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Pathology and Motivation in Players of Grand Theft Auto IV

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PATHOLOGY AND MOTIVATION IN PLAYERS OF GRAND THEFT AUTO IV

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Abstract

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Intrinsically motivated behavior is defined as a behavior that is performed for pure enjoyment (Ryan, Rigby & Przybylski, 2006). Video game playing is a form of intrinsically motivated behavior (Frederick & Ryan, 1995). Popular media commonly claims the act of playing video games leads individuals to behave in deviant and antisocial ways outside the confines of the gaming environment (Grossman & Christensen, 2008). Psychopathy is a primary feature of Antisocial Personality Disorder, according to the American Psychiatric Association (2013), and psychopathic criminals commit the greatest variety of crimes and more crimes of any type than the average criminal (Lynam, Whiteside & Jones, 1999,). The present study assessed 80 male college students on their level of psychopathy and the virtual crimes they committed while playing Grand Theft Auto IV to determine if game players with naturally high levels of psychopathy performed differently than their non-psychopathic counterparts, and subsequently to determine if the crimes committed during game play were modified and/or qualified by psychopathic scores. Correlational analysis revealed psychopathy scores positively relate to virtual crimes against people, but not to crimes against property. Results also showed that

virtual crimes against property were negatively correlated to the intrinsic motivation subscale of Relatedness, with crimes against people having no significant self-reported intrinsic motivational outcome. A regression analysis revealed the subscale of Effort/Importance positively related to the psychopathy scores of the participants. Results are reasonably set forth in the vastly unexplored environment of human behavior, motivation, and expectations in video gaming.

Keywords: Psychopathy, intrinsic motivation, video game, crime, behavior

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List of Abbreviations

BIS- Barratt Impulsiveness Scale

CAPE- Crimes Against People

CAPR- Crimes Against Property

GTA- Grand Theft Auto IV

IMI- Intrinsic Motivation Survey

IMIEI- Intrinsic Motivation Subscale of Effort/Importance

IMIIE- Intrinsic Motivation Subscale of Interest/Enjoyment

IMIR- Intrinsic Motivation Subscale of Relatedness

IMIVU- Intrinsic Motivation Subscale of Value/Usefulness

LCPD- Liberty City Police Department

LSRP- Levenson's Self-Report Psychopathy Scale

LSRPTOT- Total (composite) LSRP score

PPI- Psychopathic Personality Inventory

SDT- Self Determination Theory

TPS- The Pathology Scale

Introduction

To date, limited research has been conducted on the reason why gamers seek out and persist in playing action-adventure style video games, which promote illegal activities and behavior. Miller (2011) reviewed previous research efforts and noted they either addressed video game use and violence and aggression, or they examined different aspects of video game addiction. Miller continued to say there is a strong requirement for research to understand an individual's motivations for gaming for the purpose of providing researcher assistance in the clarification of video game usage. To expand upon this insight, this study sought to examine the relationship between individuals' self-reported levels of psychopathology and their crimes committed through video game play. This study also examined the correlation between intrinsic motivation and resultant game play via crimes committed as provided by the video game Grand Theft Auto IV.

According to the Entertainment Software Association (2013), 58% of Americans play video games, 68% of those playing are 18 years old and older. Video game research not only looks at current players in terms of age, sex, and medium used (cell phone, game console, computer, etc.) but it also quantitatively assesses the most salient of video game questions, those which involve violence (Entertainment Software Association, 2013). Violence and its origination (pre or post-game) and the negative effects of violence and video game addiction have been a root concern since the mid-1990s within this field (Gentile, 2009; Vitelli, 2013). Similar empirical research has toiled to define the context of motivation and drives within the

video game community, but these works are largely modern products of exploration into commercial utility (Rigby & Ryan, 2011).

Literary Review

Grand Theft Auto

The video game selected for this study is *Grand Theft Auto IV* (GTA). Currently, 9.71 million copies of this game have been sold on the PlayStation 3, Xbox 360, and Microsoft Windows formats, 2.47 million of which were sold in the first week alone when it was released in 2008 (VGChartz Pro, 2013). GTA is primarily an action/adventure game. Game players play as the protagonist, Niko Bellic, who is an Eastern European immigrant in a new country with only one established connection in this "foreign land": his debt-laden cousin, Roman Bellic. Players engage in various virtual crimes within Liberty City in an effort to establish and maintain friendships with in-game characters. Successful completion of the game requires players to complete storyline missions, find hidden objects within the city, and make and maintain relationships with other characters within the game.

GTA was selected for this study because it contains a number of interesting features. It is labeled as an action game, but it is stylized as an "open world" game such as *The Sims* and *Second Life* in that there are many different ways a player can reach an objective, whatever that objective may be, and the entire city is available for a gamer to explore. There are no required paths for a player to take as they travel from one location to an abstract or a specific destination ithin the game. Scripted inter-character interactions and/or storyline plot points which occur within most games as players are en route to their destination does not occur within GTA game

play. The "world map" appears as though it is open and available for exploration from the moment the game starts. This means that players can travel and explore the entire city at-will without playing scenarios within the game first in order to "unlock" the various districts of the city. When players drive about within the city the radio states there is a "non-specific terrorist threat" which is why certain parts of the world map are not initially open for exploration, but this does not seem to detract from the autonomy of the game play.

At times, GTA can be a "third-person-shooter" game, a genre that is very similar to "first-person-shooter," made popular thanks to games such as *Call of Duty*, *Doom*, and *GoldenEye 007*. The difference between first-person and third-person is the level of player involvement when the gamers' character is pulling a trigger. Third-person games give the appearance that the video game players are on the outside of a situation watching an action initiated by them unfold, whereas first-person games give the appearance that the players themselves are holding weapons and actively firing them. The most important reason for the inclusion of this game within the study is that players can autonomously explore their surroundings, and do so while committing crimes (Rigby & Ryan, 2011).

Crimes during Video Game Play

Video games and violent behavior are nothing new to the realm of research; the Entertainment Software Association has a full webpage dedicated to research spanning the last 10 years, and a number of the studies cited are centered on the premise that violence within games is not entirely "bad" per say (Entertainment Software Association, 2013). Research includes the findings that video game violence does not have a direct impact on aggressive

behavior (Ferguson & Rueda, 2010) and that antisocial personality traits, depression and a history of family violence were better predictors of aggression in teens (Ferguson, San Miguel, Garza, & Jerabeck, 2011). While Ferguson et al. examined game-based correlates of aggression, further research is needed to determine how actual incidence of aggressive acts within game play may relate to individual differences in antisocial behavior, as well as the motivation to continue to engage in game play involving aggression. To point, even within games that allow players to engage in aggressive actions, the player can choose to take on a less aggressive role in the game or he/she can choose to engage in lesser acts of aggression. The present study sought to categorize aggressive acts within game play, measuring both type and frequency of occurrence and then relate these behaviors to antisocial personality traits and continued motivation for future game play. To better understand how to measure proxy aggression (that occurring within a game, rather than in real life) within the current study, the researcher spoke with subject matter experts (SMEs) to ascertain the pivotal requirement of the game play and the motivational component of behavior which acted in a contributory manner toward the commission of a crime. To assess game play, the researcher examined, labeled and tabled all of the crimes in which GTA enables a player to participate. Those crimes which are relevant to participant game play are listed and labeled in Table 1.

Based on consultation with SMEs in law enforcement and the legal profession, crimes within the game were classified into two categories: crimes against property and crimes against people (Wilson, 2013). This arrangement contains a mixture of standard crime classifications including felonies (those acts which are inherently evil), misdemeanors (not inherently evil but prohibited by today's society), and violations (which are for the most part punishable by fines)

(Cheeseman, 2010). Within each category (crimes against people, and crimes against property), crimes vary in their level of traditional classification in the sense that not all crimes against people carry the same weight (or same punishment). However, in general, crimes against people are viewed as more serious and carry heavier penalties than crimes against property (Wilson, 2013).

Crimes Against Property

The concept of arson has been expanded upon for the quantification of what happens during game play to assist the researchers in categorizing certain actions as crimes against property. Black's Law Dictionary has defined arson as "the intentional and wrongful burning of someone else's property" (Garner, 2009). Within this game, players cannot ignite arbitrary fires and burn down randomly selected properties even when a player discharges an RPG (rocket propelled grenade) into the side of a building. Arson could occur when a player repeatedly drives a vehicle into something and through eventual "wear and tear" of the vehicle, a non-extinguishable fire ignites. Because it is difficult to establish a player's intent in causing such a fire, it may be argued that this is not arson per the definition indicated above. However, considering that this small engine fire may become a raging inferno which ultimately causes the vehicle to explode, thereby having a potential to ignite nearby vehicles, subsequently setting them on fire as well, the explosion resulting from vehicular negligence may earn the player one count of "crimes against property." Each successive explosion would be counted similarly. Players can make cars explode if they choose to fire upon a vehicle with an RPG during game play, or perform in the manner aforementioned. Because building structures don't burn down

within the game play, the researchers will consider each building blaze ignited by an RPG as one count of arson, and subsequently one count of “crimes against property”.

The criminal act of trespass, within the context of GTA, is another act that is considered a crime against property. Trespassing can occur because the player does not own certain governmental properties within the city in which they roam and if they find themselves, for example, on airport property they are guilty of trespassing. Public locations such as apartment building grounds and the front yards of private homes are not counted as trespassing, in contrast to the inside of non-store buildings and the airport tarmac which, in regard to playing GTA, would be considered trespassing.

An additional game play behavior to be considered an act of crimes against property is vandalism. Vandalism is so rampant in this game, it is (at times) difficult to assess. Vandalism is defined as action involving deliberate destruction of, or damage to, public or private property (Garner, 2009). While this study could not assess whether a behavior is deliberate, behaviors that include destruction or damage to public or private property such as striking other vehicles while driving through the streets of Liberty City were counted as vandalism. However, this study could not account for the number of telephone poles and/or fire hydrants (viable charges for vandalism) which were knocked over due to their proximity to the edges of the road and the researcher’s inability to prove the element of *intent* (the game players could just be bad drivers, which argues against willful intent).

Robbery is a crime against people which involves force, and cannot normally willfully occur in the streets of Liberty City by the game player unless it is a part of a mission within the

standard game play. To intensify the conditions of game play and to minimize in-game financial needs, a cheat code was used for all players who completed the first mission. Through the use of the cheat code (which arms players with weapons), robbery has the potential to be committed through every carjacking that is attempted.

Theft was classified as crimes against property within this study. In the state of Florida (where this research was conducted), there are two different classifications of theft, and they are petit theft and grand theft. For the state of Florida, when a piece of property is unlawfully obtained which is valued at a minimum of $300, then the individual in possession of the property can be charged with grand theft. Petit theft includes the unlawful obtainment of property valued at less than $300 (Wilson, 2013). Within this study, any and all illegally obtained vehicles were counted as one count of theft, and subsequently as one count of crimes against property. Different states set varying values for property to distinguish between grand theft and petit theft. Within the overall game play, there is a potential to commit theft of both types (grand and petit), however, this was not something the participants experienced within their 30 minutes of game time.

Burglary is considered to be a crime against property because of a generally applied rule in law enforcement which states that there are people, places and things; and of them they can be robbed, burglarized, or stolen (respectively) (Wilson, 2013). Addressing this and keeping in line with crimes against property, committing burglary is non-existent in casual game play. Because of this, raters were not given an option to assess burglary.

Crimes Against People

Continuing the previous discussion on the theft of things and the burglary of places, comes the dialogue on the robbery of virtual people. A practical definition of robbery is the taking of someone else's property with force (Garner, 2009). While playing GTA it is expected that game players will approach a vehicle and attempt to acquire it. Because of the way GTA is scripted and because of the nature of the game play itself no differences could be made with respect to plain robbery (without a weapon) and armed robbery (with a weapon). Therefore, video coders rated the taking of anything with force as robbery, and counting as one count of a crime against people.

Manslaughter is defined as "the unlawful killing of a human without malice aforethought" (Garner, 2009). This charge falls into the discussion of virtual death as it is a separate crime in and of itself from murder regardless of whether it is voluntary or involuntary. Assault is another charge listed as a crime against people. This may occur on the streets at any time during game play at the discretion of the gamer, and was defined by the video coders as physically attacking another in-game virtual citizen of Liberty City.

On the subject of crimes against people, kidnapping is another key crime that falls into this category. Kidnapping occurs when a player presses the triangle button on the video game controller to engage in the act of carjacking a virtual citizen. Some "citizens" of Liberty City within GTA drive around with passengers and when a player commits assault and subsequently intensifies the "charge" to grand theft auto, if there is a passenger in the car then the player is guilty of kidnapping as well. Extortion and drug trafficking are not alien to the game plot, and

are nothing the player will probably experience within their 30 minutes of game play but must be quantified nonetheless as a crime against people.

Other criminal behavior considerations within GTA. It is not uncommon for players to also experience solicitation for prostitution, harassment, conspiracy, and public intoxication (which is possible for the times when players take their character to a bar in the game) during game play. Once a character is drunk and in control of a vehicle, they receive "wanted" levels of 2 out of a possible 6 stars, and the LCPD (Liberty City Police Department) immediately respond to the character's location. To avoid jail, players must maneuver their character though the streets and away from police until their wanted level disappears or they sober up. As players drive while intoxicated the screen distorts and the controls for the vehicle become "spongy." Incidentally, while driving about Liberty City, if a player drives through an intersection with a stop sign or cruises through a red light the LCPD will not give chase and the "wanted level" will not register a single star. Because of these "petty" crimes (when compared to the grand scope of the game play) the researchers decided to not code for or to account for the number of red light violations or stop signs which were ignored by the players, in addition to the number of telephone poles downed or fire hydrants demolished as addressed previously.

In summary, when playing video games that include the possibility for violent or aggressive actions, it is important to consider not only the number of occurrences for these acts, but the type of action which occurs. Within GTA, all possible aggressive actions were documented and with the assistance of SMEs within law enforcement and the legal profession, a

classification system was created to distinguish between crimes against property and crimes against people during game play (Wilson, 2013).

Psychopathy

One of the main variables within this study involves individuals with psychopathic personalities. Psychopaths are experts at manipulation, "achievers in an individualistic society," and are typically deceptive, impulsive, emotionally detached, dishonest, and destructively antisocial (Balbuena, 2010). Machiavelli wrote in 1532 about the desirability of psychopathic traits; according to him these traits were necessary in the art of politics. Psychopathic tendencies are not uncommon in successful businessmen, politicians, and their less successful counterparts; unsuccessful inmates. Modern research on psychopathy is not new as it has been around since Cleckley wrote about it in 1941 (Balbuena, 2010). This research aims to extend understanding on the nature of individuals with psychopathic personalities, and it is the contention of this author that this understanding could come through the use of video games as a non-invasive catalyst.

Due to the complicated nature for ascertaining guidelines for the qualification of psychopathic behavior, psychopathy and the definition of it have been assessed and defined using differing groups of individuals from traditional and distinct pools. Levenson, Kiehl, and Fitzpatrick (1995) define psychopathy as a disorder characterized by a pattern of intrinsically antisocial behavior, which is based on an individual's judgments on the importance of their wishes and the rights of others. They further make the claim that antisocial behavior is a

choice, which is selected by psychopathic individuals and the repetition of this behavior acts as a positive reinforcement in that future antisocial behavior becomes "less aversive."

Levenson (1990) created his first psychopathy scale based on clinical research on psychopathy performed by Cleckley in 1976. He then used this scale in a comparison of drug unit residents, rock climbers, and heroes. Levenson is not the only primary researcher to address psychopathy and build an assessment scale for it: Hare accomplished the same in the creation of his *Psychopathy Checklist, Revised* (PCL-R), as did Lilienfeld and Andrews when they created the *Psychopathic Personality Inventory* (PPI) (Walters, Brinkley, Magaletta, & Diamond, 2008). Balbuena (2010) noted that psychopathy as a trait is dimensional in nature and is not a taxonomy, making it suitable for assessment in college-aged individuals (Levenson, Kiehl, & Fitzpatrick, 1995). This is consistent with the positions taken by both Levenson and Hare in that both of the scales created to measure psychopathy can be used in a general college-aged population (Walters, Brinkley, Magaletta, & Diamond, 2008).

In the present study, psychopathy was a primary variable of interest. As the video game industry and others realize, playing video games and aggression are often linked together (Ferguson et al., 2011). In the popular press, the linkage is often described as video game violence leading to real-life violence, or acting as a tool to aid in the desensitization of would-be killers. A notably popular example of this occurrence involves the two Columbine High School students-turned-shooters Eric Harris and Dylan Klebold and their use of the video game *Doom* for this express purpose (Grossman & Christensen, 2008).

In contrast to the contention that video game violence leads to real-life violence, it may be that personality factors may lead to video game violence during game play, a causal relationship that has not been as extensively studied (Ferguson et al., 2011). This author contends it is the personality of the individual that drives the type of video game played, as well as possible violence exhibited during game play. The present study assumes that greater psychopathy as a trait-based measure of antisocial tendencies predicts greater violence in game-play, though whether that violence occurs as virtual crimes against people, virtual crimes against property, or both is largely unknown.

Self Determination Theory

It is this author's contention that Self-Determination Theory (SDT) can be utilized in the explanation of the motivational components which drive individuals to play within the genre that GTA falls. SDT is composed of three aspects of motivation which cause individuals both to be, and to remain, engaged in activities in which they undertake. In fact, Rigby and Przybylski (2009) noted that "fun" while playing video games was attributable to the degree of satisfaction experienced in the fulfillment of the needs of competence, autonomy, and relatedness, three primary psychological needs according to SDT (Deci, 1980). Weinstein, Przybylski and Ryan (2012) acknowledged that relatedness and autonomy "go hand in hand" in direct support of the writing of Hodgins, Koestner, and Duncan (1996) when they postulated that within the framework of SDT, one does not need to fulfill the need for autonomy prior to fulfilling the need for relatedness. Fulfilling one need increases the probability that the next need will be fulfilled (Hodgins, Koestner, & Duncan, 1996). According to SDT, if someone receives a positive

benefit from an activity, then they will persist in the behavior being reinforced (Wang, Khoo, Liu, & Divaharan, 2008).

Autonomy. Autonomy is a key component of SDT. Autonomous individuals feel that their goals and activities are self-chosen and in line with their values and intrinsic interests (Sheldon, Ryan, & Reis, 1996). According to Weinstein, Przybylski, and Ryan (2012), autonomous behavior has been positively associated with engagement, socializing behavior, and development of relationships. A lack of autonomy, on the other hand, in an activity is characterized by frustration and a general lack of satisfaction as individuals whom experience these feelings have the impression they are not the authors of their behavior (Sheldon, Ryan, & Reis, 1996).

Autonomy relates to GTA in that a player has the freedom to travel from location A to location B via any means imaginable, and the complete freedom to stop for any sidebar possible for any reason while en route. Autonomy is provided within GTA by providing financial rewards as feedback for the completion of missions (Przybylski, Ryan, & Rigby, 2009). In-game autonomy is related to game enjoyment, which is measured through the use of the Intrinsic Motivation Survey (IMI) and is discussed in proceeding sections of this paper (Ryan, Rigby, & Przybylski, 2006).

Competence. Douglas Gentile (2009) noted that people play video games for a myriad of reasons from initiating feelings of competence and autonomy to undertaking modern methods of relaxation and the escapement of modern living. Competence is the second key component of SDT, and individuals who rate high in competence believe that they can effectively achieve

their personal goals. When Sheldon, Ryan and Reis (1996) were composing a subscale for the quantification of competence they sought to measure individuals' perceptions of task effectiveness (in terms of completion and capability) along with their general perception of performance in most activities. With this definition, it is no surprise that individuals play video games which can bolster their personal feelings of achievement.

Competence within GTA is based upon the ability of a player to exercise their skills, and to receive positive feedback (Ryan, Rigby, & Przybylski, 2006). For GTA, competence involves the ability to get into and out of vehicles, change the radio station, cycle through weapons, aim/shoot/reload weapons, and complete missions. Competence ties into intrinsic motivation in much the same way that autonomy does, and will be discussed a little later within this writing.

Relatedness. The third key component of SDT is relatedness. According to Wang et al. (2008), relatedness deals with feelings of being connected to others, caring for and being cared for by others. In general, relatedness correlates with actions the heroes take when they act with, and for, the advancement of their community (Rigby & Przybylski, 2009). One major purpose of this research was to uncover the extent to which relatedness applies to players of this game. Relatedness and psychopathy contain an interesting relationship as variables within this study because relatedness, as a construct, involves characteristics that are the antithesis of traits associated with psychopathy. Most psychopathic individuals are "loners" by definition, and as such have no friends: unless, of course, having friends would be to their immediate advantage.

Intrinsic Motivation

Intrinsically motivated behavior describes a behavior which is performed purely for enjoyment (Wang, Khoo, Liu, & Divaharan, 2008). It is a core motivation which occurs when there is no external reward in an action or behavior which is performed, and is considered to be the form of motivation which is responsible for an individual's engagement in video game play (Przybylski et al., 2012). Intrinsically rewarding behaviors are noted by the "flow" states they produce in addition to feelings of control and competence (Levenson, 1990; Gentile 2009). Value, enjoyment, and effort are distinctly related to intrinsic motivation as are autonomy and competence which were previously mentioned (Przybylski, Ryan, & Rigby, 2009).

To date, there is no current literature on psychopaths and their leisurely activities in terms of *how* they play, video games or otherwise. Levenson (1990) reported on Blackburn's findings in 1978 that psychopaths *may* seek stimulating events to maintain optimal levels of information flow. Due to this, the researcher believes the following hypotheses will generate the qualitative requirements necessary to separate psychopathic gamer characteristics from that of their counterparts within a college-aged population.

The Present Study

Current research has shown that game play increases intrinsic motivation, which in turn has the propensity to become pathological for some players when their game play begins to produce negative life consequences (Gentile, 2009). The primary purpose of this study was to relate pathology and motivation to game play, resulting in a predictive model that posits psychopathy as an antecedent of aggressive game play and intrinsic motivation as a consequence

of play that also promotes continued participation in said activity. A secondary purpose of the study was to examine changes in motivation toward game play, following engagement in 30 minutes of playing a violent video game. A key goal was to ascertain whether or not psychological needs and intrinsic motivation predicted the type and amount of game play and whether or not the game play, in turn, related to pathology. Specifically, this research asked "How integrative is the role of psychopathy within the individual, and what role will it play within the video game community at large?"

Four hypotheses were developed and tested within the parameters of this study. The first hypothesis examined whether a link exists between LSRP values and criminality. The specific question sought to answer whether psychopathy is positively correlated with the number of crimes committed. Lynam et al. (1999) said that "psychopathic offenders… are the most prolific and violent of criminals, committing a wider variety of crimes as well as more crimes of any given kind than the average criminal offender." The second hypothesis predicted a positive relationship between criminality level within the game and intrinsic motivation toward game play.

The third hypothesis tested the validity of a regression model in which psychopathy leads to criminality during game play, which in turn predicts a higher level of intrinsic motivation toward the game. On this subject, the researcher asserted that the case could easily be inferred for this relationship to exist through reviewing previous literature on the subject of psychopathy and motivation. Levenson (1990) wrote about an observation made by Csikszentmihalyi in 1977 in which he found that mountain climbers engaged in their activity for the experience of

"flow," which incidentally builds upon feelings and the perception of competence and control. "Flow" is a state of mind in which people experiencing it report that they are focused, and this behavior is correlated with a perception of loss of location and/or sense of time (Gentile, 2009). This builds upon the case in which the expectation is such that the discovery of high values for psychopathy will breed high values for criminality, and subsequently high values for intrinsic motivation due to the perpetual "flow" state of mind which is expected to be experienced by psychopathic gamers "caught up in the moment".

The fourth hypothesis examined the assessment of intrinsic motivation scores for game play as they are related to the self-reported desire for continued game play. The specific intrinsic motivation scores under observation in this hypothesis were the subscales of interest/enjoyment, effort/importance, value/usefulness, and relatedness. It was predicted that those who report a desire to play the game again will show higher levels of intrinsic motivation than participants who do not wish to play the game again.

Method

Participants

One hundred and twenty nine participants volunteered their time in exchange for extra credit in two undergraduate introductory psychology courses at a small private university in Florida. Eighty seven students actually participated based upon their schedule of availability, and they included 80 males and 7 females. Participants were told that participation in the study was voluntary, and the ability to withdraw at any time was available to them. Due to the low number of completed female participants (n = 5), female data was omitted from this study.

Apparatus

A Sony PlayStation 3 video game console was used in this experiment with the viewing medium being a Sony Bravia 42-inch flat-screen television. The game played was *Grand Theft Auto IV* made by RockStar North. All participants started at the beginning of the game with a cheat code enabled into the player's in-game cell phone during the first mission. The cheat code used for all participants was "Health and Weapons" and 482-555-0100 was put into the character's cell phone under the "cheats" menu to give the players full health (which could slowly dissipate when players receive damage in the form of a physical attack such as a strike or a wound from being shot) and a weapon inventory. An Apple iPad (2nd Generation) was utilized as a timer for the overall game play through the use of the built-in "Clock" application. A Logitech webcam (CS310) was employed to capture game play, and the video feed of the participant's play was stored on an external hard drive for future researcher analysis.

Measures

The Intrinsic Motivation Inventory (IMI) was borrowed from the website www.selfdeterminationtheory.com and was adapted for this study. The Levenson Self-Report Psychopathy Scale (LSRP) was obtained from personal correspondence with Professor Rick Levenson on the subject of his 1995 study.

Intrinsic motivation. The IMI was used in this study to gauge participants' perceived levels of interest, enjoyment, importance, relatedness, and value/usefulness to the task of playing the video game, and has been used in previous video game research (Przybylski et al., 2012). The IMI is a nineteen-question tool which contains the four subscales of Interest/Enjoyment

(I/E), Effort/Importance (E/I), Value/Usefulness (V/U), and Relatedness (R). The IMI has adequate reliability scores for use with a college sample (Przybylski, 2012). These subscales were used as dependent variables in the assessment of the intrinsic motivation of participants' "after game-play." The purpose of this scale was to see if the four subscales could contribute to answering the second, third, and fourth hypotheses.

Psychopathy. Psychopathy was assessed using Levenson's Self-Report Psychopathy Scale (LSRP). The LSRP is a 26-question assessment scale which was created by Levenson, Kiehl and Fitzpatrick (1995) and was used in previous research and validated with a college age sample by Lynam, Whiteside and Jones (1999). It was utilized in this study to determine if there was a correlation between psychopathy and virtual crimes. Some questions contained within the scale were "I am often bored," and "Most of my problems are due to the fact that other people just don't understand me," which respondents were asked to rate on a four question Likert-style scale with 1= "Disagree strongly," 2 = "Disagree somewhat," 3 = "Agree somewhat," and 4 = "Agree strongly." The LSRP is comprised of two subscales addressing two different components of psychopathy. The first subscale measures primary psychopathy which is the selfish, manipulative, and uncaring *attitude* towards other people which psychopaths are "known" for. In future references, this scale is abbreviated LSRP1. The second subscale measures secondary psychopathy, which is defined as the impulsive, irresponsible, and self-defeating *behavior* displayed by psychopathic individuals (Walters et al., 2008). In future references, this scale is abbreviated LSRP2. Both subscales were used in the present study. A total psychopathy score was generated by combining the scores on the two subscales.

Impulsiveness. Impulsivity is loosely defined as a predisposition toward unplanned actions without regard to potential negative consequences and is a symptom of many disorders, including antisocial personality disorder, and was a major factor within this study (Stanford, et al., 2009; Steinberg et al., 2013). Recent research regarding video games has focused on impulsive aggression which is aggressive automatic behavior that is void of inhibitions and commonly occurs while playing first-person shooter games due to the nature of the games' requirements for players to make quick decisions (Society for Personality and Social Psychology, 2013). The Barratt-Impulsiveness Scale, 11th revision (BIS-11) was administered to determine whether impulsiveness or psychopathy provide better predictors of criminal behaviors within this study. The BIS-11 is a 30-question survey, using a 4-point likert scale with 1 = "Rarely/Never", 2 = "Occasionally", 3 = "Often", and 4 = "Almost Always/Always". Some of the questions included in the scale were, "I concentrate easily", "I "squirm" at plays and lectures", and "I am a steady thinker." It was designed and validated as a standard to assess general impulsiveness (Stanford, et al., 2009).

Criminal behavior during game play. A variable of primary interest in the present study was the number of crimes committed during 30 minutes of game play in GTA. This measure of criminal activity was further delineated using the categorization system presented in Table 1. Through videotape of game play, sessions were reviewed and crimes were categorized based upon an assessment of all illegal activities committed by the game player. The crimes themselves were then categorized as crimes against property or crimes against people, as defined by legal SMEs (mentioned in previous section of paper) (Wilson, 2013). In order to assure reliability of the ratings, two raters were used to review the sessions and ratings were compared.

The assessment form utilized to rate participant crimes can be viewed in Appendix G. In instances involving disagreement between raters, both raters watched the video again and were required to achieve consensus for the final categorization of the overall actions performed. For the present study, an inter-rater reliability rate of 90% was achieved between the two raters.

Experimental Design

Participants were asked to sign a consent and demographic form in addition to completing the LSRP. They were then asked to play the video game GTA IV for 30 minutes with timed game play starting following the successful completion of the first "mission." After this, participants were tasked with the completion of the IMI as a post-game play measure.

Procedure

The experiment was conducted in the Embry-Riddle Aeronautical University GEARS (Game-based Education and Advanced Research Studies) Laboratory. Each participant filled out a consent form (Appendix A) and an Experience Survey (Appendix B) which assessed their individual game playing experience in life. Following this, the LSRP (Appendix C) was administered. These surveys took approximately 5 minutes (cumulatively) to complete. All participants received background information on the storyline of GTA IV as well as the expectation that they must successfully complete the first "mission" to receive 30 minutes of game play. Instructions regarding how to play the game were provided by the game and the researcher as the participants played the first "mission". A cheat code was provided as soon as the participants "received" a cell phone during game play, as cheat codes could not be utilized

without said cell phone. After the 30 minutes of game play, the researcher administered the IMI which took approximately 5 minutes to complete (Appendix D).

Participants also filled out two motivational questionnaires (one prior to game play, one immediately after) which gave the appearance that their game play was not being assessed and that the researcher had no interest in their gaming knowledge, skills, and abilities. The outward appearance was that the researcher was assessing overall motivation for game play and was interested in the motivational content which GTA provided in comparison to the motivational content provided by the participants' favorite video game. These additional surveys can be found in Appendix E and Appendix F respective to their administration (pre and post-game). Although, these measures are legitimate psychology scales measuring motivation, they were not of interest in the present study.

Proposed Analyses

The proposed analyses were as follows:

Hypothesis 1 involved the correlation of psychopathy to the number of crimes committed by gamers. This correlation was made possible through the use of the LSRP scores and the GTA criminality scores for each gamer. The Pearson correlation was used to analyze the relationship with a *p*-value set at .05 or less.

Hypothesis 2 involved another correlational analysis in which the researcher predicted that intrinsic motivation values toward game play were positively correlated with criminality. This correlational model involved the use of individual and composite IMI scores along with the

assessed GTA game play crime totals. This analysis used the Pearson correlation with a *p*-value set at .05 or less.

Hypothesis 3 was a multiple regression model which was tested for best fit. In the model, it was predicted that trait-based psychopathy leads to greater incidents of criminal activity during game play, which in turn leads to increased intrinsic motivation for game play. Several regression analyses were used to test this temporal-causal relationship. Several assumptions were met in order for the model to be testable as predicted. First, psychopathology must be significantly correlated with criminality during game play; and criminality must be significantly correlated with the resulting intrinsic motivation. Both of these assumptions were tested in Hypotheses 1 and 2. Since assumptions were met, the psychopathy variable was regressed onto the two criminality variables (crimes against property and crimes against people) and the four intrinsic motivation variables. In this regression it was predicted that psychopathy would be a significant predictor of game play but not intrinsic motivation. Utilizing results from the regression analyses, a model was created designating the significance of each pathway tested and the resulting percent of variance predicted by each relationship. Significance in the regression model for each individual predictor was set at a *p*-value of .05 or less.

Hypothesis 4 involved a one-way multivariate analysis of variance in the assessment of intrinsic motivation scores for game play to determine if there was significance in the self-reported desire to continue to play when the researcher stopped the participants at the 30 minute mark. Self-reported desire to continue pay was coded as "1 = Yes", "2 = No"; these values were compared to the subscale values of the IMI to determine the validity of this hypothesis. *P*-values determining significance for hypotheses 4 were set at .05 or lower.

Results

The present study assessed 80 male college students (age M = 23.6, range 17-33) on level of psychopathy and virtual crimes committed while playing GTA IV. In order to understand the participants' characteristics more fully, correlations were calculated between participant age, psychopathy scores, and types of crimes committed during game play. Table 2 contains means and standard deviations, and is provided for statistical clarification.

The age and crimes against property (CAPR) variables were negatively correlated within this study (r = -.225, p = .045) as were age and LSRP1 (r = -.282, p = .011). Keeping this in mind, it can be inferred that older participants were significantly less likely to have high LSRP1 values and also were less likely to have high counts of crimes against property. This data is slightly moderated by the fact that there were more participants closer to the age of 18 than those closer to 30, so the older population was under-represented. In fact, 23 year-old males were within the 75th percentile of this particular study.

A correlation was also performed to determine if impulsiveness was a contributing factor in number of crimes committed during game play. In addition, impulsiveness scores were correlated with LSRP variables to determine if there was any overlap between these two psychological constructs. Impulsiveness scores, as measured by The Barratt Impulsiveness Survey (BIS) were weakly yet significantly correlated with the LSRP2 subscale (r = .237, p = .034); however, they were not correlated to any of the committed crimes during game play. The conclusion that can be drawn from the set of correlations presented would indicate that psychopathy level is more related to crimes committed during game play than impulsiveness is;

even with 41.2% of participants having impulsiveness scores above the clinical diagnosis score of 74 (Stanford, et al., 2009). Thus, the LSRP seems the more appropriate tool for this study and no further analysis was conducted using the impulsivity construct.

Players' experiences were regressed as a co-variate to determine if playing experience contributed a significant role within the analyses conducted. Playing experience was not significant for total LSRP (LSRPTOT) values [F (1, 79) = .419, p = .519], nor for crimes committed during game play [F (3, 79) = 1.678, p = 0.179]. For the first hypothesis, a correlation was performed between the LSRPTOT score of the participants and their resultant criminality values from their game play. Partial support for the first hypothesis was obtained through the discovery of a weak yet significantly positive correlation between crimes against people (CAPE) and LSRPTOT (r = .226, p = .044). The relationship between crimes against property (CAPR) and the LSRPTOT was not significant (r = .083, p = .465).

Partial support for the second hypothesis was achieved using a correlational analysis. The variable CAPR was significantly and positively correlated with the IMI subscale of I/E (r = .246, p = .014), and was significantly, negatively correlated with both IMI subscales of E/I (r = -.205, p = .034) and Relatedness (r = -.188, p = .048). The variable CAPE was not correlated with any of the IMI subscale variables. Results indicate only partial support for hypothesis 2, because only CAPR and not CAPE was correlated with motivation for continued game play. A possible interpretation for the finding is that when crimes against property were low, self-reported effort towards game play and relatedness were high. In contrast, when CAPR was high, interest/enjoyment for game play was also high.

Hypothesis 3 tested the validity of a regression model in which psychopathy leads to criminality during game play, which in turn predicts a higher level of intrinsic motivation toward the game. A regression model was used to build the case for the third hypothesis. In this model, LSRPTOT, CAPE, and CAPR were predictor variables regressed by the dependent variables of Interest/Enjoyment (I/E), Effort/Importance (E/I), and Relatedness (R) to determine if psychopathy led to criminality, which in turn predicted intrinsic motivation.

In all, three models were tested for each of the significant IMI subscales discovered in Hypothesis 2. The multiple R shows a correlation between the three predictor variables of LSRPTOT, CAPE, & CAPR and the dependent variable of IMIEI (R = .356). The R-square value indicates that approximately 13% of the variance in E/I is explained by the three predictor variables. The Omnibus F for the E/I model was significant [F (3, 79) = 3.687, p = 0.02]. The predictor with the greatest significance and subsequently the greatest influence on E/I was LSRPTOT (β = .274).

All of the relationships for the third hypothesis can be viewed in Figure 1. The third hypothesis was marginally supported in that there is a partial relationship between LSRPTOT values and crimes committed during game play, as was discovered by the first hypothesis. Moreover, the second hypothesis revealed the existence of a relationship between the crimes against property committed (CAPR) and intrinsic motivation towards game play. In the formulation of the third hypothesis, the author could not make an educated assumption as to whether there would be a significant relationship between the LSRPTOT and any subscale of the

IMI. No literature could be found to explain the existence of a relationship between LSRPTOT values and the intrinsic motivation subscale of E/I.

To address the fourth hypothesis, a 2 X 5 multivariate analysis of variance was performed on five dependent variables: IMI subscales of Interest/Enjoyment, Effort/Importance, Value/Usefulness, Relatedness, and the IMI Composite (IMICOMP) scale. The independent variable was the self-reported desire to continue to play (yes or no) after the research time (30 minutes) ended. The multivariate analysis indicated a significant main effect for perceived desire for continued game play with a Wilks' Lambda = .763, F (4, 75) = 5.817, p = 0.00, Partial η^2 = 0.237. Significance was found in the IV/DV relationships of I/E [F (1, 79) = 23.32, p = 0.00], V/U [F (1, 79) = 3.96, p = 0.05], I/R [F (1, 79) = 4.47, p = 0.04], and significance was noted in the overall IMICOMP [F (1, 79) = 11.13, p = 0.00]. As a result, hypothesis 4 was upheld, indicating that desire to continue to play the game is related to the outcome of one's motivational orientation toward game play.

Discussion

As previously stated, existing literature does not account for any of the behaviors captured in this study. This is the first experiment conducted to determine if psychopathic behaviors inherent in an individual's personality are related to, and predict, the type of behaviors players exhibit in a video game containing the possibility for violent acts. The relationship tested was important because it stands in contrast to the current popular belief that individuals develop antisocial personalities because they play potentially violent video games. The present study showed partial support for the hypothesis that psychopathy predicts criminal behavior in

game play. The study showed that psychopathy relates to crimes against property, which in turn predicts higher levels of intrinsic motivation for continued game play. There was not a relationship between psychopathy subscales and crimes against people, which is considered to be a more serious form of violence in the game. Furthermore, it was shown that psychopathy is related to effort and importance for this particular genre of video game.

The study also found that when players committed more crimes against property they reported higher levels of interest/enjoyment for the game, but lower levels of effort. This could mean that, had this been an actual assessment of their abilitie) they would have created more damage against property; or it could mean they simply did not "try" as much as they felt they could have. Alternatively, they may have felt that while it was enjoyable to transgress against property, in this particular game, it was relatively easy or effortless to do so.

The regression model showed an inverse relationship between the IMI scale of relatedness and crimes against property, which can be interpreted to mean that when crimes against property were high, feelings of relatedness decrease. This relationship is modest, but is of theoretical interest. Relatedness is a motivational construct that measures how motivationally important the connection to others is for the individual. So, it is possible that when engaging in socially deviant behavior during game play (e.g. criminal activity), social relationships take a "back seat." Furthermore, it is possible that fostering relatedness or reminding players of their social needs perhaps changes willingness to engage in criminal acts. This study alludes to the fact that "relatedness" as a construct of intrinsic motivation within the assessment of video games should be reviewed and the scale should quite possibly be modified. The inverse

relationship observed between relatedness and crimes against property fits within existing literature, in that when relatedness is low, crimes should be high, as a product of antisocial behaviors, and by extension, as a product of psychopathy. Further explanation of the exact nature of this relationship is warranted.

Limitations

There were several limitations observed during the completion of this study. Demographic limitations were present in that there were not enough females to include gender as a study variable. As well, no ethnicity data were captured. In the analyses presented, power was appropriate for the statistical tests conducted, but due to the nature of psychopathy, and its elusive characteristics and prevalence within the general population, it would have been useful to include more participants, perhaps with a wider age range and a more varied socioeconomic status distribution.

Gaming experience. Due to the time constraints of this study and the available pool of potential participants, gaming experience, or lack thereof, was a major limitation. The results were relegated to the use of only male data because there simply was not enough female interest for playing this particular game. Of the few females who participated ($N = 7$), two of them had data that was unusable largely due to their lack of experience; a stark contrast to the fact that *none* of the males who participated had unusable data. There are at least 3 hypothetical reasons for the lack of female gamers. These reasons are hypothetical because no research currently exists on the following statements, which are purely anecdotal and partially based upon observations made within this study.

One potential reason for lack of female interest and their higher inability to play the game could be that female college students do not play video games within this genre (action) as often as their male counterparts. Another reason could be that females choose to play games on smaller devices such as iPads and cell phones as opposed to large consoles such as the PlayStation 3 or the Xbox360. As a result, they may have limited exposure with the equipment needed to play or they could feel less competent when they receive an opportunity to play on a larger, more complex gaming system. A potential third reason for lack of female gaming experience could be that video games produce different psychophysiological outcomes for females than they do for male; whereby females may experience greater physiological discomfort destroying property and harming people than males. Due to this possible difference in sensitivity, perhaps females choose not to engage in these behaviors, and thus would not be interested in playing games such as GTA IV.

This researcher contends that the future of the video game industry and the optimization of video games and video game consoles is dependent upon understanding the dynamics of female gaming behavior, because females are a large demographic and are under-researched.

Psychopathic demographics. Accessing when someone is a "successful" psychopath is difficult due to the nature of their traits (Levenson, Kiehl, & Fitzpatrick, 1995). For the most part, the only time those with clinical levels of psychopathy "stick out" is when they do something worthy of incarceration as they blend into the general population so well. Identifying individuals with psychopathic traits requires a valid assessment and cannot be done by sight. The present study used currently enrolled,

college students as participants. While there was a range of scores on the LSRP, most of these students would not be labeled psychopathic. While the study can provide some insight into how higher levels of psychopathy influence gaming behavior, we still do not know how those already criminally identified as psychopaths would play the game.

Conclusions and Future Study

As previously mentioned this study is unique and novel and has paved the way for future research utilizing both "successful" and "non-successful" (incarcerated) psychopathic populations. Of the males who played, interesting characteristics of game play were observed across ethnicities; however, subject numbers were low and no official ethnicity data were captured. In terms of developmental psychology and social psychology, this study has provided groundwork for determining how critical personality development may be for individuals playing open simulation/crime/third-person-shooter genre games. It is a first attempt at addressing the chicken-and-the-egg dilemma of which comes first: Does game play create negative personality traits and behaviors, or do those with negative personality traits choose to play games with more virtual violence, thereby leading to an increase in actual violent behavior? The results of this study indicate that personality, specifically an individual's level of psychopathy and potentially other traits, could indicate that an individual's behavior acts as a critical antecedent within this modern dilemma. The possibility exists that through the combined results of this research and subsequent studies, training and rehabilitation of psychopathic prisoners could be addressed through the use of video games as a means of teaching concepts like empathy stress management. Furthermore, the development and design

of future video games may be influenced in a manner that decreases the possibility for reinforcement of aggressive actions by those inherently drawn to virtual or actual violence.

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Table 1

A table portraying the types of crimes committed during participants' game play

Crimes Against Property	Crimes Against People
Arson	Murder 1st
Trespassing	Murder 2nd
Robbery	Manslaughter
Burglary	Assault/Battery
Vandalism	Kidnapping
Grand Theft	Extortion
Petty Theft	Drug Trafficking

Table 2

Documenting the statistical descriptions of the groups within this study.

	AGE	LSRP1	LSRP2	LSRPTOT	IMIIE
N	80	80	80	80	80
Mean	21.24	32.6375	18.2375	50.8750	33.8125
Std. Deviation	4.450	6.25056	3.57645	7.96412	4.31393
Variance	19.804	39.069	12.791	63.427	18.610
Skewness	1.449	.320	.249	.286	-.966
Range	17	28.00	16.00	40.00	22.00
Minimum	17	22.00	11.00	35.00	21.00
Maximum	34	50.00	27.00	75.00	43.00

	IMIEI	IMIVU	IMIR	CAPE	CAPR
N	80	80	80	80	80
Mean	17.2125	11.2375	11.4500	33.46	38.50
Std. Deviation	5.06588	5.42438	5.35547	28.737	21.262
Variance	25.663	29.424	28.681	825.796	452.076
Skewness	.205	.826	.869	1.629	.685
Range	23.00	24.00	24.00	139	100
Minimum	5.00	4.00	4.00	1	1
Maximum	28.00	28.00	28.00	140	101

Table 3

A visual depiction of primary correlations within this study

		LSRP1	LSRP2	LSRPTOT	CAPE	CAPR	AGE	BISTOT
LSRP1	Pearson Correlation	1	.259*	.901**	.201	.032	-.282*	.102
	Sig. (2-tailed)		.020	.000	.073	.780	.011	.368
	Sum of Squares and Cross-products	3086.488	456.888	3543.375	2856.413	333.500	-619.112	320.225
	Covariance	39.069	5.783	44.853	36.157	4.222	-7.837	4.053
	N	80	80	80	80	80	80	80
LSRP2	Pearson Correlation	.259*	1	.652**	.152	.129	.107	.237*
	Sig. (2-tailed)	.020		.000	.180	.254	.345	.034
	Sum of Squares and Cross-products	456.888	1010.488	1467.375	1230.212	774.500	134.487	426.025
	Covariance	5.783	12.791	18.574	15.572	9.804	1.702	5.393
	N	80	80	80	80	80	80	80
LSRPTOT	Pearson Correlation	.901**	.652**	1	.226*	.083	-.173	.186
	Sig. (2-tailed)	.000	.000		.044	.465	.125	.098
	Sum of Squares and Cross-products	3543.375	1467.375	5010.750	4086.625	1108.000	-484.625	746.250
	Covariance	44.853	18.574	63.427	51.729	14.025	-6.134	9.446
	N	80	80	80	80	80	80	80
CAPE	Pearson Correlation	.201	.152	.226*	1	.698**	-.084	.123
	Sig. (2-tailed)	.073	.180	.044		.000	.461	.279
	Sum of Squares and Cross-products	2856.413	1230.212	4086.625	65237.888	33705.500	-843.787	1770.575
	Covariance	36.157	15.572	51.729	825.796	426.652	-10.681	22.412
	N	80	80	80	80	80	80	80
CAPR	Pearson Correlation	.032	.129	.083	.698**	1	-.225*	.051
	Sig. (2-tailed)	.780	.254	.465	.000		.045	.656
	Sum of Squares and Cross-products	333.500	774.500	1108.000	33705.500	35714.000	-1680.500	540.000
	Covariance	4.222	9.804	14.025	426.652	452.076	-21.272	6.835
	N	80	80	80	80	80	80	80

AGE	Pearson Correlation	-.282*	.107	-.173	-.084	-.225*	1	.169
	Sig. (2-tailed)	.011	.345	.125	.461	.045		.135
	Sum of Squares and Cross-products	-619.112	134.487	-484.625	-843.787	-1680.500	1564.487	377.025
	Covariance	-7.837	1.702	-6.134	-10.681	-21.272	19.804	4.772
	N	80	80	80	80	80	80	80
BISTOT	Pearson Correlation	.102	.237*	.186	.123	.051	.169	1
	Sig. (2-tailed)	.368	.034	.098	.279	.656	.135	
	Sum of Squares and Cross-products	320.225	426.025	746.250	1770.575	540.000	377.025	3197.950
	Covariance	4.053	5.393	9.446	22.412	6.835	4.772	40.480
	N	80	80	80	80	80	80	80

*.Correlation is significant at the 0.05 level (2-tailed).

**.Correlation is significant at the 0.01 level (2-tailed).

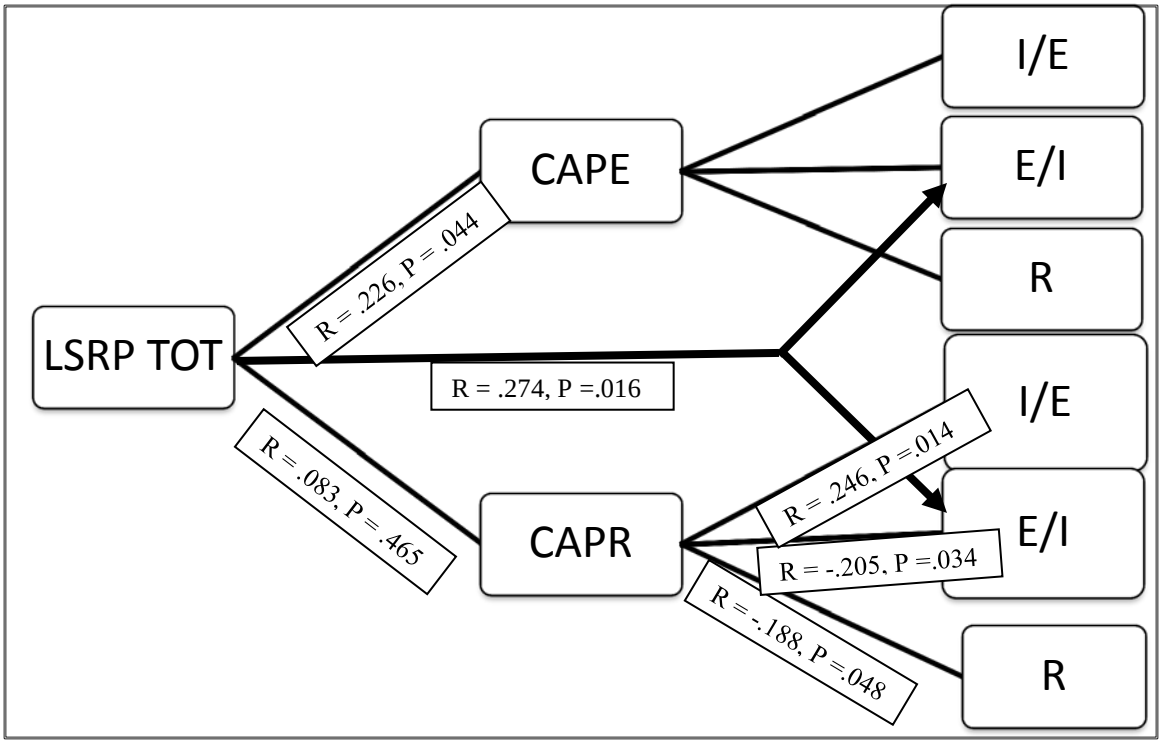

Figure 1: A mediational model of the relationship between level of psychopathy, crimes committed during game play and motivational outcomes associated with gaming.

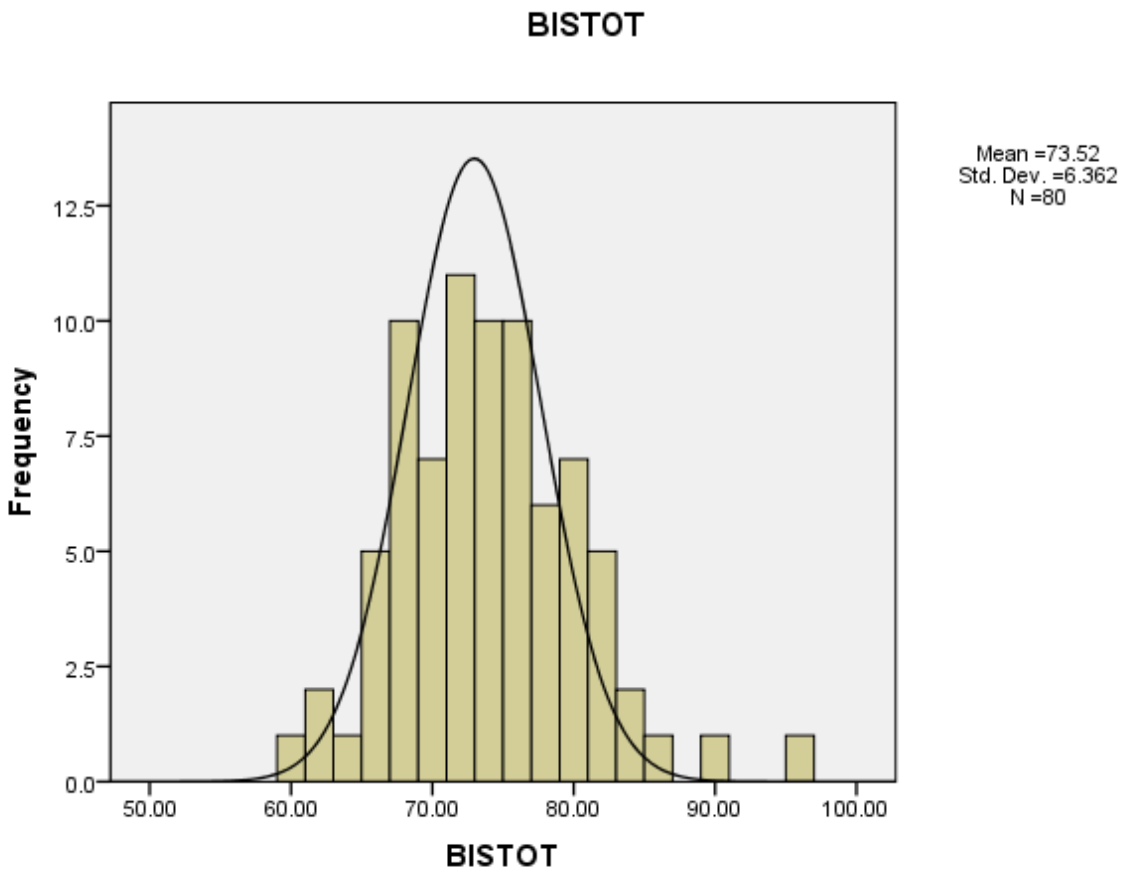

Figure 2: A visual depiction which elucidates the dispersion of Barratt Impulsiveness Scores within this study.

Appendix A

CONSENT FORM

Embry-Riddle Aeronautical University

I consent to participating in the research project entitled:

BPNS & GTA: Three Degrees of Satisfaction

The principle investigator of the study is:

Dr. Christina Frederick

This research will examine the correlation between intrinsic motivation and criminal activities within the video game, Grand Theft Auto. You, the participant, can expect to receive 30 minutes of video recorded game play, along with three assessment questionnaires which will account for intrinsic motivation, basic psychological needs, and psychopathology. Playing this game, like all video games, may have the potential to cause epileptic seizures, motion sickness or dizziness. If at any time, you experience symptoms such as these, please notify the experimenter at once and discontinue game play immediately. This study will take approximately 50 minutes of time. Participation in this study will not be rewarded.

The individual above, or their research assistants, have explained the purpose of the study, the procedures to be followed, and the expected duration of my participation. Possible benefits of the study have been described, as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Furthermore, I understand that I am free to withdraw consent at any time and to discontinue participation in the study without prejudice to me.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy of this form is available upon request.

Date: _____

Name *(please print)*: _____

(Participant)

Signed: _____

(Participant)

Signed: _____

(Researcher/Assistant)

Appendix B

Experience Survey

Video games are played on many devices. Please think about devices such as your cell phone, your game console, your computer, and your iPad when answering the following questions.

Please read each of the following items carefully, thinking about how applicable they are to your life, and then indicate how true they may be for you by **CIRCLING** THE CORRECT ANSWER.

I. Participant age:_____

II. Are you (circle one):

a. Male

b. Female

c. Transgendered

1.) On average, how often do you play video games?

a. Daily

b. Several times a week

c. Once or twice per week

d. A few times per month

e. Never really bother

2.) Do you consider yourself a gamer?

a. Yes

b. No

3.) How often do you play video games during a typical day?

a. Video Games?

b. 0 - 1 Hours

c. 1 - 2 Hours

d. 2 - 3 Hours

e. Where does the time go?

4.) When playing videogames, what medium are you more likely to use?

a. Large video game counsel (PS3,PS2, XBOX, Wii, SEGA, Nintendo)
b. Small video game counsel (PS Vita, PSP, Nintendo DS, Game Boy, etc.)
c. Cell Phone (iPhone, Android, Blackberry, etc.)
d. Reading Device (iPad, NOOK, Kindle, etc.)
e. Personal Computer (Desktop, Laptop)
f. Never really bother with videogames.

5.) How familiar are you with the PlayStation 3 gaming system?

a. I saw it in a magazine once.
b. I have watched others play on the PS3 before.
c. I play on the PS3 on the weekends, and when the semester ends.
d. I know without looking where the X, Δ, O, and □ buttons are.
e. Never really bother

6.) How familiar are you with the game series known as Grand Theft Auto?

a. I have heard something about it once-upon-a-time
b. I have played one of the games from the franchise a couple of times before
c. I own a licensed copy of one of the games
d. I can't wait for GTA V to come out
e. I don't know what you are talking about.

7.) Please list your top 5 games you have played, and which medium (refer to question 4) you used to play them on.

a.
b.
c.
d.
e.

Appendix C

LSRP

Listed below are a number of statements. Each represents a commonly held opinion and there are no right or wrong answers. You will probably disagree with some items and agree with others. Please read each statement carefully and circle the number which best describes the extent to which you agree or disagree with each statement, or the extent to which each statement applies to you.

1 = Disagree strongly *3 = Agree somewhat*

2 = Disagree somewhat *4 = Agree strongly*

1.	I am often bored.	1	2	3	4
2.	In today's world, I feel justified in doing anything I can get away with to succeed.	1	2	3	4
3.	Before I do anything, I carefully consider the possible consequences.	1	2	3	4
4.	My main purpose in life is getting as many goodies as I can.	1	2	3	4
5.	I quickly lose interest in tasks I start.	1	2	3	4
6.	I have been in a lot of shouting matches with other people.	1	2	3	4
7.	Even if I were trying very hard to sell something, I wouldn't lie about it.	1	2	3	4

8.	I find myself in the same kinds of trouble, time after time.	1	2	3	4
9.	I enjoy manipulating other people's feelings.	1	2	3	4
10.	I find that I am able to pursue one goal for a long time.	1	2	3	4
11.	Looking out for myself is my top priority.	1	2	3	4
12.	I tell other people what they want to hear so that they will do what I want them to do.	1	2	3	4
13.	Cheating is not justifiable because it is unfair to others.	1	2	3	4
14.	Love is overrated.	1	2	3	4
15.	I would be upset if my success came at someone else's expense.	1	2	3	4
16.	When I get frustrated, I often "let off steam" by blowing my top.	1	2	3	4
17.	For me, what's right is whatever I can get away with.	1	2	3	4
18.	Most of my problems are due to the fact that other people just don't understand me.	1	2	3	4
19.	Success is based on survival of the fittest; I am				

	not concerned about the losers.	1	2	3	4
20.	I don't plan anything very far in advance.	1	2	3	4
21.	I feel bad if my words or actions causes someone else to feel emotional pain.	1	2	3	4
22.	Making a lot of money is my most important goal.	1	2	3	4
23.	I let others worry about higher values; my main concern is with the bottom line.	1	2	3	4
24.	I often admire a really clever scam.	1	2	3	4
25.	People who are stupid enough to get ripped off usually deserve it.	1	2	3	4
26.	I make of point of trying not to hurt others in pursuit of my goals.	1	2	3	4

1 = Disagree strongly *3 = Agree somewhat*

2 = Disagree somewhat *4 = Agree strongly*

Appendix D

IMI Questionnaire

Please read each of the following items carefully, thinking about how they relate to you when you played the video game, and then indicate how true each concept is for you. Use the following scale to respond and clearly mark your answer to the left of the question number.

1	2	3	4	5	6	7
Not at all True			Somewhat True			Very True

In the following example, the answer is in **BOLD**.

Example:

7 0. You just played a video game.

Please begin now, and remember to mark your answer to the left of the question item number. Please do not skip any questions.

1. I enjoyed playing this game very much.
2. I put a lot of effort into this game.
3. I believe this game could be of some value to me.
4. I felt really distant to the main character.
5. I didn't try very hard to do well at this activity.
6. This game was fun to play.
7. I really doubt that this character and I could ever be friends
8. I would be willing to play this game again because it has some value to me.
9. I thought this was a boring game.

10. I tried very hard playing this game.

11. I feel like I could really trust the main character.

12. I believe playing this game could be beneficial to me.

13. I would describe this game as very interesting.

14. I didn’t put much energy into this.

15. I feel close to this main character.

16. I think this is an important game.

17. I thought this game was quite enjoyable.

18. It was important for me to play this game well.

19. This game did not hold my attention at all.

Appendix E

BPNS/ACR Questionnaire #1

Please read each of the following items carefully, thinking about how they relate to you and the video games you play, and then indicate how true each concept is for you. Use the following scale to respond, and clearly mark your answer to the left of the question number.

1	2	3	4	5	6	7
Not at all True			Somewhat True			Very True

In the following example, the answer is in **BOLD**.

Example:

70. You will receive the opportunity to play a video game.

Please begin now, and remember to mark your answer to the left of the question item number. Please do not skip any questions.

1. When playing videogames, I feel like I am free to decide for myself how my character is to "live" their life.

2. I really like the other characters I interact with on games.

3. Often, I do not feel very competent while playing games.

4. I feel pressured when playing.

5. People I know tell me I'm good at playing video games.

6. I get along with characters I come into contact with in the games.

7. I pretty much keep to myself when playing games, and I don't have a lot of social contacts.

8. I generally feel free to express my ideas and opinions within the construct of video games.

9. I consider characters (in games) I regularly interact with to be my friends.

10. I have been able to learn interesting new skills recently.

11. In my gameplay, I frequently have to do what I am told.

12. Other characters in games appear to care about my character.

13. After playing, I feel a sense of accomplishment from what I do.

14. In the game, I don't get a chance to show how capable I am.

15. There are not many characters I am close to.

16. I feel like I can pretty much be myself in my gameplay.

17. The characters I interact with regularly do not seem to like me much.

18. I often do not feel very capable as a gamer.

19. There is not much opportunity for me to decide for myself how to do things within the game.

20. Characters in games are generally pretty friendly towards me.

Appendix F

BPNS/ACR Questionnaire #2 (Note: this questionnaire was not used in analyses for the present study)

Please read each of the following items carefully, thinking about how they relate to you and the video game you just played, and then indicate how true each concept is for you. Use the following scale to respond, and clearly mark your answer to the left of the question number.

1	2	3	4	5	6	7
Not at all True			Somewhat True			Very True

In the following example, the answer is in **BOLD**.

Example:

7 0. You have just received the opportunity to play a video game.

Please begin now, and remember to mark your answer to the left of the question item number. Please do not skip any questions.

1. When playing Grand Theft Auto 4, I feel like I am free to decide for myself how my character is to "live" their life.

2. I really like the other characters I interacted with in this game.

3. Often, I do not feel very competent while playing Grand Theft Auto 4.

4. I feel pressured when playing Grand Theft Auto 4.

5. People I know tell me I'm good at playing video games.

6. I got along with characters I came into contact with in the game Grand Theft Auto 4.

7. As I played the game, I pretty much kept my character to myself when playing the game, and I didn't have a lot of social contact within the game.

8. I generally feel free to express my ideas and opinions within the construct of the video game Grand Theft Auto.

9. I consider the characters (in Grand Theft Auto) I regularly interact with to be my friends.

10. I have been able to learn interesting new skills recently.

11. In my gameplay, I frequently have to do what I am told.

12. Other characters in Grand Theft Auto 4 appear to care about my character.

13. After playing, I felt a sense of accomplishment from what I did.

14. In the game Grand Theft Auto 4, I didn't get a chance to show how capable I am.

15. There are not many characters in Grand Theft Auto that I feel I am close to.

16. I feel like I can pretty much be myself in my gameplay.

17. The characters I interact with regularly in the game Grand Theft Auto 4 do not seem to like me much.

18. I often do not feel very capable as a "gamer".

19. There is not much opportunity for me to decide for myself how to do things within the game Grand Theft Auto 4.

20. Characters in Grand Theft Auto 4 are generally pretty friendly towards me.

For the following question, please answer with a Yes or a No:

21. Would you have continued playing if the Researcher had not stopped you at 30 minutes?

For the following question, please rate on a scale of 1-5; with 1 meaning “Highly Unlikely”, 3 meaning “Likely” and 5 meaning “Highly Likely”.

22. How likely are you to play this game again?

Appendix G

GTA 4 CRIME CODING

Crime	Definition	Number of Occurrences
Arson	setting fire to property: regardless of intent	
Trespassing		
Vandalism	destruction of public/private property	
Theft	Taking a vehicle from roadside w/no driver	
Murder/Manslaughter	successful/attempted taking of a life	
Assault/Battery	physically attacking another character	
Kidnapping	taking an individual against their will	
Robbery	taking something (car) with force(person in it)	