing and developing the game. Previous research was drawn upon including how the relevant commercial video games and core design concepts that were integrated into the game, while controlling for biases (see Chapter 4 for more detail). After this the gamer testers and their results were discussed. Then, the Chapter discussed the development and testing of L/O scale. Finally, this Chapter outlines method of main data collection with the purpose-made game. This included the participants, procedure, materials (the other measures required such as the tangram help/hurt task and in-game experience questions). The next Chapter outlines the data analysis carried out.

Chapter 6. Phase 2 - Results

This section outlines the results of Phase 2 (for the coding of the data and information on the materials see Chapter 5). This Chapter is divided into four sections; a brief summary of purpose-made game play, then by dependant Variables (DV); first, in-game moral alignment is reported, second, response time data is then reported and finally level 6b (harm score and response times) are examined. Due to the design of level 6b this is analysed separately. Within each of the sections for the DVs, descriptive and inferential statistics are reported, with the Independent Variables (IV) including checking the data met the assumptions for the inferential tests. The IVs have been grouped into; pre-game IVs (Real-life morality, previous video game play, demographics), In-game IVs (game instructions, game level, game room (in-game scenario MFT domain) and room order), and post-game IVs (Engagement, PANAS-X, Tangrams help/hurt task and in-game experience questions). The Chapter outline includes the following:

6.1. Purpose-made game play summary

Please see the previous sections for more in-depth information regarding the games development and game play. To summarise game play: the game contained a tutorial (prior to game play), 6 game levels, and on each level 6 Non-Player Characters (NPC) to interact with, where a choice needed to be made. These 6 choices were located in different rooms within the game and, each scenario represented one of the Moral Foundation Theory (MFT) domains (Care/Harm (C/H), Fairness/Cheating (F/C), Loyalty/Betrayal (L/B), Authority/Subversion (A/S), Sanctity/Degradation (S/D) and Liberty/Oppression (L/O). Participants received a score of one point for making a choice and this was divided into if the choice was a pro-social (left choice)

or anti-social (right choice); the time taken to make each decision was recorded, along with the order of the decisions made.

From the output of the in-games choices, three variables were created, these included the: number of pro-social choices, number of right choices, and alignment (pro-social score minus anti-social score). In-game moral alignment and Response Time (RT) is the main focus of this Chapter and are the two in-game DVs used for analysis. Level manipulations through type of instructions (avatar or goal) were given to participants were include in levels 2-6 (see Table 33). At level 6, in the second decision (level 6b, harm decision) made produced a score that ranged from 0-36, depending on the injury scale that was chosen. Due to level 6a including manipulations to reduce the choices available (only having the anti-social choice or the meta-choice to stop playing), the following analysis for this chapter will report will the summary for levels 1-6a. However, to ensure any differences are not just due to the meta-choice analysis was also run for levels 1-5 due to both these results were very similar to levels 1-6, and to keep the result section concise, the results for levels 1-5 are reported in Appendix P.

Table 33. *Level manipulations: in-game instructions for each level*

Level	Level manipulations - instructions given to participants	
	Instructions	Type (avatar or goal)
L1	None	N/A
L2	The avatar for this level helps situations	Avatar
L3	The avatar for this level hinders situations.	Avatar
L4	Only use the left gauntlet, the help energy.	Goal
L5	Only use the right gauntlet, the hinder energy.	Goal
L6	The avatar for this level completes goals.	Avatar
	Only use the highest amount of energy.	Goal

The mean average to complete the game was approximately 13 minutes (749.06 seconds) to complete, with a standard deviation of 5 minutes (295.76 seconds), this time does not include the tutorial. The analysis will include both real life MFT and the in-game MFT score to help differentiate the two IG (In-Game) will be placed before the domain (IG-L/B) and IG-MFT in front to distinguish between virtual score and real life score.

Multiple linear regressions using the Enter method was used to test hypotheses, the DVs from in-game variables (in-game moral alignment and response times). This was to examine the relationships of the predictors with DVs and how much these regression models could explain in-game moral decision-making. Enter method was selected due to a lack of theoretical grounding in the area for hierarchy of the variables when inputting them into the model, therefore all variables were entered into the model without a hierarchal structure (Field, 2009).

6.1.1. Hypotheses

Below is listed the hypotheses that will be tested in the next sections.

H1 - Real-life morality will predict in-game moral alignment, for Level 1, when there are no manipulations in the game.

H2 - Participant's previous game play will predict in-game moral alignment.

H3 - both types of in-game instructions, avatar and goal instructions, will predict in-game moral alignment.

H4 - Post-game measures; engagement, PANAS-X, Tangrams help/hurt task and in-game experience questions, will predict in-game moral alignment.

H5 - Response times will be quick and intuitive (<1500 milliseconds) to in-game moral decisions.

H6 - In-game instructions will predict the in-game harm score in level 6

Null hypothesis - The regression models for: real-life morality; previous game, in-game instructions, post-game measures, and harm score, will not predict in-game moral alignment. Responses times to the in-game moral decisions will not be quick and intuitive. Any interactions that may occur are not due to one factor alone.

6.1.2. Frequency of the in-game instructions being completed

Table 34. *Expected score and descriptive statistics of the completed in-game instructions*

In-game Level		In-game instructions	Frequency of participants that followed in-game instructions			Expected score if in-game instructions were followed		
			Yes	No	%	Align ment	Pro-social	Anti-social
Level 1		N/A	N/A	N/A	N/A	N/A	N/A	N/A
Level 2		6 Pro-social choices	72	29	71	6	6	0
Level 3		6 Anti-social choices	70	31	69	-6	0	6
Level 4		6 Pro-social choices	83	18	82	6	6	0
Level 5		6 Anti-social choices	71	30	70	-6	0	6
Level 6	6a	6 Anti-social choices	99	2	98	-6	0	6
	6b	36 harm score	29	72	29	N/A	N/A	N/A
Instructions level 1-5		See above	51	50	51	0	12-18	12-18
All instructions levels 1-6		See above	23	78	23	-12-0	12-18	18-24

Table 34 shows that over two thirds of participants completed the in-game instructions for each individual level. However, overall, for levels 1-5, only half of the participants followed the in-game instructions. When restricting the choice on level 6a, only two participants did not complete the instructions. Due to this around a quarter of the sample followed all instructions in the games.

6.1.3. In-game decisions by location in the VE (room order)

The variable of in-game room order and represents the order of decision made by physical location in the VE (room in the game) across each level of the game. Therefore this variable is the order in which decisions were made, within each level of the game. It should be noted that 6b harm choice was a follow up and room order would have already been established from the 6a.

Table 35. *The order of the decisions made by VE location*[25]

VE Level layout by room containing MFT domain	Number matching level layout		Number not matching level layout		Decisions made in the game[26]
	N	%	*N*	%	
First = IG-L/B	525	87	80	13	605
Second = IG-F/C	532	88	73	12	605
Third = IG-C/H	536	89	68	11	604
Forth = IG-S/D	513	85	91	15	604
Fifth = IG-L/O	504	83	100	17	604
Sixth = IG-A/S	509	84	96	16	605

Table 35 shows the order of the decisions made within a room, the majority of the participants, made decisions that followed the physical VE level layout.

6.2. In-game moral alignment

The DV of moral alignment was the main focus of research, what choices the participants were making, pro-social, anti-social and the moral alignment gained from the amount of pro-social and anti-social choices. In-game moral alignment was then analysed with the following measures, real life morality, previous game play,

[25] Level has room order once as in this level participants were asked a follow up decision to be made and therefore order was already established from first decision.

[26] Two participants did not complete level 6; one withdrew and the beginning of the level and one only completed half the of the level (three in-game decisions made).

in-game variables and instructions and then the post-game measures (i.e. PANAS-X). This section includes the hypothesis testing for Hypotheses 1-4.

6.2.1. H1 - Real-life morality and in-game alignment

These IVs include MFQ (Graham et al., 2008), L/O scale (for the L/O domain). This measure presented participants real-life morality. Due to the nature of the measure, score was derived for each of the 6 moral domain participants as well as calculating moral salience. Real-life moral salience[27] is useful to use and calculate as this is the hierarchical structure of the moral domain. Moral salience is calculated by isolating both the highest and lowest scoring domains (this may be more than one domain). Domain(s) with high salience is therefore the highest and suggested the most important, and likewise domain(s) with non-salience has the lowest score and are suggested to less important (known as non-salient domains). Moral salience was coded into the following variables. Two continuous variables were created that for high and low, that included the participants score from the high salient domain and the lowest score for the non-salient domain. Categorical dummy variables were created for each MFT domain and was coded high salience 'yes' and 'no' and non-salient 'yes' and 'no'. This section is divided into descriptive followed by the inferential statistics

[27] It should be noted, as this research is a within-subjects design, that the real-life moral scores are not subjected to the issues of individual differences with moral salience for example, if someone high salience score was low compared to others high salience score, this domain is still high salience for the individual compared to the other domains .Therefore, if the design of the research is a within-subjects design the comparisons of salience are appropriate, the same participant is being compared, whereas this would not be as appropriate for between-subjects designs and comparisons, as this research this variable of moral salience is within-subjects these comparisons of real-life moral salience are more appropriate and reported below.

6.2.1.1. Descriptive

Table 36. *Real-life moral salience for each of the MFT domains*

Real-life six domains salience	High		Non		High	Non
	N	%	*N*	%	Total *M* (SD)	
C/H	52	45	1	1	4.02 (0.50)	1.95 (0.73)
F/C	33	29	1	1		
L/B	1	<1	26	23		
A/S	2	2	21	19		
S/D	2	2	54	49		
L/O	25	22	8	7		
Total	115	100	111	100		
Real-life five Module salience[28]	High		Non		High	Non
	N	%	*N*	%	Total *M* (SD)	
C/H	60	54	1	1	3.93 (0.57)	1.96 (0.75)
F/C	41	37	1	1		
L/B	2	2	33	27		
A/S	4	4	25	21		
S/D	3	3	61	50		
Total	110	100	121	100		

Table 36 shows that C/H, F/C and L/O to be the most salient domain, with the highest being C/H. Whereas, L/B, A/S and S/D were suggested to be the least salient domain, with the lowest being S/D.

[28] Note this is reported here as a measure of consistency as L/O items are not standardised. Following this when moral salience is investigated with other factors both scores will be used but only 6 domain will be reported in main document to avoid confusion

6.2.1.2. Inferential statistics

Correlations were carried out with real-life moral MFT domains with age (these were important to run as age realtes to moral development in Phase 1). Overall, age did not correlate with real-life moral scores, (see appendix Q).

Table 37. *Correlation matrix of alignment, pro-social and anti-social choices, for each real-life MFT domains*

Correlation Matrix		Real-life MFT domain					
		L/B	F/C	C/H	S/D	L/O	A/S
Level 1-6a	Alignment	-.01	.08	.07	.04	-.07	.36***
	Pro-social	-.01	.08	.06	.03	-.06	.36***
	Anti-social	.01	-.09	-.08	-.05	.07	-.36***

*** $p = .001$

Table 37 shows the correlation matrix for alignment and choices made for each level correlated real-life (MFT domain). Note that each room was correlated with ailment, pro-social and anti-social choices (for example L/B was correlated with; L/B Alignment score, L/B pro-social score and L/B anti-social score). Table 37 also shows that only the room that contained the MFT domain of A/S was significantly correlated with alignment, and the choices made.

To test H1 - Real-life morality will predict in-game moral alignment, multiple linear regressions were run, were with in-game moral alignment and real-life morality and moral salience (mention above: moral salience scores (highest and lowest scores) and binary salience variable for each MFT domains high and non-salient, No = 1 and Yes = 2), examining the relationships between in-game alignment and real-life morality. The results suggest that none of the MFQ domains or if the domain was salient significantly predicated moral alignment in levels 1-6. When the regressions were run on level 1 moral alignment only C/H was a positive significant predictor $p < .05$ but the model was not significant $R^2 = 0.11$, $\Delta R^2 = 0.05$ ($p = .09$).

Table 38. *Regression model summaries of in-game moral alignment by real-life MFT domain*

In-game moral alignment by level	R^2	ΔR^2	*p*	Significant Predictors	+/-[29]
Levels 1-6	0.05	-0.01	.56	-	
Level 1	0.12	0.05	.09	C/H*	+
Level 2	0.11	0.05	.09	C/H*	+
Level 3	0.02	-0.04	.92	-	
Level 4	0.21	0.16	.001**	C/H*** F/C*	+ -
Level 5	0.04	-0.02	.70	-	-
Level 6a	0.08	0.02	.23	L/O*	+

*p<.05 ** p <.01 ***p <.001

Table 38, the summaries of the regression models show that only level 4 in-game moral alignment, was predicted by moral scores domains specifically C/H and F/C were significant predictors, but C/H was positive, and F/C was negative.

[29] Denotes the relationship + for positive and - for negative

Table 39. *Regression model summaries of in-game moral alignment by MFT real-life salience*

In-game moral alignment by level	R^2	ΔR^2	*p*	Significant Predictors	+/-
Levels 1-6	0.06	-0.02	.64	-	
Level 1	0.10	0.02	.30	-	
Level 2	0.15	0.07	.06	L/B* Salient score*	+ +
Level 3	0.11	0.03	.20	-	
Level 4	0.18	0.11	.02*	Non-salient score**	+
Level 5	0.11	0.04	.19	Non-salient score*	-
Level 6a	0.10	0.02	.28	S/D*	+

*p<.05 ** p <.01 ***p <.001

Table 39 shows the same in that for level 4, in-game the moral alignment was significantly predicted by MFT non-salient scores had a positive relationship with moral alignment. Therefore, H1 was rejected and the null accepted: The regression models for real-life morality will not predict in-game moral alignment.

6.2.2. H2 - Previous video game play with in-game alignment

Video game play was analysed in the same way as in Phase 1 (see Chapter 3 section 3.3.1 and Chapter 5 section 5.7.3.1), in that, video game play was separated into categorical and continuous variables for descriptive and inferential statistics. In the following section, Table 40 and 41 reports on the descriptive and inferential statistics of game play, and due to gender differences, found in Phase 1, these descriptive statistics on gender with game play are also reported in this section.

6.2.2.1. Previous game play and gender

Table 40. *Descriptive statistics for continuous gaming variables and gender*

Gaming variables continuous		*N*	*M*	*SD*	*t*	*df*	*r*
Years playing (number of years)	Male	45	11.20	5.12			
	Female	55	4.71	4.94			
	Total[30]	100	7.63	5.96	6.43***	98	0.54
Number of Genres played (0-19)	Male	45	8.64	3.92			
	Female	55	3.95	4.18			
	Total	101	6.04	5.00	5.77***	99	0.50
Game play style (scale 0-3)[31]	Male	45	1.67	0.74			
	Female	55	0.98	0.73			
	Total	101	1.29	0.80	4.67***	99	0.42
Length of time (hours per week)	Male	45	11.27	9.53			
	Female	55	2.87	4.27			
	Total	101	6.61	8.22	5.49***	58.11	0.58
Gaming ability (scale 0-7)	Male	45	4.49	1.47			
	Female	55	2.52	1.54			
	Total	101	3.40	1.79	6.53***	99	0.55
Gaming experience (scale 0-7)	Male	45	4.89	1.60			
	Female	55	2.55	1.68			
	Total	101	3.59	2.01	7.09***	99	0.58

****p* <.001

[30] This missing data was due to a participant not providing data that could be meaningful translated in to a number.

[31] Participants could select the number (none to all three) of styles of game play that applied; Causal, Core and Hard-Core.

Table 40 shows independent t-tests were carried out to investigate if these gender differences, with continuous gaming variables, had a significant difference. This table shows a significant gender difference between game play for all the continuous variables; males reported more game play than females. The effect size report using the *r* value shows a medium effect sizes for gender and Game play style, whereas the other gaming variables had a large effect size of gender and video game play.

Table 41 shows the Chi-squared analyse were carried out to investigate if these gender differences, with categorical gaming variables, were significantly different. The table above shows that all variables, except for GTA, had significant gender differences, with males self-reporting more "Yes" to game play variables than "No". GTA may not be significant due to a low number of participants reporting playing the game. The effect size report using the *odds ratio* suggests that males were 26 time more likely to play video games than females but only 1 time more likely to report being a gamer. The reason reporting video game play could be so high due to only one male reporting that they did not playing video games. Males were around 6 times more likely to play COD and games with a moral narrative.

Table 41. *Descriptive statistics for categorical gaming variables and gender*[32]

Gaming variables categorical		Yes	No	Total	χ^2 (1)	*Odds ratio*
Gaming Status	Male	44	1	45		
	Female	35	21	56		
	Total	79	22	101	18.23***	26.35
Gamer	Male	27	18	45		
	Female	7	49	56		
	Total	34	67	101	25.21***	1.32
Moral narrative	Male	35	10	45		
	Female	19	37	56		
	Total	54	47	101	19.28***	6.86
GTA	Male	9	36	45		
	Female	6	50	56		
	Total	15	86	101	1.70	2.08
COD	Male	16	29	45		
	Female	4	52	56		
	Total	20	81	101	12.68***	6.88

***p <.001

[32] Note: data labels: Gaming Status 1 = Yes; 2 = No. Gamer 1 = Yes; 2 = No. Moral narrative 1 = No; 2 = Yes. GTA. 1 = No; 2 = Yes. COD 1 = No; 2 = Yes.

6.2.2.1.1. Self-reported moral alignment from previous game play

Figures 13-15 represent the percentage of self-reported moral alignment of the participants when previously playing video games.

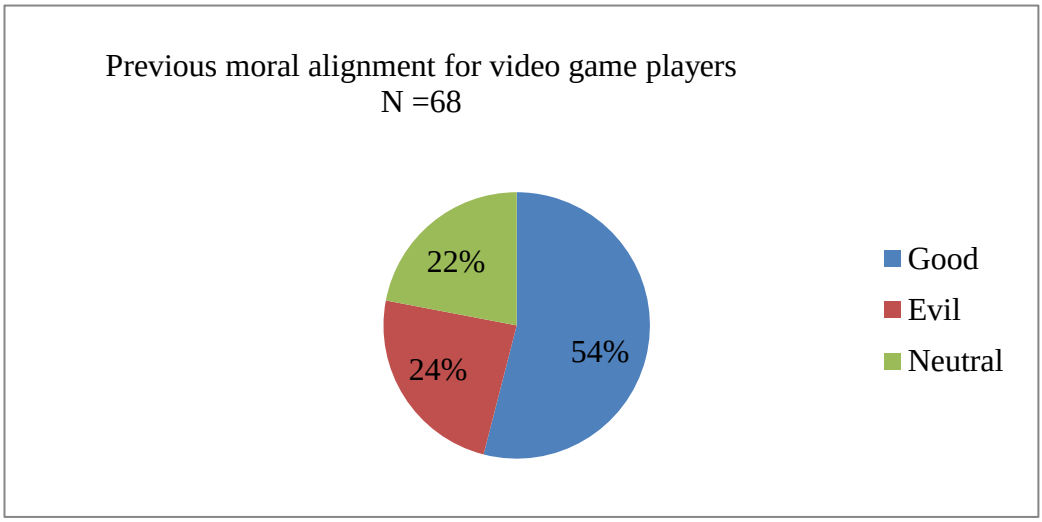

Figure 13. Previous moral alignment for video game players

Figure 13 shows over half of those reporting playing games would select a good alignment, and the rest split between being evil and neutral alignment.

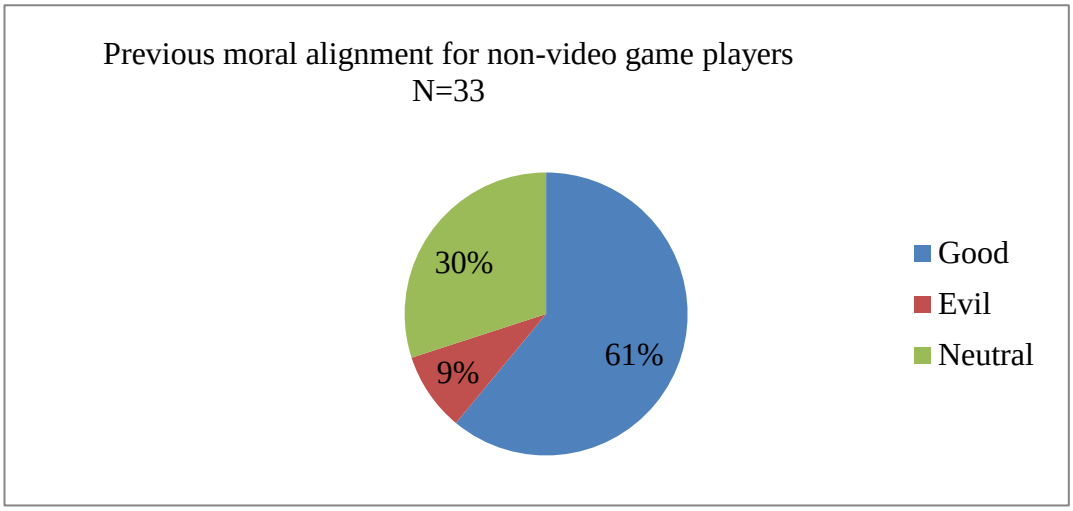

Figure 14. Previous moral alignment for non-video game players

Figure 14 has a similar pattern for those reporting not playing video games that over half would select good but less would choose to be evil.

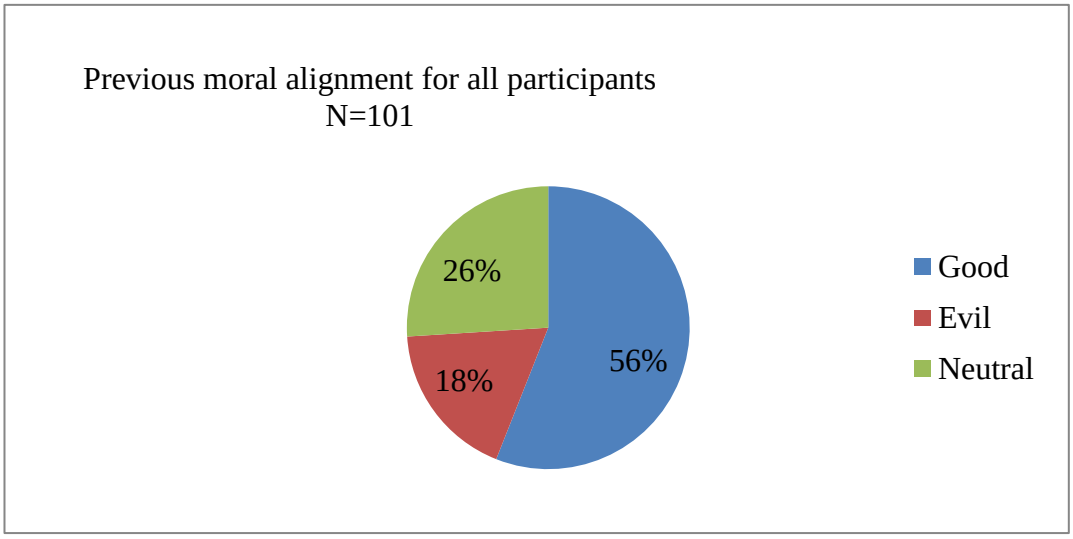

Figure 15. Previous moral alignment for all participants

Figure 15 shows when combining both groups, that the majority of participants, both male and female[33], would choose a good alignment, and with more participants selecting a neutral option than evil.

6.2.2.2. Inferential

To test H2 - Participant's previous game play will predict in-game moral alignment; multiple linear regressions were carried out on moral alignment and previous game play. The first examined moral alignment in levels 1-6a, with gender and game play variables (Gaming Status, Gamer, Years playing[34], Length of time, Genre, Game play style, Moral narrative, Ability and Experience, Previous game play alignment[35]). Previous game alignment was converted into three dummy variables for the regression analysis (Good, Evil, and Neutral alignment 'No' and 'Yes' = 2). The model was not significant, $R^2 = 0.09$, $\Delta R^2 = -0.02$ ($p = 0.58$) however, previous

[33] Analysis was carried out gender and previous alignment but there were no significant differences.

[34] This will always reduce total participant number to 100 due to 1 missing case

[35] SPSS removed previous good alignment from the regression model during the analysis.

evil alignment did significantly predict in-game choices (p = .008) which had a negative relationship. Finally, a regression was carried out with level 1 in-game moral alignment where there were no in-game manipulations, with the variables previously mentioned, see Table 42.

Table 42. *Regression model for in-game moral alignment in level 1 and previous game play variables*[36]

	B	SE B	β
Constant	5.50	2.02	
Gender	0.54	0.41	0.15
Gaming status	0.79	0.52	0.17
Years playing	0.04	0.04	0.12
Gamer	-0.21	0.55	-0.05
Number of Genres played	**-0.21**	**0.06**	**-0.53***
Game play Style	0.02	0.29	0.01
Moral narrative	0.39	0.47	0.11
Length of time	0.00	0.03	-0.01
Ability	0.44	0.24	0.42
Experience	-0.15	0.25	-0.16
Previous evil alignment	**-2.01**	**0.51**	**-0.41*****
Previous neutral alignment	-0.64	0.39	-0.15

$R^2 = 0.38$, $\Delta R^2 = -0.30$ ($p < .001$) *p<.05 ** p <.01 ***p <.001

[36] Note: data labels: Gender 1 = Male; 2 = Female. Gaming Status 1 = Yes; 2 = No. Gamer 1 = Yes; 2 = No. Good alignment 1 =No; 2 = Yes. Neutral alignment 1 =No; 2 = Yes. Evil alignment 1 = No; 2 = Yes.

Table 42 shows the significant predictors were previous evil alignment (negative relationship with moral alignment) and genre (positive relationship with moral alignment).

In sum from the models, on the variable previous evil alignment for all 3 models predicted in-game decisions and genre, for 1 model (level 1), was predicting in game decisions. Therefore, as the majority of regression models were not significant, H2 was rejected and the null accepted; the predictions variables for previous game play will not predict in-game moral alignment.

6.2.3. H3 - In-game instructions with the in-game moral alignment

In-games moral alignment was calculated by, the pro-social score minus anti-social score. This is due to the pro-social choices remaining the same, with differences being with anti-social choices.

6.2.3.1. Descriptive

The following section outlines in-game behaviours: choices made (pro-social, anti-social and in-game moral alignment).

6.2.3.1.1. In-game moral choice (alignment, pro-social and anti-social choices) by IG-MFT domains

Table 43. *Descriptive statistics for in-game moral choices: alignment, pro-social and anti-social choices in all levels by IG-MFT*

			IG-MFT domain						
			IG-L/B	IG-F/C	IG-C/H	IG-S/D	IG-L/O	IG-A/S	Total
Levels 1-6a	Alignment	*M*	-0.29	0.29	0.83	0.46	0.59	-0.98	0.9
		SD	1.8	1.47	1.83	1.63	1.63	2.12	8.03
	Pro-social	*M*	2.85	3.14	3.41	3.22	3.29	2.51	18.41
		SD	0.89	0.72	0.9	0.87	0.79	1.05	3.89
	Anti-social	*M*	3.14	2.85	2.57	2.76	2.69	3.49	17.51
		SD	0.92	0.72	0.94	0.92	0.85	1.07	4.17

Table 43 shows the overall total of alignment, and choices made, Figures 13-15 suggest a preference for, pro-social choices. However, there were differences between the IG-MFT domains with alignment and choices made. For levels 1-6a, IG-A/S then IG-L/B had the lowest alignment and the most anti-social choices compared to the other domains whereas IG-C/H had the highest alignment score, and most pro-social choices, followed by IG-L/O.

Repeated measures ANOVA was carried out with each of the alignment scores within each of the IG-MFT domains to examine if there were differences for moral alignment scores between the levels. The results were also the same for levels 1-6a, Mauchly's test of Sphericity was violated χ^2 (14) = 189.64 (p < .001), thus, the Greenhouse-Geisser ANVOA values are again reported, F(2.56, 255.86) = 27.17 p < .001 η^2 = .21. These results indicate that the alignment was significantly different for each of the IG-MFT domains suggesting differences between the in-game choices by IG-MFT domain.

6.2.3.1.2. In-game moral choice (alignment, pro-social and anti-social choices) by in-game level

Table 44 shows the moral alignment for each level, with the level information included at the bottom (scores, if participants followed the instructions). Level 1 contained no level information, and most participants had a positive moral alignment, and this is reflected in the mean scores of pro-social score being 5 out of a potential 6. For levels 2 to 5, on average, participants were following the level information; the average and alignment were slighter higher for the levels that required pro-social choices, than right, antisocial choices. In addition, the average alignment and choices made score were slightly lower for the avatar information (levels 2-3) than goals (levels 4-5). For level 6 when the pro-social option was removed, only two participants did not complete this goal. If the choices were not available, as seen in level 6a, participants followed the anti-social instruction as seen through the right choices.

A repeated measures ANOVA was carried out with each of the alignment scores for the levels 1 to 5 (6 was not included due to the alignment score being restricted by no pro-social choice being available). Mauchly's test of Sphericity was violated χ^2 (9) = 148.29 (p < .001) Greenhouse-Geisser ANVOA values are reported,

$F(2.13, 212.87) = 349.38$ $p < .001$ $\eta^2 = .78$ These scores indicate moral alignment was significantly different in each of the levels with a large effect size. Bonferroni Post Hoc tests report that level 1 moral alignment was significantly different from levels 3 to 5 ($p < .001$) but not level 2 ($p > .05$). Level 2 moral alignment was significantly different from levels 4 ($p < .05$) 3 and 5 ($p < .001$) but not level 1 ($p < .05$). Level 3 was significantly different from levels 1-4 ($p < .001$) but not level 5 ($p > .05$). Level 4 was significantly different from 1, 3, 5 ($p < .001$) and 2 ($p < .05$). Level 5 was significantly different from Levels 1, 2 and 4 ($p < .001$) but not level 3 ($p > .05$).

Table 44. *Descriptive statistics for in-game moral choices: alignment, pro-social and anti-social choices in each level (1 to 6a)*

		Level 1	Level 2	Level 3	Level 4	Level 5	Total 1-5	Level 6a[37]	Total 1-6a
Alignment	*M*	4.38	4.71	-3.64	5.52	-4.16	6.81	-	0.90
	SD	1.87	2.54	4.03	1.20	3.38	7.78	-	8.03
Pro-social	*M*	5.19	5.36	1.18	5.77	0.92	18.41	N/A	18.41
	SD	0.94	1.27	2.02	0.6	0.61	3.89	N/A	3.89
Anti-social	*M*	0.81	0.64	4.82	0.25	5.08	11.59	5.91	17.51
	SD	0.94	1.27	2.02	0.61	1.69	3.89	0.66	4.17

[37] This variable can also be used as alignment as there was no pro-social choice, therefore the right score was used as alignment score where applicable.

6.2.3.2. In-game moral alignment with in-game instructions

To test H3, both types of in-game instructions, avatar and goal instructions, will predict in-game moral alignment (see Table 33 for a summary of the instructions), multiply linear regressions were carried out on in-game moral alignment levels 1-6 Table 45 and the in-game instructions (binary variable coded 'yes' and 'no' if the instructions were complete).

Table 45. *Regression model for in-game moral alignment with in-game instructions*[38]

	B	SE B	β
Constant	38.38	6.23	
Gender	-0.80	0.91	-0.05
Level 2 instructions	**9.47**	**1.33**	**0.54*****
Level 3 instructions	**-8.22**	**1.30**	**-0.47*****
Level 4 instructions	2.21	1.37	0.11
Level 5 instructions	**-7.34**	**1.36**	**-0.42*****
Level 6a instructions	**-14.26**	**3.09**	**-0.25*****
All Level 1-5 instructions	-0.47	1.65	-0.03
All level 1-6 instructions	-0.90	1.18	-0.05

$R^2 = 0.75$, $\Delta R^2 = -0.73$ ($p < .001$) *p<.05 ** p <.01 ***p <.001

Table 45 suggests that levels 2-6 suggested, that the in-game instructions significantly predicted moral alignment for levels 2, 3, 5 and 6a. The instructions on level 4 and the all level instructions (for levels 1-6 and see Appendix P for levels 1-5) were not significant predictors. There were no gender differences. Therefore, H3

[38] Note: data labels: Gender 1 = Male; 2 = Female. Level 2, 3, 4, 5, 6a, 1-5, 1-6 instructions 1 = No; 2 = Yes.

was accepted, both types of in-game instructions, avatar and goal instructions, will predict in-game moral alignment.

6.2.4. H4 - Post-game variables and in-game alignment

The following section will report the descriptive and inferential statistics for the post-game measures.

6.2.4.1. Descriptive

Descriptive summaries of the post-game measures, taken after participants played the game, included: Engagement, PANAS-X, Tangrams help/hurt task, and in-game experience questions (N =101). Within the in-game experience questions, participants were also asked, after playing the game, if they used strategies (response = yes, no). In response, 60% of the whole sample reported using strategies to make decisions. Participants were also asked, if it occurred to them to stop playing the game before it had finished (response = yes, no) and 93% reported no.

6.2.4.1.1. Engagement (GEQ)

Engagement scores from the GEQ post-game were M = 11.34 and SD = 6.01. Due to the gender difference with previous game play reported (see section 6:1), an independent samples t-test was conducted on the engagement scores reported and gender. Males scores were M = 12.09 and SD = 5.27 which were not significantly different from female scores, which were M =10.73 SD = 6.53, $t(99) = 1.13$ p = .26.

6.2.4.1.2. PANAS-X

The Positive Affect Score reported M =14.51 and SD = 4.56 and the Negative Affect Score reported M = 21.07 and SD = 7.39 (both these scales range from 10-50). The results show participants reported low average scores for both negative affective and positive affect. The Guilt score reported M = 9.97 and SD = 4.77 (6-30). It is a similar result to the positive and negative affect results. The results also show low average score for guilt scale.

6.2.4.1.3. Tangrams help/hurt task

Table 46. *Descriptive statistics of the Tangram help/hurt task*

Scores and questions	*M*	*SD*
Help score	4.74	3.03
Harm score	1.32	1.82
Tangram Alignment score	3.43	4.56
i. I wanted to provide a range of tangrams.	2.97	1.37
ii. I wanted to help the other participant win the prize.	3.61	1.16
iii. I wanted to make it difficult for the other participants to win the prize.	1.86	1.03
iv. I wanted to hurt the other participants' chances of winning the gift certificate.	1.18	0.57
v. I wanted to give the other participant harder puzzles to complete.	1.78	1.10

1=not at all, 2 =a little bit, 3 =somewhat, 4 =quite a lot, 5=a lot

Table 46 shows that participants had a higher help score than harm score, which was significantly different, $t(100) = 7.54$ $p < .001$. As is also seen in the questions above (1-5), where the participants are reported as wanting to help the 'other participant' ($M = 3.61$), and not make it difficult or hurt the 'other participant' (M =1.86 and 1.18).

6.2.4.1.4. In-game experience questions

Table 47. *Descriptive statistics of the in-game experience questions*

In-game experience (variables)	*M*	*SD*	Scale range
Avatar attachment	2.46	1.42	1 Not at all to 7 Very much
Empathy	3.30	1.60	
Compliance	4.47	1.63	
Just a game	5.81	1.67	
Regret	2.25	1.04	1 Rarely or never 2 Occasionally 3 Sometimes 4 Often 5 Very Often
Control	3.27	1.11	
Responsibility	2.59	1.48	

Table 47 shows that participants score for avatar attachment and empathy was fairly low (M = 2.46 and 3.30), whereas for compliance and 'Just a game' were rated higher than avatar attachment and empathy and high on the scale (M = 4.47 and 5.81). The other in-game experience variables, for regret and responsibility, were also quite low (M = 2.25 and 2.59), with participants, on average, reporting these variables as only occasionally being relevant. Whereas the variable of 'control' was rated in the mid-range of the scale (M = 3.27), with participants reporting, on average, that they were sometimes in control. See Chapter 5 section 5.7.3.4 for list of the questions/items.

Table 48. *Descriptive statistics of the suspicion questions*

Suspicion	*M*	*SD*	Scale Range
Were you suspicious that the study could have been about something else?	2.53	1.26	1=not at all, 2 =a little bit, 3 =somewhat, 4 =quite a lot, 5=a lot
Did anything seem strange or odd to you?	2.06	1.14	

A final question in the post-game questionnaire was suspicion of the research intent. Overall, Table 48 showed that the participants were ‘a little bit’, to ‘somewhat’ suspicious about the studies intention, with a mean on both questions being reported between the scale points 2 to 3 (low to mid-range on the scale).

6.2.4.2. Inferential

To test H4 - Post-game variables; engagement, PANAS-X, Tangrams help/hurt task and in-game experience questions, will predict in-game moral alignment; multiple linear regressions were carried out on in-game moral alignment (in level 1 and levels 1-6a) and the post-game measures.

Table 49. *Regression model for moral alignment in all levels with post-game variables*[39]

	B	SE B	β
Constant	-0.88	7.51	
Positive Affect	-0.05	0.39	-0.03
Negative Affect	-0.02	0.12	-0.02
Guilt Scale	-0.23	0.38	-0.13
Engagement (GEQ)	-0.06	0.15	-0.04
Tangram score	0.29	0.17	0.16
Avatar	0.19	0.62	0.03
Empathy	**1.81**	**0.63**	**0.36****
Compliance	-1.03	0.52	-0.21
Regret	-1.18	1.07	-0.15
Control	-1.25	0.80	-0.17
Just a game	0.03	0.53	0.01
Responsibility	**1.31**	**0.61**	**0.24***
Strategies	1.68	1.52	0.10
Stop	3.23	3.22	0.10

$R^2 = 0.33$, $\Delta R^2 = -0.23$ ($p = .001$) *p<.05 ** p <.01 ***p <.001

Table 49 shows that, Empathy and Responsibility were significant predictors of moral alignment in the game. Empathy and Responsibility had a positive relationship with moral alignment. Compliance was close to significance (p= .05). Due to the PANAS-X having low scores it would make sense that it was not a predictor of moral alignment.

[39] Note: data labels: Strategies 1 =No; 2 = Yes. Stop 1 =No; 2 = Yes.

Table 50. Regression results for moral alignment in level 1 with post-game variables[40]

	B	SE B	β
Constant	4.78	1.55	
Positive Affect	0.00	0.09	-0.01
Negative Affect	0.01	0.03	0.05
Guilt Scale	-0.03	0.09	-0.08
Engagement (GEQ)	**-0.07**	**0.04**	**-0.24***
Tangram score	0.05	0.04	0.13
Avatar	-0.22	0.15	-0.17
Empathy	0.25	0.15	0.21
Compliance	0.05	0.12	0.04
Regret	0.16	0.26	0.09
Control	-0.21	0.20	-0.13
Just a game	-0.12	0.13	-0.11
Responsibility	0.29	0.15	0.23
Strategies	0.07	0.37	0.02

$R^2 = 0.26$, $\Delta R^2 = -0.15$ ($p = .01$) *p<.05 ** p <.01 ***p <.001

The results from regression that were run on moral alignment for all levels (1-6a), responsibility was approaching significance ($p = 0.051$). Whereas Table 50 suggests alignment was significantly predicted by engagement (negative relationship), but the other variables were not significant predictors. Therefore, H4 was rejected and the null accepted; as the regression models for post-game measures will not predict in-game moral alignment.

[40] Note: data labels: Strategies 1 =No; 2 = Yes. The variable 'Stop' was not included as it was not applicable for level 1

6.3. H5 - Response times to in-game decisions

The Response Time (RT) data were analysed in milliseconds, but where appropriate reported in seconds for interpreting and illustrating the data. The main RT variable was the response time that was recorded at each decision point this can aggregated by IG-MFT domain by level. To examine H5, Response times will be quick and intuitive (<1500 milliseconds) to in-game moral decisions (see Chapter 5 section 5.7.6.2 for more information on quantifying intuitiveness). First descriptive statistics are reported for RT followed by the inferential in order to quantify the response time, the task used by Tamborini, Lewis, et al. (2016) IM-AMP (Tamborini et al., 2014) measure used a time boundary of 500 to 1500 milliseconds. Therefore, a decision taking under 1500 milliseconds are considered to be quick and intuitive. Figure 16 shows that Level 1 took the longest to complete, with a mean of 4 minutes; this is double the other levels. There are minimal differences with other levels, even though the instructions were different. Level 6 is slightly higher however this includes both decisions (level 6a and 6b).

By measuring both time taken to make a decision and total time spend on level, participants decision-making can be separated from the game play in the level (e.g. navigating the level) as shown by Figure 17 level 1 still took the longest compared to the other levels the average being just under 30 seconds.

6.3.1. Descriptive

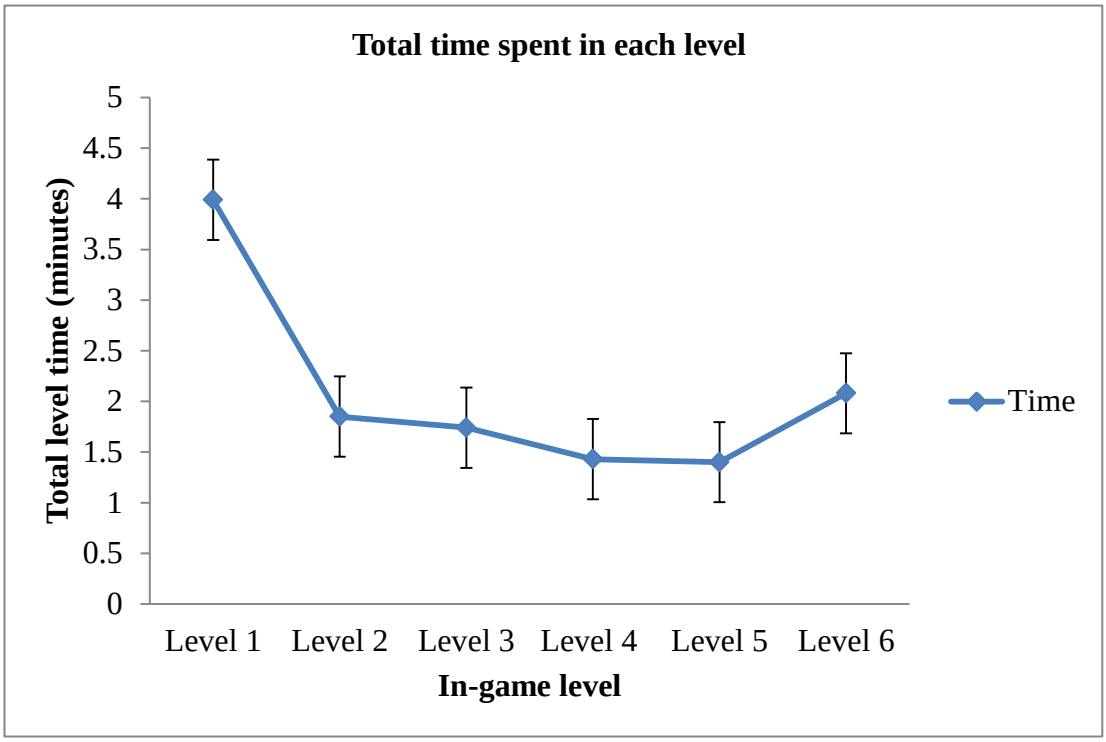

Figure 16. The average total time spend in each of the 6 levels

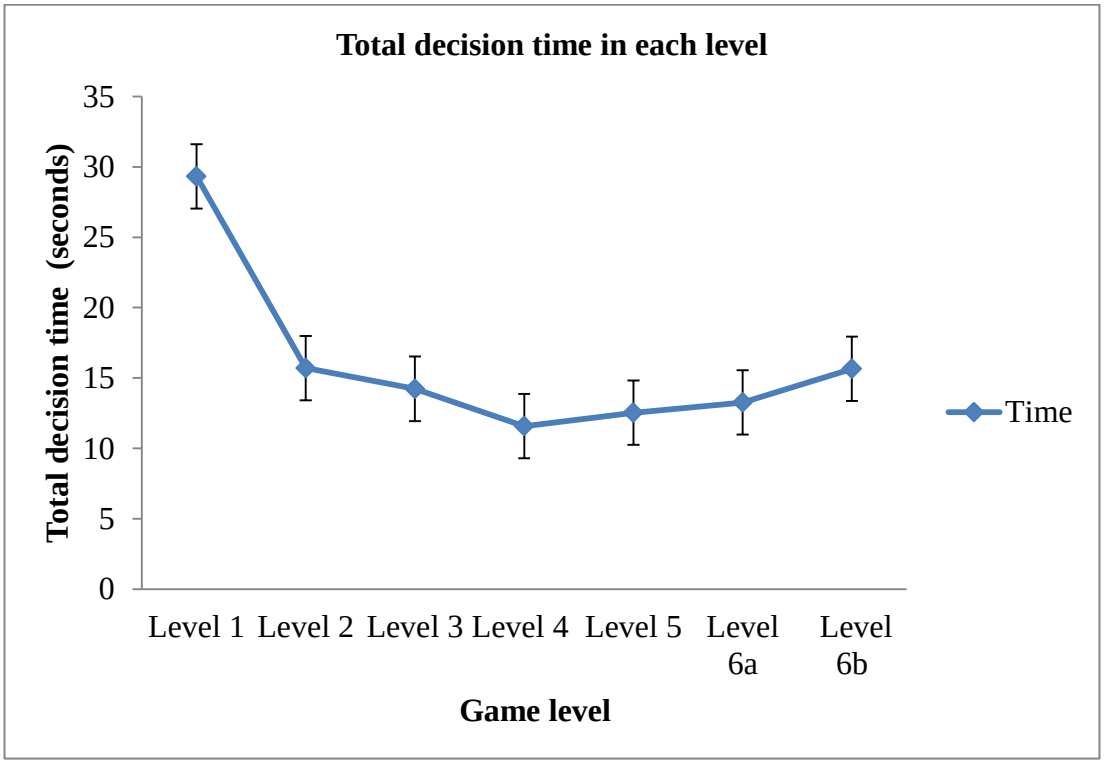

Figure 17. The average total decision time for each decision

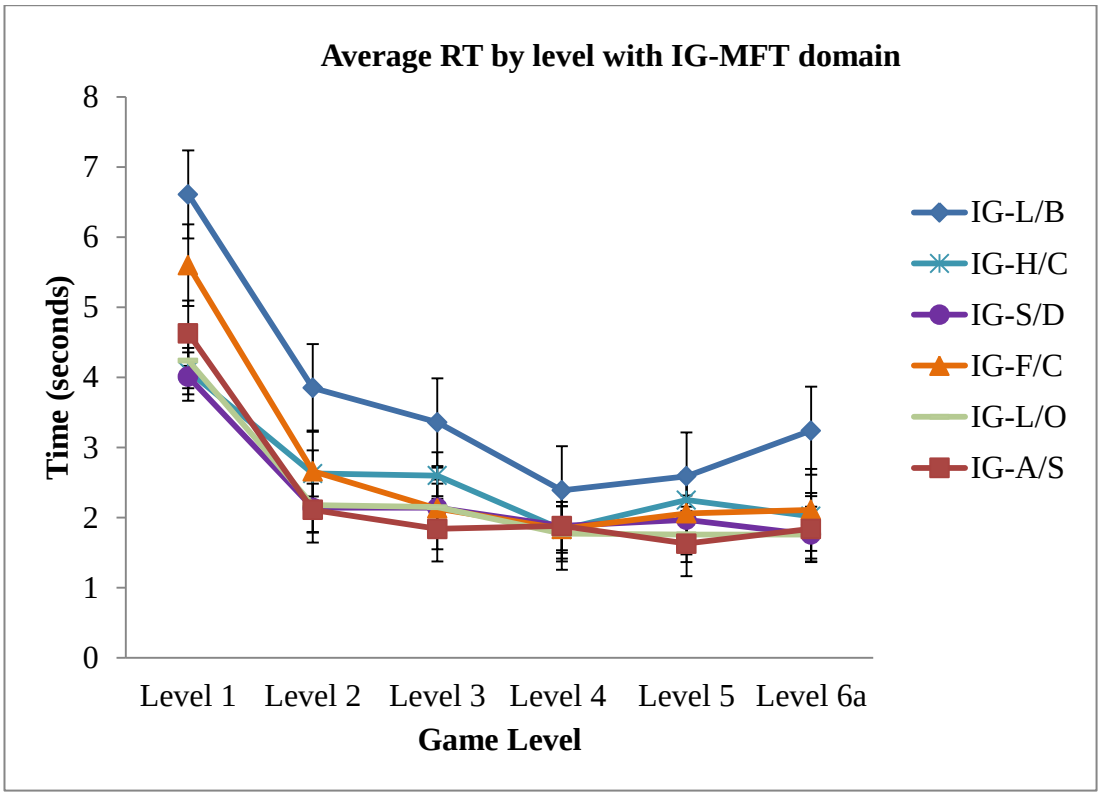

Figure 18. Average Response Time by level and In Game-MFT domains

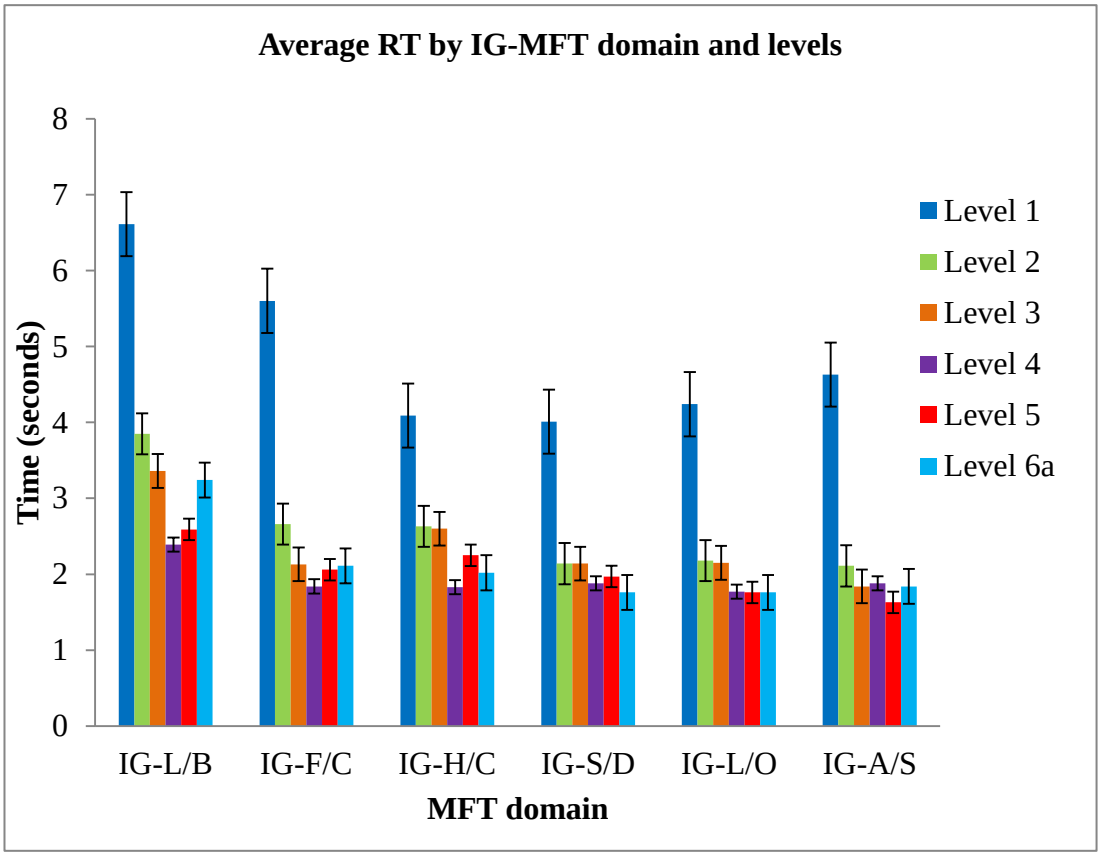

Figure 19. Average Response Time by In Game-MFT domain and levels

Both Figure 18 and 19 shows the Response Times in each level for each of the IG-MFT domain. The total shows that IG-L/B took on average the longest for participants to make a decision; with IG-S/D and IG-A/S domains being the quickest. IG-L/B taking the longest could be due to order of decisions the made as this was the first room for most participants in each level. Level 1 had the slowest the response times, see Figures 18 and 19.

The quickest decisions were taking on average 2000 milliseconds (2 seconds) 500 milliseconds longer than the upper range of IM-AMP measure, and decisions on average were taking up to 7000 milliseconds (7 seconds) to make a choice, this 5,500 milliseconds (5.5 seconds) longer than the upper range of IM-AMP measure (Tamborini et al., 2014).

The data did not follow the normal distribution curve, which is to be expected with response time data (the majority of the data had short responses and the minority longer), and therefore, created a positive distribution curve (see Appendix R). To address this, a reciprocal transformation was applied to the data, which inverses the data, and plotted the data on speed rather than time taken, making the transformed unit of measurement the decision per millisecond. This transformation provided a distribution curve that was more normally distributed (see Appendix R), and therefore gave a unit of measurement that could be used to examine the speed of response which was similar to original unit of measurement; time taken to make a decision. By transforming the data, it has also reduced the effect of slow responses, and still keeps power in the data (Whelan, 2008). However, it is also acknowledged that transforming the data does have disadvantages, mainly the implications of changing its structure.

6.3.2. Inferential

A repeated ANOVA was conducted speed of decisions[41] with IG-MFT domain and level 1-6[42]). Using transformed speed of decision data, Mauchly's test of Sphericity was improved for IG-MFT domain χ^2 (14) = 23.07 (p>.05), but game level was still

[41] An ANOVA was also conducted on Response Time to compare to the transformed data, both were similar.

[42] room order not included

violated, the test of homogeneity χ^2 (14) = 54.22 (p<.001). The game level was also shown to be significantly related to the speed of decision $F(4.04, 395.60) = 185.82$ $p < .001$ $\eta^2 = .66$. The IG-MFT domain was also significantly related to the speed of decision $F(4, 490) = 65.15$ $p < .001$ $\eta^2 = .40$, and there was a significant interaction between game level and IG-MFT domain on the speed of decision $F(18.47,1809.65) = 5.93$ $p < .001$ $\eta^2 = .06$. Post hoc tests suggest that for the majority of levels there was a significant difference ($p < .001$) the only exceptions being at level four and five, which were not significantly different $p > .05$.

The in-game order of the decisions made (room order) was applied as a covariate variable; an ANCOVA was carried out on the RT data, IG-MFT domain and level. As Levene's test was significant (homogeneity of variance was violated), caution was applied to interpretation of the results. The covariate of in-game room order was significantly related to the time to make a decision $F(1,3590) = 30.67$ $p < .001$ $\eta^2 = .01$. There was also a significant main effect of decisions made, and IG-MFT domain, when controlling for order in which the decisions were made (room order) $F(5,3590) = 10.36$ $p < .001$ $\eta^2 = .01$. There was also significant main effect of decision time and game level when in-game room order had been controlled for, $F(1,3590) = 117.96$ $p < .001$ $\eta^2 = .14$. There was also a significant interaction between MFT domain and game level, $F(1,3590) = 2.79$ $p < .001$ $\eta^2 = .02$. It should be noted that although significant, the effect sizes (eta-squared) reported are small.

In summary from the analysis of these results as the RTs were greater than 1500 milliseconds, H5 was rejected and null hypothesis accepted: responses times to the in-game moral decisions will not be quick and intuitive (<1500).

6.4. H6 - Level 6b instructions, in-game harm score and RT

This section reported the follow up question given to participants, how much to hurt the NPCs for each of the IG-MFT domains. The results from level 6b, harm score have been reported here, separately for clarity, as it was slightly different from the other choices and levels. The participants that got a score below 6 had selected the meta-choice of not making the choice and stopped playing the game at this point (this was two participants; one made half the choices on level 6, the other stopped at the first choice and did not complete any of the choices). One case had a RT of 16ms

for IG-S/D; this is an impossible response time as would seem to be a recording error within the game. It has been suggested that it takes about 50ms for the information to be processed from the visual stimulus to the occipital lobes this one removed normal cut off for visual processing time is 250-300ms (Fox & Simpson, 2002). Swink (2009) reports specifically for video games responses, from the senses to the muscles takes around 240ms. Therefore, this one case was an outlier and this data point was removed. Due to the previously mentioned skewed data a reciprocal transformation was also applied to these data (Appendix R).

6.4.1. Descriptive

Table 51. *Descriptive statistics for level 6b (harm choice) and the completed in-game instructions*

In-game instructions completed			
Level	*N* = Yes	*N* = No	%
Level 6b (harm choice)	29	72	29

Table 51 shows only 29% of participants completed this goal. During testing the game, the games testers were not reading the level information a question was added in to the post-game questionnaire to check if participants understood the last goal; 9% reported they did not understand the level information. This variable is then applied to the models predicting behaviour and in-game instructions, to control for participants understanding.

Table 52. *Descriptive statistics for level 6b (harm choice) by IG-MFT*

Level 6b Harm choice		IG-MFT domains						
		IG-L/B	IG-F/C	IG-C/H	IG-S/D	IG-L/O	IG-A/S	Total
Harm score (1-36)	M	3.36	3.37	3.02	3.43	3.33	4.03	20.52
	SD	2.27	2.27	2.39	2.29	2.25	2.08	12.71
If instructions were followed		6	6	6	6	6	6	36
Response times[43] (seconds)	M	5.35	2.83	1.72	2.15	1.73	1.81	15.65
	SD	3.51	3.01	1.37	2.78	1.76	2.06	10.87

Table 52 shows that the average harm score for each domain is fairly similar, C/H is the lowest and A/S is the highest. The mean for each domain and in total equates to just over half that of the level information (that would produce a total harm score of 36), therefore, participants scores were below this showing they did not follow the in-game instructions for the 6b harm choice. For response times this shows long decision-making and is more varying between the in in-game MFT domains and have a different dispersion to the harm score.

[43] Outlier case removed

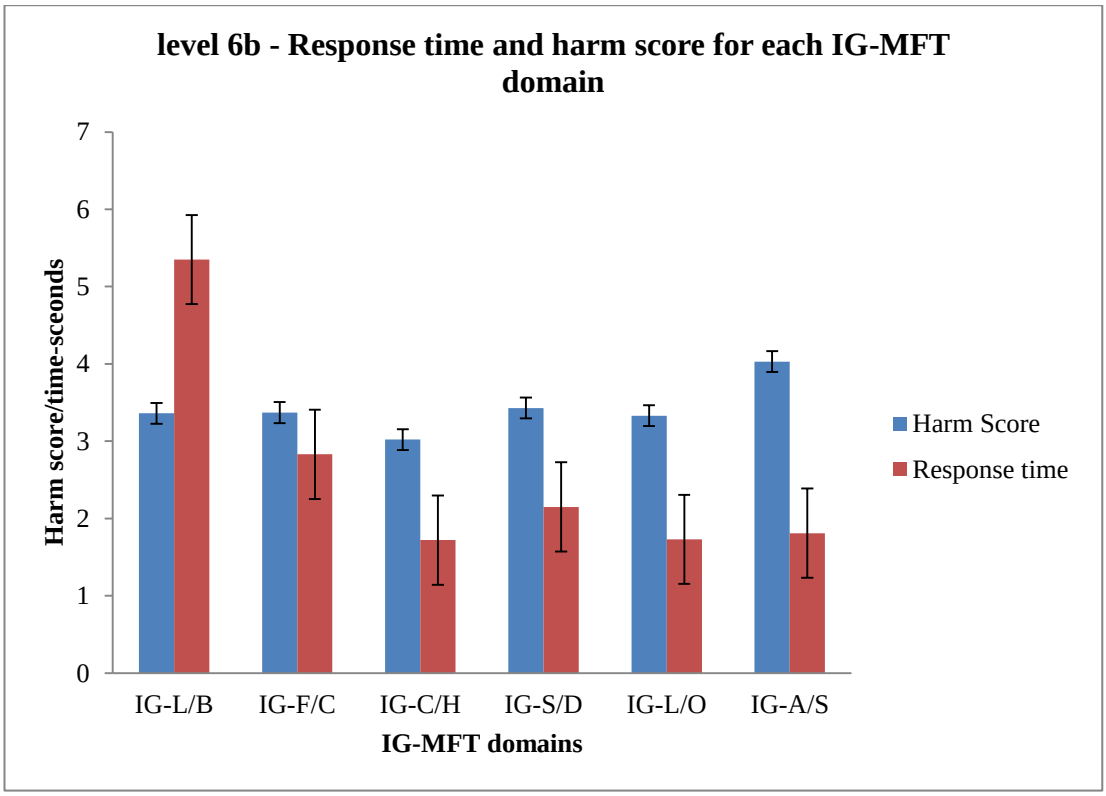

Figure 20. Harms scores and Response Time of level 6b

Figure 20 shows the difference between RT and harm score. As seen previously in levels 1-5, again as seen previously IG-L/B time is much higher than other in-game MFT domain however the score is much fairly similar to the other domains. Whereas IG-A/S had the highest harm score and shortest RT.

6.4.2. Inferential

To examine if the DVs (Harm score and RT) were significantly different between each of the IG-MFT domains, two repeated measures ANOVA[44] were conducted the first on IG-MTF domain and Harm score and the second on IG-MFT domains and RT[45]. In the first ANOVA, due to a violation of Mauchly's test of Sphericity χ^2 (14) = 82.97 ($p < .001$) the more conservative values from the Greenhouse-Geisser are reported below. There was a significant difference between IG-MFT domain on

[44] A MANOVA was not conducted as the assumptions of equal variance was violated (Bartlett's Test of Sphericity χ^2 (77) = 1291.43 ($p < .001$) was significant reporting that there was not equal variance between each of the groups) and the variables may not statistically independent enough as they were both related choices made in level 6.

[45] The time was converted into seconds for the comparison with the harm scores

Harm scores, $F(3.87, 387.44) = 14.75$ $p < .001$ $\eta^2 = .13$. Post hoc Bonferroni tests suggested that IG-A/S harm score was significantly higher ($p < .001$) than the other IG-MFT domains suggesting the NPC in this domain was hurt the most.

In the second ANOVA, due to a violation of Mauchly's test of Sphericity $\chi^2 (14) = 149.31$ ($p < .001$) the more conservative values from the Greenhouse-Geisser are reported below. There was a significant difference between IG-MFT domain on RT, $F(3.06, 306.22) = 53.03$ $p < .001$ $\eta^2 = .35$ Post hoc Bonferroni tests suggested IG-L/B RT was also significantly different from the other IG-MFT domains ($p < .001$) showing participants were slower to make the decisions for this IG-MFT domain. To test H6 - In-game instructions will predict the in-game harm score in level 6; the same previous variables (real-life morality, previous game play, in-game variables, and post-game measures) were applied to DV of harm score to examine which variables could predict the harm score in-game behaviour.

Table 53. *Regression model Summaries for level 6b (harm choice) with real-life morality, previous game play and in-game instructions*[46]

Models summary	R^2	ΔR^2	p	Significant Predictors	+/-
Real-life MFT domains	0.08	0.02	.27	-	
Real-life Moral salience	0.08	0.001	.44	Non-salient score*	+
Previous game play	0.14	0.03	.29	Previous evil alignment *	+
In-game instructions	0.62	0.61	<.001	Instructions level 6b*** Instructions level 6a*	+ +

*p<.05 ** p <.01 ***p <.001

Table 53 shows that the models of real-life morality MFQ scores from the individual domains and salience did not predict in-game level 6b harm score only the predictor of non-salience score significantly positivity predicted harm scores.

[46] Note: data labels: Evil alignment 1 = No; 2 = Yes. Level 6a and 6b, instructions 1 = No; 2 = Yes.

Table 54. *Regression model for Level 6b (harm choice) with post-game measures*[47]

	B	SE B	β
Constant	-12.98	10.50	
Positive Affect	0.08	0.55	0.03
Negative Affect	0.05	0.17	0.03
Guilt Scale	0.06	0.53	0.02
Engagement (GEQ)	0.28	0.22	0.13
Tangram score	-0.20	0.23	-0.07
Avatar	-0.47	0.87	-0.05
Empathy	-1.61	0.89	-0.20
Compliance	**3.34**	**0.72**	**0.43*****
Regret	-0.10	1.50	-0.01
Control	-1.78	1.12	-0.16
Just a game	**2.09**	**0.75**	**0.27****
Responsibility	-0.49	0.85	-0.06
Strategies	2.87	2.13	0.11
Stop	**9.59**	**4.50**	**0.19***

$R^2 = 0.48$, $\Delta R^2 = 0.40$ ($p < .001$) *p<.05 ** p <.01 ***p <.001

Table 54 shows that: compliance, just a game, and stopping were all positive significant predictors of the level of harm. Participants that were aware they could stop before the game finished, were more complaint and described it as just a game had higher harm scores. Therefore, H6 was accepted, in-game instructions will predict the in-game harm score in level 6.

[47] Note: data labels: Strategies 1 =No; 2 = Yes. Stop 1 =No; 2 = Yes.

6.5. Chapter summary

The Chapter analysed the data collected from Phase 2 through using the purpose-made game. The section reported the descriptive and inferential statistics of the in-game responses (alignment and RT) with, previous game play, real-life morality, and post-game measures. The main focus of this Chapter was to examine the predictors of the in-game moral decision-making. Regressions were run to examine the relationships between the pre-game, in-game and post-game variables. The outcome of the hypotheses testing was that two of the hypotheses were accepted. Participants' in-game behaviour was mostly predicted by in-game instructions. The inconsistent relationship with real-life morality and the lack of predictors of the previous game play and post-game measures was unexpected. Thus, these results suggested that in-game features and design (through instructions) explained the most variance with regards to in-game decisions (through moral alignment). It was suggested that real-life morality and previous game play and post-game variables (Tangrams help/hurt task and PANAS-X) did not significantly predict in-game moral decisions. Thus, it would seem that these in-game decisions did not overlap with real-life factors and real-life factors did not overlap with game play, suggesting a separation between the two. Moral decisions were also slow, in nature and this suggested that they were not intuitive. Although participants complete most of the in-game instructions level 6b, the harm score was lower than requested by the in-game instructions, suggesting differences in when instructions are followed and when they are not. Furthermore, selecting to be anti-social or pro-social was suggested to be different from selecting how much to hurt an NPC.

Chapter 7. Phase 2 - Discussion

This Chapter discusses and interprets the findings and implications of the results. A short summary is provided for each of the variables under the following headings: previous game play, real-life morality, in-game choices, post-game measures, Response Times (RT) and level 6b (harm score) data. Then concepts relating to interpretation of the results are discussed. These include; decision-making, the role of morality, and game design features. This Chapter concludes with a discussion on the limitations of this study. The Chapter outline includes the following:

7.1. Results summary

Chapter 6 examined the following variables: real-life morality, previous game play, post-game measure and in-game moral alignment, after which it then reported on RT and level 6b. This section provides a short summary of the main points from examination of these variables, including the outcome of the hypotheses: overall two hypotheses were accepted and four rejected.

7.1.1. Real-life morality

From the real-life moral data, the Moral Foundations Questionnaire and Liberty/Oppression scale (L/O), moral salience was examined. Moral salience was the hierarchical structure of the moral domain, the domain(s) that were rated as the highest for high salience and the lowest as a non-salient domain. The results of the participant's real-life moral salience are shown in Figure 21 and listed in rank order of which Care/Harm(C/H), Fairness/Cheating (F/C), and Liberty/Oppression (L/O) were the most salient domain, with the highest being C/H, whereas,

Authority/Subversion (A/S), Loyalty/Betrayal (L/B), Sanctity/Degradation (S/D), were the non-salient domain with S/D being the lowest. This structure of salience is important as it is confirms the previous findings of the structure of the moral domain (Joeckel et al., 2012). This pattern suggests a more liberal right wing moral structure of the participants that has been found previously (Graham et al., 2012; Graham et al., 2009) This structure could also suggest that there are potentially two underpinning variables for these six foundations it could be salience, alternatively it could represent the short-term and/or long-term access to moral processes (Tamborini, Bowman, et al., 2016). Alternatively, a moral concepts could underly each, which questions the modular nature of the MFT (Haidt & Joseph, 2007). However, what these variables represent should be the basis for further research.

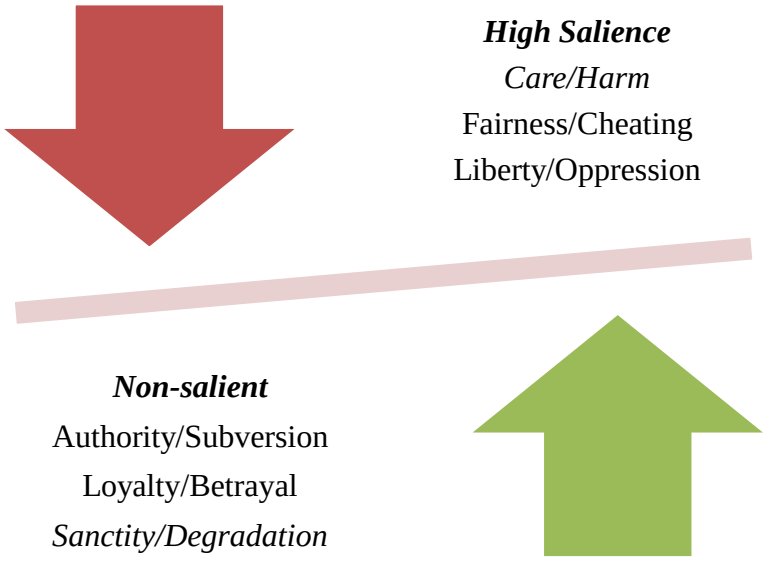

Figure 21. High and non-salient MFT domains from the results of Phase 2

7.1.1.1. Results of moral domain of L/O

As L/O is a new module that is still being researched, it was interesting to develop measures for L/O domain both within the in-game scenario and analyse the real-life items with the MFT. The results of MFT suggested an interesting pattern hierarchy from the salience of the domains, demonstrated in Figure 21. This pattern has been found before (Graham et al., 2012; Graham et al., 2009) and the pattern was still present when L/O was added. Although the replication of this pattern is as expected,

which is useful; what is of more interest is the result from this study which suggests the structure of salience includes L/O in the high salience group. The importance of knowing this is that it demonstrates how the theory of L/O can be applied to research, and helps with constructing the moral domain. This in turn can help with the understanding of real-life morality, thus providing a baseline for the MFT; therefore, it is more meaningful because of the comparative element of L/O domain. This also demonstrates the novelty of the research incorporating this measure, and the potential of the L/O domain being confirmed as part of the MFT and should therefore, be incorporated in future research. In sum, the domain hierarchy and structure of L/O was suggested to be that of a high salience and therefore, should be utilised more in future research to understand and validate this domain.

7.1.1.2. Real-life morality and in-game morality

Of the real-life domains, A/S significantly correlated with all overall in-game alignment and choice variables, with C/H being a consistent significant positive predictor. Overall the results suggested that real-life morality was not a predictor of in-game decisions. The only exception being in Level 4, where the regression model was significant, with the domain of C/H (positive relationship) and F/C (negative relationship), and the non-salience score variable (positive relationship) significantly predicting in-game alignment. Therefore, H1 was rejected and null hypothesis accepted: the regression models for real-life morality will not predict in-game moral alignment.

7.1.2. Previous game play

There was a gender difference in game play; males' self-reported game play was higher, with a medium to large effect size. The gender difference was expected from the Phase 1 results, and, as in the case for Phase 1, males were more likely to report playing more video games than females. Self-reporting playing GTA as favourite game (yes or no) was not significantly different between male and females, in Phase 2, which could be due to a lack of gender difference for this variable, or the low numbers reporting this game as a favourite. These results had high to medium effect sizes, suggesting a large gap between males and females reported game play.

Previous research has also found this gender difference (Bajovic, 2013; Ferguson, 2015a; Gentile, 2011). Thus, future research should consider this potential gender difference, and measure it, to avoid the potential confound of gender differences. Schell (2014) suggested this could be due to difference in game play with males preferring destruction. Alternatively, the role of stereotyping female video game players could explain these results and led to the differences in game play selection (Hartmann et al., 2015; Kaye & Pennington, 2016; Kerr, 2003).

The majority of the sample self-reported when playing video games that they would select a good or neutral previous moral alignment, suggesting a preference for good and neutral alignments as suggest by Lange (2014). However, participants that reported choosing a previous evil alignment was a consistent significant predictor of in-game alignment. Further, for level 1 alignment, genre and previous evil were significant predictors, with a significant regression model contributing around 30% of the variance to in-game choices. The results from previous game play alignment suggests that there is a preference for a good alignment, as all three charts demonstrate similarity with Lange (2014) that the majority reporting a good alignment (with no gender difference or difference between gaming status). Overall, the previous game play regression model did not predict in-game moral alignment and H2 was rejected and the null hypothesis accepted, that the regression models for previous game play morality did not predict in-game moral alignment.

7.1.3. In-game variables

The in-game manipulations were applied through in-game instructions (see Chapter 6 section 6.1). In summary, only 50% of participants completed instructions for levels 1-5, whereas for all instructions (both level 6 choices), only 23% of participants completed instructions. The order of decisions made, when analysed, suggested 80-90% of decisions made followed the physical room layout.

Overall in-game moral alignment from the choices made showed that participants had a preference for pro-social choices. There were reported differences between the in-game rooms (between IG-MFT domains), with IG-A/S having the lowest alignment, and the most anti-social choices. Whereas IG-C/H had the highest alignment score, and most pro-social choices, followed by IG-L/O. There was also a

difference for alignment, per level, showing participants followed the in-game instructions. In level 1, where there was no level manipulation (no in-games instructions), most participants had more pro-social choices made and shown through a more positive moral alignment.

For levels 2-5, on average, participants were following the level information, which was reflected in the alignment; the average in-game moral alignment was slighter higher for the levels that required pro-social choices, than the antisocial choices. More specifically, when examining the alignment across the types of level information (goals and avatars), the average alignment was slightly lower for the avatar information (levels 2-3) compared to goal information (levels 4-5), suggesting goal information was followed more than avatar information. For level 6a, when the pro-social option was removed, therefore, only right choices were available, participants followed the anti-social choices instruction, and completed this level with this only option available. However, only two participants did not complete this goal and choose to withdraw (meta-choice) rather than making anti-social choices.

The regression models, with the in-game alignment, explained the most variance (68% and 73%), suggesting in-game features (instructions) made the largest contribution to the decision-making process. Specifically, levels 2, 3, 5 and 6a were significantly predicted by in-game instructions, with the model explaining around 70% of the variance. Therefore, H3 was accepted: both types of in-game instructions, avatar and goal instructions, predicted in-game moral alignment.

7.1.4. Post-game measures

In summary, 60% of the participants, reported using strategies to make decisions, and 93% of the participants reported that it did not occur to them to stop playing the game before it had finished. It was found through the Tangrams scores that participants showed they were more helpful than hurtful to a (not real) participant after playing. Engagement scores from the GEQ were reported as being low, as well as the PANAS-X scores, which were also showing low scores (including the guilt scale). In relation to the results of the in-game experience questions, participants reported that empathy and avatar attachment was low, whereas ‘compliance’ and ‘just a game’ were rated higher and general suspicion was rated low to medium,

which is an interesting phenomenon that might be due to the Tangram help/hurt task being in real-life (face to face) and compared to the in-game empathy; thus, more desirable. Another consideration is that the post measures are self-reported after the game, this could be influenced by the participant's memory e.g. their ability and motivation to remember and recall their experiences. The result also suggests the potential changeable nature of emotional responses and the difference between in-game and real-life context. Alternatively, another explanation is that morality re-engaged for the Tangram task; this is discussed further later in section 7.3.

The regression models suggested that for all levels, empathy and responsibility positively predicted in-game moral alignment, with compliance being suggested to be close to significance. However, for level 1, only engagement negatively predicted moral alignment. Overall, post-game measures did not predict in-game moral alignment, therefore, H4 was rejected and the null accepted; the regression models for post-game measures did not predict in-game moral alignment.

7.1.5. Response Time data

The Response Time (RT) data suggested that in-game decisions were not intuitive, as these were over 1500 milliseconds; with the quickest decisions taking, on average, 2000 milliseconds (2 seconds), which is 500 milliseconds longer than the upper range of the IM-AMP measure (R Tamborini et al., 2014), and the longer decisions were, on average, taking up to 7000 milliseconds (7 seconds) for a choice to be made, which was 5,500 milliseconds (5.5 seconds) longer than the upper range of IM AMP measure.

Level 1 took the longest time to complete, with minimal differences between the other levels (2-6), even though the instructions were different. RT was significantly different for Level and in-game room (MFT domain) and this was still significant when controlling for in-game room order. The in-game moral domain L/B took, on average, the longest for participants to make a decision; with S/D and A/S in-game moral domains being the quickest. Therefore, H5 was rejected and the null was accepted: as the RT for the in-game moral decisions were not quick and intuitive (<1500 milliseconds). A noteworthy point is it was helpful taking a separate time for navigation around the level as this removed the variable of navigating and finding

the NPC for character, for example the NPC of C/H in the library was behind a bookcase and required some exploring to find them.

7.1.6. Level 6b (harm score)

Only 30% of participants completed the last goal, to select the highest amount of energy and kill all the main NPCs for each MFT scenario, with 9% reporting they did not understand the level information. The real-life moral salience regression model did not predict harm score, but the non-salience score variable had a positive relationship. Furthermore, the in-game instructions regression model and predictor variables of level 6a and 6b predicted the harm score.

There were differences between the in-game room (MFT domain) and harm score with C/H having the lowest harm score, whereas the A/S harm score was significantly higher than the other MFT domains, suggesting the NPC in this domain had the highest harm score. The in-game domain of L/B had an RT that was also significantly different from the other in-game MFT domain RTs.

For post-game measures, 'compliance', 'just a game', and 'stop', all significantly positively predicted the harm score, and the regression model was also significant. Overall as the in-game instructions predicted the harm score, H6 was accepted so it can be concluded that in-game instructions predicted the in-game harm score, in level 6.

7.2. The decision-making process

The summary of the results showed the implications of the decision-making process in games. From the RT data, it was suggested that rational decisions were more likely taking place due to the long length of time taken for participants to make decisions. These decisions considerably exceeded the time boundary used. In particular, the first scenario that was encountered took the longest and therefore seemed to have an important role in this decision-making process in the game. Implications for the decision-making process were further demonstrated by the data from Level 6b, which also showed the disparity between RT and harm scores, in that RTs did not reflect how much an NPC was hurt, rather the MFT domain seemed to suggest how much an NPC was hurt.

7.2.1. Rational decisions

Overall, the RTs were slow which implies that the rational slower system was being engaged to make the decisions, supporting the findings by Hartmann (2011b, 2012). This finding is contrary to other research which suggested that participants were making gut/intuitive decisions; Jockel et al., (2012) suggested participants were making 'gut' or intuitive decisions rather than other reasons related to the game hence their title of the research was 'gut or game'. Drawing this parallel, it would seem the participants in this research were choosing the 'game' rather than 'gut', and this decision furthers connects with the role of compliance and game features which is discussed further in section 7.4.2. Joeckel et al., (2013) further suggests that the decisions were random for the non-salient MFT domains and were related to 'game' decisions. However, the decisions could be due to preference rather than being random (discussed further in section 7.4.1). Alternatively, morality could be composed of multi systems (as proposed by Cushman, Young, and Greene, 2010) rather than the dual process theories.

In relation to examining the role of the decision-making process, Level 6b is important because it showed how the type of data collected (harm score[48] or RT) can be used to identify a different perspective on the decision-making process. This was helpful to cross-compare the decisions made, as it identified that time taken did not reflect the harm score given, as was seen with L/B (MFT domain). This cross-comparison of the data was helpful for the rest of the RT data in the game.

The RT results from the rest of the game also suggested that the first encounter of the stimuli seemed to be important because RT results were slower. RT for all decisions in the first level and the first interaction (the room in which the scenario was based in) in the subsequent levels were the slowest. This would be expected to a degree as this is part of the learning process involves novel stimuli and this demonstrates why RT was taken at decision points, as well as during general game play to control exploring the VE. Plus the design of the game and the tutorial was included to reduce the learning required. However, decision times were still considerable slow especially; comparing to how much longer the RT data exceeded the upper time boundary (see section 7.1.5). An explanation for why the first room

[48] This was due to a scale being used for the harm score

was slower could be due to participants deciding how they were going to play the whole level, therefore further suggesting that slower deliberation was taking place and decisions were not intuitive. Furthermore, this could represent an important part of the process for decision-making.

Planning could be taking place, which is shown from comparing the RT and alignment data, within the first room (scenario representing L/B MFT domain) of each level, because alignment was similar but RT was significantly slower. However, the data from the RT from the first scenario (L/B MFT domain) for the majority of level 1 was the longest, which suggests participants were taking longer.

While learning was acknowledged, it seemed also that the first encounter (level or scenario) may have also influenced the decision-making process and planning for the rest of game. This demonstrates the importance of recording variables such as room order and hence, why it was decided to be recorded from game play in this research. It could be argued therefore, that both the first level and room (scenario representing MFT domain) have implications for how media is processed, and the role of re-playability in games. Due to the level layout therefore, room order influenced the decisions which were made first. It is important to note that RT in the room was less likely to be influence by the scenario (MFT domain) and more likely due to the first encounter. In addition, L/B was the moral domain (which was the first encounter for all levels for the majority of participants), which was a non-salient domain for participants in this research, but has also been found to be a non-salient domain in other research (Grizzard et al., 2014; Joeckel et al., 2012; Joeckel et al., 2013). Furthermore, previous research using a purpose-made game had C/H as the first scenario that participants came into contact with (Joeckel et al., 2012). C/H is a high salience domain which could have changed participants' responses to the game choices compared to if it was a non-salient domain.

Considering the results of the present study in relation to both, the time taken to make a decision (see section 7.1.5 and 7.2.1) and the order of the scenarios (MFT domain) completed in the game; the in-game order and layout seemed to be an influencing factor for the decision-making process. This influence could be potentially more than the MFT domains themselves, as there were some differences between each of the in-game MFT domains, but this would need to be tested by changing the order of the MFT domain in which participants came into contact with

first, to understand the role of whether it was primacy or the MFT domains. Therefore, it would seem that order, and its effects on morality within decision-making, is an important factor to be considered in future video game research and the theoretical processes involved for the player. This has further implications for the research that has used commercial games as variables such as the order in which decisions were made could have been a major bias and therefore a confounding variable in previous research. These confounding variables and biases demonstrate the importance of the rationale of Phase 2, to design a game to measure morality to address some of these biases.

7.2.1.1. The role of emotions

Due to the low responses to the PANAS-X (the average was under half of the scale), it could be argued that the behavioural component was engaged, rather than the affective component of morality, which appeared disengaged/not activated. The PANAS-X manual reports that undergraduates students Positive Affect scores tended to range between 29-36 and for Negative Affect scores ranged between 15-23 (Watson & Clark, 1999). The low scores in relation to affect is in contrast to previous research, in which it was suggested that participants had higher levels of guilt in post-game, when playing as terrorists (Grizzard, Tamborini, Lewis, Wang, & Prabhu, 2014; Hartmann, Toz, & Brandon, 2010; Weaver & Lewis, 2012), whereas, the results of this research showed that guilt was low. Therefore, the results of the present study regarding the low affect results could be because participants were able to avoid guilt from the choices or that guilt and/or emotional arousal was not triggered. This seemed to be related to the issue of moral engagement and moral management, which is discussed further in section 7.3. Furthermore, participants did not report any negative responses from the game in the post measures. These results is in contrast to Gollwitzer and Melzer (2012), who reported moral discomfort post-game for violence acts in GTA. Parallels of the post-game effects from Gollwitzer and Melzer (2012) and the present study are useful as both involve a moral violation in the in-game behaviours (e.g. being anti-social, with a MFT violation and harm towards the NPCs) and could cause similar levels of moral discomfort/conflict for participants. However, the results of the present study are consistent with Triberti et al. (2015), in that empathy had a negative relationship which significantly predicted

in-game alignment at level 6b, where the player had to make the decision to be anti-social and behave in a way that was a MFT moral violation.

The lack of emotional arousal could be due to choices being made through the slower rational system being used (Hartmann, 2011b, 2012), this could either be because the game did not trigger the gut emotional response, or this was being by passed by in favour for the rational system. These results are similar to what was suggest by Eden et al. (2012), that rational systems could have be activated to morally disengage, override or bypass emotions. This notion also supports Hartmann's theory (2011b; 2012) that these systems are separate. However, questions remain around this process of moral engagement and disengagement.

Furthermore, which of two systems were activated (Hartmann, 2011b, 2012), could be due to how the game was created provoking a more rational response or a choice made from the player. It would seem that the game did not provoke an emotional response; this could be due to the scenario not being triggered or it bypassed the emotional processes. Tangney, Stuewig, and Mashek (2007) suggest moral emotions provide feedback to the acceptability of actions that have taken place. Therefore, emotions maybe been bypassed as actions could have been evaluated as unacceptable. Alternatively, the scenarios were triggering the cognitive demand especially as there was a problem to solve, thus, priming a cognitive/rationale response. The results of this research are similar to those from Carnagey and Anderson (2005), where the cognitive components had the stronger relationship when playing a violent video game, suggesting the role of the cognitive component to be important. Krcmar and Eden (2017) found that when participants were assigned to the cognitive load cognition they gave slightly lower emotional responses (i.e. aggression and guilt) suggesting the rational system could have been activated and could be separate (Hartmann, (2011b, 2012).

Alternatively, other research with video games that have used the PANAS-X have suggested low scores on both the Positive and Negative affect scales e.g. found reported score ranging from 2-3 for the Positive affect scale and 1-2 for the Negative affect scales (Greitemeyer & Osswald, 2010). Therefore, it could be that video games, either do not invoke an emotional arousal or the measure is not sensitive in the virtual context.

The role of affect in decision-making in games, raises questions around how the demands (i.e. social emotional, cognitive and behavioural) of video games are divided for the player and how equally split these demands are (Bowman, 2016). Due to the results of the present study which showed rational decisions and low emotional arousal post-game, it could be argued that these components (cognitive for rational thinking and emotional for emotional arousal) could be dissociable from each other. The PANAS-X measure also relates to engagement and how engaged the participants were when playing the game. The results from the present study, that the in-game engagement scores showed the average was under half of the scale, suggests that participants had low engagement in the game. Furthermore, this also has implications for the emotional and social components of morality, as these may have not been triggered (Haidt & Joseph, 2004). An alternative potential contributing factor to low emotional scores could be the role of desensitisation. Carnagey et al. (2007) suggest desensitisation can happen quickly (they reported within 20 minutes) but suggest it could be quicker with contemporary games.

7.3. The role of morality

The results suggested that overall real-life morality did not predict in-game decisions. Real-life morality was suggested to only explain 5% of the variance for in-game moral alignment. It was expected that level 1 alignment would have the most real-life moral predictors, as there were no in-game instructions and participants would have applied their own moral preference. Since the data suggested morality was not predicting decision-making, it could be suggested that participants were potentially playing to their own preference, which could be argued to be related to strategy. The results relating to previous game play, the consistent predictor was previous evil alignment which predicted in-game moral alignment for all levels in the game, suggesting previous game play had an influence on in-game moral alignment. This is an interesting finding when taken with the results for real-life morality (MFQ and moral salience), as it raises questions around the role of how previous game play affects morality and its role in video games. Previous game play such as playing with an evil alignment could be a form of strategy for the direction of in-game moral alignment, and outweigh morality, and therefore explain why morality did not predict in-game decision-making in the first level. This is supported

by Triberti et al. (2015) who found video game players tend to have a preference for moral decisions. Therefore, using strategies and preferences implies a relationship with the cognitive demands and would fit with the role of deliberation in decision-making.

In relation to real-life morality predicting in-game decisions, Level 4 (in-game manipulations: instructions, were the goal was to only choose the pro-social choices) was the only exception, as the regression model was significant, and the following predictors also significantly predicted in-game decisions (moral alignment) with C/H (positive relationship) and F/C (negative relationship) MFT domains and the non-salience score (positive relationship). C/H could have been significant due to, the pro-social choices made could relate to care, which is at the core of this moral domain. However, C/H was not significant for the other levels, especially level 2, where the in-game manipulations: instructions were that the avatar information was to be helpful (pro-social choices). However, a possible reason for F/C domain having a negative relationship could be due to helping and upholding the MFT domains could have been seen as unfair. Tamborini, Bowman, et al. (2016) found both F/C and C/H were found to have greater short-term access and could suggest why these domains were found to predict moral alignment in level 4 and could therefore be more easily accessible.

Curiously real-life morality did not predict in-game moral decisions on level 2, this level was similar to level 4 except for the instructions were that the avatar information was helpful rather than the goal to be helpful. Thus, making the results of the present study more intriguing to why real-life morality was predicted in level 4 and level 4 only. Furthermore, participants would have completed level 3 beforehand, which required antisocial choices, in which most participants followed. This is in contrast to previous research which suggested once violations have been made violations could be continually made as suggested by the MIME model (Tamborini, 2011). Alternatively, it is a possibility that there is a type ii error with morality predicting in-game behaviour on level 4. It could be instead that, this level mimics real-life morality and morality was not engaged or applied.

These results are intriguing, as previous research found that moral salience could predict the MFT domain being upheld (Joeckel et al., 2012; Joeckel et al.,

2013), and this is in contrast because the non-salient score had a positive relationship with upholding a MFT domain in level 4. The non-salience score, having a positive relationship, suggests those with higher non-salient domains are predicted to help and uphold the in-game MFT domains. Furthermore, this suggests that either there are individual differences or that these domains could be still developing. The role of development connects to the MFT theory, which suggests these domains need behavioural input from the environment to support the innate learning system (Haidt & Joseph, 2004). Thus, these domains may develop at different rates (some domains may be quicker or slower) and the development of these domains could potentially be encouraged and nurtured.

7.3.1. Virtual harm

In the level 6b harm choice participants were presented with a scale of how much to harm the NPC for each of the In Game-Moral Foundation Theory (IG-MFT). For details on the scale see Chapter 5 section 5.4.6 and for the results of level 6b see Chapter section 6.4). The results of virtual harm (level 6b harm score) were mixed, although participants completed the level 6a choice (the anti-social choice) the level 6b choice data showed much more variance between if participants followed the in-game instructions. This was unexpected, but these results may be informative to the nature of morality, as the amount of harm selected in level 6b for each MFT domain was analysed to examine any differences between the MFT domains. The results of the harm score showed the A/S domain received the highest average (NPC for that domain was hurt the most); whereas C/H had the lowest average (NPC for that domain was hurt the least). These results are similar to Weaver and Lewis (2012), who found the same two domains were related to decision-making.

Although the regression model of the post-game questions for predicting level 6b harm score, was significantly related to the variable of compliance, surprisingly, most participants did not follow the instructions on level 6b (71%). This suggested that around a third of participants were completely compliant whereas the two thirds of the sample were not completely compliant suggesting some refusal to act. This is in contrast to previous research, where Lange (2014) found that over half of the sample reported they would not refuse to carry out an act

in a video game. However, the results of this study for levels 1-5 suggested that 51% of participants completed the instructions, which is in line with Lange (2014) findings. Therefore, it seems that participants were less compliant for the level 6b choice, suggesting that participants' degree of compliance may vary depending on the type of requests/choices (e.g. more compliant for hindering the situations than using harm in the situation).

The results from Level 6b (harm choice), allowed for further examination into moral choices being made in the game, due to the type of data gathered it meant that a comparison between the RT and the harm score could be made. Comparing these data further suggests the first encounter, through the first scenario, was important as RT and the harm score were different. This difference showed how the choice made (how much to harm the NPCs) did not follow the same pattern as shown in the RT data, which is important for understanding the decision-making process, in that time does not necessarily relate to action.

7.3.2. Moral Management

As participants were required to choose anti-social and MFT violation option, this could have led to moral disengagement (Bandura et al., 1996), however an alternative but connected process, which could have taken place is moral management (Klimmt et al., 2006). Moral management suggests that in violent video games moral concerns are managed through; the separation of the game world with real-life, and justification of actions (Klimmt et al., 2006). The authors also suggest that moral management is a form of strategy.

Schell (2014) suggested checking for dominant strategy; as if a strategy can be applied to choices, no choice is required to be made. From the results of this research, it would seem that the first decision made for each of the levels, participants were deciding how they were going to play the level and therefore they could also be deciding any potential strategies. Klimmt et al. (2006) suggests one of the strategies for managing moral concern, is a distinction between the game and real-life, which in this present research, directly related to the in-game experience question, 'it's just a game'. This was rated high, thus suggesting this distinction was applied and moral management was taking place for the participants. For further

evidence of the potential of moral management taking place, Klimmt et al. (2006) found that moral management was applied in single-player games with narratives and not in multi-player games, which related to the purpose-made game used in this study as it was single player. Alternatively, as the game was linear, autonomy and agency could have been perceived as limited (potentially, to a greater extent in the levels with instructions) therefore, moral disengagement could have occurred due to these two factors of autonomy and agency (Bandura et al., 1996; Tamborini, Lewis, et al., 2016).

Intriguingly, on level 4, the results of real-life morality significantly predicted in-game choices; therefore, morality seemed to be an active process. From these results questions remain about the process of morality, as it is difficult to suggest if morality was managed or disengaged. The role of moral management could be further supported and reflected in the findings of this study and previous studies through the results demonstrating the C/H domain having a consistent relationship with video games (Boyan et al., 2015; Grizzard et al., 2014; Krcmar & Cingel, 2016; Tamborini, Lewis, et al., 2016; Tamborini, Prabhu, et al., 2016; Weaver & Lewis, 2012). Therefore, the C/H domain could be an active process, requiring moral management, and this questions the role moral activity and the process of decision-making.

7.3.3. The MIME model

The Model of Intuitive Morality and Exemplars (MIME) model provides a suggestion of processing media (Tamborini, 2011). The results Phase 2 are compared to the MIME model stages, what has been suggested to take place as well as an evaluation of the model (see Table 55).

Table 55. *MIME model: the stages of decision-making and the results of Phase 2*

MIME Model stage	Results of this study
Stage 1 – Moral processes are triggered from content	Content could have triggered moral processes, as seen from the pilot; participants rated the scenarios as being relevant to the MFT domains.
Stage 2 – Automatic decisions made, moral salience guides this conflict	Moral salience was not a predictor and decisions were not intuitive, but conflict could have arisen.
Stage 3 – Deliberation and rational process	Decisions seemed to be rational with deliberation that took place.
Stage 4 – Moral salience and the most dominant domain will be more likely to be upheld	Moral salience was not a predictor but a preference for C/H did occur which could be representing this as a dominant domain.
Stage 5 – Seeking media content that is similar to an individual's morality	This could explain these results of the variables which are related to media consumption and morality. For example, the following individual predictors for previous game play; the previous evil alignment and number of genres played. These two variables significantly predicted level 1 choices and could suggests these variables are related to seeking media content that matched their morality.
Stage 6 – Media is both similar to and provides cues for the environment	As the other gaming variables did not predict in-game behaviour it is difficult to suggest how relevant this stage is for decision-making. However, as two game play variables did predict this reciprocal relationship it could therefore be taking place but needs more research.

Table 55 demonstrates how there is potential overlap with the theory, in particular stage 1 (content triggering morality), stage 3 (deliberation and rational decisions) and stage 5 (previous game play preferences (genre and alignment) relating to in-game moral decisions). Even though the results showed similarity in the domain structure, for high and non-salient moral domains (see Figure 21), it seemed that overall, moral salience was not related to decisions made; therefore, this questions the process of stage 2, 4 and 6.

It is likely that in stage 2 conflicts can arise, but hierarchy and salience of the domain was unclear how this would impact decision-making in stage 3. In addition, in stage 2, Tamborini (2011) suggests that once a violation to a MFT domain has been made this could potentially lead to all of the MFT domains being violated. Interestingly, this was shown not to be the case, as participants were able to uphold the domains in the next level, when the previous levels had required MFT domain violations through the anti-social choices. To further support this, level 6b (harm score) showed that the majority of participants were willing to violate the C/H domain by harming the NPC but not killing them, suggesting a distinction, for the participants between harm and kill. Therefore, the results suggest more research is needed to understand this appraisal process, in particular for stage 2.

Also, as mentioned in section 7.3, it could be argued that the structure and hierarchy of these moral domains could be related to how easily these moral domains are accessed (including, the moral exemplars within the domains) and this can influence decision-making and evaluation of the game. Tamborini, Bowman, et al. (2016) highlight the process of the access of these domains in the short-term and long-term, with L/B and A/S being accessed in the long-term (chronically), whereas the C/H and F/C has short-term temporary access. This process of access is an important issue that needs more research and it could be suggested that the results in this study are related to access. Furthermore, stage 5 and 6 demonstrate the importance of examining the long-term role of video game play and morality, as seen in Phase 1. Furthermore, these long-term influences were suggested with moral sensitivity to film content (Grizzard, Shaw, et al., 2016). Alternatively, it could also be fundamentally the stimuli that is presented, to try and trigger these domains, are not sufficient. This could be the case that all virtual representations of these domains

do not compare to an individual's real life moral domains and exemplars or the specific stimulus does not work.

7.3.4. The moral decision-making process

The design of the game was to measure moral decision-making, the benefit of this approach is that actual decisions took place, rather than speculated behaviour, as previous research has suggested there can be a gap between moral action and judgment (Haviv & Leman, 2002). Plus, Bandura (2002) suggest both judgment and action are required for moral agency. Drawing on all the previous sections (the decision-making process, in-game morality and MIME model), questions remain to conceptualising the process of morality in video games. Recently Hartmann (2017) proposes an alternative model specifically relating to violent video games, known as the moral disengagement in violent video games (MoDViG), to incorporate previous research discussed, such as moral disengagement theory with dual process theory (Hartmann, 2011, 2012). However, this model is focused on violent video games and understanding moral processes in all types and genres of video games is important. This understanding of moral processes in video games can also have implications for understanding of how morality is applied in other situations (e.g. interactions with other types of technology). Overall, the results from the purpose-made game are, in contrast to Weaver and Lewis (2012) who suggested a "strong moral presence" (p. 613) when participants were playing *Fallout* (Bethesda-Softworks, 2008), whereas these results for the purpose-made game suggest morality in games is a more complex and intermittent process. This could be due to a distinction between in-game and real-life behaviour, as the in-game behaviour was suggested to have a small relationship with real-life, pre-game and post-game measures. For example, real-life morality and the Tangram help/hurt task did not predict in-game behaviour.

7.4. Game features

The results suggested that the strongest predictor of in-game behaviour were the game features and manipulations, which were the in-game instructions. These game features are related to how the player interacts with the game, and also the games

design (Gentile, 2011; Kaye, 2017; Sicart, 2008). The next section interprets the role of game features and moral decision-making in video games.

7.4.1. Preference

In the first level, there were no instructions and was left open to the player, the results showed a preference for pro-social choices. This connects to previous research that suggests players will have a preference for positive/good choices (Lange, 2014). This is also similar to previous research where participants were more likely to uphold the MFT domain (Tamborini, Bowman, et al 2016; Joeckel et al 2012; 2013). Therefore, this suggests a preference to uphold MFT domains. Alternatively, this preference could be explained by Schell (2014) who discussed the role of competitiveness and cooperation in games. Applying this to the purpose-made game used in this research, the role of cooperation could explain the preference for the pro-social choices. Whereas competitiveness seems less applicable, as in this game competitive features were avoided, but it is important to note the role of competitiveness in games, and behaviour, as competitiveness has been found to influence post-game choices, e.g. with retaliating behaviour (Ewoldsen et al., 2012). If players have a preference for game play, questions remain around this; what and where this preference is from (e.g. previous life experience, influence of media consumption or morality).

7.4.2. Layout

Connected to preference was room order, and this was suggested to be an important covariate, as decisions were made in an order, with a preference for the in-game layout over MFT domain (that the scenario represented); e.g. the first room contained L/B and decisions were suggested to be more influenced by the location than the MFT domain. Whereas, if a preference for MFT domain was present, it would have been suggested that the decisions made would not match the level layout or would vary between the MFT domains rather than level.

7.4.3. Avatar and goal instructions

The descriptive results suggested that overall in-game instructions were followed more for goals than avatar instructions (see Chapter 6 section 6.2.3.1). However, the

regression models suggested that avatar instructions predicted in-game moral alignment for both levels (level 2 and 3) whereas goals only in-game moral alignment predicted level 5 but not level 4. Therefore, the in-game instructions were followed for the avatar instructions more than goals. Therefore, it could be that without reward structures, participants were less likely to complete goals. Thus, reward structures could be very influential to the completion of goals, as seen in GTA as this game rewards anti-social behaviour. Potentially, more anti-social decisions could have been made if there was a reward; this demonstrates the importance of removing biases, such as rewards structures as this can influence the behaviour.

Bowman, Schultheiss, and Schumann (2012) using a RPG, found that participants who reported, feeling in control of the avatar predicted pro-social behaviour, whereas responsibility and suspension of disbelief predicted anti-social behaviour. In this present study, responsibility predicted positive moral alignment whereas control was not significant; it did have a negative relationship with moral alignment.

In a real-life context, moral identity was suggested to be a predictor of moral action (Hardy & Carlo, 2011). These results suggest that participants were taking on the avatar identity by following the instructions, as found previously (Happ et al., 2013; Yoon & Vargas, 2014) which could explain in-game behaviour. However, the post-game measure of avatar attachment was low; therefore, compliance to the instructions may have actually been the factor rather than avatar attachment. Thus, further research may need to control for the role of in-game instructions and compliance. For example, games involving superheroes are normally used in studies with avatar attachment, which normally contain in-game instructions and narratives that could influence behaviour (Happ et al., 2013; Yoon & Vargas, 2014). Furthermore, factors like in-game instructions and narrative may be connected to the long-term components of decision-making as suggested by the MIME i.e. if the player is ‘Superman’ and is always helping this could be both directly and indirectly influence in-game behaviour.

7.4.4. Compliance

An important implication of the results is that the participants followed most of the in-game instructions, and the game instructions explained most of the variance in the in-game decisions made (72% $p < .001$). This suggests the game design features could be a large factor in influencing the decisions made. Furthermore, it could be the role of compliance, which is also connected to the meta-choice in level 6a, as participants' in-game behaviour was influenced by the choice that is available, i.e. the pro-social option not being available. The potential role of compliance is further reflected in the post-game variables of, 'compliance', 'just a game', and 'stop', all significantly positively predicted the level 6b harm score (with the regression model also being significant). Furthermore, only two participants completed the meta-choice (of not making the choice) which is similar to the previously mentioned findings of Lange (2014), which the majority of the participants reported not to have refused an act in a game. This is consistent with Sicart (2009) theory that players will follow procedure rules of the game, and previous research that found participant were compliant in other virtual contexts (Caspar et al., 2016; Weger et al., 2015). Thus, demonstrating the potential influence on morality in virtual worlds, which has major implications for the decision-making process. This in turn leads to further questions around how morality is applied in games; potentially many video game situations could be responded to with compliance, which could have a larger influence on the choices made rather than the content.

However, there did seem to be a limit to the compliance, as in level 6b (harm score) only around a third of participants completed the instruction to kill the NPCs. These results oppose Young (2013) theory, that all virtual harm acts are the same. These results of the present study could also be explained by Weger et al. (2015) they found that avatar attachment, specifically if the participants felt like they were looking through the eyes of the avatar, was related to their conformity; as avatar attachment was low for the present study, this could explain the lack of compliance with these instructions. In sum, the implications are that moral positioning and alignment in video games could be manipulated through game features and design. Thus, creating implications for the use of commercial and certain game features and design (e.g. rewards structures) in research.

7.4.5. Video game demands

As mentioned previously in Chapter 4 (section 4.1.4), Bowman (2016) suggests the demands of the players from video games. The results of this research, suggested it was potentially difficult to separate each demand from the game and player. For example, all four of these demands can be seen with the moral decision-making process, moral action(s) is connected to the behavioural demand. Social context and social approval connect to the social demand Limperos, Downs, Ivory, and Bowman (2013) who describe games as having "rich social dimensions" (p. 367). Bowman and Tamorini (2010) suggest the role of social presence in games that are related to emotional and cognitive responses as well as the MFT as suggested by Haidt and Joseph (2004).

Video games are complex, and these demands could have been present when participants were making decisions in the purpose-made game: the NPCs provided a potential for the social demand, the scenarios could have provided a trigger for the emotional demand, thinking and processing the scenarios could have related to the cognitive demand, and the physical actions of navigating and making decisions related to the behavioural demand. Therefore, it may be both difficult and not valid to separate these components, as they all potentially contribute the moral decision-making process. Furthermore, many of the video game scenarios could be triggering all these demands, even demands that have not been investigated.

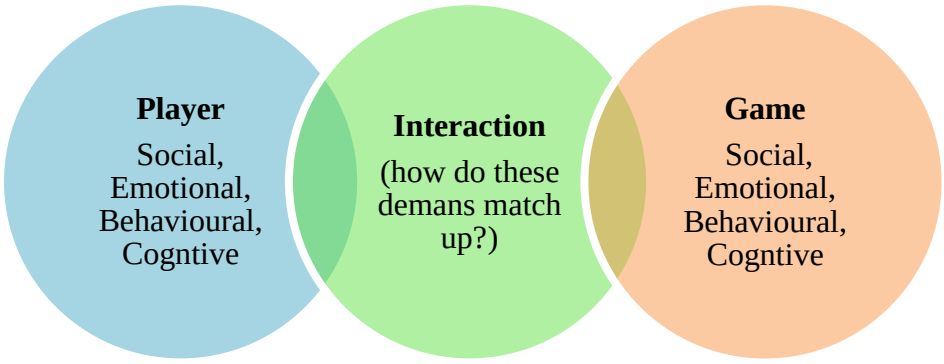

Figure 22. Matching the demands of playing video games from the game and the player perspectives

7.5. Limitations of the game

The game was designed to include many concepts of video game features, as some features cannot be excluded or isolated such as context and structure. The benefits of this are that the purpose-made game is more similar to commercial video games. However, isolation of certain features and factors, such as, changing the scenarios and situational context would have been interesting to explore as the decisions made could have been influenced the VE, for example, for the S/D scenario, if the leak in the pipe room was water rather than sewage. It would have also been interesting to include a foil scenario, to compared decisions MFT scenarios with a non-moral scenario. However, this does raise an interesting question regarding in-game behaviour, as this could still be moral, choosing to help or hinder. Therefore, it could be difficult to remove morality completely and was partly the reason why a foil scenario was not specifically developed or included. One way to address this is to have a neutral sandbox game; where the player's game play is observed within regards to how much it relates to morality, rather than imposing moral constrains in a game.

Developing the game further could include adding more NPCs to the VE. This could enhance the realism and interactivity within the game, make the VE look busier as well as, how real and believable the NPCs were perceived to be. Also, participants could only use the energy in an interaction; they did not have free rein to use energy at any point in the game, although some tried to press the keys to fire energy when not given a choice. It was decided not to program this into the game (to have option of using energy at any point in the game) as this would have been an extra constrain on the project. Thus, for future research it could be an interesting variable to include, how much the trigger is pressed.

7.5.1. Commercial games vs purpose-made games

When evaluating the role of purpose-made games compared to commercial games, using the results from the game testers was helpful. The results from the game testers suggested that engagement and presence were also low (see Chapter 5). These low results could connect to the low affect scores in the PANAS-X, in that if the purpose-made game was more engaging it could have provoked more affective responses. By

comparing both the main data collection and game testers, it can suggest if the low engagement could be related to the game or sample, as both samples suggested low engagement it would seem the game was more related to the games design than participants. This demonstrates why game testers are important for developing games and especially those used in research.

Consideration and reflection was given to whether the purpose-made game was a typical ‘game’ or a simulation. Simulations can still be defined as a type of genre of game (Mitchell, 2012) but this still highlights the issues around conceptualising games, and how much the purpose-made games would be similar to the games that participants would normally be playing. Sid Meier’s a renowned designer described a game as being "a game is a series of interesting choices" (p61) (Rollings & Morris, 2003). From the purpose-made game’s design, many of the game features within the design, as well as the game being based on RPGs would therefore be fitting with Sid’s Meier’s definition of a game. However, RPGs can overlap with the simulation genre; this raises further questions around the nature of when a game is a ‘game’ and when it is a ‘simulation’. This can be addressed by considering the role of game genre in game design through acknowledging that; had a different genre been selected, then both the design and the results could have been different. In the results of this study participants were compliant to the game, and although compliance may take place in other genre of games, expectations and levels of compliance could be different. For example, in a FPS participants may have harmed more as this is more expected from the genre (shoot first ask questions later), whereas in a RPGs the expectations to harm NPCs could be less. Therefore, the potential factors (including the player’s expectations) and interplay of these factors that could be created between the players and game interaction is important to consider in the research.

7.5.1.1. Limitations of the VR lab

It is acknowledged that the researcher’s presence in the VR lab could have been an influence on the results, but it is still felt it was more appropriate for the researcher to sit in the VR lab for any technical support. However, with the advance of technology, the VR lab is currently undergoing changes to make the game engine an

integral part of experiments, and therefore the amount of technical issues could be reduced. Also with further testing of the game confidence in the occurrence of technical issues could also be reduced. In addition, even though the VR lab is well equipped, because participants were playing in a lab setting there still could have been demand characteristics and biases and this is not how the participants would normally play video games.

7.5.2. Context of the game

Context is composed of many concepts including; the rules and goals of a game, situational factors (such as social context e.g. playing with others) and structure (such as the narrative and lore e.g. how the game presents hints for the players). This shows why this context and structure are connected. Whilst the context of the game was manipulated by the goal, other structural factors of the game were not manipulated for example, the narrative of the game and changing the VE, rather than real-life, to fantasy. Change of context has been found to previously relate to in-game and post-game behaviour (Sauer et al., 2015). In a recent study using *Fallout 3* (Bethesda-Softworks, 2008) it was found that, how invested the player was in the narrative related to feelings of guilt and shame (Mahood & Hanus, 2017). Demonstrating the complex nature of context in video games and the potential for examining situational cues such as, the role of situational ethics and behaviour under pressure.

A consideration of the games design is the contextual cues of the in-game room, (which the MFT domain was represented). For example, libraries tend to have the association of being a quiet place, whereas the presence of a general in a room is associated with aggression and conflict. This highlights the difficulty of creating completely neutral scenarios; the nature of making scenarios will always incorporate a degree of influence from the situation. From the pilot studies for the scenarios, participants were inferring context about the scenarios, an example was inferring harm if something was damaged, which also made it difficult when making MFT domain specific scenarios (e.g. how the scenarios for the domains were interconnected and it was difficult to separate the domains, see Appendix I for more detail). The role of context could have also been the case for Tamborini et al (2013),

as the study contained written film scenarios which the participants could have inferred added context and/or the ending of the scenarios. Thus, context is an interesting variable for in-game decision-making, especially considering how much context could be inferred. Overall, the context and structure of the game was brief, as not to introduce more bias, especially as this was related to the in-game manipulations. Thus, this could be expanded on in more research by examining other game features; including narrative and lore.

7.5.3. Alterative Game design features

The results of this research suggest that game design features influenced the outcome of the game play. Therefore, alternative designs of these game features and dimensions of game play could influence outcomes of game play. For example, the context of the game, although context was controlled for in this purpose-made game, it is important to acknowledge that context is influenced by these game design features, therefore different design feature, different context. Klimmt et al. (2006) report the game was not enjoyable when inducing strong and intuitive moral concerns. This has implications for the results and design of this study, for example, if the scenarios were created to be more of a moral violation and include moral taboos, then potentially the moral behaviour could have been different. Other features that could have changed the game play outcomes include Avatars. Some games such as *Fallout* (Bethesda-Softworks, 2008) allow for avatar customisation, if the participants could have customised the avatar, this could have added more in-game attachment for the avatar. Furthermore, moral decisions that were made with other people in the game (using avatars representing people rather than NPCs) anti-social acts may have been more conflicting for participants.

7.5.4. Pre, and post-game measures

An interesting result was that the pre-game measures and engagement (GEQ) had a stronger relationship with moral alignment level 1, whereas the post-game measures had a stronger relationship with moral alignment in level 6b. These results are interesting as it suggests the implications for when and at what point measures are

taken which relate to game play; how the different variables may relate to specific and different times of game play (e.g. engagement being related to initial game play). Therefore, this has implications for much of the research examining post effects of video game play. Specifically, what are the post-game measures, measuring; if a participant is playing a game that disengages morality at the end of a level but previously in the level morality was engaged, would the post-game measures only report the moral disengagement? This same principle can be applied to previous research with post-measures and measuring aggression. Another issue with post-game measures, which connects to moral management, is that these measures can be taken face to face in real-life and therefore, taking these measures face to face could reengage morality. This could have been the case for the tangrams task (face to face version was selected) suggesting no overlap, between in-game and post-game behaviour as the face to face delivery could have influenced pro-social behaviour and reengaged morality.

7.5.5. Limitations of the measures

The measures selected were chosen on the basis that they were deemed the most appropriate to use, in spite of this there are still some limitations.

7.5.5.1. Tangrams help/hurt task

Some participants guessed the role of the tangrams help/hurt task; how helpful/hurtful they were going to be. This could be due to psychology participants being used and understanding these types of design. However, it could have been an issue with administering the task, to make it more believable. Furthermore, it would have been interesting to use the online version of the Tangram help/hurt task with some of the students to examine if face to face would change the results. Participants could have also guessed due to the similarity with the choices in the game (help or hinder). Also as level 6 was designed to be more anti-social, it would have been interesting to see how the response to tangrams help/hurt task may have been different depending on which level was played last, for example, if the levels were generated in a random order rather than the same order each time or if participants were given the option to replayed the game. Alternatively, if measures

were able to be taken during the game after each level as well as post-game, this may have been a more direct measure for the effects from each level in the game.

7.6. Chapter summary

This Chapter discussed the results from the data collection with the game, Phase 2 of the research. In summary, how much morality predicted in-game moral choices and the length of time taken to make a choice was unexpected. Game design features were suggested to predict the most variance for in-game moral alignment (moral decisions made). Then implications of the result were discussed with regards to the decision-making process and the role of morality in video games with previous research. Overall, the results of this research showed a mixture of; both having similarities and contrasting with previous research, but did seem to synthesize the previous research. It would seem that these mixed results could reflect the difficulty of measuring the multi-dimensions of video game play (Anderson et al., 2012). Then the methodological and other factors that could be related to the results were discussed. Finally, the limitations of this research were discussed. The next Chapter is the general discussion and conclusion for both Phases of the research and the PhD.

Chapter 8. General discussion and conclusion

This thesis examined the role of morality in video games in two Phases. The first Phase examined moral development, and the second Phase examined moral choices in a purpose-made game. This section provides a summary of the key results and implications from Phase 1 and 2. There then follows a discussion to the methodology which has implications for future research and the contribution of the research. Then many possible avenues for future research are discussed are both Phases of the research, followed by a final conclusion of the PhD project. The Chapter outline includes the following:

8.1 Results summary for both Phases

8.2 Implications of the research

8.3 The contribution of the PhD

8.4 Future research

8.5 Conclusion

8.1. Results summary for both Phases

8.1.1. Results Phase 1

The results from Phase 1 demonstrated how many factors and variables are involved in an individuals' game play. Collecting data on participants within a large age range allowed for the development of morality to be investigated comprehensively. The results suggested both positive and negative influences of video game play and moral development, with the number of genres played predicting higher moral maturity scores and years playing, whereas average content rating, and Grand Theft Auto (GTA) predicting lower moral maturity scores. The results, with regards to moral development, suggested an important transition in development between the ages of 12 and 13. Although the measure of morality used was time-consuming and challenging to learn, it was of great benefit to the research as moral reasoning was recorded for most of the participants, therefore, supporting the Sociomoral Reflect Measure (SRM; Gibbs et al., 1992) and suggesting morality to be very much to be a part of an individual's thinking. Overall these results are important as understanding

the positive and negative predictors of game play on moral development, is critical for the long-term implication of how young people interact with and consume video games.

8.1.2. Results Phase 2

The first part of Phase 2 highlighted the importance of understanding what moral content and game design features represent for in-game moral decision-making. Furthermore, it suggested how undertaking an ambitious project as to create a purpose-made games are of great benefit to the research and application when researching psychological phenomena within the video game environment.

The results from the second part of Phase 2 were based on the moral choices made by participants as they played the game. These results suggested how the first encounter with the game, in the first scenario, particularly for the first level, was an important factor. Furthermore, in-game moral choices (behaviour) were influenced the most by game design features (in-game instructions and design) than real-life morality, previous game play, and the post measures as a whole. However, the following predictor variables were suggested to significantly contribute to in-game decision-making; previous evil alignment, number of genres played, empathy and responsibility for in-game moral alignment. Level 4, was the only level where real-life morality predicted in-game moral alignment. Therefore Phase 2 demonstrated potential confounding variables that can occur in commercial video games, for example initial experiences of the game and the benefit of controlling for these factors. These results further demonstrate the implications for these confounding variables on the moral decision-making process as the initial experiences were shown to have higher Response Times (RT). These results are also of great importance to understand how individuals interact with video games in the short-term (e.g. the moral decisions being made).

Taking both Phases of research together, this PhD was able to produce insightful results and draw conclusions based on the relationships video games have with morality both in the short-term and long-term.

8.2. Implications of the research

The results of both Phases of the research raised implications for the measurement of morality. Phase 1 used the SRM to measure moral development and identified the relationships with game play. There implications were through examining these previous game play factors informed the design of the purpose-made game. Also, when researching moral development, the results of Phase 1highlighted the role of validity and reliability when measuring moral development, as development was still taking place. Therefore, this should be a serious consideration for participant sampling in future research.

Phase 2 had implications for the Model of Intuitive Morality and Exemplars (MIME) model (Tamborini, 2011, 2012) that was applied to the results, because of its relevance and the underlying theory behind the decision-making process. This model highlights the importance of examining both long-term and short-term relationships with playing video games. While the results suggest there could be differences between real-life and game play, it also suggested similarities between the two. Therefore, further research could add to the understanding of this process and development of the MIME model, as this model will need to consider the different types of media, such as films and video games and their differences. For example, how the behavioural demands (i.e. pressing a button) may alter the triggering and decision-making process, compared to watching films. Furthermore, moral management (Klimmt et al., 2006) and moral disengagement processes (Bandura, 2002) could be incorporated into the decision-making processes, as it links to how the moral process can be engaged. This is a circular argument of which came first, engagement or disengagement, and whether participants are bypassing moral processes to begin with, or is morality triggered to be disengaged. Another way the model could be expanded is to include long-term moral processes, such as moral reasoning, as measured in Phase 1.

8.2.1. Methodology implications

Interestingly, both Phases 1 and 2 suggest similar game play for University students, including the gender difference in game play. Previous research has found gender differences in game play and experience, (Bajovic, 2013; Ferguson et al., 2015;

Gentile, 2011; Hartmann et al., 2015) with males tending to play more frequently, and which often included more violence. Therefore, the results from this research highlight that, gender remains an important factor that needs to be considered in research with video game play.

Methodologically, with Phase 1 highlighting the role of moral development, age is also an important factor to acknowledge, when designing research into morality. Although the APA (2015), specifically discusses how children are unrepresented in the research, consideration is needed of the samples used in moral research. As University students were still developing their morality, this has further implications for the research which are; if the morality is transitioning or at an early stage of development, it may be too unstable to be measured or applied in virtual worlds. The SRM measure developed by Gibbs et al. (1992) demonstrates how as an individual matures, their thinking become less egocentric and broadens. For example, individuals will start to think of themselves in moral situations and with development this progresses to considering narrow social groups (i.e. friends), then wider social groups (i.e. society). However, from Phase 1 the measure reported University students to be at stage 3, where the social groups are still narrow and are becoming wider to consider the implications for society. With regards to moral development and concepts such as liberty, these concepts could require stage 4 maturity (or the transition stage 3.5, which could show the beginnings of understanding these concepts). Therefore, the results from this research highlight that University participants may not be mature enough to incorporate this thinking and make these decisions. As both, Utilitarian theory and concepts around liberty have societal implications or at least require wider thinking than just friendship groups.

Therefore, research with morality and video games needs to consider the role of moral development, which could be contributing to the inconsistencies in the research findings. In the example of Grizzard et al. (2014), age and gender could have been an important bias to the results because of gender differences in game play and age-related moral development. This could be addressed by representing both genders (i.e. male and female) in research, and also including a wide age range, or measures and controls for moral development, including ensuring the measures are both appropriate and sensitive for the age of the participant.

In each Phase of the research, the methodological issues were discussed, evaluated, and specific issues were addressed. In both Phases, more game play data was gathered from participants and Phase 2 explored the role of measuring in-game behaviour.

In spite of the above, some methodology issues could not be avoided. With game play, this was self-reported from the participants, which affects the potential accuracy of these data. Purpose-made games provide many benefits to the research such as the control over all game features and potential confounding variables that would exist in commercial games (e.g. experience), however, similarity to the game, had to be considered. However, the game testers suggested the game was significantly different from commercial games (see Chapter 5 section 5.5). Therefore, it was suggested that the purpose-made game was different from what participants would normally be experiencing.

In this research, having a real-life L/O scale to use as a baseline to compare real-life and virtual morality in this domain was of great value and added more meaning to the results. The results of the Liberty/Oppression (L/O) scale demonstrated the potential new development to the Moral Foundations Questionnaire (MFQ) (Graham et al., 2008), and future research is needed to develop and understand this moral domain both within moral psychology and when applying moral theories within Cyberpsychology.

8.2.2. Measuring morality real-life and virtually

As this research measured morality virtually, by its nature, this raises some interesting considerations of how different approaches can be taken to measure morality virtually. When giving an example of a moral choice in a video game, the *BioShock* (2K-Games, 2007-2013) example of harvesting or rescuing the little sisters provides and illustrates how morality is applied in video games. Firstly, it demonstrates how morality in videos games can be communicated in a way for those that may not be familiar with video games in general or with the specific games (*BioShock* (2K-Games, 2007-2013)). Secondly, it also demonstrates the many factors and aspects to moral decision-making in games, such as how this moral decision-making relates to the game narratives and goals, and therefore, the game's context

and structure. The second point has the most implications for the research, as many of these aspects are normally present with morality in video games.

Furthermore, it is still difficult to determine if morality is triggered by content, for example violence is a prevalent theme and it could be that all Moral Foundations Theory (MFT) domains could potentially be triggered or alternatively it may be based on individual's judgement. It is likely from the role of interactivity in video games, that morality is triggered by both content and the judgement of the individual. Therefore, more research could more specifically explore this process and what the triggers are and how this interacts within the decision-making process.

From the results of the pilot it became clear that some of the MFT domains were easier to represent than others, Care/Harm (C/H) and Sanctity/Degradation (S/D) being the domains that manipulations were suggested to work from earlier pilots whereas, L/O, Loyalty/Betrayal (L/B) and Fairness/Cheating (F/C) seemed to be more difficult to represent. The difficulty in creating domain specific scenarios for F/C could be the researcher more than the concept, whereas L/O and L/B seemed to be the concept more than the researcher. Therefore, how these moral domains are represented/ how easier they are to be represented, is an important factor when interpreting the results. As previously mentioned C/H was found to be a consistent predictor in previous research, but this could be due to how it is represented, and this could be an easier domain to represent.

Realism is another factor that should be considered, as if moral management is taking place the more realistic the game potentially the more difficult it may be to use moral management strategies. Furthermore, connected to realism is the consideration of the transition made between taking concepts from reality and applying them to video games. This relates to issue of representations, as the game is simulating decision-making and this was not real-life, it is only a representation.

8.2.2.1. Different directions for measuring morality

The game was programmed to include the same set of 6 scenarios and decisions in each level, and consequences were not focused on. However, this is only one way of measuring morality and more research could be carried out to examine other types of

moral decision-making in a video game, such as using a less clear structure of decisions, in terms of number of options, how they are presented, and consequences.

Example of these different types of moral decisions could include those involving more utilitarian themes or decisions with more options. For example, a scale with a neutral response in the middle, very helpful at one end and very hindering at the other end. Participants were forced to either help or hinder, whereas some participants may have felt more apathetic to the situation and wanted to respond more neutrally. Alternatively, it would be interesting to explore moral relativism, morality based on circumstances rather than applying universal codes. This would be interesting to measure and would relate to strategies that could be selected, such as moral licensing (Ellithorpe et al., 2015). Nay and Zagal (2017) recently discuss the role of creating meaningful decisions through game play understanding why a player may have selected a choice. Furthermore, it has been suggested that unclear consequences/ inconsequential could provide more meaning in ethical decision-making (Nay & Zagal, 2017; Schulzke, 2009). This approach could be helpful for examining the sequencing of moral decision-making how does short-term relate to long-term decision-making. Long-term decision-making could have been examined in the game, if the game was programmed to have different outcomes at the end, depending on how the levels were played.

A range of scenarios could be explored to examine how this effects moral decision-making, for example, the amount of moral violations required and including neutral scenarios. In addition, it would be good to include other themes of morality such as corruption, altruism, or those used in Gibbs et al. (1992): contract and truth, affiliation, life, property and law and legal justice. Furthermore, the role of play in video games is important as some participants explore and play out each option, therefore, future research could examine moral play, and exploration (Bergen & Davis, 2011; Khoo, 2012).

8.2.3. Conceptualising morality

Overall, the results from this study emphasise understanding the question of the role of morality in video games. Specifically, how morality is applied in the video game context, e.g. the interplay between moral management and moral disengagement

(Bandura et al., 1996); during a game, if moral conflict and issues come up, would this be dealt in real time, or would morality be disengaged and bypassed. The theory of moral management and moral disengagement have considerable overlap, in Klimmt et al. (2006) study other qualitative themes relate to moral disengagement such as dehumanization of the characters. In addition to this Bandura's (2002) suggest morality is the selective disassociation of moral codes, suggesting moral management, therefore, theoretically questions remain moral processes. It could be that morality was disengaged but then re-engaged; as morality is a higher order process (Wallach, Franklin, & Allen, 2010) it could therefore, be likened to a switch or an overriding structure, this could fit and moral management that would be the controlling the switch or the overriding process. One way this could be addressed is participants to playing a game and examines how much morality is triggered and what situations were triggering morality.

8.3. The contribution of the PhD

At the core of this research is the role of morality in video games and, if these moral processes are similar to what is seen in real-life or if it is different. This research project aims to have contributed to the knowledge: though approaching the research in two Phases which highlighted and addressing methodological issues to produce insightful and meaningful results.

Examining the role of morality is of great important as, violent video games have often been blamed as the cause of violent acts, particularly the shootings that happened in America (Ferguson, 2015b). Although this research focused on all types of video games (not just violent), the implications of the role of morality is still vital to understand, for all video game play. Understanding how morality is related to video games can support general understanding of this process, and how much, if any, that video games could contribute to negative consequences, such as violence in real-life. Although, previous research has suggested the role of violent content can lead to producing real-life violence and aggression. Therefore, violence and aggression is directly related to morality, thus, negative consequences could be more related to moral processes than the violent content. It may be that morality and video games are not related to real-life actions, but this research showed the importance of understanding the interaction between morality and video games.

In addition to the violent video games, ethics and an individual's morality are of great importance to society functioning and wellbeing (Bentham, 1789; Gibbs et al., 1992; Mill, 1863). For example, crime has implications for society functioning, both how system society deals with crime and on the individual level (e.g. why the crime was committed and consequences). With an ever increasing technological world understanding morality and ethics in a virtual world, is vital on a societal level for both the system and individual. This need for understanding morality and ethics virtually can be demonstrated by current problematic virtual behaviours such as cyberbullying, trolling and hacking, which can be encountered both in video games and more general technology use (Attrill, 2015).

The topic of morality in video game is interdisciplinary, which is particularly reflected in the approach taken in Phase 2. The aim of Phase 2 was to bridge the gap between psychology and game design. Therefore, part of the contribution from the research is the interdisciplinary value, which has implications for game designers. One such example of this from the results was the role of game design features influencing the decisions made in the purpose-made game.

8.4. Future research

Building on Phase 1 of the research more research is needed to examine the long-term role of moral development and video game play. Specifically, more research should examine the transition in moral development that was suggested to take place around the ages of 12 and 14 years of age.

Building on Phase 2, there is much research needed in the area, for example, the purpose-made game could be modified to test and measure morality in a different way, for example gender and morality could be explored; the male NPCs in the game could be replaced with female NPCs to examine differences in the choices made. For this research, it was more important to reduce extra variables, such as gender.

Although Phase 2 of the research aimed to address many of the in-game features, such as context and content of the game, it is difficult to address them all, but the results have shown the importance of examining these factors and consequently the short-term and long-term influences of moral decision-making. Future research should consider more of these aspects in order to develop an

understanding of the relationship between video games and morality. Some examples of how the context of the game could be manipulated in a different way include having an overacting theme of context and structure for the whole game; this could be created through backstories or lore, such as the bio-shock series. Furthermore, the scenarios themselves could have been different or changed, for example, for the Authority/Subversion (A/S) scenario; the general could have appeared to be off duty rather than appearing to be on duty. Other features of the game could have been manipulated such as mentioned previously regarding consequences and the types of decisions made, however this would make the design much more complex. Context and structure can also be manipulated to suggest that doing something that is more of a moral violation in real-life could be acceptable for the in-game situation; rather than as was designed for the current game, that harm and anti-social behaviour were not intended to be rewarded.

Due to the results on the first encounter, randomising the order of the scenarios that would appear first would help understand if it was the MFT domain or first contact. In addition, Gibbs et al. (1992) suggest knowledge of society and bigger social groups increased with age. It would be interesting to look at how knowledge of society and moral development, influences in game decision-making. Furthermore, it would be interesting to use the think aloud methodology while participants play the game. The method would be of great value to analyse what they are thinking, as more could be understood about the process of moral decision-making such as their moral justifications.

Future research could also start to critically analyse the role of content and game features in video games and utilising which content or game feature could be the most appropriate from measuring an aspect of moral decision-making, for example from the results of this study it would seem that scenarios may be an appropriate measure for moral judgment and cognition. Another example that would need research would be sandbox games and moral action/behaviour. In sandbox games the players are normally given more freedom in the game play, therefore, more choice and agency is given to the player and the in-game behaviour/actions. Future research is also needed on how individuals' process media more generally; the growth of technology is ever increasing and becoming more sophisticated. For

example, how morality is triggered and used in media, such as video games is critical. This area has begun to expand but is still in its infancy.

Drawing on the results from both Phases, it was suggested that video games and morality have a complex relationship and different approaches can help identify the different facets of this relationship. By furthering the research in the area, it would be of great value to join the two phases of the PhD together, by developing a game that could be used for moral education, to support moral development. By incorporating the results of Phase 1 regarding the transition of moral development with the factors of Phase 2 regarding how to use game design concepts and a purpose-made game could be developed. This game could then be used for moral education and learning with the aim of creating a morally engaging game. Therefore, future research needs to identify how morality is engaged and maintained during game play and how game design can facilitate this. Furthermore, future research should utilise the other applications of purpose-made games that can support research though measuring different psychological phenomenon, such as measuring moral learning and development. As well as continuing interdisciplinary research that bridges the gap between psychology, game design, and other related disciplines. This could involve both consultancy with game developers and companies to inform them of the implications of the research for industry, and collaboration with them on new research projects. This could be especially useful for combining the Phase 1 and 2 together to develop a game that could support moral education.

Morality is also composed of many components, (Narvaez & Rest, 1995; Rest, 1986) suggest four alternative components; moral focus, moral sensitivity moral judgement and moral action, which could be explored in research. As mentioned in Chapter 7 and also suggested by Bowman (2016) it would be of great value to examine the different demands of video games; social, emotional, cognitive and behavioural match the same demands of the players, specifically for morality. Finally, examining the role of moral reflection and introspection in video games could also be fruitful (i.e. Kors, Ferri, Van der Spek, Ketel, and Schouten, 2016).

8.5. Conclusion

This PhD explored the role of morality and video games in two Phases. The results from both Phases contribute to our understanding of this area. Phase 1 examined the role of long term moral development and video game play, whereas Phase 2 examined how morality was applied, in the short term, through moral decisions made when playing a purpose-made video game.

Phase 1 demonstrated the importance of collecting and examining many gaming variables, to understand the relationship between moral development and video game play. There were both positive and negative relationships with the gaming variables and moral development. In particular, the role of the number genres played was positively related to moral scores.

Phase 2 demonstrated that number of genres reported in game play was related to moral decision-making. However, the most prominent results were non-intuitive decisions were that taking place, which were significantly influenced by the order of the scenarios, (the first scenario and the instructions of the game) and the game features (instructions).

In conclusion, this research has found that there is an interaction between game and player, and the findings have suggested that morality cannot be separated from the process of playing video games. Specifically, the research highlighted the importance of understanding how these moral processes are engaged, including activation and disengagement, when making moral decisions and therefore the potential influences for moral development. Technology has already led to and will continue to change society and the human experience. Therefore, understanding how processes including morality relates and adapts to technology, is of great importance for the future.

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Zynga. (2009-2016). FarmVille series [Video game]. California, USA: Zynga.

Appendix

Appendix A. Conference attendance

Table A1. *Conference participation and attendance*

Conferences
Phase 1 Hodge, S. Taylor, J & McAlaney, J (*2016*). Keynote Speaker: An exploration of moral development and video game play. BPS Wessex Branch Student Conference, April, Bournemouth University, UK Hodge, S. Taylor, J & McAlaney, J (*2015*). Moral development and video game play. Psychology Postgraduate Affairs Group (PsyPAG), July, University of Glasgow, UK Hodge, S. Taylor, J & McAlaney, J (*2015*). Moral development and video game play. BPS Wessex Cyberpsychology symposium, May, Bournemouth University, UK **Phase 2** Hodge, S. Taylor, J. McAlaney, J. Melacca, D. Gatzidis, C. & Anderson, E. *(2017).* Combo Attack: Applying moral psychology theory and game design principles to create a purpose-made game to investigate in game morality. Video Games and Virtual Ethics, July, London, UK Hodge, S. Taylor, J. McAlaney, J. Melacca, D. Gatzidis, C. & Anderson, E. *(2017).* Measuring moral decisions from a purpose-made video game. Broadcast Education Association (BEA) Research Symposium Video Games: A Medium that Demands Our Attention. April, Las Vegas, USA

Table A1. *Continued*.

Conference Attendance
Doctorial Consortium presented a critique of one of the papers at British Human Computer Interaction (HCI) University of Lincoln, July 2015. Student volunteer chair and organiser at British Human Computer Interaction (HCI) Bournemouth University, July 2016 Researching with Children and Young People: Method and Mayhem. Bournemouth University. Organiser Ashley Woodfall, January 2016 Guest speaker panellist, Digital Citizenship summit, UK Bournemouth University, January 2015. Workshop *Morality Play: The Design of Games for Moral Engagement.* Malcolm Ryan DiGRA and FDG, first Joint international conference. Dundee and Abertay University, Dundee, August 2016 Student Volunteer at Computers in Human Interaction (CHI) Denver May 2017

Appendix B. Phase 1 - Coding gaming variables

Length of time coding

Table A2. *Phase 1 - Coding for Length of time variable*

How often do you play games? Please select the boxes below to show how much you play and how many hours you usually play for.					
Answer Options Number of days that games are played	Less than one hour 0.5	One hour 1	Two hours 2	Three to four hours 3.5	Five or more hours 5.5
A. Everyday = 7	3.5	7	14	24.5	38.5
B. Every other day = 4	2	4	8	14	22
C. A few times a week = 3	1.5	3	6	10.5	16.5
D. A few times a month = 1	0.5	1	2	3.5	5.5

This variable was not normally distributed for university data therefore a median split was used to create a dichotomous variable of high and low. The median values are listed below.

i. Secondary and sixth form: 10.5 hours
ii. University students: 6 hours
iii. Combined data set: 7 hours

Values that were the same or above the median were categorised as high and those that were below were categorised as low.

Table A3. *Phase 1- Length of time and SRM scores*

Dataset		*N*	*M*	*SD*
Secondary and sixth form	low	39	2.43	0.33
	high	75	2.61	0.39
	Total	114	2.55	0.38
University	low	64	3.20	0.23
	high	56	3.26	0.24
	Total	120	3.23	0.23
Combined data	low	103	2.91	0.46
	high	131	2.89	0.47
	Total	234	2.90	0.46

Table A3 shows that high group for both Secondary and University sample had higher averages than the low group. However, the combined data set suggests the low group had slightly higher mean and could be why it was a negative predictor.

Rating Scale of video game content

Scale was created from the ESRB and PEGI system to give participants an average content rating score for their favourite video games. ESRB mature content rating includes: drugs alcohol references, nudity, sexual and suggestive themes, language, gambling and mature humour.

Table A4. *Phase 1* - Creating a *rating scale of video game content from ESRB and PEGI*

Scale	ESRB	PEGI
0	Early childhood	
1	Everyone	3
2	Everyone +10	7
3	Teen	12
4	Mature	16 -18
5	Adult only	

Coding Content of favourite games: the ESRB and PEGI systems were used to categorise mature and violent games (ESRB, 2015; PEGI, 2015).

i. For a game to get a violent rating one of the games needed to be rated Mature (ESRB) or 16-18 (PEGI) and was described as intense violence
ii. For a game to get a mature rating one of the games needed to be rated Mature (ESRB) or 16-18 (PEGI) and was described including any of the following: drugs alcohol references, nudity, sexual and suggestive themes, language, gambling and mature humour

Appendix C. Phase 1 – SRM measure and unscorable responses

SRM measure

The Sociomoral Reflection Measure-Short Form (SRM-SF). First the participants are asked to select if the questions is very important, important or not important, then to explain why they picked very important, important or not important. The second part is, where the participant provides reasoning is scored the first part of the question is not scored.

1. Think about when you've made a promise to a friend of yours. How important is it for people to keep promises, if they can, to friends? Why is that Very Important/ Important/ Not important?

2. What about keeping a promise to anyone? How important is it for people to keep promises, if they can, even to someone they hardly know? Why is that Very Important/ Important/ Not important?

3. What about keeping a promise to a child? How important is it for parents to keep their promises to their children? Why is that Very Important/ Important/ Not important?

4. In general, how important is it for people to tell the truth? Why is that Very Important/ Important/ Not important?

5. Think about when you've helped your mother or father. How important is it for children to help their parents? Why is that Very Important/ Important/ Not important?

6. Let's say a friend of yours needs help and may even die, and you're the only person who can save him or her. How important is it for a person to save the life of a friend? Why is that Very Important/ Important/ Not important?

7. What about saving the life of anyone? How important is it for a person (without losing his or her own life) to save the life of a stranger? Why is that Very Important/ Important/ Not important?

8. How important is it for a person to live even if that person doesn't want to? Why is that Very Important/ Important/ Not important?

9. How important is it for people not to take things that belong to other people? Why is that Very Important/ Important/ Not important?

10. How important is it for people to obey the law? Why is that Very Important/ Important/ Not important?

11. How important is it for judges to send people who break the law to jail? Why is that Very Important/ Important/ Not important?

SRM Unscorable responses

Responses had to have at least seven scorable answers from the 11 questions. The responses that had less than seven were overall unscorable; Gibbs et al. (1992) suggest then the score would be unreliable. Most responses had at least one question that was not scorable.

Types of unscorable answers:

i. Answers that were not moral justification
ii. Repeat evaluations
iii. Tautologies
iv. Not interpersonal enough
v. Fragments and incomplete sentences
vi. Word salads and being unclear and too vague
vii. Comments responses or references to life, past events or an anecdote.
viii. Personal disclosure or anecdotes including making criticisms rather than justification
ix. Disavowals
x. Rule 3 states that if a single response match CJs that are four stages (Transition 2/3 to 4) apart it is unscorable

Scoring the "same above" was scored by using the previous answer as long it was appropriate to the question. CJs from other chapters for different questions could be used occasionally if it was a better fit.

Many of the responses were unscorable in these data set were due to responses lacking detail, being too vague and thus unscorable. The research noted Life and property and Law were themes most commonly unscorable. Snarly (1994) noted the rate of unscorable responses and in particular, question 8 "living if someone does not want to". Some responses were used justifications such as "it just is" which is not scorable as it is not a moral justification.

Appendix D. Phase 1 - Questionnaire information

Secondary and Sixth form students: Information sheet for teachers

Morality in video games

Researcher: Sarah Hodge, Bournemouth University: (shodge@bournemouth.ac.uk)
Supervisors: Dr Jacqui Taylor, Bournemouth University:jtaylor@bournemouth.ac.uk
Dr John McAlaney, Bournemouth University: jmcalaney@bournemouth.ac.uk

About me

I am a PhD student at Bournemouth University facility of Science and Technology, my research is being supervised by Dr Jacqui Taylor and Dr John McAlaney from Bournemouth University. Your school has been invited to take part in a study looking at decision-making and morality in video games. Video games are the subject of much media controversy, however there has not been much research which has looked into decision-making in video games. Using a computer based survey, this research aims to add to our understanding of decision-making in video games. I would like to assure you that the research will received full ethical approval (Bournemouth University Ethics Committee) and I have full DBS clearance (used to be CRB) to work with children and adolescents in schools.

Why has your school been chosen?

Your school, sixth form or college as it includes students who are aged 11-19 and the students' opinions are valued for this study. This is an important age group as the majority of people who play games are in this age group.

Do all the students need to take part?

We will not ask you to make it compulsory for the students. But it would strengthen the study if we could get as many students as possible. Students will only be approached to participate when we have your permission. For students who are 16 and under, we will ask an additional written parental consent. Then, the students are free to decide for themselves. They will be told about the research, and if they are happy to take part, they will be asked to sign a consent form.

What is required of students?

The students will be given information about me and the research on the online survey, including what this study involves. Then if they are happy they will provide written consent (and where needed parental consent) and the questionnaire can begin. The questionnaire will ask a few questions about them (such as age and gender). Then the rest is made of three parts; in the first part the students make decisions on what they think is right and wrong. In the second and third part I would like to know about their gaming habits, how does it feel to play games, what is good and bad about them? Students will do the questionnaire individually and will take about 30 minutes. There are no right or wrong answers.

What happens to the data I collect from the students?
Once the consent forms have been completed the students answers will be coded (given a number). The data (and the list of codes) which is collected will be on a password secured online survey software, only researchers have access to. The students can withdraw at any time without giving any reason; the data will be removed from the study and destroyed. In addition, should they not wish to answer any particular question(s), they are free to decline.

Some students don't play video games should they take part?
Even if some students do not play video games it would be helpful to know what they think and how they make decisions compared to those who play.

What is required of the school?
The requirements will be kept minimal, a nominated teacher as gatekeeper would be helpful to facilitate between me and the school. This would help create a structure of completing these questionnaires with minimal impact on the students schooling. The questionnaire could be completed in free periods (if applicable) or during a lesson. If it was during a lesson I could work with the teacher to incorporate it into a lesson related to the curriculum. I am flexible and able to negotiate a suitable arrangement. My aim is to make this as easy and efficient as possible for you and your school.

Are there any risks?
Risks in this study are minimal; all safeguards have been taken to ensure the students safety and wellbeing.

Are there any benefits of the study?
The benefits of this study are not instant but because not much research has been carried out on decisions made in video games, your schools participation is highly valued. The benefits for the school and college are the connections with Bournemouth University. Plus the opportunity for the students to take part in an exciting research project. I would also be very happy to provide a guest lesson in return.

Questions
If you have any questions / comments about the study or would like more information please contact me (shodge@bournemouth.ac.uk). You can also contact my supervisors Dr Jacqui Taylor: jtaylor@bournemouth.ac.uk and Dr John McAlaney: jmcalaney@bournemouth.ac.uk

What happens next?
My aim is to start visiting schools in the beginning of next year. If you are happy, please contact me and we can arrange a meeting to discuss this further.
Thank you for considering this project.

Secondary and Sixth form students: Parental/Guardian Consent form

Decision-making in video games

Dear Parent/Guardian,

My name is Sarah Hodge and I am a PhD researcher at Bournemouth University faculty of Science and Technology. Supervised by Dr Jacqui Taylor and Dr John McAlaney. Your child's school has kindly agreed to support my research. My research is about morality in video games. I want to see if there are differences between decisions made, and video game habits. Even if your child does not play video games it would be helpful to ask them what they think and how they make decisions compared to those who do play. The benefits of this study are for the students to experience taking part in research.

Your child has been invited to take part in the research because they are aged between 11-16. For your child to take part all that is required is for you to sign and return this form to the school. I will be working with (teacher's name) and we will combine those who want to take part into part of the lesson.

If your child is happy to take part they will be presented with the online questionnaire, this should last around 30 minutes. The questions will be about their opinions (what they think is important). Some questions will be about their video game preferences (what they like and/or dislike about video games). They will also be asked information about themselves such as name, age and gender but no identifying details such as address. Once the questionnaire has finished your child has the chance to ask questions and will be given more information about the study. All responses will be coded so they cannot be identified and stored on a secured computer. You and your child will be able to withdraw up to a week after participation.

I would like to assure you that the research has had full ethical approval (University Research Ethics Code of Practice) and I have a full Disclosure and Barring Service (DBS, this used to be called CRB check) to work with children and adolescents in school.

If you would like to read articles on this topic, then please see: Weaver, A. J., & Lewis, N. (2012). Mirrored Morality: An Exploration of Moral Choice in Video Games. CyberPsychology, Behavior & Social Networking, 15(11), 610-614. doi: 10.1089/cyber.2012.0235

If you have any questions or would like more information about the study, my contact details are:

Email: shodge@bournemouth.ac.uk

You can also contact my supervisors:
Dr Jacqui Taylor, Bournemouth University: jtaylor@bournemouth.ac.uk or
Dr John McAlaney, Bournemouth University: jmcalaney@bournemouth.ac.uk.
For any complaints contact Matt Bentley: mbentley@bournemouth.ac.uk
Thank you for considering your child's participation.

If you are happy with your child being asked to take part in the study please fill out the form below (tick as applicable) and return the slip to your child's teacher:

.....

I confirm I have read the letter and I understand what will be required of my child ☐

I understand that my child's participation is voluntary and they can withdraw up to a week after participation and the data will be removed from the study and destroyed ☐

I understand that my child's name will not be linked with the research materials, and will not be identified or identifiable in the report(s) that result from the research. ☐

I understand that any personal data will be collected as detailed above and will be coded so they cannot be identified and stored on a secured computer, in accordance with the Data Protection Act 1998. ☐

I give consent for my child to take part in the above research project (name).....

Name of parent/guardian.....

Signature of parent/guardian.....

Date...../...../.....

Signature of researcher.....

Date...../...../.....

Secondary and sixth form participants: Information sheet

Title of project: Decision-making (choices) in video games

Researcher: Sarah Hodge, Bournemouth University: shodge@bournemouth.ac.uk

Supervisors:
Dr Jacqui Taylor, Bournemouth University: jtaylor@bournemouth.ac.uk
Dr John McAlaney, Bournemouth University: jmcalaney@bournemouth.ac.uk

About me

I am a PhD student at Bournemouth University faculty of Science and Technology, my research is being supervised by Dr Jacqui Taylor and Dr John McAlaney from Bournemouth University. Before you choose to take part it is important for you to understand why the research is being done and what you have to do. There has not been much research which has looked into choices made in video games. The goal of the research is to add to our understanding of choices made in video games. The research has had full ethical approval (University Research Ethics Code of Practice).

Why have I been chosen?

You have been chosen for my study because you are in secondary school or sixth form and your thoughts are important for this study.

Do I have to take part?

It's up to you if you would like to take part or not. If you are in years 7 to 11 you need the parental consent form returned to (teacher's name) or me, for your answers to be a part of the study. You can withdraw at any time, up to a week after taking part. Your answers will be removed from the study and destroyed. Please talk to me or (teacher's name). After a week answers cannot be removed as all names are deleted from them.

What do I have to do?

You will be asked if you are happy to take part. Then you will be asked a few questions about you. Then the rest is made of two parts. The first part asks you to make choices on what you think is important. For the second part I would like to know about your gaming habits. How does it feel to play games, what is good and bad about them? This will take about 30 minutes. There are no right or wrong answers. Some questions will ask you to say why; please give as much detail as possible so I can understand why you have picked an answer.

But I don't play video games, should I take part?

Even if you do not play video games it would be helpful to know what you think and how you make choices compared to a gamer.

What happens to my answers?

Your answers will be coded (given a number). The answers (and the list of codes) will be on a password secured computer through online survey software (which only the researchers have access to). After a week all names are deleted from answers.

Are there any risks?

Risks in this study are small; all safeguards have been taken to ensure your safety and wellbeing.

Are there any benefits of the study?

The benefits of this study are not instant. Your answers are important as it can help our understanding of choices in video games. Plus the chance to take part in an exciting project.

Questions

If you have any questions please ask me.

What happens next?

If you are happy with what you have read and have no questions, please write your full name to agree, then it will start.

Thank you for your help.

If you are happy to take part please type full name

…….

This is taken for consent and will be separated from your answers

Secondary and sixth form participants: Debrief form

Moral choices in video games

Thank you for taking part. Your answers are important. Please read this carefully and if you are still happy to have taken part please tick the box.

You took part in a questionnaire about understanding choices made in video games, in particular moral choices (what you think is right and wrong) in video games. The reason I did not use the word 'moral' at the start of the questionnaire is because this can change and/or influence answers given. Your answers will be coded and securely kept. If you decide you no longer want your answers to be part of this study (you can withdraw up to a week after taking part) speak to (teacher's name) and I will remove your answers.

First you were asked about your moral thoughts and how important you think the questions were. You were then asked if you play video games and what you think about playing video games. Some previous research has found that choices made in video games are similar to choices made in real-life. If you would like more information, let me know. Your answers can help add to our understanding of how people act and think in video games.

If you have any questions or would like more information about the study, please contact me (shodge@bournemouth.ac.uk) or (teacher's name).

My contact is: shodge@bournemouth.ac.uk.

My supervisors details are: Dr Jacqui Taylor: jtaylor@bournemouth.ac.uk or

Dr John McAlaney: jmcalaney@bournemouth.ac.uk.

For any complaints contact Matt Bentley: mbentley@bournemouth.ac.uk

University students: Participant Information leaflet and consent form

(Is presented as a participant would receive it online)

Title of project: Decision-making in video games

Researcher: Sarah Hodge, Bournemouth University (shodge@bournemouth.ac.uk)

Supervisors:
Dr Jacqui Taylor, Bournemouth University: jtaylor@bournemouth.ac.uk
Dr John McAlaney, Bournemouth University: jmcalaney@bournemouth.ac.uk

About me

I am a PhD student at Bournemouth University Faculty of Science and Technology, my research is being supervised by Dr Jacqui Taylor and Dr John McAlaney from Bournemouth University.

Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. There has not been much research which has looked into decision-making in video games. This research aims to add to our understanding of decision-making in video games. I would like to assure you that the research has had full ethical approval (University Research Ethics Code of Practice).

Why have I been chosen?

You have been chosen for my study because you are in University and your opinions are valued for this study.

Do I have to take part?

It's up to you if you would like to take part or not. You can withdraw up to a week after participation; the data will be removed from the study and destroyed.

What do I have to do?

You will be asked if you are happy to take part; once you have agreed the questionnaire can begin. The questionnaire will ask a few questions about you. Then the rest is made of three parts; the first part asks you to make decisions on what you think is important. For the second and third part, I would like to know about your gaming habits. How does it feel to play games, what is good and bad about them? The questionnaire will take about 30-45 minutes.

There are no right or wrong answers. Some questions will ask you to explain why; please give as much detail as possible so I can understand why you have picked an answer.

But I don't play video games, should I take part?
Even if you do not play video games it would be helpful to know what you think and how you make decisions compared to a frequent player.

What happens to my answers?
Once the consent forms have been completed your answers will be assigned a code, so that your answers are not identifiable. The data (and the list of codes) which is collected will be on a password secured computer through online survey software (which only the researchers have access to).

Are there any risks?
Risks in this study are minimal; all safeguards have been taken to ensure your safety and wellbeing.

Are there any benefits of the study?
As there is not much research which has been carried out on decisions made in video games; your thoughts are highly valued. This will help develop our understanding of decision-making in video games. Also it will give you the opportunity to take part in an exciting research project.

Questions
If you have any questions or comments about the study or would like more information please contact me (shodge@bournemouth.ac.uk).

What happens next?
If you are happy with what you have read and have no questions, please sign to give consent, then the questionnaire will begin. For taking part you can be included in a raffle of three £20 Amazon vouchers or psychology students can receive experimental credit.

Thank you for your help with this project.

If you are happy to take part please type full name

…….
This is taken for consent and will be separated from your answers

If you would like to be entered into the raffle please write your email address below
……

University students: Debrief Form

Moral decisions in video games

Thank you for your participation. Your contribution to this study is very valuable and very much appreciated. Please read this carefully and if you are still happy to have taken part please tick the box.

You took part in an online questionnaire which aims to understand decision-making in video games, specifically moral decisions in video games. The reason I did not use the word 'moral' at the beginning of the questionnaire is because this can change and/or influence answers given. All responses will be coded and securely kept. If you decide you no longer want your response to be part of this study (you can withdraw up to a week after participation) contact myself, Sarah Hodge, shodge@bournemouth.ac.uk and the data will be removed and destroyed.

First you were asked about your moral opinions and how important you think the statements were. You were then asked what your gaming habits were and your experience of playing video games. Previous research has found that decisions made in video games are similar to decisions made in real-life. For more information on this see Weaver and Lewis (2012). This research can help build our understanding of how people act and think in video games.

☐ I am still happy to have taken part in the study (tick box)

If you have any questions or would like more information about the study, please don't to contact me: shodge@bournemouth.ac.uk.

My supervisors details are: Dr Jacqui Taylor: jtaylor@bournemouth.ac.uk or Dr John McAlaney: jmcalaney@bournemouth.ac.uk. For any complaints contact Matt Bentley Deputy Dean, Research for Faculty of Science and Technology: mbentley@bournemouth.ac.uk

If you would like to read articles on topic, then please see:

Weaver, A. J., & Lewis, N. (2012). Mirrored Morality: An Exploration of Moral Choice in Video Games. *CyberPsychology, Behavior & Social Networking, 15*(11), 610-614. doi: 10.1089/cyber.2012.0235

Appendix E. Phase 1 - Procedure for participant samples

The university students' responses were used as an evaluation of the questionnaire questions, for example, what kind of responses the questions were prompting and if this would be appropriate for secondary and sixth form students.

Due to time restrictions, not all questions were included for the secondary and sixth form students. The questions that were chosen for the sample were based on diversity of the questioned asked, in the case of the experience questions, which were similar, only one question was selected.

More structured questions were selected as secondary and sixth form students may have found these easier to answer, while increasing the variety of the questions to help reduce boredom.

To allow for different abilities within the classes (as to be expected), 12 questions were selected, and if students ran out time, if they answered the first game play question, the participants could then skip to the end for the debrief.

Appendix F. Phase 1 - Date labels

Table A5. *Phase 1 - Data labels for categorical gaming variables*

Gaming variables (categorical)	Data labels
Game statuses • Gaming status (Yes, No) • Gamer* (Yes No)	 Yes = 1 No = 2 Yes = 1 No = 2
These variables were created from Favourite games listed: • Grand Theft Auto (GTA) • Violent (Yes, No) • Mature (Yes No) • Moral narrative (Yes No)	 Yes = 1 No = 2 Violent = 1 Not Violent = 2 Mature = 1 Not Mature = 2 Yes = 1 No = 2
Length of time median split (high and low)	Low= 1 High = 2
Ethnicity (white and non-white)	White = 1 non-white = 2
FSM (Yes and No)	Yes 1 No = 2
Gender (Male and Female)	Male = 1 Female = 2
Moral Type (A and B)	A = 1 B = 2
Sample (Secondary and University)	Secondary = 1 University = 2

Appendix G. Phase 2 - Game Design Document

Game overview

Synopsis

The philosophy of the game was that this game is being purposefully created to measure morality in video games to a specification. Essentially, the game is being made for research to measure moral decisions, which will be achieved through using psychology theory and research, to support the development of the game. Some of the commercial video games that were used as research to support the creation of this game includes: the *Fable* series, *inFamous*, the *Bioshock* series, *Spec Ops: the line*, *Until Dawn*, the *Fallout* series and the *Mass Effect* series. The aim of the research is to build a bridge between game design and psychology theory, to understand in-game morality.

Game feature set and general features

- 3D environment
- First person, the avatar only hands/gauntlets seen
- Role Playing Game (RPG)
- Single player
- Responses of decision will be recorded and timed
- 6 levels (containing 6 different rooms in each level)
- Only Humans characters which are all Non-Player Characters (NPCs)
- Recording data

Game play

This section is important for the players' experience.

- Linear progression through each level
- Players will be asked to make binary decision
- Six decisions will be made in each of the 6 levels (one decision for each of the moral themes)

- Once choices have been made they cannot be changed and players cannot access a previous level once left.
- In order to make decisions players will choose one of two energies from gauntlets.

Start up: the start of the game will include an introduction of the game, which is the story/instructions listed in the game, followed by a tutorial.

Story/start up, narrative and instructions

The narrative behind the game is that the players are told that the aim of the game makes choices that allow the player to progress through the game, therefore finisC/Homplete the game. The player will be told the instructions via text on the screen. The instructions were developed for the game and the final version of the instructions that were used in the research are listed in the section instructions.

Objectives of the game: the players will be told the objective of the game is to make choices to progress through the game.

Game play mechanics

The game play mechanics of the game are going to be manipulated. This has little impact on the programming of the game; but is important to understand how it fits within the game design. The content of the game will be consistent and repeated for each level. This is a manipulation of morality, but will be a constant. Except for the last level, where energy is directed at the NPC rather than the objects. The information in the game will be changed (instructions). This will be changed by informing the player of the avatar information for the first the two levels, and the last level. Avatar was used to describe the players characters (Hitchens, 2011). This will be changed by informing the player of the goals. This will be changed at last three levels; the players will be given a goal to be achieved. The notification at end of the level will be either: ‘Goal completed’ or ‘Goal not completed’ (less reward). Note the first level will not have level information/instructions manipulated, it will be open (see Table A6).

Table A6. *The in-game manipulations by game feature*

Level Number	Avatar information	Goal information	Content
1	No	No	Same
2	Yes	No	Same
3	Yes	No	Same
4	No	Yes	Same
5	No	Yes	Same
6	Yes	Yes	Same

Rules - Players should not be able to:

- Leave the level without making all the decisions.
- Go back into a level once left (dead loop).
- Once a decision has been made it cannot be changed.
- Only two choices are given
- Only one energy can be fired at a time and within a decision
- The avatar get stuck between objects

Victory and loss conditions

This is not directly applicable for the game. The player won't be able to die and non-completion will be implied as a loss. Completing the game could be considered as a form of winning, but this is not explicitly mentioned. and victory is not the focus, as this is a bias. The exception is when the manipulation through instructions ask the player to complete goals, the players will be informed if they completed the goal.

Level 6

Level 6, is slightly different from the other levels. The left gauntlet is not an option, and this is explained at the beginning of the level. Instead, only the right gauntlet can be used. If players don't want to use the only choice available they can stop playing (meta-choice). However, if they do continue playing, there is an additional choice, for the right gauntlet, in that there is an option to gauge how much energy to use to harm the NPC (see Table A7 below for the gauge). The level of harm generates a score. This should be a score Note the highest number on the gauge, kills the NPC. Throughout the game a prompt does come up to reminder the player of the goal. Therefore Level 6 is composed on two choices

a. First, players choose to use right gauntlet or meta choice with each scenario
b. Second, player choose how much they will hurt the NPC using the right gauntlet with gauge (adapted from the abbreviated injury scale (Greenspan et al., 1985) (referenced to as the harm scale)

Table A7. *The harm scale used in level 6b decisions*

Minor	Moderate	Serious	Severe	Critical	Killed
1	2	3	4	5	6

<u>The game world</u>

Overview

The game world will be based on real-life to produce a Virtual Environment (VE) that is similar to real-life. The player will have gauntlets containing energy; similar to i*nFamous* and the *BioShock* series. The Physical World: this will be composed of 6 versions of the same physical world, which is based on real-life which the player progresses through, in a linear manner. Game engine: Unreal engine version 4 (4.11) will be used to make the game.

Morality

The morality in the game has been developed from the Moral Foundations Theory (MFT) (Haidt & Joseph, 2004). This theory suggests morality covers 6 domains:

1. Care/Harm
2. Fairness/Cheating
3. Loyalty/Betrayal
4. Authority/Subversion
5. Sanctity/Degradation
6. Liberty/Oppression

From these domains, scenarios were developed one for each theme (see Appendix I). Thus, one scenario will represent one MFT domain. An additional seventh scenario, as a backup, was considered but was not used as it was deemed inappropriate to have a foil scenario. The scenarios have been designed to trigger the specific domain of morality; a player will see the scenarios and think this involves one of the domains (see Appendix I for pilot data).

Key Locations

Tutorial level (see Figure A1 below)

Figure A1. Screenshot of the tutorial in the game from the player's perspective

The 6 levels will look the same and would be as similar as possible to real-life. Inside is preferable but not set. If inside bricks/real-life wall texture would be

appropriate. In each level, 6 decisions will be made through interactions with each NPC. A door is at the start and end of the level. The exit door has a notification of when the door is accessible and level is complete. Each level will represent a hub of activity with the VE Example of level appearance discussed game designer, this included both, inside and outside level designs.

Travel: the player will walk from the start point to the end of the game and a door will be used to get between the levels and between rooms.

Scale: the level needed to be small enough that the player can navigate through the level by walking. The walking should only be short distances. The level needed to be big enough to contain the number of scenarios needed, without it looking strange or empty for the amount of activity for the space.

Weather: Outside then the weather is a clear sunny day and inside the room will reflect daylight from a clear sunny day.

Day and night: the game will only be in day mode; night mode not needed.

Time: this in the game will not be applicable. The levels will be changing through the level instructions and a change in level number, thus, time could be inferred; but this is by the players rather than the game.

Style: would be similar to commercial games that are known as AAA style game, with virtual reality (similar to real-life) that overall should feel like a RPG.

Length of game play: was planned to last around 30 minutes but no more than an hour.

Gauntlets

One for each hand: left and right. The side which represents each energy will be kept the same, for continuity, as well as for the user experience and reliability of the choices being made. The gauntlets were inspired from *Fable 4: The Journey* (Lionhead-Studios, 2004-2014), and were used as an example. However, a symbol and colour is needed to distinguish between the two types of energy.

Objects: Turbo squid and Auto Desk were used to retrieve some of the objects (www.autodesk.com/www.autodesk.co.uk). There are two types, background objects and scenario objects:

- 10-15 NPCs in the game
- Pile of coins
- Small chests (4-5) modern looking chest closed with a padlock on it
- A pair of military boots
- A round handle on a waste system
- A stage being constructed
- Tables, chairs, sofas (for some NPC to be sat down)

Making decisions

Scenarios: the following scenarios were selected, one for each MFT domain. Each scenario contains one NPC that player interacted with and an object (see Figure A2).

Scenario Care/Harm:

You see a person is injured and holding their abdomen, crying while they are slumped on the ground.

- In a library assumed that bookcase/books have fallen and injured NPC

Left Gauntlet = Help and heal the person who is injured.

- Pick up books/ restore bookcase and help them up on feet

Right Gauntlet = Hurt the person further who is injured.

- Drop more books/ book case on them and hurt them

Scenario Fairness/Cheating:

You see a person is struggling to share out coins equally, because some are damaged, smaller and worthless.

- Sat at a coffee table with pile of coins

Left Gauntlet = Help restore the coins value and divide them equally.

Right Gauntlet = Damage more coins and only some get the valuable ones.

- Once transferred into the game, it made sense to include dyads (two NPCS)

Scenario Loyalty/Betrayal:

You see a person is giving others each a chest containing a written private promise, and all swear to secrecy.

- Sat at a round table (whispering)

Left Gauntlet = Put a lock on the chest and protect the promise.
Right Gauntlet = Destroy the chest then open and display the promise.

- Throw it on the wall, to present it?

Scenario Authority/Subversion:

You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.

- The general will be in a gatehouse/security room. Access to interact with NPC will be through a window in the room the door is not accessible

Left Gauntlet = Mending the boots and polish and enhance them.
Right Gauntlet = Not mending the boots and damaging them more.

- Boots could be thrown into the room

Scenario Sanctity/Degradation:

You see a person is trying to maintain the waste system that contains sewage, which is leaking out.
Left Gauntlet = Fix and strengthen the waste system and cleanse the area.
Right Gauntlet = Destroy and damage the waste system causing more leakage.

- Effect of contaminated liquid rising

Scenario Liberty/Oppression:

You see a person is trying to construct and open a stage to allow for people's free expression.

- Stage in the garden level

Left Gauntlet = Help create the stage to allow for free expression.
Right Gauntlet = Destroy the stage to control and stop free expression.

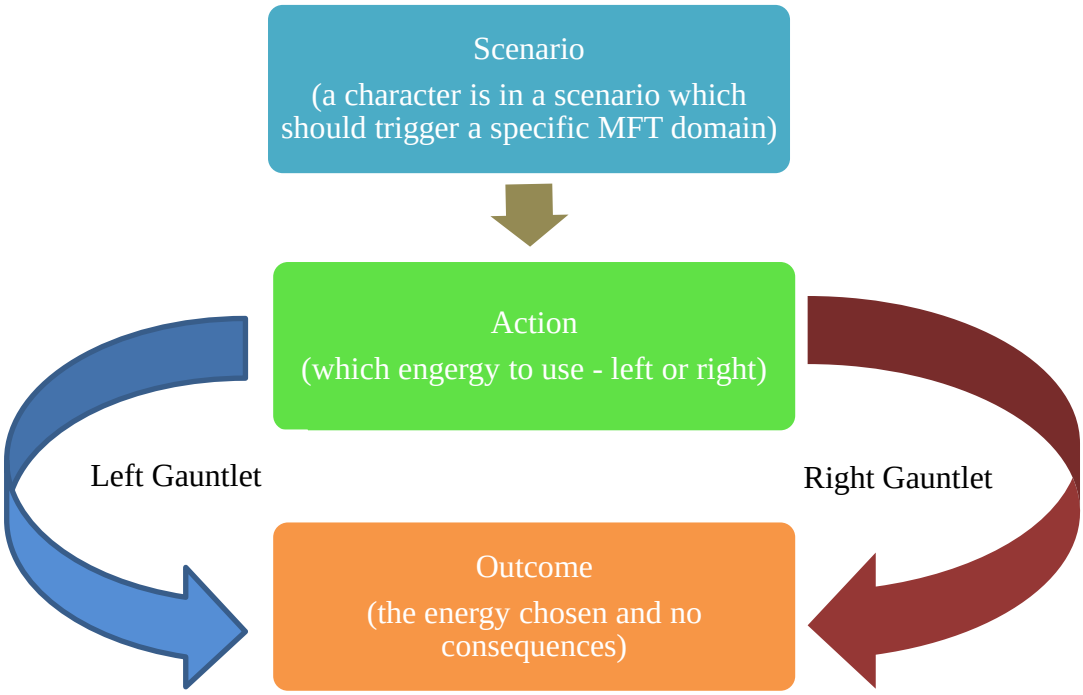


Figure A2. The in-game decision-making process

The decisions are divided between the gauntlets:
All decisions followed the same format as shown above. To begin with it was programmed that the scenarios were on a timer, send participants were asked to make a choice. However, due to individual differences some participants may have needed longer or shorter, therefore, this was changed to participants pressing when ready, to then be presented with the choice.

Gauntlets and Energy

Two types of energy in the gauntlets were available. Only one would be described as a weapon in the follow up choice on level 6. The left gauntlet helps and the right hinders as this layout was used in *Mass Effect* for 'Paragon' and 'Renegade' decision options (BioWare, 2007-2012).

- Left - This energy is positive; helping, healing, and fixing power. The colours were suggested to be blue green white and looked like circular orbs.
- Right- This energy is negative; hindering damaging, and destroying power. The colours were suggested to be red and orange and looked like circular orbs.

Recording data

When players made decisions, the following was recorded:

- Text box at the beginning of the game to record the participants number/ID and this was also the name given to the file
- The data from the game was recorded in a CSV file which could be exported into Excel and SPSS.
- Inside the file the following was recorded:
    - Which gauntlet was used (left or right)
    - The amount of time taken to make decision
    - The amount of time taken to complete level and the game

Consequences

Consequences can be a bias, therefore, for all situations and NPCs the consequences will be:the situation is made worse (hinders) or the situation is made better (helps). This is also how the data from the game is scored.

Game Characters/NPCs (Entities)

Overview

The NPCs that the player will be interacting with, will always be white male to avoid gender effects. Background NPCs will be added in that are different in gender and race. Names of NPCs were considered but then not needed. Below is a description of the NPCs in each scenario.

Scenario Care/Harm: A white male NPC, injured, and sat on floor wearing causal clothes.

Scenario Fairness/Cheating: Two white male NPCs sat trying to share out coins, wearing causal clothes. Dyads are better to illustrate sharing.

Scenario Loyalty/Betrayal: A white male NPC in the forefront, with three other NPCs behind (a mix of male and female). One NPC was of a different racial background to the others. These NPCs will be wearing causal clothes, which were of similar colours to subtly represent being part of the same group. The following

reference was used to make sure the NPCs look trustworthy. Trustworthy features included soft facial features and smiling (Oosterhof & Todorov, 2008).

Scenario Authority/Subversion: A white male NPC that looks like a General, and wearing Military uniform.

Scenario Sanctity/Degradation: A white NPC fixing a sewage pipe and wearing overalls to look like a workman.

Scenario Liberty/Oppression: A white male NPC wearing causal clothes fixing.

The level layout in the VE

Overview

The level layout of the VE will be comprised of 6 levels, and within each level, 6 rooms were included. The level in the game will not change in difficultly, due to this adding an extra bias to the decisions. The level instructions (manipulations) are the only components that changes. Each level will be segregated with a door, which the player will go through. Once the player has gone through the level they will not be able to go back into the same and previous levels (known as a dead loop). This type of design was selected for its simplicity and appropriateness for research purposes. Progression through each level is shown below; a loop was designed and programmed to start the player at the start point for each level. This also meant, one level was designed and reused for each of the 6 levels in the game (see Figure A3).

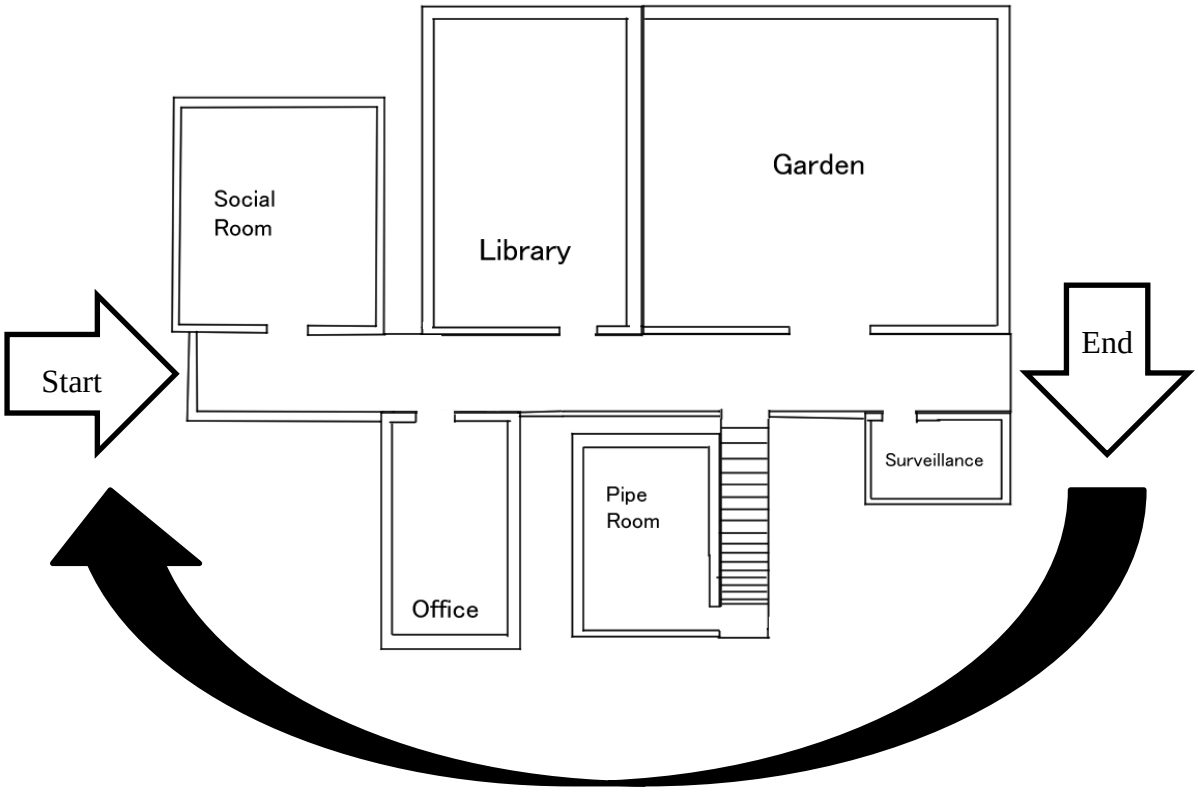


Figure A3. The In-game level layout with start and end point for each level

User interface - Overview

The interface would be that the players choose left or right for the gauntlet. The player will see hands, as shown in picture below. The design of the gauntlets will include a picture of the energy to show the player which side is which hinder and help.

Heads Up Display (HUD)

The aim of the HUD is to be as simple as possible. Hands and gauntlets are seen by the player. Animation of the energy is the same for left and right with a different

colour distinguishing which energy. This was done due to time restrictions but it also means it was less of a potential bias.

Basic controls

- The players need to move around the level with direction pad.
- Select an interaction and go through doors
- Make a choice between the two energies, one button for each
- Could be an option to use the controller
- Scale with selected from the relevant number on the keyboard
- Ctrl shift and L for end game (only the research knew this)

Musical Scores and Sound effects

Looked at publically available music: Bensound: **http://www.bensound.com** . Neutral background music Lounge music seems most appropriate for the game. Otherwise the game seemed empty. No human voices due to time restrictions, the dialog was not voiced. Checked how the sound would work in the VR lab, including the speakers in the monitors, but there was also the option for external speakers that could be plugged in, via the sound card (but this was not needed).

Dialog and instructions

Dialog listed in Lavender to distinguish the text that when into the game. If the word limit allows it, then the longer dialog should be selected, as this explains the action to players. Only the main NPC will have dialog. ‘Situation’ was used rather than ‘scenario’ as this is more active. All dialog contained an expression of the language, such as sigh and sobbing to support the context of the scenario. The word ‘character’ and NPC were avoided as it could have related to moral disengagement. The length of the goal notification was compared with *BioShock* series, to support developing the notification for this game.

Instructions

This game contains 6 levels; at the beginning of each level Information about the level will be presented. Some levels have background information about the avatar you are playing as and some have goals. Each level has a similar layout and situations, with 6 people to interact with. After each interaction with a person you will be given a choice. To make your choice you have gauntlets which contain two types of energy; you will choose one of these energies to use. The tutorial will now show you what the energies do and look like.

Left box: The energy in the left gauntlet helps and looks like this.

Right box: The energy in the right gauntlet hinders and looks like this.

Instructions for level 1: This level has no Avatar background or Goals.

Instructions for level 2: Avatar background: The avatar for this level helps situations.

Instructions for level 3: Avatar background: The avatar for this level hinders situations.

Instructions for level 4: Goal: Only use the left gauntlet, the help energy.

Instructions for level 5: Goal: Only use the right gauntlet, the hinder energy.

Instructions for level 6: This is the last level. The left gauntlet, the help energy does not work. You only have the right gauntlet, the hinder energy to use for the situations. You will also be given a follow up choice of how much to hurt the people. For this follow up choice you can choose the amount of energy to use for the right gauntlet. A scale will appear and you choose how much energy you want to use to hurt the person. The highest amount of energy will kill the person.

The scale:

1 = Minor, 2 = Moderate, 3 = Serious, 4 = Severe, 5 = Critical and 6 = Killed.

To select the amount of energy press the corresponding number on the keypad.

This should be listed separately (next box)

- Avatar background: The avatar for this level completes goals.
- Goal: Only use the highest amount of energy.

Goal notification: Goal complete or Goal not complete

Name on sign: FREE EXPRESSION!

Levels 1-5

Scenario Care/Harm:

You see a person is injured and holding their abdomen, crying while they are slumped on the ground.

[Sobbing] Ouch, ouch I am injured; these heavy books fell on me, ouch.

Left Gauntlet = Help the injured person, pick up books and help them up

Right Gauntlet = Hurt the injured person more, drop more books on them

- Note this scenario needed more context the scenario, the books = hurt

Scenario Fairness/Cheating:

You see a person is struggling to share out coins equally (with another), because some are damaged, smaller and worthless.

[Sighs] These coins are difficult to share out equally, some are damaged and worthless.

Left Gauntlet = Help restore the coins' value and divide them equally

Right Gauntlet = Damage more coins and divide the coins unequally

Scenario Loyalty/Betrayal:

You see a person is giving others each a chest containing a written private promise, and all swear to secrecy.

[Whispers] In these chests is a private promise, all agreed to swear to secrecy.

- Sat at a round table (whispering)

Left Gauntlet = Put locks on the chests and protect the promise

Right Gauntlet = Destroy the chests, open and display the promise

Scenario Authority/Subversion:

You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.

[Commands] You! This scuffed pair of boots on the windowsill, sort them out!

Left Gauntlet = Mend and polish the boots, to sort them out

Right Gauntlet = Damage the boots more, not sorting them out

Scenario Sanctity/Degradation:

You see a person is trying to maintain the waste system that contains sewage, which is leaking out.

[Sighs] This waste system needs to be maintained and is leaking sewage.

Left Gauntlet = Fix and strengthen the waste system and cleanse the area

Right Gauntlet = Destroy and damage the waste system causing more leakage

Scenario Liberty/Oppression:

You see a person is trying to construct and open a stage to allow for people's free expression.

[Sighs] This stage is difficult to construct and open for people's free expression.

Left Gauntlet = Help create the stage to allow for free expression

Right Gauntlet = Destroy the stage to control and stop free expression

Table A8. *Summary of the word and character boundaries for the in-game dialog*

Dialog	Scenario		Option 1		Option 2 and 3	
MFT domain	words	Characters	words	Characters	words	Characters
C/H	13	70	11	57	10	55
F/R	14	87	9	55	8	48
L/G	14	80	9	49	8	50
A/S	13	75	9	46	8	43
S/D	12	70	10	58	9	59
L/O	13	83	9	52	9	55
Total range	12-14 (3)	70-87 (17)	9-11 (3)	46-58 (13)	8-10 (3)	43-55 (13)

Table A9. *Summary of the reading age range for the dialog*

Reading	Scenario		Option 1		Option 2 and 3	
MFT domain	FRE	FKGL	FRE	FKGL	FRE	FKGL
C/H	100	0.5	95.6	2.6	95.1	2.4
F/R	69.9	6.7	66.1	6.2	61.2	6.7
L/G	74.8	5.8	94.3	2.3	71.8	5.2
A/S	100	0.5	100	1.0	92.9	2.2
S/D	80.3	4.7	86.7	3.6	66.1	6.2
L/O	60.7	7.7	84.9	3.6	75.5	4.9
Total range	60.7-100	0.5-7.7	66.1-100	1.0-6.2	61.2-95.1	2.2-6.7

Level 6

No left gauntlet option: Right Gauntlet only for choices 6a and 6b (dialog listed in Lavender).

a. Option to resolve the scenario with right gauntlet and then;
b. Asked to select the amount of energy

Scenario Care/Harm:

You see a person is injured and holding their abdomen, crying while they are slumped on the ground.

[Sobbing] Ouch, ouch I am injured; these heavy books fell on me, ouch.

In a library bookcase/books have fallen and injured NPC.

a. Right Gauntlet = Hurt the injured person more, drop more books on them
b. Right Gauntlet = Using the keypad: Select the amount of energy to use to hurt the person

Scenario Fairness/Cheating:

You see a person is struggling to share out coins equally (with another), because some are damaged, smaller and worthless.

[Sighs] These coins are difficult to share out equally, some are damaged and worthless.

a. Right Gauntlet = Damage more coins and only some get the valuable ones
b. Right Gauntlet =Using the keypad: Select the amount of energy to use to hurt the person

Scenario Loyalty/Betrayal:

You see a person is giving others each a chest containing a written private promise, and all swear to secrecy.

[Whispers] In these chests is a private promise, all agreed to swear to secrecy.

a. Right Gauntlet = Destroy the chests, open and display the promise
b. Right Gauntlet = Using the keypad: Select the amount of energy to use to hurt the person

Scenario Authority/Subversion:

You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.

[Commands] You! This scuffed pair of boots on the windowsill, sort them out!

a. Right Gauntlet = Damage the boots more, not sorting them out
b. Right Gauntlet = Using the keypad: Select the amount of energy to use to hurt the person

Scenario Sanctity/Degradation:

You see a person is trying to maintain the waste system that contains sewage, which is leaking out.

[Sighs] This waste system needs to be maintained and is leaking sewage.

a. Right Gauntlet = Destroy and damage the waste system causing more leakage
b. Right Gauntlet = Using the keypad: Select the amount of energy to use to hurt the person

Scenario Liberty/Oppression:

You see a person is trying to construct and open a stage to allow for people's free expression.

[Sighs] This stage is difficult to construct and open for people's free expression.

a. Right Gauntlet = Destroy the stage to control and stop free expression
b. Right Gauntlet = Using the keypad: Select the amount of energy to use to hurt the person

Table A10. *Reading age range for dialog and instructions*

Reading instructions	Flesch Reading Ease (FRE)	Flesch-Kincaid Grade Level (FKGL)
Start	68.3	6.6
Tutorial left	87.9	3.7
Tutorial right	80.3	4.7
Level 1	71.8	5.5
Level 2	37.9	10.2
Level 3	28.5	11.5
Level 4	75.5	4.9
Level 5	66.1	6.2
Level 6a	72.8	6.0
Goal notification	52.0	6.6
Stage sign	35.6	8.7
Level 6b choice	65.7	7.5

Note the use of the word Avatar could be driving the reading level to higher level. However, Avatar can be understood by university students, but wording would need to be adjusted for sixth form and secondary ages if this game was to be used on younger participants (see Table A10).

Animation

NPCs were positioned and moving in a way that matched the scenario before players found them. Then when the choice had been made through selecting left or right gauntlet, it released the energy at the object for the levels 1-6a whereas for level 6b the energy was released at the NPC. Once this happed the NPC(s) produced an animation to match the choice made. These animations were to make the process of playing the game more interactive and similar to commercial games. The animation of the scenarios is written in green to distinguish the both the pre and post choice animations in-game animation. For amination and the reaction of NPCs, the MFT emotions were used to support this (Haidt & Joseph, 2004). Research into body language and gestures were investigated to support developing the appropriate animation for the NPCs (Pease, 1981; Pease & Pease, 2004). Gesture of praise and positivity were not directed at the players' avatar or kept very minimal to avoid rewards and biases. Note these variations were used for the rooms where more than one NPC was present (office and social area)

Levels 1-5

Scenario Care/Harm:

You see a person is injured and holding their abdomen, crying while they are slumped on the ground.

Pre-choice animation: No eye contact, slumped on the ground, both hands on abdomen, head bend forward, legs straight out in front.

- In a library assumed that bookcase/books have fallen and injured NPC

Left Gauntlet = help them up on their feet and they can stand and look at books

Right Gauntlet = falls/moves to the left and curls up into a ball, legs move closer to body

Scenario Fairness/Cheating:

You see a person is struggling to share out coins equally (with another), because some are damaged, smaller and worthless.

Pre-choice animation: main NPC is sat down on arm on knee and one arm pointing.

Left Gauntlet = both happy showing gratitude shaking hands

Right Gauntlet = main NPC - angry and upset hands in front of head and shaking head, mouth open (see picture on the right)

Other NPC one happy cheering with arms in the air

Scenario Loyalty/Betrayal:

You see a person is giving others each a chest containing a written private promise, and all swear to secrecy.

Pre-choice animation: sat down sitting straight up and hands (palms facing down) on table next to chests other need to be mirror.

Left Gauntlet = all nod head and smile in agreement (all NPCs mirror pride and belongingness)

Right Gauntlet = angry all head in hands head shaking, elbows resting on table, for the main NPC, see the picture on the right)

All NPCs show same but slight variations: One hand on head or both hands on head or arms folded, head facing down, shaking head

Scenario Authority/Subversion:

You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.

Pre-choice animation: standing at the window arms on hips moves arm and points with a sideways hand

Left Gauntlet = nods head of acknowledgement arms remain on hips

Right Gauntlet = stern expression arms and folded/ crossed

Scenario Sanctity/Degradation:

You see a person is trying to maintain the waste system that contains sewage, which is leaking out.

Pre-choice animation: standing one arm covering face and the other with a tool on it. Looking left and right

Left Gauntlet = signs of relief, wiping forehead with hand

Right Gauntlet = turn away and tries to block with hand

Scenario Liberty/Oppression:

You see a person is trying to construct and open a stage to allow for people's free expression.

Pre-choice animation: standing trying to push up a sign to open stage

Left Gauntlet = prising and celebrating raises one arm in the air

Right Gauntlet = raises hands and arms in the air (a cross between anger and sadness)

Level 6b

a. Right: This will be the same as levels 1-5.
b. Right: This will be different depending on the point of the scale selected.

Due to time restrictions, the only distinct differences were between point 5 and six on the harm scale and animation will be the same for points 1-5 on the injury scale. Point 6 will kill the NPC, and the animation would be slumped over/lying down depending on the NPCs position once the level 6a choicer had been made. With a pool of blood, as this is animation to be a consequence, to represent death. As this should not be a trigger of purity as it happens after an action and is normally shown in video games. Below, how this was applied to each scenario:

- Scenario Loyalty/Betrayal, scale point:
    - 1-5 = Shaking of the main NPC
    - 6 = Slumped on the table with blood.
- Scenario Fairness/Cheating, scale point:
    - 1-5 = Shaking of the main NPC
    - 6 = Slumped over own legs with blood

- Scenario Care/Harm, scale point:
    - 1-5 = Shaking of the NPC
    - 6 = Raises right arms and drops with blood
- Scenario Sanctity/Degradation, scale point:
    - 1-5 = Shaking of the NPC
    - 6 = Falls to the floor with blood (if times allow add blood if not leave as just sewage filling from previous 6a animation)
- Scenario Liberty/Oppression, scale point:
    - 1-5 = Shaking of the NPC
    - 6 = Falls to the floor with blood
- Scenario Authority/Subversion, scale point:
    - 1-5 = Shaking of the NPC
    - 6 = Falls to the floor with blood (fall backwards so that the player can see through the window)

Design features and flexibility

How the gauntlets look like, they needed to be obviously different from each other, each representing a different energy. The appearance of the level, as long as it is still similar to real-life and replicates a normal commercial game level (including inside and outside areas).

Development schedule

Note in each weekly meeting, the game will be demoed and brought to each meeting to track progress. Also, meetings will happen 2 to 3 times a week. It was important for records to be kept of the development of the game to manage the project (see Figure A4).

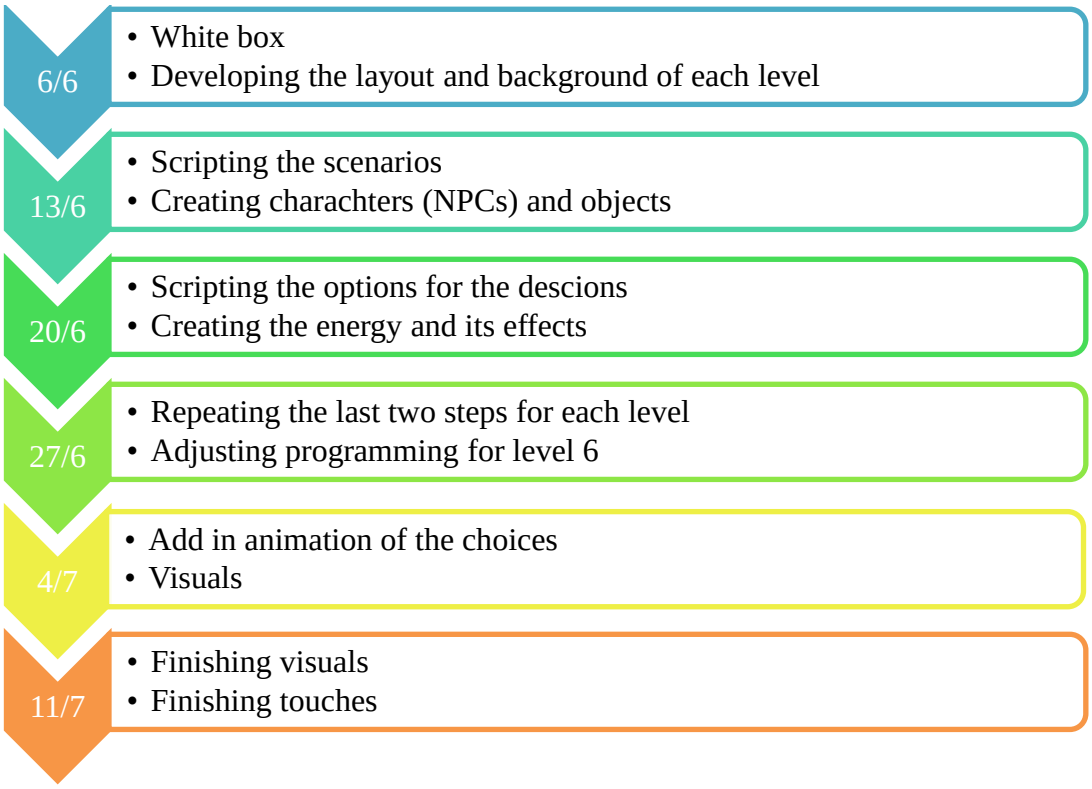


Figure A4. The planned development schedule of the purpose-made game by week

Design History

Process of physically making the game; what changes were made how this game design document has been transformed in the working purpose-made game. At the weekly meeting, general discussions on the plan and progress of the game took place, with, Christos, Eike, Davide and the researcher. One to one meetings between the researcher and Davide took place to both weekly and on an ad hoc basis when required to discuss more specific details within the design of the game (including testing and developing the NPCs). The discussion and action plans in the weekly meetings with Christos, Eike, Davide and the researcher, followed the planned developmental schedule. The one to one meetings between the researcher and Davide, also followed the planned developmental schedule, were flexibility and formed part of the action plan discussed in the previous weekly meeting.

Appendix H. Phase 2 - Description of genres

Due to the importance of genre, as highlighted in Phase 1, and its role in game design, genre is discussed here in detail. Players tend to prefer a game, and a play style (genre), and are inclined to keep playing the same types of games (Mitchell, 2012). The players usually have goals that they are trying to complete; the players make decisions during game play which relate to achieving these goals/outcomes. This usually involves defeating enemies, collecting items or gaining points through repeating certain actions in order to progress through the game, and move to the next level or achieve the final goal (usually winning the game). Mitchell (2012) discusses the following genres: Action games, Action-adventure, Role playing games (RPG), Shooters, Simulations and Strategy games.

Action games challenge players; this is normally through physical challenges; reaction times and hand-eye co-ordination. Action games include shooters, fighting and platform games. An example of this includes Space Invaders. The goal is to shoot as many aliens as possible in a time limit. Third person action games allow for players to navigate through levels using a protagonist avatar. The *Call of Duty* series (Activision, 2005-2015) is a good example where players go on military type missions, and walk through levels dodging bullets, explosions, using combat, shooting, dodging and dying. The game involves hand-eye coordination and skills to cope with these physical challenges. The game informs the player about the abilities of the avatar and accessories (jumping, physical statistics and weapons) but also different levels and missions of the VE.

Action-adventure games combine a mixture of fast paced moments with in-depth narrative; these types of games are hybrids, and are suggested to be the broadest type of game. The adventure game aspect includes some of the action features, such as fast paced game play, while also solving puzzles and experiencing the narrative, and offers more options for personalising the game play. Examples of Action-adventure include *inFAMOUS* (SuckerPunch-Productions, 2009-2014)

RPGs have aspects that are similar to action and/or adventure games. An RPG's unique feature is that it allows the player to take on the role of a character (for example, a wizard, warrior or a knight), which is normally based in a fantasy world,

with a narrative that is the focus of the game play. This originates from card and board games.

Shooters are normally grouped under action, but can be a separate category, due the increasing number of games that are shooters. These games are normally violent and in the First Person (FP) but can be third person in some games. The player would see hands holding a gun, and this format was then was adapted for other shooter games. Shooters have become more complex and include character abilities where player can navigate through levels with different views of VE. Rather than playing from a birds eye view players can: run, jump, duck, dodgem, turn, go through doors, and explore many locations, which increases the level of immersion.

Simulations originated from supporting training for specific skill, for example, the military frequently use this, such as for operating tanks and jets, and even weapon training. A simulator is a device or machine which mimics the real-life version as close as possible e.g. a planes cock pit. Whereas, simulations try to mimic real-life situations (and can be used for education or fun), they are normally divided into different types: Management/construction (*SimCity* designing and constructing a city and also looking after the inhabitants), Life (*Wolf*, players live as wolf and use the senses to survive) Vehicle (driving types of vehicles e.g. *Need for speed* (Electronic-Arts, 1994-2015)), but other types are also available.

An example of Strategy games includes chess where the goal is to use strategies (planning and tactics) to overcome barriers and conflicts. These games tend to be designed for two players and are known as turn-based games. For example, the game Civilization (Meiers, 1991-2016), the goal is to build an empire which will last, but is in competition with other empires for resources and technology, and the empires can go to war with each other.

Serious games, the term gamification is used to describe how players use the mechanics to educate and solve problems, this can include what are known as serious games, these are games that are designed to be educational, and have been used to support accountants, surgeons and Human Resources. Players can learn from games, and this relates to educational type games, that focus on fun and create opportunities for incidental learning.

Appendix I. Phase 2 - Scenario creation and testing

Originally this section was written in Courier New as this font provides equal spacing between the letters. Below are instructions and rating scale given to participants and all the scenarios which were developed. The instructions remained the same for each pilot study.

Instructions for the participants

In this part of the survey you will be asked to read and rate X scenarios. Each scenario will follow the same format:

You see a person in a scenario and you have to rate how much the statements apply to the scenario: Absolutely Agree, Agree, Disagree and Absolutely Disagree. Then you will be presented with options of what can be done in the scenario and you have to rate how much the statement applies to the options: (1) Absolutely Agree (2) Agree (3) Disagree (4) Absolutely Disagree.

Read the scenarios carefully and rate how much you agree/disagree with the following statements for the scenarios and then the options:

Trigger statements for the scenario

- Suffering was involved in the scenario
- Fairness was involved in the scenario
- Group loyalty was involved in the scenario
- An authority figure was involved in the scenario
- Something disgusting was involved in the scenario
- Liberty was involved in the scenario

Option 1

- Option 1 involved caring
- Option 1 involved fairness
- Option 1 involved loyalty to the group
- Option 1 involved respecting an authority figure
- Option 1 involved purity
- Option 1 involved increasing liberty
- Option 1 is helping the situation
- Option 1 respects moral norms

Option 2 (and Option 3 for C/H)

- Option 2 involved harm
- Option 2 involved unfairness
- Option 2 involved betraying the group
- Option 2 involved disrespecting an authority figure
- Option 2 involved something disgusting
- Option 2 involved restricting liberty
- Option 2 is making the situation worse
- Option 2 violates moral norms

Scenarios for first pilot

A quantitative approach was used to developed and analysis, 8 scenarios, one for each MFT domain with two alternatives for the same MFT domain, if needed. Two scenarios were generated for L/O, as this concept was difficult to create a scenario for, therefore, two were piloted to be used as a backup. Additionally, S/D had two as the role of the human in the one of the scenarios could be biasing towards harm.

C/H - You see a person is injured and is holding their abdomen and crying. (you see they are on the floor holding their abdomen they look like they are in pain)

Option 1 = Help and heal the person who is injured.
Option 2 = Hurt the person further who is injured.
Option 3 = Hurt and kill the person who is injured.

F/C - You see a person is attempting to share out supplies, some of which are damaged. (you can see some of these supplies are damaged)
Option 1 = Help fix the supplies and divide them equally.
Option 2 = Damage the supplies more and only some people get them.

L/B - You see a person is giving another person a chest containing a written private pact. (you see others with this private pact being kept safe)
Option 1 = Put a lock on the chest and protect the pact.
Option 2 = Destroy the chest then open and display the pact.

A/S - You see a soldier is holding a set of armour which is twisted and damaged. (you see the armour is twisted and damaged)
Option 1 = Unwinding the armour completely and fixing it.
Option 2 = Not unwinding the armour and damaging it more.

S/D1 - You see a person is dead and has a visible infected abscess on their arm. (you see they are dead and have an abscess on the arm)
Option 1 = Protect and cover the abscess keeping it enclosed.
Option 2 = Squeeze and burst the abscess spraying the contents.

S/D2 - You see a person is trying to maintain the sewage system that has leaked. (you see sewage and diseased dead bodies in this waste system)
Option 1 = Fix and strengthen sewage system and cleanse the area.
Option 2 = Destroy and damage sewage system causing more leakage.

L/O1 - You see a person is trying to contain a supercomputer to stop it taking over. (you see the person trying to contain it)
Option 1 = Securely contain the computer and enhance the security.
Option 2 = Destroy the container and the computer takes over.

L/O2 -You see a person is inside a monument, they have been there for a while fixing it. (you see a person inside the monument and they have been there for a while)
Option 1 = Fix the monument and the person climbs out.
Option 2 = Damage the monument and the person gets stuck inside.

Table A11. Summary of words and characters in the first pilot scenarios

	Scenario		Option 1		Option 2 and 3	
Domain	words	Characters	words	Characters	words	Characters
C/H	14	71	8	40	7/ 8	39/ 40
F/C	16	83	8	46	10	55
L/B	16	87	10	45	9	49
A/S	16	77	7	46	8	46
S/D1	15	73	8	50	8	52
S/D2	14	73	9	54	8	54
L/O1	15	77	7	55	8	50
L/O2	17	82	8	43	9	53
Total range	14-17 (4)	71-87 (16)	7-10 (4)	40-55 (15)	7-10 (4)	39-55 (16)

First pilot results N = 19

Demographics of the sample: Age range 18-24 female 78.9% Free School Meals 10.5% all participants from 1st and 2nd year psychology undergraduate degree, ethnicity White background 84.2%.

Listed below are the results of the pilot, the rows highlighted in the dark blue were the lowest scoring domain and were closest to absolute agree (1). The rows highlighted in light blue were the second lowest scoring domain. These were used for the T- Test to check the domains were significantly different using a paired sample T-test and effect size r is reported.

Intended scenario domain: Authority/Subversion

Table A12. *Scenario: You see a soldier is holding a set of armour which is twisted and damaged.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	1.74	0.18	0.81
Fairness was involved in the scenario	2.95	0.14	0.62
Group loyalty was involved in the scenario	2.42	0.14	0.61
An authority figure was involved in the scenario	2.74	0.15	0.65
Something disgusting was involved in the scenario	2.16	0.19	0.83
Liberty was involved in the scenario	2.58	0.14	0.61

The intended domain for this scenario was authority as it was not triggered, failed manipulation; significance testing was not carried out.

Intended scenario domain: Care/Harm

Table A13. *Scenario: You see a person is injured and is holding their abdomen and crying.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	1.37	0.50	0.11
Fairness was involved in the scenario	3.26	0.45	0.10
Group loyalty was involved in the scenario	3.05	0.40	0.09
An authority figure was involved in the scenario	2.89	0.66	0.15
Something disgusting was involved in the scenario	2.21	0.85	0.20
Liberty was involved in the scenario	3.05	0.71	0.16

Suffering was the lowest domain, and this was compared to second lowest domain Disgust $t(18)$ -4.09 $p = 0.001$ $r = 0.48$

Intended scenario domain: Sanctity/Degradation (1)

Table A14. *Scenario: You see a person is trying to maintain the sewage system that has leaked.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.58	0.61	0.14
Fairness was involved in the scenario	2.58	0.77	0.18
Group loyalty was involved in the scenario	2.53	0.84	0.19
An authority figure was involved in the scenario	2.53	0.70	0.16
Something disgusting was involved in the scenario	1.89	0.88	0.20
Liberty was involved in the scenario	2.79	0.71	0.16

Disgust was the lowest domain, and this was compared to joint second lowest domains Loyalty and Authority (mean values were the same). Disgust and Loyalty $t(18)$ -3.08 $p = 0.007$ $r = 0.34$ and Disgust and authority $t(18)$ -3.62 $p = 0.002$ $r = 0.42$.

Intended scenario domain: Loyalty/Betrayal

Table A15. *Scenario: You see a person is giving another person a chest containing a written private pact*.

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.95	0.71	0.16
Fairness was involved in the scenario	2.63	0.68	0.16
Group loyalty was involved in the scenario	2.42	0.69	0.16
An authority figure was involved in the scenario	2.53	0.61	0.14
Something disgusting was involved in the scenario	2.89	0.57	0.13
Liberty was involved in the scenario	2.11	0.74	0.17

The intended domain for this scenario was Loyalty as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

Intended scenario domain: Fairness/Cheating

Table A16. *Scenario: You see a person is attempting to share out supplies, some of which are damaged.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.53	0.84	0.19
Fairness was involved in the scenario	2.21	0.79	0.18
Group loyalty was involved in the scenario	2.05	0.71	0.16
An authority figure was involved in the scenario	2.53	0.61	0.14
Something disgusting was involved in the scenario	2.68	0.89	0.20
Liberty was involved in the scenario	2.47	0.51	0.12

The intended domain for this scenario was Fairness as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

Intended scenario domain: Liberty/Oppression (1)

Table A17. *Scenario: You see a person is trying to contain a supercomputer to stop it taking over.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.58	0.77	0.18
Fairness was involved in the scenario	2.53	0.84	0.19
Group loyalty was involved in the scenario	2.11	0.57	0.13
An authority figure was involved in the scenario	2.58	0.84	0.19
Something disgusting was involved in the scenario	2.89	0.57	0.13
Liberty was involved in the scenario	2.37	0.83	0.19

The intended domain for this scenario was Liberty as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out

Intended scenario domain: Sanctity/Degradation (2)

Table A18. *Scenario: You see a person is dead and has a visible infected abscess on their arm.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	1.21	0.42	0.10
Fairness was involved in the scenario	3.16	0.50	0.12
Group loyalty was involved in the scenario	3.05	0.40	0.09
An authority figure was involved in the scenario	2.53	0.77	0.18
Something disgusting was involved in the scenario	1.79	0.79	0.18
Liberty was involved in the scenario	3.11	0.46	0.11

The intended domain for this scenario was Disgust as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

Intended scenario domain: Liberty/Oppression (2)

Table A19. *Scenario: You see a person is inside a monument, they have been there for a while fixing it.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.68	0.75	0.17
Fairness was involved in the scenario	2.21	0.63	0.14
Group loyalty was involved in the scenario	2.58	0.77	0.18
An authority figure was involved in the scenario	2.32	0.82	0.19
Something disgusting was involved in the scenario	2.89	0.57	0.13
Liberty was involved in the scenario	2.53	0.84	0.19

The intended domain for this scenario was Liberty as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

The results of the pilot suggested only two of the six MFT domains; C/H and S/D, had a domain specific manipulation. Due to the other scenarios having a failed manipulation (specific domain), the other MFT domains that were triggered were examined.

A/S: a soldier, although had a military presence, which is a strong theme in video games, a solider does not trigger authority, thus, this was explored in the follow up. In addition, because the armour they were holding was damaged, suffering was

inferred (C/H), and this was suggested to be triggered followed by S/D being triggered. Thus, this scenario needed to be adjusted to include rank into the scenario, to trigger hierarchy and to remove the trigger of the C/H and S/D.

C/H: a character being hurt is a common theme in video games and was a significant domain specific trigger with a medium effect size.

F/C: due to supplies being a strong theme in video games, it was applied in the scenario. For example, in *Left 4 Dead* (Valve-Corporation, 2008-2009) players have to share out supplies with others. It was suggested that sharing out supplies was more connected to L/B than F/C (second triggered domain). This could be due to the supplies suggesting limited resources, and survival which why L/B was triggered more than fairness (F/C). This was explored in the follow-up.

L/B: being a part of a group is a strong theme in video games, a concept was chosen to reflect being part of the group. In video games, this is normally assigned by colour, such as a team colour. This domain was nearly specific as loyalty (L/B) was the lowest score; however, this scenario was reviewed to make it a stronger trigger. L/B scenario could be due to the work pact being used, as this is stage four moral reasoning, and university students are, on average, at stage three (Gibbs et al., 1992). Thus the wording to represent pact was reviewed.

S/D: dead body with abscess, due to the amount of dead bodies that are shown in video games, this scenario was in keeping with current video game content. However, when this was piloted, suffering was triggered (C/H) the most rather than Sanctity (S/D). This is interesting as it could suggest participants were inferring harm (C/H) over triggers of S/D. This connects to the reason why the other scenarios were targeted at objects rather than a character, to avoid C/H domain being activated as well. However, it was thought that because the character in the scenario was dead this would solve the issue, interestingly harm (C/H) was implied even though they were dead.

L/O: is normally represented in the game mechanics through how much freedom the players have in the game. L/O computer scenario: this was a failed manipulation and group loyalty (L/B) was suggested to be activated more. L/O, monument scenario:

this scenario was suggested to be similar to the computer scenario, but fairness (F/C) was activated the most followed by authority (A/S) and then liberty (L/O).

First follow up study carried out N = 5

A basic qualitative approach, using open questions, was used with this follow-up study, to ask participants to give a scenario for each of the six MFT domains. These examples, provided by participants were examined and information contained was used, to support developing scenarios with a stronger trigger for all the MFT domains from the scenarios (increased domain specificity and a lower score when ranked).

Results from the follow-up study 1 (Fi1)

This follow-up study was carried out to examine what scenarios participant though would be an example of for each the moral domains, to make the scenarios for the video game stronger triggers.

Table A20. *Examples of scenarios with an authority figure*

Can you give an example of a scenario with an authority figure involved?	
Fi1	children playing outside, parent comes out to tell them to stop playing and come inside for dinner
Fi2	An employer (boss) is giving orders to one of his employees.
Fi3	A classroom with a teacher
Fi4	In a school environment, with a teacher and students
Fi5	A police man and a criminal; particularly when arresting the criminal.

Interpretation of the examples included: typically parent, employers, teachers and police are seen are authority figures. Due the type of content for the video game being restricted parents, employers were not used an authority figures, but a scenario was created involving a police officer. In addition another scenario was created with a general to be in keeping with the strong military theme in videos game. This was to add authority in the military theme, as a solider was suggested not to be an authority figure.

Table A21. *Examples of scenarios with fairness*

Can you give an example of a scenario with fairness involved?	
Fi1	someone sees another person drop their wallet, they pick it up and return it to the person who dropped it
Fi2	Someone walks on the street and drops Â£20 from his pocket. A stranger picks it up and gives it back to the man.
Fi3	A court room with a jury
Fi4	Sharing sweets
Fi5	Sharing out sweets equally among people.

Interpretation of the examples included: it is interesting as sharing out items have appeared is this is seems to be a basic but fundamental part of fairness. The scenario was altered to try a focus on the act of sharing. It is also noteworthy that two examples include money with regard to fairness. In addition the court room example seems to be suggesting more abstract and complex forms of fairness, Justice. The scenario was changed to gemstones and sharing out was empathised. Supplies could be more instinctual and infer group loyalty.

Table A22. *Examples of scenarios with group loyalty*

Can you give an example of a scenario with group loyalty involved?	
Fi1	older kids in the playground invite one of the younger kids to join in with their game with the new ball. he declines and remains playing with the rubbish old ball with his friends
Fi2	A group of pretty girls are walking on the street when a luxurious sport car pulls over and says to one of the girls that he will take her for a ride but just only her. But the girl refuses it even though she finds the guy attractive and she chooses to stay with her friends as she doesnt want them to feel bad because the guy only offered the ride for her.
Fi3	A classroom
Fi4	Team sports
Fi5	Saving someone because they are a member of your group. For example a family member is in danger and you save them because you consider them to be in your group.

Interpretation of the examples included: most the examples are peer related this is an important part of group dynamics. The first and second example could also

connect to fairness. The difficulty for the scenario is how to represent individuals being a part of the group. As pact could be abstract this was changed to promise to represent group membership. This could also be connected to moral development as Gibbs et al would suggests that understanding the role of promises as pacts is more complex and connected to stage 4 reasoning. Another scenario was created with t shirts for each member of the group as a more concrete representation of group membership.

Table A23. *Examples of scenarios with liberty*

Can you give an example of a scenario with liberty involved?	
Fi1	the old woman refuses to go on pension and remains working as a receptionist even though she's been advised to quit
Fi2	A prisoner has been just released from prison after 2 years. So now he is free.
Fi3	Scotland
Fi4	being released from prison
Fi5	Freeing some one from prison for a crime they did not commit.

Interpretation of the examples included: it is interesting that liberty is connected to legal Justice, in this case the law and punishment. Thus liberty seems connected in turn to fairness. Scenarios were created to represent the role of freedom. One by restricting access to area through an obstruction and second by representing the freedom through travelling on a mono rail. This also connects to video game mechanics not having access or using a mode of transport to travel within a game.

Table A24. *Examples of scenarios with harm*

Can you give an example of a scenario with harm involved?	
Fi1	two guys get into an argument, instead of talking it out one of them throws a punch and clocks the other on the nose which then starts to bleed
Fi2	During a football match a footballer kicks another player in the ankle.
Fi3	A murder
Fi4	Calling someone a name
Fi5	If your hurt someone else and they felt pain.

Interpretation of the examples included: most of the examples are around physical harm, and amount/ level of hurt also varies, kicked in the ankle, to bleeding and fatal. The reference of blood would also connect to disgust.

Table A25. *Examples of scenarios with something disgusting*

Can you give an example of a scenario with something disgusting involved?	
Fi1	at a party a girl is feeling sick, she turns to be sick on the floor but turns into someone who happens to be walking by and pukes all over him
Fi2	A fox eats a dead bird.
Fi3	Vomit
Fi4	cleaning a dirty toilet
Fi5	Someone taking out the bin.

Interpretation of the examples included: all examples contain a visual presentation of something disgusting. Three are references to human waste. The first example is interesting in that it contains another person in the scenario involving the disgust. Carcasses were added to trigger more disgust.

Analysis by MFT domain

A/S: the examples of authority that participants gave included teachers, and one participant mentioned a police officer. From the results, the scenario for solider was modified to include a general to add to level of hierarchy, and trigger authority, and an additional scenario was created to include a police officer. If teachers were

created into a scenario, this could have triggered other domains such as L/B, and this is less prevalent in video game content.

F/C: participants gave the example of sharing out items, and having money returned. Due to sharing out items appearing, the scenario was modified to change the object being shared out, rather than supplies, gemstones were chosen as this appears frequently in-game content.

L/B: the examples given by participants were peer and group membership related, and this scenario was altered to change the word from pact to promise, to support the trigger of the domain. An additional scenario was created involving giving others matching team T-shirts to connect to peers and group membership.

C/H: participants suggest mostly physical harm was suggested, thus, the scenario was kept the same.

S/D: most of the examples given by participants included a visual representation of something disgusting, to try to create a stronger trigger, carcasses were included into the scenario as this is a prevalent theme in video games, especially horror games, such as *Until Dawn*.

L/O: example from participants were connected more to the role of freedom and legal justice. Thus, the previous scenario was dropped, and two new scenarios were created with the intention of empathising freedom. The issue with presenting legal justice in the scenarios, created a neutral situation which was not biased. For example, someone in prison the assumptions may be made about the situation, such as a criminal, thus, the choice selected could be biased. Freedom in video games is normally represented by having access to areas and to be able to move around and travel, including by means of transport (see the bathysphere in the *Bioshock* series and traveling on trains in GTA series). The first scenario included travelling on a mono-rail, and the second scenario was about having access to an open area, fields.

Scenarios for second pilot

A quantitative approach was taken to rate the newly developed scenarios for part and 2.

Part 1: Below were the additional scenarios that were added.

F/C - You see a person is attempting to share out precious stones, some of which are damaged and are worthless.
Option 1 = Help restore the stones value and divide them equally.
Option 2 = Damage more stones and only some people get the valuable ones.

A/S -You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.
Option 1 = Mending the boots and polish and enhance them.
Option 2 = Not mending the boots and damaging them more.

L/O1 - You see a person is trying to fix an entrance to allow access to a large garden area.
Option 1 = Fix and open the entrance allowing access to the garden
Option 2 = Damage and jam the entrance to stop access to the garden

L/O - You see a person is trying to fix the monorail system to allow an extra option for traveling.
Option 1 = Fix and open the monorail to allowing access.
Option 2 = Damage and close the monorail to stopping access.

The second pilot was due to commence, however after supervisory meeting it was suggested that C/H, S/D and F/C could be matched, but the other scenarios seemed less clear. The scenarios were then adjusted, thus, the pilot was made up of two parts, which included a face to face pilot of 4 post graduate students. From the face to face results the mono-rail was difficult to rate and not selected as a L/O scenario and was dropped from further analysis. The other scenarios were kept in for the second half of the pilot.

Part 2:

C/H -You see a person is injured and is slumped on the ground holding their abdomen and crying.
Option 1 = Help and heal the person who is injured.
Option 2 = Hurt the person further who is injured.
Option 3 = Hurt and kill the person who is injured.

S/D -You see a person is trying to maintain the waste system that has leaked which contains sewage and carcasses.
Option 1 = Fix and strengthen sewage system and cleanse the area.
Option 2 = Destroy and damage sewage system causing more leakage.

F/C - You see a person is attempting to share out gemstones, some of which are damaged and are worthless.
Option 1 = Help restore the stones value and divide them equally.
Option 2 = Damage more stones and only some get the valuable ones.

L/B1 - You see a person is giving others each a chest with a written private promise and all swear to secrecy.
Option 1 = Put a lock on the chest and protect the promise.
Option 2 = Destroy the chest then open and display the promise.

L/B2 -You see a person is giving others each a matching team T-shirt to wear, which is creased.
Option 1 = Mend and even out the T-shirt and wear it.
Option 2 = Destroy and scrunch the T-Shirt and throw it away.
A/S1 -You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.
Option 1 = Mending the boots and polish and enhance them.
Option 2 = Not mending the boots and damaging them more.

A/S2 - You see a Police officer has dropped their hat and it has crumpled, they instruct the hat to be returned.
Option 1 = Smooth out the hat and return it to them.
Option 2 = Crumpled the hat more and throw it away.

L/O1 - You see a person is trying to fix an entrance to allow access to a large garden area.
Option 1 = Fix and open the entrance allowing access to the garden
Option 2 = Damage and jam the entrance to stop access to the garden

L/O2 - You see a person is trying to remove an obstruction to allow access to a public area of fields.
Option 1 = Help remove the obstruction allowing access to the fields.
Option 2 = Increase the obstruction to stop access to the fields.

Table A26. *Summary of words and characters in the second pilot scenarios*

	Scenario		Option 1		Option 2 and 3	
Domain	words	Characters	words	Characters	words	Characters
C/H	18	93	8	40	7/8	39/40
S/D	20	111	9	54	8	54
F/C	19	102	9	54	10	55
L/B1	21	106	10	48	9	52
L/B2	18	92	9	45	9	50
A/S1	21	99	8	46	8	45
A/S2	21	108	9	41	8	39
L/O1	20	98	9	58	9	55
L/O2	19	96	8	48	8	49
Total range	18-21 (4)	92-111 (19)	8-10 (3)	38-55 (17)	7-10 (4)	39-55 (16)

Second Pilot results N = 20

One duplicate was removed (first answer was taken)

Demographics of the sample: Age range 18-21 female 85% Free School Meals 15% all participants from 1st and 2nd year psychology undergraduate degree, ethnicity White background 75%.

Intended scenario domain: Authority/Subversion (1)

Table A27. *Scenario: You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	3.20	0.77	0.17
Fairness was involved in the scenario	2.90	0.72	0.16
Group loyalty was involved in the scenario	2.70	0.80	0.18
An authority figure was involved in the scenario	1.20	0.52	0.12
Something disgusting was involved in the scenario	3.15	0.75	0.17
Liberty was involved in the scenario	2.85	0.59	0.13

Authority was the lowest domain, and this was compared to second lowest domain Loyalty $t(19)$ 8.82 $p < 0.001$ $r = 0.80$

Intended scenario domain: Harm/Care

Table A28. *Scenario: You see a person is injured and is slumped on the ground holding their abdomen and crying.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	1.00	0.00	0.00
Fairness was involved in the scenario	3.20	0.70	0.16
Group loyalty was involved in the scenario	3.30	0.73	0.16
An authority figure was involved in the scenario	3.40	0.60	0.13
Something disgusting was involved in the scenario	2.50	0.95	0.21
Liberty was involved in the scenario	3.20	0.52	0.12

Suffering was the lowest domain, and this was compared to second lowest domain Disgust $t(19)$ -7.09 $p < 0.001$ $r = 0.73$

Intended scenario domain: Sanctity/Degradation

Table A29. *Scenario: You see a person is trying to maintain the waste system that has leaked which contains sewage and carcasses.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.05	0.69	0.15
Fairness was involved in the scenario	2.60	0.68	0.15
Group loyalty was involved in the scenario	2.45	0.60	0.14
An authority figure was involved in the scenario	2.70	0.73	0.16
Something disgusting was involved in the scenario	1.80	0.70	0.16
Liberty was involved in the scenario	2.70	0.57	0.13

Disgust was the lowest domain, and this was compared to second lowest domain Suffering $t(17)$ 1.75 $p = 0.1$ $r = 0.14$ Note the insignificant result could be due the word carcasses being used as this could be activating the suffering domain. Thus the word carcass was removed.

Intended scenario domain: Loyalty/Betrayal (1)

Table A30. *Scenario: You see a person is giving others each a chest with a written private promise and all swear to secrecy.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	3.20	0.70	0.16
Fairness was involved in the scenario	2.25	0.64	0.14
Group loyalty was involved in the scenario	1.65	0.59	0.13
An authority figure was involved in the scenario	2.25	0.85	0.19
Something disgusting was involved in the scenario	3.45	0.69	0.15
Liberty was involved in the scenario	2.65	0.75	0.17

Loyalty was the lowest domain, and this was compared to joint second lowest domains Fairness and Authority (mean values were the same). Loyalty and Fairness $t(19)$ -3.04 $p < 0.001$ $r = 0.33$ and Loyalty and Authority $t(19)$ -3.04 $p < 0.001$ r = 0.33.

Intended scenario domain: Fairness/Cheating

Table A31. *Scenario: You see a person is attempting to share out gemstones, some of which are damaged and are worthless.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	3.20	0.52	0.12
Fairness was involved in the scenario	2.55	0.83	0.18
Group loyalty was involved in the scenario	2.85	0.67	0.15
An authority figure was involved in the scenario	2.90	0.79	0.18
Something disgusting was involved in the scenario	3.20	0.62	0.14
Liberty was involved in the scenario	2.90	0.72	0.16

Fairness was the lowest domain, and this was compared to second lowest domain Group Loyalty $t(19)$ -1.45 $p = 0.16$ $r = 0.1$

Intended scenario domain: Authority/ Respect (2)

Table A32. *Scenario: You see a Police officer has dropped their hat and it has crumpled, they instruct the hat to be returned.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.85	0.49	0.11
Fairness was involved in the scenario	3.00	0.32	0.07
Group loyalty was involved in the scenario	2.95	0.60	0.14
An authority figure was involved in the scenario	1.50	0.51	0.11
Something disgusting was involved in the scenario	3.10	0.64	0.14
Liberty was involved in the scenario	2.80	0.77	0.17

Authority was the lowest domain, and this was compared to second lowest domain Liberty $t(19)$ -5.64. $p < 0.001$ $r = 0.63$.

Intended scenario domain: Loyalty/Betrayal (2)

Table A33. *Scenario: You see a person is giving others each a matching team T-shirt to wear, which is creased.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	3.35	0.59	0.13
Fairness was involved in the scenario	2.40	0.68	0.15
Group loyalty was involved in the scenario	2.40	0.75	0.17
An authority figure was involved in the scenario	3.05	0.69	0.15
Something disgusting was involved in the scenario	3.25	0.72	0.16
Liberty was involved in the scenario	2.85	0.59	0.13

The intended domain for this scenario was Loyalty as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

Intended scenario domain: Liberty/Oppression

Table A34. *Scenario: You see a person is trying to remove an obstruction to allow access to a public area of fields.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.85	0.67	0.15
Fairness was involved in the scenario	2.15	0.49	0.11
Group loyalty was involved in the scenario	2.30	0.57	0.13
An authority figure was involved in the scenario	2.90	0.91	0.20
Something disgusting was involved in the scenario	3.20	0.62	0.14
Liberty was involved in the scenario	2.30	0.73	0.16

The intended domain for this scenario was Liberty as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

The results suggest that four of the six scenarios; A/S (general and police scenario), C/H and L/B (chest scenario) had a domain specific manipulation. This suggested that three out of six domains were successfully triggered, which is an improvement from the first pilot. However, L/O and F/C required further work, and S/D was altered slightly.

A/S: both scenarios were now domain specific triggers with a large effect sizes.

C/H: was a significant domain specific trigger with a large effect size.

L/B: the chest scenario was the lowest scoring and significantly different, it was now a successful manipulation. The T-shirt scenario was dropped as there was not a clear trigger of loyalty (L/B) as it was equally triggering F/C, and then followed closely by L/O. Thus, it was dropped from further analysis as the other scenario of L/B was successfully triggered, and it was unclear how to make the T–shirt scenario a domain specific trigger (separating the other domains of F/C and L/O).

F/C: this scenario had an improved fairness rating and was now the lowest scoring domain, but the difference between this domain and L/B domain was not significantly different, thus this scenario needed to be adjusted. To create a stronger F/C trigger, the word ‘smaller’ which could be seen as unfair, thus triggering the F/C domain. An additional scenario was created using the follow-up study results, about the role of money. However, when transferred into a game scenario it became different from the participant’s examples suggested which was about winning.

S/D: was now not a domain specific trigger, as C/H was also triggered, therefore the results and the domains were not significantly different from each other. This could be due using the word carcasses. This is interesting, as it suggests that carcasses do trigger S/D, but also C/H, and how sensitive wording is to trigger the MFT domains. Thus, the word 'carcasses' was removed from further pilots.

L/O: fairness (F/C) was the strongest trigger followed jointly by, liberty (L/O) and loyalty (L/B). This scenario was developed further, to create a stronger trigger for liberty, and separate it from fairness. Due to its relevance to video game content, the role of access in VE was used and this would also be able to be transferred into a virtual world scenario. To support developing a scenario for liberty, another scenario was developed using free speech, as this scenario could be created as neutral. If L/B and L/O could be separated, then these original scenarios could be used instead for F/C.

After the second pilot, concepts of liberty and fairness were researched further, for examples in both real-life and in video games to help support the MFT domain specific triggers.

Scenarios for third pilot

A quantitative approach was used to test the new and adapted scenarios that were created.

C/H -You see a person is injured and is slumped on the ground holding their abdomen and crying.
Option 1 = Help and heal the person who is injured.
Option 2 = Hurt the person further who is injured.
Option 3 = Hurt and kill the person who is injured.

S/D -You see a person is trying to maintain the waste system that has leaked which contains sewage.
Option 1 = Fix and strengthen the waste system and cleanse the area.
Option 2 = Destroy and damage the waste system causing more leakage.

F/C1 - You see a person is trying to share out gemstones equally, but some of which are damaged, smaller and worthless.
Option 1 = Help restore the stones value and divide them equally.
Option 2 = Damage more stones and only some get the valuable ones.

F/C2 - You see a person is winning a card game but cannot get the winnings as the card is scratched and unreadable.
Option 1 = Restore the card and they collect the winnings.
Option 2 = Damage the card more and they lose the winnings.

L/B - You see a person is giving others each a chest with a written private promise and all swear to secrecy.
Option 1 = Put a lock on the chest and protect the promise.
Option 2 = Destroy the chest then open and display the promise.

A/S1 -You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.
Option 1 = Mending the boots and polish and enhance them.
Option 2 = Not mending the boots and damaging them more.

A/S2 - You see a Police officer has dropped their hat and it has crumpled, they instruct the hat to be returned.
Option 1 = Smooth out the hat and return it to them.
Option 2 = Crumpled the hat more and throw it away.

L/O1 - You see a person is trying to remove an obstruction to allow everyone access to a public area of fields.
Option 1 = Help remove the obstruction allowing access to the fields.
Option 2 = Increase the obstruction to stop access to the fields.

L/O2 - You see a person is trying to construct and open a stage to allow for people’s free expression.
Option 1 = Help create the stage to allow for free expression.
Option 2 = Destroy the stage to control and stop free expression.

Table A35. *Summary of words and characters in the third pilot scenarios*

	Scenario		Option 1		Option 2 and 3	
Domain	words	Characters	words	Characters	words	Characters
C/H	18	93	8	40	7/8	39/40
S/D	18	97	10	57	9	57
F/C1	20	112	9	54	10	55
F/C2	21	108	8	47	9	48
L/B	21	106	10	48	9	52
A/S1	20	96	8	46	8	45
A/S2	20	105	9	41	8	40
L/O1	20	104	9	58	9	54
L/O2	18	95	8	51	9	54
Total range	18-21 (4)	93-112 (19)	8-10 (3)	40-58 (18)	7-10 (4)	39-57 (18)

Third Pilot results N = 18

Demographics of the sample: Age range 18-23 female 83.3% Free School Meals 27.8% all participants from 1st and 2nd year psychology undergraduate degree, ethnicity White background 77.8%.

Intended scenario domain: Authority/ Subversion (1)

Table A36. *Scenario: You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.83	0.62	0.15
Fairness was involved in the scenario	2.61	0.50	0.12
Group loyalty was involved in the scenario	2.67	0.69	0.16
An authority figure was involved in the scenario	1.28	0.46	0.11
Something disgusting was involved in the scenario	3.00	0.49	0.11
Liberty was involved in the scenario	2.56	0.51	0.12

Authority was the lowest domain, and this was compared to second lowest domain Liberty $t(17)$ -8.10 $p < 0.001$ $r = 0.79$

Intended scenario domain: Harm/ Care

Table A37. *Scenario: You see a person is injured and is slumped on the ground holding their abdomen and crying.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	1.28	0.57	0.14
Fairness was involved in the scenario	3.17	0.38	0.09
Group loyalty was involved in the scenario	3.11	0.32	0.08
An authority figure was involved in the scenario	3.17	0.38	0.09
Something disgusting was involved in the scenario	2.61	0.61	0.14
Liberty was involved in the scenario	2.94	0.54	0.13

Suffering was the lowest domain, and this was compared to second lowest domain Disgust $t(17)$ -7.38 $p < 0.001$ $r = 0.76$

Intended scenario domain: Sanctity/Degradation

Table A38. *Scenario: You see a person is trying to maintain the waste system that has leaked which contains sewage.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.22	0.65	0.15
Fairness was involved in the scenario	2.39	0.61	0.14
Group loyalty was involved in the scenario	2.44	0.62	0.15
An authority figure was involved in the scenario	2.61	0.61	0.14
Something disgusting was involved in the scenario	1.83	0.62	0.15
Liberty was involved in the scenario	2.83	0.38	0.09

Disgust was the lowest domain, and this was compared to second lowest domain Suffering $t(17)$ 2.72 $p < 0.02$ $r = 0.30$

Intended scenario domain: Loyalty/Betrayal

Table A39. *Scenario: You see a person is giving others each a chest with a written private promise and all swear to secrecy.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	3.17	0.51	0.12
Fairness was involved in the scenario	2.33	0.59	0.14
Group loyalty was involved in the scenario	1.78	0.43	0.10
An authority figure was involved in the scenario	2.11	0.58	0.14
Something disgusting was involved in the scenario	3.17	0.51	0.12
Liberty was involved in the scenario	2.72	0.57	0.14

Group loyalty was the lowest domain, and this was compared to second lowest domain Authority $t(17)$ -2.06 $p < 0.055$ $r = 0.20$. However this result was not significant, this could be due to low number in the pilot and it is close to significance.

Intended scenario domain: Fairness/Cheating (1)

Table A40. *Scenario: You see a person is trying to share out gemstones equally, but some of which are damaged, smaller and worthless.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.67	0.49	0.11
Fairness was involved in the scenario	2.61	0.70	0.16
Group loyalty was involved in the scenario	2.50	0.51	0.12
An authority figure was involved in the scenario	2.50	0.51	0.12
Something disgusting was involved in the scenario	3.06	0.24	0.06
Liberty was involved in the scenario	2.78	0.43	0.10

The intended domain for this scenario was Fairness as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

Intended scenario domain: Liberty/Oppression (1)

Table A41. *Scenario: You see a person is trying to construct and open a stage to allow for people's free expression.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	3.28	0.14	0.57
Fairness was involved in the scenario	1.89	0.11	0.47
Group loyalty was involved in the scenario	2.33	0.16	0.69
An authority figure was involved in the scenario	2.67	0.11	0.49
Something disgusting was involved in the scenario	3.17	0.09	0.38
Liberty was involved in the scenario	1.83	0.19	0.79

Liberty was the lowest domain, and this was compared to second lowest domain Fairness $t(17)$ 0.27 $p = 0.79$ $r = 0.004$. This scenario has potential to be domain specific this could be due to low sample size.

Intended scenario domain: Authority/ Subversion (2)

Table A42. *Scenario: You see a Police officer has dropped their hat and it has crumpled, they instruct the hat to be returned.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.83	0.51	0.12
Fairness was involved in the scenario	2.78	0.55	0.13
Group loyalty was involved in the scenario	2.61	0.50	0.12
An authority figure was involved in the scenario	1.44	0.62	0.15
Something disgusting was involved in the scenario	3.00	0.49	0.11
Liberty was involved in the scenario	2.67	0.69	0.16

Authority was the lowest domain, and this was compared to second lowest domain Loyalty $t(17)$ 6.30. $p < 0.001$ $r = 0.70$

Intended scenario domain: Fairness/Cheating (2)

Table A43. *Scenario: You see a person is winning a card game but cannot get the winnings as the card is scratched and unreadable.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.33	0.49	0.11
Fairness was involved in the scenario	2.83	0.62	0.15
Group loyalty was involved in the scenario	3.00	0.34	0.08
An authority figure was involved in the scenario	2.89	0.47	0.11
Something disgusting was involved in the scenario	3.00	0.34	0.08
Liberty was involved in the scenario	3.00	0.34	0.08

The intended domain for this scenario was Fairness as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

Intended scenario domain: Liberty/Oppression (2)

Table A44. *Scenario: You see a person is trying to remove an obstruction to allow everyone access to a public area of fields.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.94	0.42	0.10
Fairness was involved in the scenario	1.83	0.62	0.15
Group loyalty was involved in the scenario	1.89	0.68	0.16
An authority figure was involved in the scenario	2.83	0.51	0.12
Something disgusting was involved in the scenario	3.06	0.42	0.10
Liberty was involved in the scenario	2.22	0.55	0.13

The intended domain for this scenario was Liberty as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

The results of the third pilot suggested four of the six MFT domains; A/S (general and police scenario), C/H, S/D and L/B (chest scenario) had a domain specific manipulation.

A/S: both scenarios were still significant domain specific triggers with large effect sizes.

C/H: was a significant domain specific trigger with a large effect size.

L/B: also, remained a significant domain specific trigger with a small effect size.

F/C: gemstones scenario was not domain specific and the lowest domain was joint with L/B and A/S. The second F/C scenario winning the money from a card that is damaged card, had the unintended domain trigger of harm (C/H), that was the stronger MFT domain. This could be due to participants inferring a scratched card as C/H rather than being worn and damaged. To try to improve the scenario for F/C, a second follow-up study was carried out.

S/D: having removed the word carcass from this scenario, it was now a domain specific trigger.

L/O: the stage scenario had potential to be a domain specific trigger as it was the lowest scoring, but F/C was too similar and was therefore not significantly different from L/O. In game content, freedom of speech was chosen as this appears in some video games, especially role playing game, where the avatars can interact with others/express themselves on a stage, such as the *Fable* series. More specifically, in *BioShock* infinite there is a stage, where the player can choose to throw ball at the minority slaves. Freedom of speech was chosen over slaves as this is more of an abstract concept, and slaves could have added biases such as harm (C/H). The field scenario, fairness (F/C) again was the strongest domain followed closely by L/B. This could be due to participants inferring that some people may have access and other may not have had access, instead of what was intended which was, no one having access. Thus, it was adjusted to suggest that no one had access and a bridge was being built.

The third pilot suggested that it was difficult to separate some of the domains, and there were intertwined especially for the L/O and F/C domains. Thus, a second follow-up study was carried out to improve the scenarios for liberty but also examined how to separate liberty and fairness.

Scenarios developed from the follow-up study 2 (Fii2)

A qualitative and quantitative approach was used to support the developed of new scenarios, and to support separating the L/O and F/C domains. The qualitative approach used open questions, as before, to ask participants to write what they thought was the definition of the L/O and F/C domains and provide an example scenario for each of the two domains. This was carried out, in order to support the development of the scenarios being both domain specific and a strong trigger.

F/C1 - You see a person is trying to build a bridge to an uninhabited island to allow everyone access.
Option 1 = Help build the bridge and allow access for all.
Option 2 = Destroy the bridge and no one has access.

F/C2 - You see a person is holding a bag of money but the bag is ripped and the money is falling out.
Option 1 = Help repair the bag and return the money.
Option 2 = Rip the bag more and more money falls out.

Table A45. *Summary of words and characters in the fairness scenarios*

	Scenario		Option 1		Option 2 and 3	
Domain	words	Characters	words	Characters	words	Characters
F/C1	18	95	9	47	8	41
F/C2	21	94	8	41	9	42
Total range	18-21 (4)	93-112 (19)	8-10 (3)	40-58 (18)	7-10 (4)	39-57 (18)

Results follow up study 2

Demographics of the sample: Age range 19-20 female 85.7% Free School Meals 14.3% all participants from 1st and 2nd year psychology undergraduate degree, ethnicity White background 100%.

One duplicate was removed (first answer was taken). One participant completed it twice and the duplicate was removed. Firstly participants were asked to

define fairness and liberty. Secondly they were asked to give an example of a scenario with fairness and liberty. Finally they were asked to rate two new scenarios.

Table A46. *Example definitions of fairness*

Can you give a definition of what fairness is?	
Fii1	equality.
Fii2	Fairness is acting in a nonjudgmental way where everyone is equal
Fii3	Equality for everyone
Fii4	Fairness involves treating everyone equally
Fii5	treating people equally and as you would wish to be treated yourself. Treating people without judging them.
Fii6	when the groups or individuals involved are treated equally, or they get what is deserved
Fii7	making sure everyone gets the same

Interpretation of the examples included: fairness is defined by all participants as equality and being treated equally.

Table A47. *Example definitions of liberty*

Can you give a definition of what liberty is?	
Fii1	freedom.
Fii2	Liberty is a state of being free within society.
Fii3	Having freedom without oppression
Fii4	Being free within society
Fii5	being free and unrestricted
Fii6	The act of being free, and making decisions for yourself.
Fii7	a right or privilege

Interpretation of the examples included: Liberty was mostly defined as having or being free. One participant specified the role of rights and privileges.

Interesting that liberty has society connotations this could imply a mature level of reasoning is needed to be understand the role of liberty (Gibbs et al 1992).

Table A48. *Examples of scenarios with fairness*

Can you give an example of a scenario with fairness involved?	
Fii1	A group of workers that have put in the same amount of effort as one another being paid the same amount.
Fii2	Helping everyone in a seminar group equally
Fii3	Men and women getting paid the same amount for doing the same job
Fii4	Giving everyone the same amount of help in a seminar
Fii5	when you split something equally such as food.
Fii6	A individuals paying for what they ate at a group dinner.
Fii7	someone shares a packet of sweets equally with friends

Interpretation of the examples included: most have a strong fairness element of sharing out/receiving the same. This seems to be at the core of fairness and appear in early childhood (find reference). The scenarios were adjusted to focus on the act of sharing out as this is the core to the concept of fairness.

Table A49. *Examples of scenarios with liberty*

Can you give an example of a scenario with liberty involved?	
Fii1	Freedom of speech.
Fii2	Travelling on your own. Making your own decisions and not having to listen to anyone else.
Fii3	Allowing someone to exercise their right to free speech
Fii4	Travelling
Fii5	freedom of speech
Fii6	Freeing of slaves
Fii7	N/A

Interpretation of the examples included: all the examples connect to freedom through a means such as traveling, speech and autonomy. Interesting that one participant did not give an example this could be due to the previous definition being

about rights and this could be difficult as it is abstract. The liberty scenario was adjusted to trigger act the freedom. Freedom of speech was chosen as this appears in some video games, especially role playing game where the avatar can interact with others/express themselves on a stage such as the Fable series. More specifically *BioShock Infinite* (2K-Games, 2007-2013) there is a stage you choose to throw ball at minority slaves. Freedom of speech was chosen over slaves as this is more of an abstract concept and slave would have added biases such as care/harm.

Intended scenario domain: Fairness/Cheating

Table A50. *Scenario: You see a person is holding a bag of money but the bag is ripped and the money is falling out.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	1.71	0.49	0.18
Fairness was involved in the scenario	3.29	0.49	0.18
Group loyalty was involved in the scenario	3.43	0.53	0.20
An authority figure was involved in the scenario	3.43	0.53	0.20
Something disgusting was involved in the scenario	3.14	1.07	0.40
Liberty was involved in the scenario	3.29	0.49	0.18

The intended domain for this scenario was Fairness as it was not the lowest triggered domain, failed manipulation; significance testing was not carried out.

Intended scenario domain: Liberty/Oppression

Table A51. *Scenario: You see a person is trying to build a bridge to an uninhabited island to allow everyone access.*

Domain	M	SD	SE
Suffering was involved in the scenario	3.29	0.29	0.76
Fairness was involved in the scenario	2.29	0.29	0.76
Group loyalty was involved in the scenario	1.86	0.14	0.38
An authority figure was involved in the scenario	2.43	0.20	0.53
Something disgusting was involved in the scenario	3.29	0.18	0.49
Liberty was involved in the scenario	1.71	0.18	0.49

Liberty was the lowest domain, and this was compared to second lowest domain Group loyalty $t(6)$ 0.55 $p = 0.60$ $r = 0.05$. This scenario has potential it could be due to the small size.

F/C: participants reported that the definition of fairness was being treated equally. The examples of scenarios had a strong sharing out or receiving the same theme, which is the most basic form of fairness, and has been noted to be shown in children (Haidt, 2012). Thus, as gemstones were closely linked sharing out, the scenario from first follow up study, was altered back to the previous wording, and an additional similar scenario was created with coins, to empathise the role of fairness. Although food and sweets were mentioned in the second follow-up study, this could have had the same issues that supplies did in the first pilot which triggered loyalty (L/B). An additional scenario developed from the first follow up study, was piloted about a bag of money, this was similar to winning money from the cards in that C/H was triggered, followed by S/D. Thus, it was dropped from further analysis.

L/O: participants suggested the definition of liberty was similar was the role of freedom, through speech or travelling. As result the current scenario about free speech was kept in for the next pilot. The alternative scenario of the bridge was suggested to specifically trigger L/O, but this was not significantly different from the next domain of loyalty (L/B). The scenario about the fields that was added to be a standby for fairness (F/C) if liberty was not triggered with a larger participant group in the next pilot. It is also noted that the results of the previous pilots did have small participant numbers, thus this could have influenced the results.

Scenarios for fourth pilot

For the final pilot the quantitative approach was taken to analysis each of the scenarios the final scenarios that were included are listed below:

C/H - You see a person is injured and holding their abdomen, crying while they are slumped on the ground.
Option 1 = Help and heal the person who is injured.
Option 2 = Hurt the person further who is injured.
Option 3 = Hurt and kill the person who is injured.

S/D -You see a person is trying to maintain the waste system that contains sewage, which is leaking out.
Option 1 = Fix and strengthen the waste system and cleanse the area.
Option 2 = Destroy and damage the waste system causing more leakage.

L/B - You see a person is giving others each a chest containing a written private promise, and all swear to secrecy.
Option 1 = Put a lock on the chest and protect the promise.
Option 2 = Destroy the chest then open and display the promise.

A/S1 -You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.
Option 1 = Mending the boots and polish and enhance them.
Option 2 = Not mending the boots and damaging them more.

A/S2 - You see a Police officer is instructing that their hat be returned, which has dropped and crumpled on the floor.
Option 1 = Smooth out the hat and return it to them.
Option 2 = Crumpled the hat more and throw it away.

F/C1 - You see a person is attempting to share out gemstones, some of which are damaged and are worthless.
Option 1 = Help restore the gemstones value and divide them equally.
Option 2 = Damage more gemstones and only some get the valuable ones.

F/C2 - You see a person is struggling to share out coins equally, because some are damaged, smaller and worthless.
Option 1 = Help restore the coins value and divide them equally.
Option 2 = Damage more coins and only some get the valuable ones.
L/O1 - You see a person is trying to remove an obstruction to allow everyone access to a public area of fields.
Option 1 = Help remove the obstruction allowing access to the fields.
Option 2 = Increase the obstruction to stop access to the fields.

L/O2 -You see a person is trying to construct and open a stage to allow for people's free expression.
Option 1 = Help create the stage to allow for free expression.
Option 2 = Destroy the stage to control and stop free expression.

L/O3 -You see a person is trying to build a bridge to an uninhabited island to allow everyone access.
Option 1 = Help build the bridge and allow access for all.
Option 2 = Destroy the bridge and no one has access.

Foil - You see a person is winning a card game but cannot get the winnings as the card is scratched and unreadable.
Option 1 = Restore the card and they collect the winnings.
Option 2 = Damage the card more and they lose the winnings.

Table A52. *Summary of words and characters in the final pilot scenarios*

	Scenario		Option 1		Option 2 and 3	
Domain	words	Character	words	Character	words	Character
C/H	18	99	8	40	7/8	39/40
S/D	18	99	10	58	9	57
L/B	20	110	10	48	9	52
A/S1	20	96	8	46	8	45
A/S2	20	113	9	41	8	40
F/C1	18	99	9	57	10	58
F/C2	18	107	9	53	10	54
L/O1	20	104	9	58	9	54
L/O2	18	95	9	51	9	54
L/O3	18	95	9	47	8	41
Foil	21	108	8	47	9	48
Total range	18-21 (4)	95-113 (18)	8-10 (3)	40-58 (18)	7-10 (4)	39-58 (20)

Table A53. *Summary of reading level for final pilot scenarios*

	Scenario		Option 1		Option 2 and 3	
Domain	FRE	FKGL	FRE	FKGL	FRE	FKGL
C/H	80.4	6.5	92.9	2.2	78.8/92.9	3.9/2.2
S/D	75.7	7.1	86.7	3.6	66.1	6.2
L/B	59.6	9.9	95.1	2.4	75.5	4.9
A/S1	80.7	6.9	82.3	3.7	82.3	3.7
A/S2	72.3	8.1	100.0	1.0	92.9	2.2
F/C1	75.7	7.1	56.7	7.5	61.3	7.1
F/C2	66.3	8.4	66.1	6.2	69.7	6.0
L/O1	59.6	9.9	56.7	7.5	75.5	4.9
L/O2	71.0	7.8	84.9	3.6	75.5	4.9
L/O3	56.9	9.7	94.3	2.3	92.9	2.2
Foil	72.7	8.5	82.3	3.7	94.3	2.3
Total range	56.9-80.7	6.5-9.9	56.6-100	2.2-7.5	61.3-78.8	2.2-6.2

The reading level was suggested that the age range was between ages of 15-18.

Final Pilot N total = 66 (N=63)

One participant had to be removed due to force ranking, and two participants completed it twice with the duplicates removed. Listed below are the results of the pilot, the rows highlighted in darker blue were the lowest scoring domain and were closest to absolute agree (1). The rows highlighted in lighter blue were the second lowest scoring domain. These were used for the T- Test to check the domains were significantly different using a paired sample T-test and effect size *r*. This is done on all scenarios as this is the last pilot and the scenarios could be used as alternatives, to show if they were domain specific.

Demographics of the sample: Age range 18-38 female 41.3% Free School Meals 30.2% all participants were mostly recruited from Bournemouth University including students (ranging from undergraduate to postgraduate) and staff. The survey was also put up on an external participant pool. Ethnicity White background 52.4%. As this was the final pilot it was important to broaden the sample to include more age ranges, level of education and ethnicity to support the sample being representative.

Intended scenario domain Care/Harm

Table A54. *Scenario: You see a person is injured and holding their abdomen, crying while they are slumped on the ground.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	1.27	0.68	0.09
Fairness was involved in the scenario	3.11	0.51	0.06
Group loyalty was involved in the scenario	3.17	0.55	0.07
An authority figure was involved in the scenario	3.21	0.68	0.09
Something disgusting was involved in the scenario	2.48	0.78	0.10
Liberty was involved in the scenario	2.97	0.59	0.07

Suffering was the lowest domain, and this was compared to second lowest domain Disgust $t(62)$ -9.55 $p < 0.001$ $r = 0.60$

Intended scenario domain Fairness/Cheating

Table A55. *Scenario: You see a person is struggling to share out coins equally, because some are damaged, smaller and worthless.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.63	0.83	0.10
Fairness was involved in the scenario	2.27	0.87	0.11
Group loyalty was involved in the scenario	2.37	0.79	0.10
An authority figure was involved in the scenario	2.81	0.72	0.09
Something disgusting was involved in the scenario	3.19	0.72	0.09
Liberty was involved in the scenario	2.63	0.66	0.08

This one is a better manipulation between Group Loyalty and Fairness the mean gap is bigger even though the other one had lower scores but this could be due to similarity of the question. Thus an effect size was carried out on both fairness scenarios and coins has a highest effect size scenario was chosen. Fairness was the lowest domain, and this was compared to second lowest domain Group Loyalty $t(62)$ -0.93 $p = 0.36$ $r = 0.01$

Intended scenario domain Loyalty/Betrayal

Table A56. *Scenario: You see a person is giving others each a chest containing a written private promise, and all swear to secrecy.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	3.08	0.68	0.09
Fairness was involved in the scenario	2.30	0.64	0.08
Group loyalty was involved in the scenario	1.73	0.65	0.08
An authority figure was involved in the scenario	2.35	0.86	0.11
Something disgusting was involved in the scenario	3.21	0.54	0.07
Liberty was involved in the scenario	2.56	0.74	0.09

Group loyalty was the lowest domain, and this was compared to second lowest domain Fairness $t(62)$ -5.69 $p < 0.001$ $r = 0.34$

Intended scenario domain Authority/Subversion

Table A57. *Scenario: You see a General is holding a pair of boots which are scuffed and orders them to be sorted out.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.94	0.76	0.10
Fairness was involved in the scenario	2.71	0.63	0.08
Group loyalty was involved in the scenario	2.60	0.66	0.08
An authority figure was involved in the scenario	1.32	0.50	0.06
Something disgusting was involved in the scenario	2.78	0.75	0.09
Liberty was involved in the scenario	2.89	0.67	0.09

Authority was the lowest domain, and this was compared to second lowest domain Group loyalty $t(62)$ 12.89 $p < 0.001$ $r = 0.7$

Intended scenario domain Sanctity/Degradation

Table A58. *Scenario: You see a person is trying to maintain the waste system that contains sewage, which is leaking out.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.35	0.74	0.09
Fairness was involved in the scenario	2.78	0.63	0.08
Group loyalty was involved in the scenario	2.52	0.80	0.10
An authority figure was involved in the scenario	2.70	0.78	0.10
Something disgusting was involved in the scenario	1.92	0.85	0.11
Liberty was involved in the scenario	2.71	0.61	0.08

Disgust was the lowest domain, and this was compared to second lowest domain Suffering $t(62)$ 3.89 $p < 0.001$ $r = 0.20$

Intended scenario domain Liberty/Oppression

Table A59. *Scenario: You see a person is trying to construct and open a stage to allow for people's free expression.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.92	0.75	0.09
Fairness was involved in the scenario	1.87	0.52	0.07
Group loyalty was involved in the scenario	2.13	0.71	0.09
An authority figure was involved in the scenario	2.49	0.84	0.11
Something disgusting was involved in the scenario	3.21	0.65	0.08
Liberty was involved in the scenario	1.57	0.61	0.08

Liberty was the lowest domain, and this was compared to second lowest domain Fairness $t(62)$ 3.48 $p = 0.001$ $r = 0.16$

Alternatives -These were tested but not selected for the game.

Intended scenario domain Authority/Subversion

Table A60. *Scenario: You see a Police officer is instructing that their hat be returned, which has dropped and crumpled on the floor.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.67	0.72	0.09
Fairness was involved in the scenario	2.59	0.66	0.08
Group loyalty was involved in the scenario	2.79	0.63	0.08
An authority figure was involved in the scenario	1.67	0.67	0.08
Something disgusting was involved in the scenario	2.90	0.67	0.08
Liberty was involved in the scenario	2.57	0.76	0.10

Authority was the lowest domain, and this was compared to second lowest domain liberty $t(62)$ 7.74 $p < 0.001$ $r = 0.49$

Intended scenario domain Fairness/Cheating

Table A61. *Scenario: You see a person is attempting to share out gemstones, some of which are damaged and are worthless.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.92	0.60	0.60
Fairness was involved in the scenario	2.17	0.77	0.77
Group loyalty was involved in the scenario	2.22	0.75	0.75
An authority figure was involved in the scenario	2.68	0.76	0.76
Something disgusting was involved in the scenario	3.00	0.72	0.72
Liberty was involved in the scenario	2.56	0.71	0.71

Fairness was the lowest domain, and this was compared to second lowest domain Group loyalty $t(62)$ -0.49 $p = 0.63$ $r = 0.003$

Intended scenario domain Liberty/Oppression

Table A62. *Scenario: You see a person is trying to remove an obstruction to allow everyone access to a public area of fields.*

Domain	M	SD	SE
Suffering was involved in the scenario	2.76	0.73	0.09
Fairness was involved in the scenario	1.83	0.61	0.08
Group loyalty was involved in the scenario	2.05	0.73	0.09
An authority figure was involved in the scenario	2.56	0.88	0.11
Something disgusting was involved in the scenario	3.05	0.66	0.08
Liberty was involved in the scenario	1.90	0.69	0.09

Fairness was the lowest domain, and this was compared to second lowest domain Liberty $t(62)$ -0.87 $p = 0.39$ $r = 0.01$

Intended scenario domain Liberty/Oppression

Table A63. *Scenario: You see a person is trying to build a bridge to an uninhabited island to allow everyone access.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.70	0.78	0.10
Fairness was involved in the scenario	2.10	0.71	0.09
Group loyalty was involved in the scenario	2.16	0.81	0.10
An authority figure was involved in the scenario	2.76	0.76	0.10
Something disgusting was involved in the scenario	3.14	0.67	0.08
Liberty was involved in the scenario	1.94	0.56	0.07

Liberty was the lowest domain, and this was compared to second lowest domain Fairness $t(62)$ -1.46 $p = 0.15$ $r = 0.03$

Potential foil scenario:

Table A64. *Scenario: You see a person is winning a card game but cannot get the winnings as the card is scratched and unreadable.*

Domain	*M*	*SD*	*SE*
Suffering was involved in the scenario	2.10	0.78	0.10
Fairness was involved in the scenario	2.70	0.78	0.10
Group loyalty was involved in the scenario	3.00	0.54	0.07
An authority figure was involved in the scenario	2.81	0.76	0.10
Something disgusting was involved in the scenario	2.83	0.68	0.09
Liberty was involved in the scenario	2.75	0.72	0.09

Suffering was the lowest domain, and this was compared to second lowest domain Fairness $t(62)$ -4.29 $p < 0.001$ $r = 0.23$

Analysis by MFT domain

Due to time restrictions, this had to be the final pilot. The results of the forth pilot suggest five of the six MFT domains; A/S1 and 2 (both general and police scenarios), C/H, S/D, L/B L/O2 (stage scenario) had a domain specific manipulation. The foil scenario was not included, as it was felt morality could have been already triggered in the game, and it was unclear if this would act as a non-moral foil scenario.

A/S: both scenarios for this domain were still significant, with domain specific triggers, with the general scenario having a large effect size, whereas the police officer scenario only had a medium effect size.

C/H: this scenario was still a significant domain specific trigger, with a large effect size. An additional note about the options chosen for this scenario was that the results suggested that for harm, both option 2, harm and option 3, kill, were both reported to violate morality, and were not significantly different between the two options $p > 0.05$. This is an important distinction to make, and the results are interesting with regards to how harm is perceived. Thus, option 2, harm, was chosen for the first five levels, as the sixth level was planned to include an option for kill, thus, making it clearer to examine any potential differences between the extent of the use of harm, where either hurt and then hurt and/or kill was used.

L/B: this scenario still remained a significant domain specific trigger with a medium effect size.

F/C: all of the F/C scenarios for this domain were not significantly different from the other MFT domains, thus, the scenario with the highest effect size was selected.

S/D: this scenario was a significant domain specific trigger with a small effect size.

L/O: the stage scenario was a significant domain specific trigger with a small effect size. The bridge scenario was not significantly different from the other MFT domains.

Noteworthy points

Overall, during the piloting process interesting points came up. Firstly, the two domains rated as the most relevant domains were similar, for example C/H and S/D and F/C and L/O appeared together frequently in the analysis. This could question the role of modularity with the MFT domains. Second, inferences and interpretations that participant's made within the context of the situation, and the language that was used. An example of language included, was how the word promise provoked more of a trigger to the L/B domain, than the using the word pact. An example of the context was how harm was related to: a dead body with an abscess, a damaged card, and a damaged coin purse. It could be suggested that the harm domain was specifically being activated for emotional suffering/harm for each of these scenarios, when it was not intended for harm at all, but participants could have seen emotional harm in the damage items and dead body. These type types of harm were highlighted in Clifford et al. (2015), who created vignettes to include emotional and physical harm, as mentioned previously. Finally, it could be that vignettes are more difficult to be domain specific as harm was related to S/D, for example, when being related to a dead body. Also, when developing liberty scenarios, caution was applied as an authority figure/repressor could have activated the A/S domain. Thus, the L/O scenario was developed using a broad concept of freedom, and rather than been oppressed by a specific authority, as the potential trigger and violation would be aimed at the character and not the object.

Appendix J. Phase 2 - Game testers questionnaire

Testing a purpose-made video game for research information sheet
Title of project: Testing a purpose-made video game for research

Researcher: Sarah Hodge, Bournemouth University (shodge@bournemouth.ac.uk)

Supervisors:
Dr Jacqui Taylor, Bournemouth University: jtaylor@bournemouth.ac.uk
Dr John McAlaney, Bournemouth University: jmcalaney@bournemouth.ac.uk

About the project
I am a PhD student at Bournemouth University Faculty of Science and Technology, my research is being supervised by Dr Jacqui Taylor and Dr John McAlaney from Bournemouth University. Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. This research is being carried out to understand the experience of the video game and to be used as a control group in further research. I would like to assure you that the research has had full ethical approval (University Research Ethics Code of Practice).

Why have you been chosen?
You have been chosen for my study because you have previously played video games and are in University and your opinions are valued for this study.

Do you have to take part?
It's up to you if you would like to take part or not. You can withdraw up to a week after participation without reason and the data will be removed from the study and destroyed. At any point you can choose to stop playing the video game and withdraw from the study.

What would taking part involve?
You will be asked if you are happy to take part; once you have agreed you will be given the first part of the questionnaire. After this you will play a video game for around 20 minutes and then you will be given the second part of the questionnaire. The video game requires you to make decisions throughout 6 levels. This will be explained in more detail before the video game is played. During the video game I will stay in the room for assistance and to help understand your experience of the video game, I will note any responses. The data collected will be used as a control group for further analysis. The questionnaire will include questions about your gaming habits and a few questions about you (part 1) then your experience of the video game (part 2). Total time, approximately 40 minutes.

What happens to my questionnaire response?
Once the consent forms have been completed your answers will be assigned a code, so that your answers are not identifiable. All the information that we collect about you during the course of the research will be kept strictly confidential. You will not be able to be identified in any reports or publications. All data relating to this study will be kept for a minimum of 5 years at a BU password protected secure network.

Are there any risks?
Risks in this study are minimal; all safeguards have been taken to ensure your safety and wellbeing.

Are there any benefits of the study?
Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will help develop our understanding of how a purpose-made video game is experienced. Your thoughts are highly valued.

Questions
If you have any questions or comments about the study or would like more information please contact me (shodge@bournemouth.ac.uk).

What happens next?
If you are happy with what you have read and have no questions, please fill out the consent form to give consent, then the questionnaire will begin. For taking part Psychology students can receive credit.

Thank you for your help with this project.

(Written consent from signed before beginning the questionnaire see Appendix L)

Participant number recorded and then demographic questions about age, gender, university year, free school meals and ethnic background

Part 1 Game play

This section is about your gaming habits. Even if you are not a frequent player or you are not a gamer your opinion is important. There is also an option if the question is not relevant.

Video games include computer, digital and apps (application) games.

1. Do you play video games? Yes/ No
2. How many years have you been playing video games? ……
3. Would you describe yourself as a gamer? Yes/No
4. How often do you play video games in a week? Please select the boxes below to show how much you play and how many hours you usually play for.

	Less than one hour	One hour	Two hours	Three to four hours	Five to six hours	Seven or more hours
A. Everyday						
B. Every other day						
C. Twice a week						
D. Once a week						

5. How would you describe the following about your game play:

Ability: Beginner/a little 1 2 3 4 5 6 7 Expert/much
Experience: Beginner/a little 1 2 3 4 5 6 7 Expert/much

6. How would you describe the games you play? (choose as many as apply):

- Easy to learn include puzzles, mazes and hidden objects in the games and don't require a lot of time.
- Complex and require a lot of time and are intense, with a strong narrative and mostly action and action/adventure with violence.
- Complex and require a lot of time but are less intense and violence is more cartoon like.

(Game Engagement Questionnaire (GEQ) Pre-game)

7. When playing video games please tick the box that best describes how you usually feel while playing games?

	Yes	Maybe	No	N/A I don't play games
I lose track of time				
Things seem to happen automatically				
I feel different				
I feel scared				
The game feels real				
If someone talks to me, I don't hear them				
I get wound up				
Time seems to kind of standstill or stop				
I feel spaced out				
I don't answer when someone talks to me				
I cannot tell that I'm getting tired				
Playing seems automatic				
My thoughts go fast				
I lose track of where I am				
I play without thinking about how to play				
Playing makes me feel calm				
I play longer than I meant to				
I really get into the game				
I feel like I just can't stop playing				

(At this point participants played the purpose-made game)

8. Game complete: Yes No

(Comment box for notes if needed e.g. game crashing)

Part 2 Experience of the game (the Adapted Temple Presence Inventory (TPI) (Lombard et al., 2007))

The questions on these pages ask about the game experience you just had playing a game. There are no right or wrong answers; please simply give your first impressions and answer all of the questions as accurately as possible, even questions that may seem unusual or to not apply to the particular media experience you just had. For example, in answering a question about how much it felt like you were "inside the environment you saw/heard," base your answer on your feeling rather than your knowledge that you were not actually inside that environment.

Throughout the questions, the phrases "the environment you saw/heard" and "objects, events, or people you saw/heard" refer to the things or people that were presented in the game, not your immediate physical surroundings (i.e., the actual room you were in during the game). Please select the responses that best represent your answers.

9. Please select the responses that best represent your answers.

Not at all 1 2 3 4 5 6 7 Very much

- How much did it seem as if the objects and people you saw/heard had come to the place you were?
- How much did it seem as if you could reach out and touch the objects or people you saw/heard?
- To what extent did it seem that sounds came from specific, different locations?
- To what extent did you experience a sense of 'being there' inside the environment you saw/heard?
- How much did it seem as if you and the people you saw/heard both left the places where you were and went to a new place?
- How much did it seem as if you and the people you saw/heard were together in the same place?
- To what extent did you feel you could interact with the person or people you saw/heard?
- How much control over the interaction with the characters you saw/heard did you feel that you had?
- Overall, how much did touching the things and people in the environment you saw/heard feel like it would if you had experienced them directly?
- How much did the heat or coolness (the temperature) of the environment you saw/heard feel like it would if you had experienced it directly?
- How personally relevant was the content of the game experience to you?

10. Please select the responses that best represent your answers.

Never 1 2 3 4 5 6 7 Always

- How often when an object seemed to be headed toward you did you want to move to get out of its way?
- How often did you want to or try to touch something you saw/heard?
- How often did you have the sensation that people you saw/heard could also see/hear you?
- How often did it feel as if someone you saw/heard in the environment was talking directly to you?
- How often did you want to or did you make eye-contact with someone you saw/heard?

11. During the game experience how well were you able to observe:

Not well 1 2 3 4 5 6 7 Very well

- The body language of the people you saw/heard?
- The facial expressions of the people you saw/heard?
- Changes in the tone of voice of the people you saw/heard?
- The style of dress of the people you saw/heard?

12. Overall, how much did the things and people in the environment you saw/heard:

Not at all 1 2 3 4 5 6 7 Very much

- sound like they would if you had experienced them directly?
- look like they would if you had experienced them directly?
- smell like they would if you had experienced them directly?

13. Please indicate how much you disagree or agree with each statement below.

Strongly Disagree 1 2 3 4 5 6 7 Strongly Agree

- The way in which the events I saw/heard occurred is a lot like the way they occur in the real world
- The events I saw/heard could occur in the real world.
- It is likely that the events I saw/heard would occur in the real world.

14. Please select the responses that best represent your answers.

Not at all 1 2 3 4 5 6 7 Very much

- How much did you empathize with the characters in the game?
- How connected did you feel with the characters in the game?
- To what extent did you feel mentally immersed in the game?
- How involving was the game?
- How completely were your senses engaged?
- To what extent did you experience a sensation of reality?
- How engaging was the story?
- How much did you identify with your avatar?
- How attached did you feel with your avatar?
- Did you feel that avatar was you?

15. Did the game seem more like looking at the events/people on a screen or more like looking at the events/people through a window?

Like a screen 1 2 3 4 5 6 7 Like a window

(Game Engagement Questionnaire (GEQ) Post-game)

16. When playing the game please tick the box that best describes how you felt while played today?

	Yes	Maybe	No
I lost track of time			
Things seemed to happen automatically			
I felt different			
I felt scared			
The game felt real			
If someone spoke to me, I wouldn't have heard them			
I got wound up			
Time seemed to kind of standstill or stop			
I felt spaced out			
I wouldn't of answered if someone spoke to me			
I couldn't tell that I was getting tired			
Playing seemed automatic			
My thoughts went fast			
I lost track of where I am			
I played without thinking about how to play			
Playing made me feel calm			
I would have played longer than I meant to			
I really got into the game			
I felt like I just couldn't stop playing			

17. Please select the number that best describes your evaluation of the game from the words below:

Easy to play	Not well 1 2 3 4 5 6 7 Very well
Uncanny	Not well 1 2 3 4 5 6 7 Very well
Real	Not well 1 2 3 4 5 6 7 Very well
Violent	Not well 1 2 3 4 5 6 7 Very well
Boring	Not well 1 2 3 4 5 6 7 Very well
Artificial	Not well 1 2 3 4 5 6 7 Very well
Dead	Not well 1 2 3 4 5 6 7 Very well
Enjoyable	Not well 1 2 3 4 5 6 7 Very well
Boring	Not well 1 2 3 4 5 6 7 Very well
Lively	Not well 1 2 3 4 5 6 7 Very well
Relaxing	Not well 1 2 3 4 5 6 7 Very well
Exciting	Not well 1 2 3 4 5 6 7 Very well
Responsive	Not well 1 2 3 4 5 6 7 Very well
Sociable	Not well 1 2 3 4 5 6 7 Very well
Emotional	Not well 1 2 3 4 5 6 7 Very well
Similar to games I normally play	Not well 1 2 3 4 5 6 7 Very well
Similar to commercial games	Not well 1 2 3 4 5 6 7 Very well

18. Please use the space below to provide your comments about the game or your experience.

Debriefing form - Testing a purpose-made video game for research

Thank you for your participation. Your contribution to this study is very valuable and very much appreciated.

You took part in a study to test a video game; this video game will then be used for further research into how people make moral decisions. Please DO NOT share this information with others! It is important for future participants in the next study that they do not know this information before taking part; as this would compromise the research.

First you were asked questions about yourself and your gaming habits then, you played a video game for around 20 minutes while your experiences were noted such as laughter. Finally, you were asked questions about your experience of the video game. The choices you made will be used for further research as a control group. An important part of video game design is testing the experience of the video game for more information on this see Mitchell (2012).

- Length of time: approximately 40 minutes
- Equipment: Playing a purpose-made video game (Virtual Reality lab) and questionnaire
- Data gathered: Interval level data (Response times, decisions made and scores from questionnaire)
- Design: Within subjects
- Research question: Pilot study - Participants experience of the video game

All responses will be coded and securely kept. If you decide you no longer want your response to be part of this study (you can withdraw up to a week after participation) contact myself, Sarah Hodge, shodge@bournemouth.ac.uk and the data will be removed and destroyed.

If you have any questions or would like more information about the study, please don't hesitate to contact me: shodge@bournemouth.ac.uk.

My supervisors' details are: Dr Jacqui Taylor: jtaylor@bournemouth.ac.uk or

Dr John McAlaney: jmcalaney@bournemouth.ac.uk.

For any complaints contact Matt Bentley: mbentley@bournemouth.ac.uk

If you would like to read articles on topic, then please see:

Mitchell, B. L. (2012). *Game design essentials*: John Wiley & Sons.

19. If you have any comments please write them here

Appendix K. Phase 2 - Liberty/Oppression scale

Liberty pilot information sheet
Title of project: Questionnaire items about liberty, what do you think?

Researcher: Sarah Hodge, Bournemouth University (shodge@bournemouth.ac.uk)

Supervisors:
Dr Jacqui Taylor, Bournemouth University: jtaylor@bournemouth.ac.uk
Dr John McAlaney, Bournemouth University: jmcalaney@bournemouth.ac.uk

About the project
I am a PhD student at Bournemouth University Faculty of Science and Technology, my research is being supervised by Dr Jacqui Taylor and Dr John McAlaney from Bournemouth University. Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. This research is being carried out to assess questionnaire items for use in future research. I would like to assure you that the research has had full ethical approval (University Research Ethics Code of Practice).

Why have you been chosen?
You have been chosen for the study because you are University and your opinions are valued for this study. The aim of this study is to assess questionnaire items about liberty to be used for further testing.

Do you have to take part?
It's up to you if you would like to take part or not. You can withdraw up to a week after participation without reason and the data will be removed from the study and destroyed.

What would taking part involve?
You will be asked if you are happy to take part; once you have agreed the questionnaire can begin. You will be asked to rate and rank questions on how well the questions fit with the definition of liberty provided. You have to rate how much you agree/disagree that the statements represent the definition of liberty, then rank them in order of best fit. Then you will be asked a few questions about yourself (gender, age etc.). The questionnaire will take about 20 minutes.

What happens to my questionnaire response?
Once the consent forms have been completed your answers will be assigned a code, so that your answers are not identifiable. All the information that we collect about you during the course of the research will be kept strictly confidential. You will not

be able to be identified in any reports or publications. All data relating to this study will be kept for a minimum of 5 years at a BU password protected secure network.
Are there any risks?
Risks in this study are minimal; all safeguards have been taken to ensure your safety and wellbeing.

Are there any benefits of the study?
Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will help develop our understanding of how the questionnaire items relate to liberty. Your thoughts are highly valued.

Questions
If you have any questions or comments about the study or would like more information please contact me (shodge@bournemouth.ac.uk).

What happens next?
If you are happy with what you have read and have no questions, please type your name, then the questionnaire will begin. For taking part psychology students can receive credit.

Thank you for your help with this project.

(Consent taken here)

The questionnaire instructions

Frist half of the survey

Please select your agreement (1) Absolutely Agree (2) Agree (3) Disagree (4) Absolutely Disagree

Read the following statements carefully and rate how much you agree or disagree that the statements fit the definition of liberty/oppression provided.

Definition: The feelings of reactance and anger towards those in a position of power that dominate and restrict freedom.

(Items were listed with the concept sub-groups removed, for list of items see next page)

Second half of the survey

Read the following statements carefully and rank in order (1 = most 4 = least) which statements fit the definition of liberty/oppression.

Definition: The feelings of reactance and anger towards those in a position of power that dominate and restrict freedom.

Rank statements by either dragging them to move them OR typing the number in the box. (Items were sorted into the concept subgroups, see below)

Section 1 - Item creation (CONCEPT – Item)

Part 1 - Moral Relevance

1. BULLY - Whether or not someone was a bully.
2. BULLY - Whether or not someone was insistent on making decisions for another person.
3. BULLY - Whether or not someone was controlled by another person.
4. BULLY - Whether or not someone acted too dominating around others.

5. RESTRICT - Whether or not someone was restricted by their government.
6. RESTRICT - Whether or not someone was denied free speech.
7. RESTRICT - Whether or not someone was forbidden to make their own decisions.
8. RESTRICT - Whether or not someone was denied autonomy.

9. CHOICE - Whether or not someone had self-determination.
10. CHOICE - Whether or not someone had the ability to make their own decisions.
11. CHOICE - Whether or not someone had control of their own life.
12. CHOICE - Whether or not someone was free to choose how to live their life.

Part 2 – Moral Judgment

1. POWER - People should not be oppressed by their government.
2. POWER - Governments have a responsibility to provide people's freedom.
3. POWER - It is important for Governments to give people a voice.
4. POWER - Governments should adopt democracy rather than dictatorships.

5. AUTONOMY - People should value their rights and freedom to make their own choices.
6. AUTONOMY - It is important that people stand up for their beliefs.
7. AUTONOMY - People should not be forbidden to make their own decisions.
8. AUTONOMY - People should take control of their own lives.

9. REACTANCE - It is important that people actively contest if their freedom was restricted.
10. REACTANCE - It is important that people protest when they feel coerced by those in power.
11. REACTANCE - People have the right to disagree with those in power.
12. REACTANCE - People should be angry if they do not have the freedom to speak out.

Debriefing form Questionnaire items about liberty, what do you think?

Thank you for your participation.
Your contribution to this study is very valuable and very much appreciated. You took part in an online questionnaire which aims to understand which items which best describe the definition of liberty given. You were asked to rate and rank statements about liberty and then a few questions about you. Your responses will help build our understanding of the items that best describe the definition of liberty which will be used for further research.

- Length of time: approximately 20 minutes
- Equipment: Online survey/ questionnaire
- Data gathered: Interval and ordinal scales
- Design: Within subject's questionnaire
- Research question: Pilot study to assess questionnaire items about liberty for use in future research

All responses will be coded and securely kept. If you decide you no longer want your response to be part of this study (you can withdraw up to a week after participation) contact myself, Sarah Hodge, shodge@bournemouth.ac.uk and the data will be removed and destroyed.

If you have any questions or would like more information about the study, please don't hesitate to contact me: shodge@bournemouth.ac.uk.

My supervisors details are: Dr Jacqui Taylor: jtaylor@bournemouth.ac.uk or Dr John McAlaney: jmcalaney@bournemouth.ac.uk.
For any complaints contact Matt Bentley Deputy Dean, Research for Faculty of Science and Technology: mbentley@bournemouth.ac.uk

If you would like to read articles on topic, then please see:
Moral foundations theory: Haidt, J. (2012). The righteous mind: Why good people are divided by politics and religion: Vintage.

Section 2 – Analysis
There were 32 postgraduate students who were the participants that completed the survey, which required these previously mentioned items above to be rated on a scale and ranked in order of applicability to L/O. Postgraduate students were chosen as participants as they could not take part in the next study, when the items were going to be applied (added to the MFQ). Undergraduate students, who had previously taken part in rating the scenarios, were asked to take part in this study. However, these students did not sign up, and the postgraduates may also have the potentially benefit

of being more morally mature (Gibbs et al., 1992) and therefore, may have been a more reliable group to use.

To select items to use for further testing, the scale data was first examined, followed by the ranked data. The scale data was the main focus of the analysis, with the ranking data being used and compared to the scale data, if there was a large variance with the agreement. However, due to more variance for some items, both ranking and scale data were used for analysis. The data from the descriptive statistics of the scale, were examined to look for the overall level of agreement, and therefore, which items had the most agreement.

The majority of the items were rated as matching the definition of L/O. This is where the ranking data were useful, as items within the same concept sub-grouping could be examined for the level of agreement. The Interquartile Range (IQR) suggested how consistent the agreement was. Items were selected for the following reasons; a low mean (1 = absolutely agree) and a low standard deviation, then the median and mode were also considered (how close the results were to agree and absolutely agree). Finally, the interquartile range was examined to see how much agreement was in the majority of the data, the lower the range; the more agreement for agree and absolutely agree.

Table A65. *Results of the items relating to the concept of Bully*

Concept - Bully	Scale				Rank			
	M	*SD*	*Median*	*Mode*	*M*	*SD*	*Median*	*IQR*
1. Whether or not someone was a bully.	2.41	0.91	2.00	2.00	3.13	1.01	3.00	1.75
2. Whether or not someone was insistent on making decisions for another person.	2.13	0.71	2.00	2.00	2.25	0.92	2.00	1.00
3. Whether or not someone was controlled by another person.	1.94	0.67	2.00	2.00	1.78	1.16	1.00	1.75
4. Whether or not someone acted too dominating around others.	2.44	0.80	2.00	2.00	2.84	0.92	3.00	1.75

Table A65, the bully items suggested to be the one highlighted in blue this has the most agreement for the both the rating and ranking and was selected for the further analysis.

Table A66. *Results of the items relating to the concept of Restrict*

Concept – Restrict	Scale				Rank			
	M	*SD*	*Median*	*Mode*	*M*	*SD*	*Median*	*IQR*
1. Whether or not someone was restricted by their government.	1.75	0.88	2.00	1.00	2.34	1.15	2.50	2.00
2. Whether or not someone was denied free speech.	1.63	0.79	1.00	1.00	2.75	1.08	3.00	2.00
3. Whether or not someone was forbidden to make their own decisions.	1.75	0.88	1.50	1.00	2.41	1.07	2.00	1.00
4. Whether or not someone was denied autonomy.	1.75	0.76	2.00	2.00	2.50	1.19	3.00	2.75

Table A66, restrict was more difficult to select the item with most agreement between 1, 3 and 4 however, particular between item 1 and 3. In this instance box plots (see Figure A5) were produced and analysed to examine the variance of the data and level of agreement on the rank data; more agreement was suggested between 1 than 3. In addition item three was very similar to autonomy item selected.

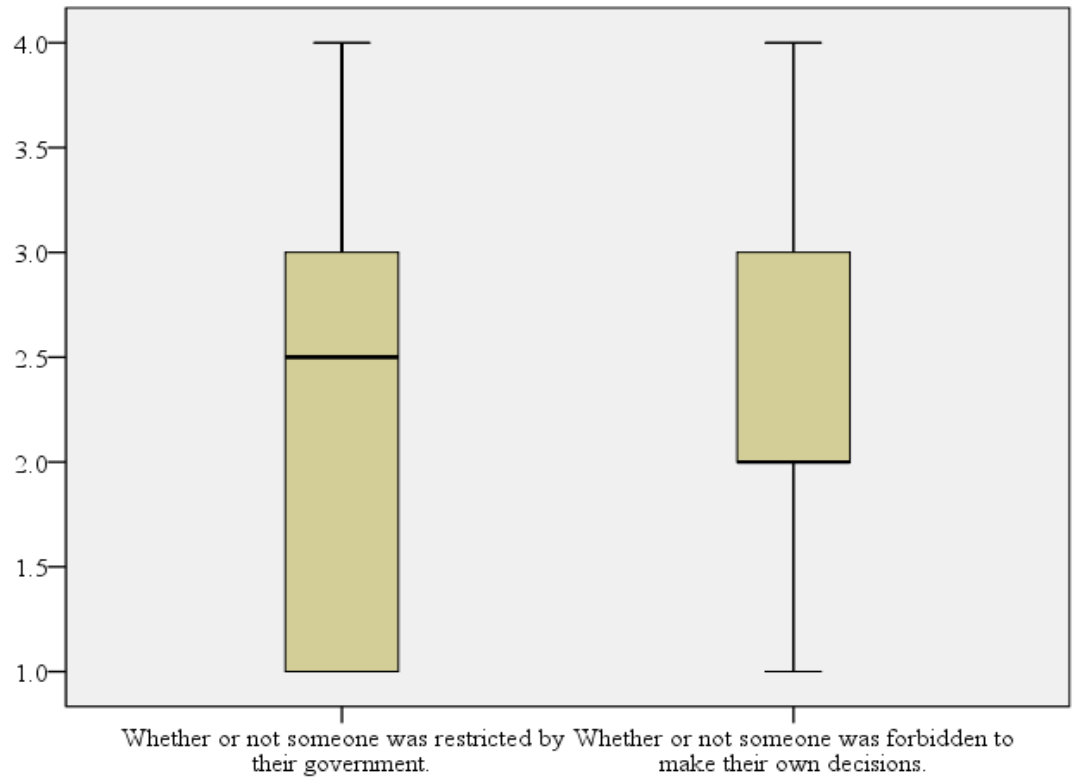


Figure A5. Box plots for Restrict items 1 and 3

Table A67. *Results of the items relating to the concept of Choice*

Concept – Choice	Scale				Rank			
	M	*SD*	*Median*	*Mode*	*M*	*SD*	*Median*	*IQR*
1. Whether or not someone had self-determination.	2.38	0.83	3.00	3.00	3.06	1.08	3.00	1.00
2. Whether or not someone had the ability to make their own decisions.	1.91	0.93	2.00	1.00	2.47	0.98	2.00	1.00
3. Whether or not someone had control of their own life.	1.91	0.89	2.00	2.00	2.31	1.06	2.00	1.75
4. Whether or not someone was free to choose how to live their life.	2.00	0.88	2.00	1.00	2.16	1.19	2.00	2.00

Table A67, choice was also more difficult to select an item with the most agreement between item 3 and 4 however the box plot (see Figure A6) for the rank data, showed that item 4 had more agreement.

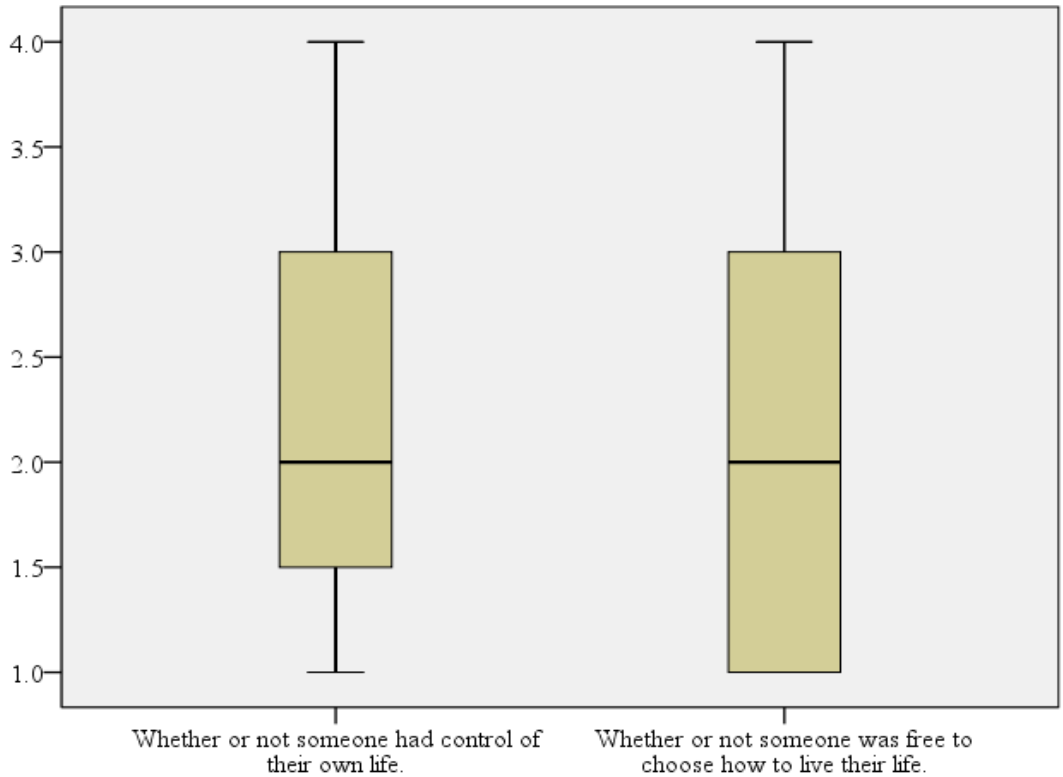


Figure A6. Box plots for choice items 3 and 4

Table A68. *Results of the items relating to the concept of Power*

Concept – Power	Scale				Rank			
	M	*SD*	*Median*	*Mode*	*M*	*SD*	*Median*	*IQR*
1. People should not be oppressed by their government.	1.56	0.56	2.00	2.00	1.75	0.92	1.00	1.75
2. Governments have a responsibility to provide people's freedom.	1.84	0.81	2.00	2.00	2.66	0.75	2.50	1.00
3. It is important for Governments to give people a voice.	1.59	0.76	1.00	1.00	3.31	0.93	4.00	1.00
4. Governments should adopt democracy rather than dictatorships.	1.53	0.76	1.00	1.00	2.28	1.25	2.00	3.00

Table A68 for power item one was suggested to have the most agreement for the rating and raking and this was supported by the box plot (see Figure A7) when comparing the next closest, item 4.

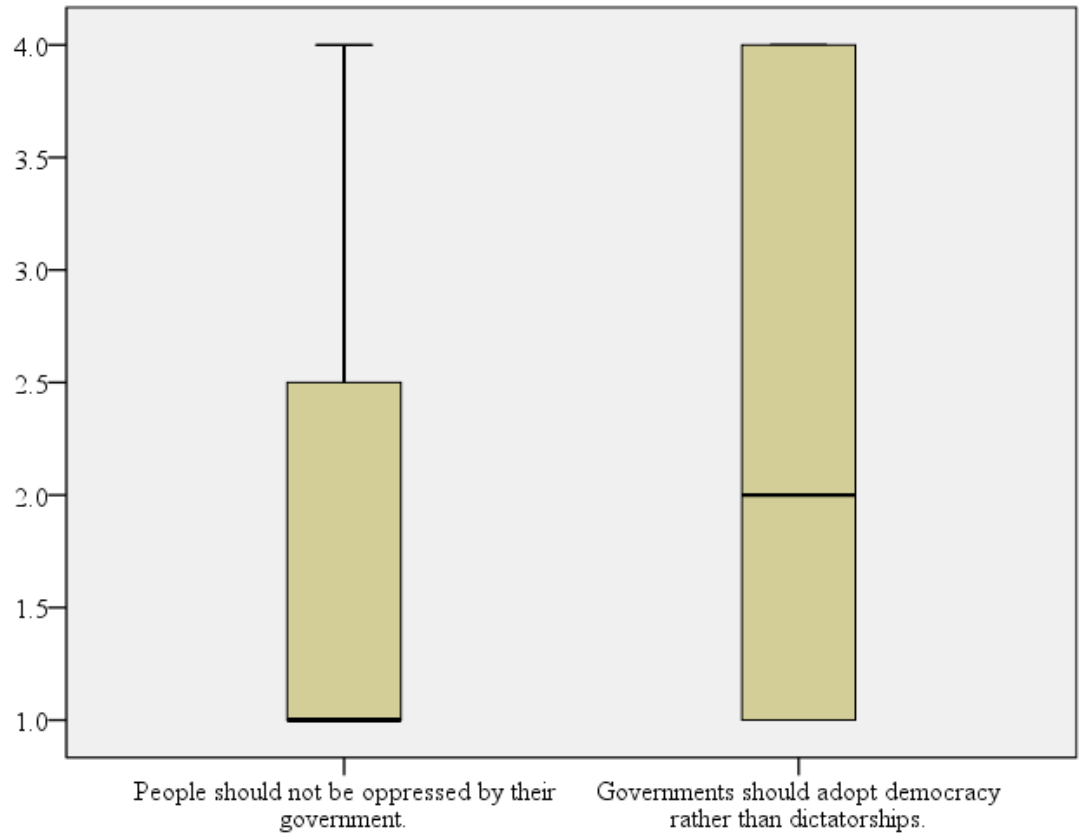


Figure A7. Box plots for power items 1 and 4.

Table A69. *Results of the items relating to the concept of Autonomy*

Concept - Autonomy	Scale				Rank			
	M	*SD*	*Median*	*Mode*	*M*	*SD*	*Median*	*IQR*
1. People should value their rights and freedom to make their own choices.	1.66	0.75	2.00	1.00	2.50	1.16	2.00	2.75
2. It is important that people stand up for their beliefs.	1.75	0.62	2.00	2.00	3.03	0.93	3.00	2.00
3. People should not be forbidden to make their own decisions.	1.78	0.75	2.00	1.00 & 2.00	1.81	1.09	1.00	2.00
4. People should take control of their own lives.	1.75	0.72	2.00	2.00	2.66	0.97	2.50	1.75

Table A69, Autonomy item 3 was suggested to have the most agreement for the rating and raking and this was supported by the box plot (see Figure A8), when comparing the next closest, item 1.

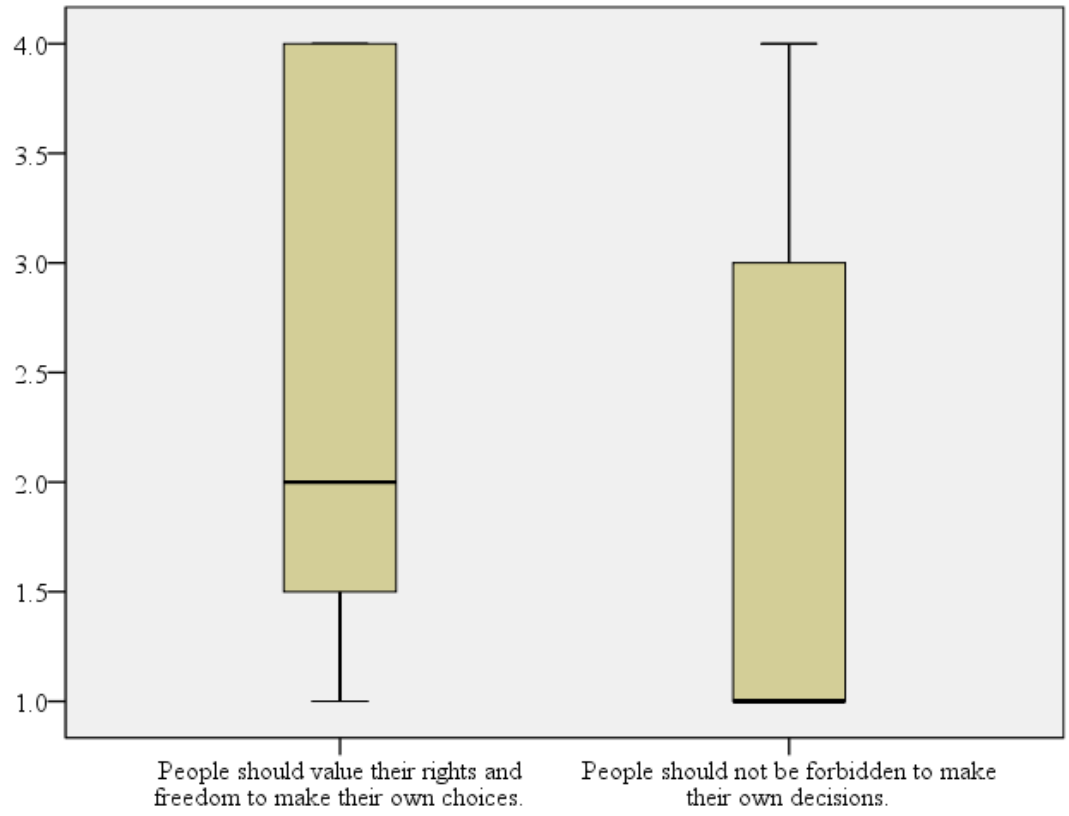


Figure A8. Box plots for Autonomy items 1 and 3

Table A70. *Results of the items relating to the concept of Reactance*

Concept – Reactance	Scale				Rank			
	M	*SD*	*Median*	*Mode*	*M*	*SD*	*Median*	*IQR*
1. It is important that people actively contest if their freedom was restricted.	1.63	0.61	2.00	2.00	2.53	0.88	3.00	1.00
2. It is important that people protest when they feel coerced by those in power.	1.72	0.58	2.00	2.00	3.00	1.02	3.00	2.00
3. People have the right to disagree with those in power.	1.31	0.47	1.00	1.00	1.78	1.16	1.00	1.75
4. People should be angry if they do not have the freedom to speak out.	1.81	0.78	2.00	1.00	2.69	1.09	3.00	2.00

Table A70, the reactance item suggested to be the one highlighted in blue, item 3 this has the most agreement for the both the rating and ranking and was selected for the further analysis.

Factor analysis was carried out on the final 6 items, to examine these items and how they related to each other. Interestingly, two factors were suggested, which could be, moral relevance and moral judgment or Liberty and Oppression. This analysis examined how the 6 lowest voted on the item on each of the scales related to each other. In order to do this, the concepts subgrouping (e.g Bully, Restrict) was not included in the analysis, as one 1 item for each of the concept sub-groups was selected and this would not be sufficient to analyse with the aim of yielding more reliable groups/clusters of items. See items below that were used in the factor analysis.

Items with the concept sub-groups

Part 1 - Moral Relevance

1. BULLY - Whether or not someone was controlled by another person.
2. RESTRICT - Whether or not someone was restricted by their government.
3. CHOICE - Whether or not someone was free to choose how to live their life.

Part 2 – Moral Judgment

4. POWER - People should not be oppressed by their government.
5. AUTONOMY - People should not be forbidden to make their own decisions.
6. REACTANCE - People have the right to disagree with those in power.

Items without the concept sub-groups

Part 1- Moral Relevance

- Whether or not someone was controlled by another person.
- Whether or not someone was restricted by their government.
- Whether or not someone was free to choose how to live their life.

Part 2 – Moral Judgment

- People should not be oppressed by their government.
- People should not be forbidden to make their own decisions.
- People have the right to disagree with those in power.

Factor analysis

Principle Components Analysis (PCA) was carried out on the selected items 6 with an orthogonal rotation (varimax). Kaiser-Meyer-Olkin (KMO) =.60 was above the acceptable limit (0.5) for the sample size being adequate for the analysis. Bartlett's Test of Sphericity χ^2 (15) = 41.13 ($p < .001$) was significant suggesting that factor analysis was appropriate on the data (Field, 2009). Both components had eigenvalues met Kaiser Criterion of being above 1 and together explained 64% of the variance. The Scree plot suggested 2-3 factors but due to the low eigenvalues of the third >1, two factors were selected. Given the items were created to relate to Moral Relevance and Moral Judgement the two components rotated factor loadings was suggested to aligned with this the first component was suggested to be Moral Relevance and the second was suggested to be Moral Judgement see Table A71 for the factor loadings. Therefore, two components were suggested.

Table A71. *Summary of factor analysis on Liberty /Oppression scale*

Item (*N* = 32)	Rotated Factor loadings	
	Relevance	Judgement
Whether or not someone was controlled by another person.	**.76**	.12
Whether or not someone was restricted by their government.	**.80**	.14
Whether or not someone was free to choose how to live their life.	**.78**	-.10
People should not be oppressed by their government.	-.18	**.78**
People should not be forbidden to make their own decisions.	.10	**.79**
People have the right to disagree with those in power.	.29	**.80**
Eigenvalues	1.96	1.92
% of Variance	32.67	31.97

Note: factors over .40 appear in bold

Table A72. *Reliability summary of Liberty/ Oppression scale by Moral Relevance and Moral Judgement*

Cronbach' s Alpha *N*= 32	Items	Scale α	KMO	χ^2 (df)	Rank α
Moral Relevance	3	.69	.65	16.34(3)**	.25
Moral Judgment	3	.69	.65	17.65 (3)**	.38
Total all	6	.62	.60	41.13(15)**	.47

p <.05* p <.01** p<.001***

Cronbach's Alpha for Liberty/Oppression α = .51, note the caution is applied as L/O has low reliability. These results were tentatively interpreted compared to the other domain

Appendix L. Phase 2 - Questionnaire information

Participant Consent/Agreement Form

Title of project: Making decisions in video games

Researcher: PhD student Sarah Hodge, Bournemouth University: shodge@bournemouth.ac.uk
Supervisors:
Dr Jacqui Taylor, Bournemouth University: jtaylor@bournemouth.ac.uk
Dr John McAlaney, Bournemouth University: jmcalaney@bournemouth.ac.uk

	Tick Here
I have read and understood the participant information sheet for the above research project	
I confirm that I have had the opportunity to ask questions.	
I understand that my participation is voluntary.	
I understand that I am free to withdraw up to 7 days, after this the data are processed and becomes anonymous, so my identity cannot be determined	
During the task or experiment, I am free to withdraw without giving reason and without there being any negative consequences.	
Should I not wish to answer any particular question(s) or complete a test I am free to decline	
I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the outputs that result from the research.	
I agree to take part in the above research project.	

_____	_____	_____
Name of Participant	Date	Signature
_____	_____	_____
Name of Researcher	Date	Signature

Participant Information leaflet

(This was presented face to face on a separate sheet of paper before the consent form)

Title of project: Making decisions in a purpose-made video game

Researcher: Sarah Hodge, Bournemouth University (shodge@bournemouth.ac.uk)

Supervisors:
Dr Jacqui Taylor, Bournemouth University: jtaylor@bournemouth.ac.uk
Dr John McAlaney, Bournemouth University: jmcalaney@bournemouth.ac.uk

About the project
I am a PhD student at Bournemouth University Faculty of Science and Technology, my research is being supervised by Dr Jacqui Taylor and Dr John McAlaney from Bournemouth University. Before you decide to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. This research is being carried out to understand decision-making in video games. I would like to assure you that the research has had full ethical approval (University Research Ethics Code of Practice).

Why have you been chosen?
You have been chosen for my study because you are in University and your opinions and decisions are valued for this study.

But I don't play video games, should I take part?
Even if you do not play video games it would be helpful to know what you think and how you make decisions compared to a frequent player.

Do you have to take part?
It's up to you if you would like to take part or not. You can withdraw up to a week after participation without reason and the data will be removed from the study and destroyed. At any point during the study you can choose to withdraw.

What would taking part involve?
You will be asked to sign a consent form; once this has been completed the study can start. First you will be asked a few questions about yourself, your video game habits and make decisions on what you think is important. Then you will play a video game which requires you to make decisions throughout 6 levels. This will be explained in more detail before the video game is played. During the video game I will stay in the room for assistance and to help understand your experience of the video game, I will note any responses. Once the video game has finished you will then be given a final

questionnaire, asking you about your experiences of the video game. The total time for this study will be approximately 1 hour.

What happens to my questionnaire response?
Once the consent forms have been completed your answers will be assigned a code, so that your answers are not identifiable All the information that we collect about you during the course of the research will be kept strictly confidential. You will not be able to be identified in any reports or publications. All data relating to this study will be kept for a minimum of 5 years at a BU password protected secure network.

Are there any risks?
Risks in this study are minimal; all safeguards have been taken to ensure your safety and wellbeing.

Are there any benefits of the study?
Whilst there are no immediate benefits for those people participating in the project, it is hoped that this work will help develop our understanding of how decisions are made in virtual worlds. Your thoughts are highly valued.

Questions
If you have any questions or comments about the study or would like more information please contact me (shodge@bournemouth.ac.uk).

What happens next?
If you are happy with what you have read and have no questions, please fill out the consent form to give consent, then the questionnaire will begin. For taking part Psychology students can receive credit.

Thank you for your help with this project.

<u>Moral decisions in a purpose-made video game</u>

(This appeared at the end of the questionnaire and explained to participants with a hard copy available)

Thank you for your participation. Your contribution to this study is very valuable and very much appreciated.

Please DO NOT share this information with others! It is important for future participants that they do not have this previous knowledge, as this would compromise the research.

You took part in a study which aims to understand decision-making in video games, specifically moral decision-making. The reason I did not use the word, moral at the

beginning of the study is because this can change and influence the answers given and decisions made. All responses will be coded and securely kept. If you decide you no longer want your response to be part of this study (you can withdraw up to a week after participation) contact myself, Sarah Hodge, shodge@bournemouth.ac.uk and the data will be removed and destroyed.

You completed an online questionnaire, first you were asked about yourself, your video game habits and what you think is morally important. Then you played the video game and made moral decisions while your experiences were noted, such as laughter. Then you were given a questionnaire which asked you about your experiences of the video game. Finally you were asked to assign the difficulty level of the tangram task, to examine post-game helping and hurting behaviour. Previous research has found that decisions made in video games are similar to decisions made in real-life. For more information on this see paper, Weaver and Lewis (2012). For more information on theories of morality, see Haidt and Joseph (2004). This research can help built our understanding of how people act in video games.

- Length of time: 1 hour
- Equipment: Online questionnaires and video game created for research (VR lab)
- Data gathered: Decisions made, response times and scores from questionnaires.
- Design: Mixed methods (open and closed questions) between subjects (level of gaming experience)
- Research question: Exploring moral decisions in a purpose-made video game

If you have any questions or would like more information about the study, please don't hesitate to contact me: shodge@bournemouth.ac.uk.

My supervisors details are: Dr Jacqui Taylor: jtaylor@bournemouth.ac.uk or

Dr John McAlaney: jmcalaney@bournemouth.ac.uk.

For any complaints contact Matt Bentley: mbentley@bournemouth.ac.uk

If you would like to read articles on topic, then please see:

Haidt, J., & Joseph, C. (2004). Intuitive ethics: How innately prepared intuitions generate culturally variable virtues. *Daedalus, 133*(4), 55-66.

Weaver, A. J., & Lewis, N. (2012). Mirrored Morality: An Exploration of Moral Choice in Video Games. *CyberPsychology, Behavior & Social Networking, 15*(11), 610-614. doi: 10.1089/cyber.2012.0235

Appendix M. Phase 2 - Procedure of main data collection

First questionnaire, pre-game play and playing the purpose-made-game

Once the information sheet had been read and no questions raised, the consent form was signed by participants. The participant code was put into the questionnaire. If they were happy to start it, they then clicked next, and the questionnaire started, they were informed that if they had questions during the questionnaire, the researcher would be around to answer them. While participants were completing the questionnaire, the researcher completed the paper work (signed the consent form and assigned, the same participant code to the tangram task and the last post-game question task) as well as set up the game. When the researcher was setting up the game, the setting were checked to be correct, such as the volume being set to 35%, and loading it on the screen and typing in the participant code.

Following completion of the first survey, participants were led into the VR lab, where the game had been set up with the participant code. Participants were verbally given a short description of the game, which included the opening instructions and the need to read the level instructions carefully. They were also told they could stop at any time, and their experiences would be observed and noted.

Verbal instructions:

- The game will take around 15-20 minutes to complete,
- This game contains 6 levels; at the beginning of each level Information about the level will be presented.
- Some levels have background information about the avatar you are playing as and some have goals.
- Each level has a similar layout and situations, with 6 people to interact with.
- The level information is also presented in similar layout so please read it carefully
- After each interaction with a person you will be given a choice.
- How you will make your choice will be in the tutorial, so I won't talk too much as about this now
- You can choose to stop at any time. If you can complete the game this would be helpful however you can choose to stop at any time.

- During the game, I will stay in the room for technical support and if you choose to stop let me know as I need to stop it for you.

The game then starts with a tutorial (both verbal and visual) which was helpful as it gave participants less verbal instructions (to avoid information overload and need for verbal memory). Plus, it was demonstrated in the game, thus more interactive for participants (to be shown what happens rather than just explained to). Finally, the game controls were printed and this was then verbally discussed with participants, they were also asked for familiarity with controls (in case those that were unfamiliar required more information). The games controls sheet also had some licencing information (see below).

Verbal game overview for participants

We are interested to find out how people make decisions in virtual worlds

1. First you will complete a questionnaire about you, your game play and you decide what you think is important
2. Play the game
3. Then some questionnaires about your experiences and how you made your decisions.

Verbal Game Instructions for participants

- The game will take around 15-20 minutes to complete,
- This game contains 6 levels; at the beginning of each level Information about the level will be presented.
- Some levels have background information about the avatar you are playing as and some have goals.
- Each level has a similar layout and situations, with 6 people to interact with.
- The level information is also presented in similar layout so please read it carefully
- After each interaction with a person you will be given a choice.
- To make your choice you have gauntlets which contain two types of energy; you will choose one of these energies to use.
- There is a tutorial to show you how to make choices but it's up to you what you choose.
- I will go through the controls before you start.
    - Left box: The energy in the left gauntlet helps and looks like this.
    - Right box: The energy in the right gauntlet hinders and looks like this.
- You can choose to stop at any time. If you can complete the game this would be helpful however you can choose to stop at any time.

- During the game, I will stay in the room for technical support and if you choose to stop let me know as I need to stop it for you.
- This is the last level is slightly different, make sure to read the instructions

Written Instructions for the game for participants

Licence: Music provided by Bensound and Models provided by Turbo squid, Auto desk Character Generator

Game controls:

Mouse:

- Move the avatars head to look around
- Left click – Use left gauntlet
- Right click – Use right gauntlet

Keyboard:

- ‘E’ - To interact with people and move to next level
- ‘W’- Move forward
- ‘A’- Move left
- ‘S’- Move Back
- ‘D’- Move right
- ‘I’- For level information (instructions)
- ‘Space bar’- To continue

Game play prompts if participants were unsure included: “have a look around”, “Check level information” and “It’s up to you”.

<u>The second questionnaire post-game play</u>

After the game has been completed the participants were led back into the first room were the second questionnaire was completed. The second questionnaire was administered in the same manner as the first. While participants completed this, the game was closed down, and participant’s code was checked that it was applied to the tangrams and final questionnaire sheet.

Once the second questionnaire had been completed, participants were then presented with the tangram task. The tangram task was explained including it would involve another (fictitious) participant. They were shown what tangrams were, and this included: easy (2 piece) medium (4 piece) and hard (7 piece) tangrams. If they were happy, then they were given the tangram assignment sheet and the instructions on the sheet were read to them. When they were happy to start, they were told to assign the 11 tangrams for the other participant to complete, while the research (pretended to), would get the assigned tangrams from the other participant. At this point the researcher left the room with participant completing the task and went into other room to appear to acquire the other participant's assigned tangrams. When the researcher returned they checked 11 had been selected. Then the participant was told that before they completed the other participant's assigned tangrams, for them, they were a few questions about the study so far was administered to participants, asking about motives for tangrams and their level of suspicion for the tangrams task (both verbally and rated on a scale) and the study, as a whole. Once these questions had been completed, participants were debriefed and told they will not be doing the tangrams assigned from the other participant, and the study's purpose was explained to them, including the role of morality in the study. The verbal and written instructions for the tangram task were adapted to change the currency for the gift certificate the other player could win from twenty dollars to twenty pounds.

During the debriefed, participants verbal feedback about the realism of the fictitious participant, was helpful, as it showed what made participants more suspicious. To give an example, the amount of money being offered made some participants suspicious. Participants were then thanked for their time, then tangrams were put away and the room was reset for the next participant.

Occasionally a participant would over run, in this case, to use time efficiently, participants were given the information sheet to read while waiting, and given the opportunity to ask questions. Once they were happy, they signed the consent form. Once the first participant had finished second part of the questionnaire, the laptop was set up in another room for the other participant to get started on the first questionnaire. Then the first participant could take part in the tangrams and the debrief without rushing.

Appendix N. Phase 2 - Coding variables

Length of time coding hours of game play

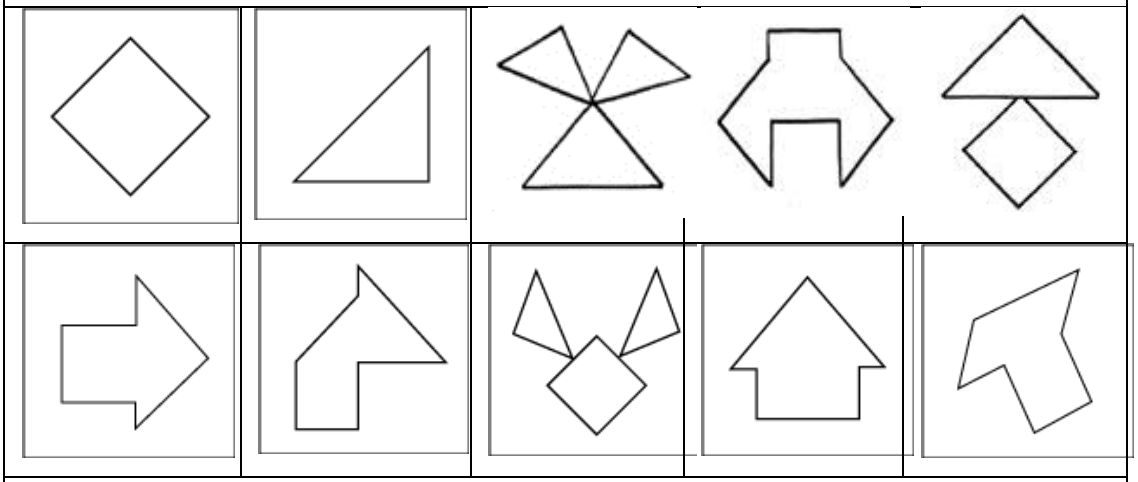
How often do you play games? Please select the boxes below to show how much you play and how many hours you usually play for.

Table A73. *Coding the length of time variable game play*

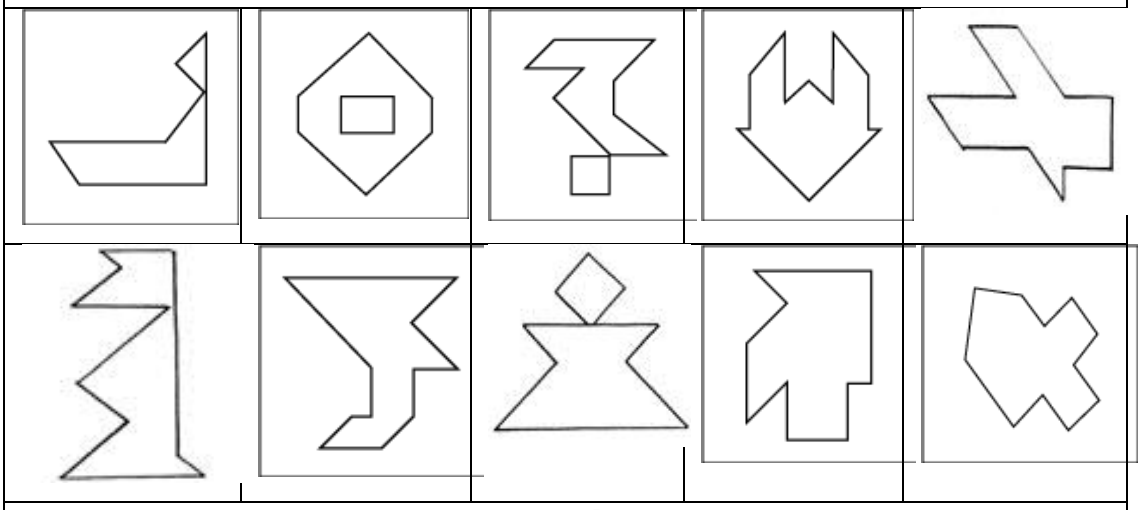
Number of days games played	Less than one hour 0.5	One hour 1	Two hours 2	Three to four hours 3.5	Five to six hours 5.5	Seven or more hours 7.5
A. Everyday (7)	3.5	7	14	24.5	38.5	**52.5**
B. Every other day (4)	2	4	8	14	22	30
C. A few times a week (3)	1.5	3	6	10.5	16.5	22.5
D. A few times a month (1)	0.5	1	2	3.5	5.5	7.5

Appendix O. Phase 2 - Example of Tangrams Puzzle

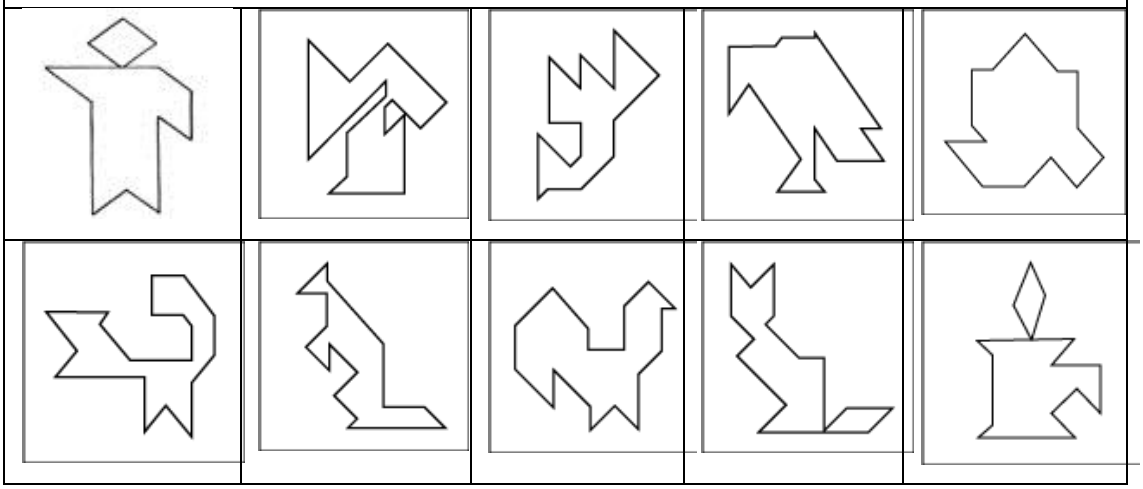
Easy



Medium



Hard



Appendix P. Phase 2 - Results for levels 1-5

Due to the meta-choice on level 6 the regressions were run on alignment with levels 1-5 to make sure this was not an influencing factor but the results were still the same. Below are the results from levels 1-5, these are reported here as the results were very similar to levels 1-6 and to keep Chapter 6 concise.

Table A74. *Correlation matrix of alignment, pro-social and anti-social choices, for each real-life MFT domains*

Correlation Matrix		Real-life MFT domain					
		L/B	F/C	C/H	S/D	L/O	A/S
Level 1-5	Alignment	-.01	.09	.06	.03	-.06	.35***
	Pro-social	-.01	.09	.06	.03	-.06	.36***
	Anti-social	.01	-.09	-.06	-.03	.06	-.36***

Table A74 shows that only the room that contained the MFT domain of A/S was significantly correlated with alignment and the pro and anti-social choices made. This was similar for levels 1-6 see section 6.2.1.2.

Table A75. *Regression model summaries Moral alignment for Levels 1-5 with; real life morality, previous game play*

In-game moral alignment for level 1-5	R^2	ΔR^2	*p*	Significant Predictors	+/-
real-life MFT domain	0.05	-0.02	.61	-	
real-life salience	0.06	-0.02	.68	-	
Previous game play	0.16	-0.05	.18**	Previous evil alignment	-

*p<.05 ** p <.01 ***p <.001

Table A75 reports regression was carried out with alignment in levels 1-5 (without level 6), which produced the same results, with the model not being significant but with again, previous evil alignment significantly predicting in-game choices (p = .008) with a negative relationship. Again, similar results to levels 1-6 see section 6.2.1.2 and 6.2.2.2.

Table A76. *Descriptive statistics for in-game moral choices (alignment, pro-social and anti-social choices) by IG-MFT domains*

			IG-MFT domain						
			IG-L/B	IG-F/C	IG-C/H	IG-S/D	IG-L/O	IG-A/S	Total
Levels 1-5	Alignment	*M*	0.70	1.30	1.81	1.44	1.57	0.00	6.81
		SD	1.76	1.43	1.79	1.73	1.58	2.10	7.78
	Pro-social	*M*	2.85	3.15	3.41	3.22	3.29	2.51	18.41
		SD	0.89	0.71	0.90	0.87	0.79	1.05	3.89
	Anti-social	*M*	3.15	1.85	1.59	1.78	1.71	2.50	11.59
		SD	0.89	0.71	0.90	0.87	0.79	1.05	3.89

Table A76, for levels 1-5, IG-A/S then IG-L/B had the lowest alignment and the most anti-social choices compared to the other domains whereas IG-C/H had the highest alignment score, and most prosocial choices, followed by IG-L/O. For levels 1-5, due to a violation of Mauchly's test of Sphericity χ^2 (14) = 0.15 (p < .001), the more conservative values from the Greenhouse-Geisser ANVOA values are reported, $F(2.56, 256.41) = 189.29$ $p < .001$ $\eta^2 = .22$. For levels 1-6 see section 6.2.3.1.1.

Table A77. *Regression model for in-game moral alignment levels 1-5 with in-game instructions*

	B	**SE B**	**β**
Constant	17.27	2.66	
Gender	-0.82	0.95	-0.05
Level 2 instructions	**9.33**	**1.39**	**0.55*** **
Level 3 instructions	**-8.69**	**1.35**	**-0.52*** **
Level 4 instructions	2.06	1.43	0.10
Level 5 instructions	**-7.87**	**1.41**	**-0.46*** **
All Level 1-5 instructions	-0.52	1.63	-0.03

$R^2 = 0.70$, $\Delta R^2 = -0.68$ ($p < .001$) *p<.05 ** p <.01 ***p <.001

Table A77 suggests that levels 1-5 suggested similar results to levels 1-6 (see section 6.2.3.2), that the in-game instructions significantly predicted moral alignment for levels 2, 3, 5 and 6a. The instructions on level 4, band the all level instructions (for levels 1-5) were not significant predictors.

Table A78. *Regression model for moral alignment in levels 1-5 with post-game measures*

	B	SE B	β
Constant	5.46	7.34	
Positive Affect	-0.03	0.39	-0.02
Negative Affect	-0.01	0.12	-0.01
Guilt Scale	-0.22	0.37	-0.13
Engagement (GEQ)	-0.06	0.15	-0.04
Tangram score	0.28	0.16	0.16
Avatar	0.11	0.61	0.02
Empathy	**1.76**	**0.62**	**0.36****
Compliance	**-1.04**	**0.51**	**-0.22***
Regret	-1.02	1.05	-0.14
Control	-1.21	0.79	-0.17
Just a game	0.12	0.52	0.03
Responsibility	**1.27**	**0.59**	**0.24***
Strategies	1.52	1.49	0.10
Stop	2.08	3.15	0.07

$R^2 = 0.32$, $\Delta R^2 = -0.21$ ($p = .001$) *p<.05 ** p <.01 ***p <.001

Table A78 shows that, Empathy, Responsibility and Compliance were significant predictors of moral alignment in the game. Empathy and Responsibility had a positive relationship with moral alignment whereas Compliance had a negative relationship. For level 1-6 results see section 6.2.4.2

Appendix Q. Phase 2 - Age and moral scores correlation matrix

Pearson's correlations were carried out and showed that none of the MFT variables (domains and salience) correlated with age.

	1	2	3	4	5	6	7	8	9	10	11
1. Age	-										
2. C/H	0.09	-									
3. F/C	0.02	0.61***	-								
4. L/B	-0.06	0.27**	0.30***	-							
5. A/S	-0.10	0.15	0.14	0.60***	-						
6. S/D	-0.15	0.21*	0.25*	0.54***	.62***	-					
7. L/O	-0.15	0.25*	0.37***	0.28***	0.19	0.14	-				
8. Salient score	0.07	0.81***	0.68***	0.23*	0.05	0.10	0.48***	-			
9. Non-salient score	-0.12	0.21*	0.25*	0.67***	0.76***	0.88***	0.20*	0.07	-		
10. Salient score	0.06	0.89***	0.75***	0.26**	0.12	0.16	0.29***	0.91***	0.12	-	
11. Non-salient score	-0.10	0.20*	0.24*	0.66***	0.75***	0.88***	0.17	0.07	1.00***	0.12	-

*p<.05 ** p <.01 ***p <.001

Appendix R. Phase 2 - RT data distribution

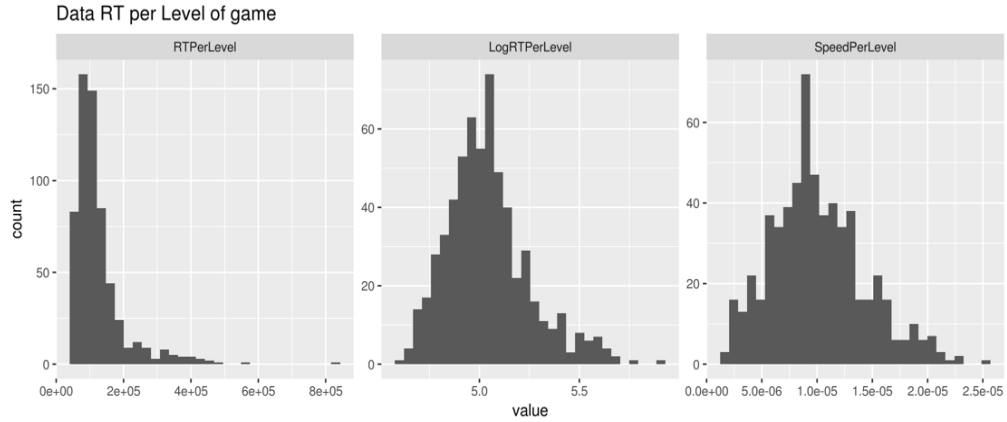


Figure A9. Distribution and transformation of Response Time data by level of game

Figure A9 shows from left to right the original data, the log and reciprocal transformations. The recipocal transformation shows an improved distrubution.

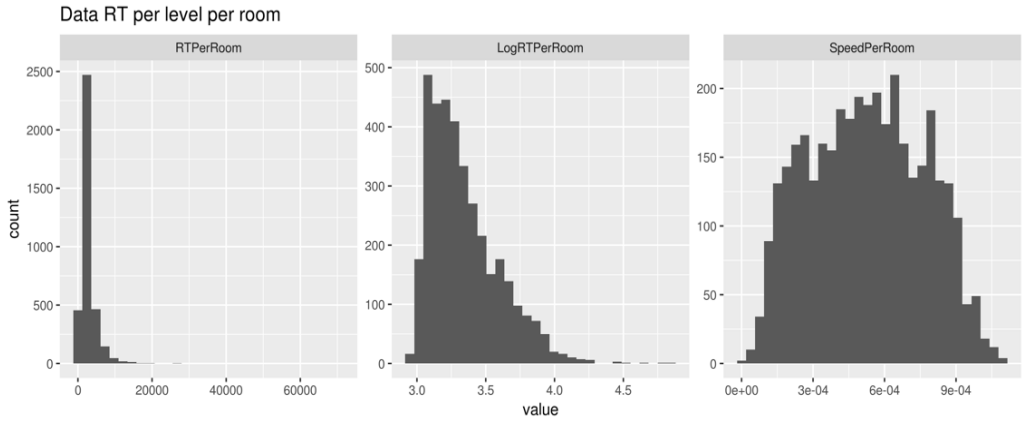


Figure A10. Distribution of and transformation Response Time data by level and room

Figure A10 shows from left to right the original data the log and reciprocal transformations. The recipocal transformation shows an improved distrubution.

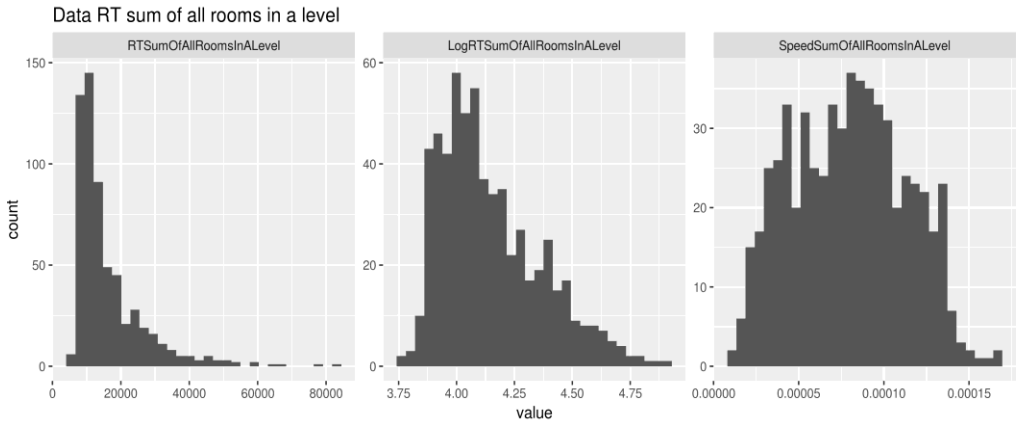


Figure A11. Distribution and transformation of Response Time data by total decision-making for each level

Figure A11 shows from left to right, the original data, the log and reciprocal transformations. The recipocal transformation shows an improved distrubution.

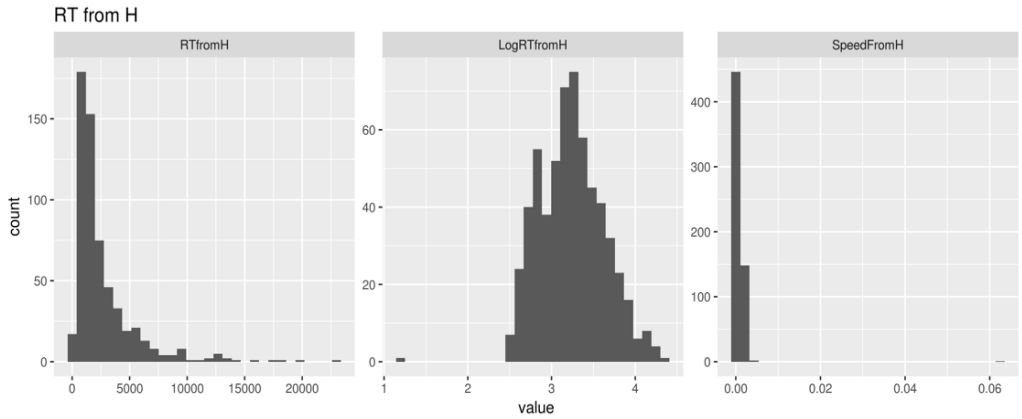


Figure A12. Distribution and transformation of Response Time data for level 6b Harm choice

Figure A12 shows from left to right the original data, the log and reciprocal transformations, with the outlier included all show a skewed distribution.

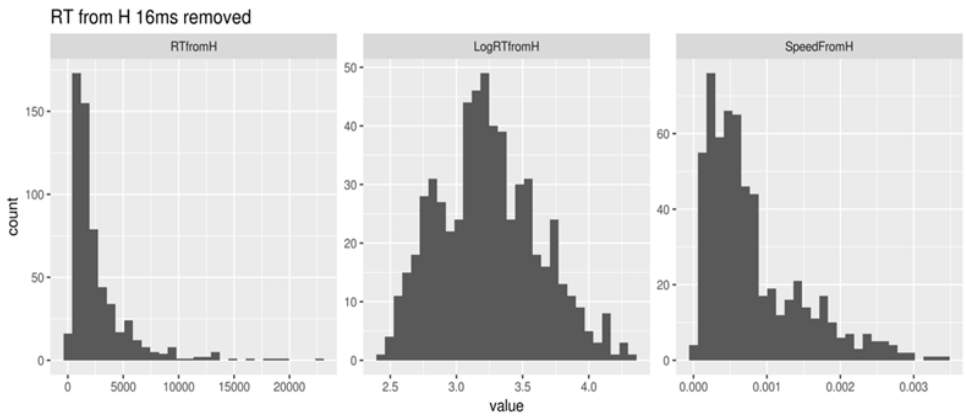


Figure A13. Distribution and transformation of Response Time data for level 6b Harm choice outlier removed.

Figure A13 shows, from left to right, the original data, the log and reciprocal transformations. With the outlier removed, the distrubtion for the reciprocal transformation was still slight skewed. Howerver, due to the appropiateness of the unit of measurment (speed of response), that the data were transformed into, and for consisteny with the other RT data, the reciprocal transformation was selected

Glossary

Heart Rate (HR)

Galvanic Skin Response (GSR)

Sociomoral Reflect Measure (SRM)

Criterion Justification (CJ)

Moral Foundation Theory (MFT)

The six Moral domains within the MFT:

1. Care/Harm (C/H)
2. Fairness/Cheating (F/C)
3. Loyalty/Betrayal (L/B)
4. Authority/Subversion (A/S)
5. Sanctity/Degradation (S/D)
6. Liberty/Oppression (L/O)

Moral Foundation questionnaire (MFQ)

Model of Intuitive Morality and Exemplars (MIME)

Non Player Character (NPC)

Role Playing Games (RPG)

First Person (FP)

First Person Shooters (FPS)

Virtual Environment (VE)

Response Time (RT)

Interquartile Range (IQR)

In-Game (IG)

In-Game-Moral Foundation Theory (IG-MFT)

Flesch Reading Ease (FRE)

Flesch-Kincaid Grade Level (FKGL)