2015

Testing ratings of violent video games: how well do they measure up?

Katherine Elizabeth Center
Iowa State University

Testing ratings of violent video games: How well do they measure up?

by

Katherine E. Center

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Psychology

Program of Study Committee:
Craig A. Anderson, Major Professor
Douglas A. Gentile
Gary L. Wells
Susan E. Cross
Norman A. Scott

Iowa State University

Ames, Iowa

2015

DEDICATION

For one who believed.
Thank you for encouragement
and for insisting.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF NOMENCLATURE

Variable		Example Calculation					
Time	how much time a participant reported playing that game recently	1-7	7	4	2	3	5
Personal Violence Rating (PVR)	participant's personal violence rating of a game	1-7	7	1	1	3	1
Mean Personal Violence Ratings	mean of personal violence ratings (PVR) for each participant, across all games that participant listed	$\frac{\sum \mathrm{PVR}_p}{\sum n_p}$			2.60		
Personal Exposure (PE)	the personal violence rating (PVR) for each game a participant listed, calculated by how much time a participant reported playing that game recently (Time)	PVR * Time	49	4	1	9	5
Mean Personal Exposure	mean of participants' personal exposure score (PE) for each participant, across all games that participant listed	$\frac{\sum \mathrm{PE}_p}{\sum n_p}$			13.60		
Game-Specific Violence Rating (GVR)	mean personal violence rating for a particular game across all participants who listed that game	$\frac{\sum \mathrm{PVR}_i}{\sum \mathrm{n}_i}$	4.80	1.86	1.59	2.62	1.46
Mean Game-Specific Violence Ratings	mean of game-specific violence ratings (GVR) for each participant, across all games that participant listed	$\frac{\sum GVR_p}{\sum n_p}$					

Variable			Example Calculation				
Game-Specific Exposure (GE)	game-specific violence rating (GVR) for each game a participant listed, multiplied by how much time a participant reported playing that game recently (Time)	GVR * Time	33.60	7.44	3.18	7.86	7.30
Mean Game-Specific Exposure	mean of participants' game-specific exposure scores (GE), for each participant across all games that participant listed	$\frac{\sum \mathrm{GE}_p}{\sum n_p}$			11.88		
Person-Game Difference Score (PGD)	calculated by subtracting each participant's personal violence rating (PVR) for each game from the game-specific violence rating (GVR) for that game	GVR - PVR	-2.2	0.86	0.59	-0.38	0.46
Mean Person-Game Difference Score	mean of person-game difference score (PGD) for each participant, across all games that participant listed	$\frac{\sum \mathrm{PGD}_p}{\sum n_p}$					
Difference Exposure (DE)	calculated by multiplying the difference scores for each game a participant listed (PGD) by how much time a participant reported playing that game recently (Time)	PGD * Time	-15.4	3.44	1.18	-1.14	2.3
Mean Difference Exposure	mean of DE for each participant, across all games that participant listed	$\frac{\sum \mathrm{DE}_p}{\sum n_p}$			-1.92		

Variable			Example Calculation
Differential Exposure Scores (DES)	calculated for each participant separately for each of the target games, by calculating the mean of the game-specific exposure scores (GE) for all participants who listed a target game—excluding participants' ratings of the target game	$\frac{\sum \mathrm{GE}_p}{\sum n_p}$ ***	6.45

Note: Time always refers to 1 person and 1 game.

Note: All rating scores are based on a participant's personal violence rating of a game, all exposure scores are rating scores multiplied by time.

Note: i denotes that the formula is calculated using all participants who listed a particular game, e.g. Tetris.

Note: p denotes that the formula is calculated using all scores for a particular participant.

Note: *** denotes that the formula is calculated using all scores for a particular participant excluding his score on the target game (game 1).

ACKNOWLEGEMENTS

I would like to thank my committee chair, Craig Anderson, and my committee members, Douglas Gentile, Gary Wells, Susan Cross, and Norman Scott, for their guidance and support throughout the course of this research. In addition, I would also like to thank those, without whom, this dissertation would not have been possible.

ABSTRACT

Decades of research shows a rise in the number of people playing video games, with the content of violent video games becoming increasingly realistic, interactive and unequivocal in depicting violent activity (Gitter, Ewell, Guadagno, Stillman, & Baumeister, 2013). Research also shows that exposure to video game violence increases aggression (for recent meta-analyses, see Anderson et al., 2010; Greitemeyer & Mügge, 2014). The combination of these two factors—growing numbers of players in addition to progressively violent games—appears to have important consequences.

The General Aggression Model demonstrates how factors in the immediate situation (e.g., having just played a violent video game) combine with factors that people bring with them to the situation (e.g. positive thoughts about using aggression) influence a person in the short term (changing a reaction). The General Aggression Model also describes how multiple aggressive episodes can lead to long term changes in aggression related person variables (Anderson & Bushman, 2002).

One key issue in the study of the effects of violent video games is how best to assess the violent content in these games. Three common methods of assessing the violent content in video games include: (1) participants' rating of the amount of violence in a game or genre (Anderson & Dill, 2000); (2) official game ratings, such as ESRB ratings (Przybylski, Ryan, & Rigby, 2009); and (3) independent raters' assessments of violent content in video games or genres

(Weber, Ritterfeld, & Mathiak, 2006). Using participants' ratings is direct and has been found to be valid (Busching, et al., 2013). Busching, et al. found that user ratings and expert ratings were both reliable and valid measures of the violent content in video games. However, there is still little consensus of what is the best practice when measuring the violent content in video games (Anderson et al., 2010). Therefore, this dissertation explored different methodologies to assess exposure to violent video games.

The current research utilized a cross-sectional study design, using preexisting data gathered as 9 separate studies. These studies were conducted at universities, elementary schools, and high schools as both laboratory experiments and in-class surveys.

The total sample included 4,746 participants; due to missing data, numbers do not add to 100%. The sample included 1175 children (385 girls, 600 boys; 8-17 years), 3525 adults (1729 women, 1685 men; 18-52 years), 2311 males, and 2132 females. Only 3 of the 9 studies assessed ethnicity; 942 participants in these 3 studies were Caucasian and 134 were other ethnicities. Participants were recruited from university (N=3548), high school (N=809), middle school (N=301) and elementary school (N=88) classes.

Study 1 addressed whether there are age related differences in perceptions of violence. Although it was hypothesized that children and adults may rate the violence in video games systematically different, in this analysis there were no differences between video game ratings of children and adults.

Study 2 was designed to test whether a novel operationalization of expert ratings predict users' personal violence rating of video games. In study 2, exposure scores calculated using a novel operationalization of expert ratings—mean game-specific exposure—did predict users' personal violence ratings of video games. Therefore, mean violence ratings of all participants who played a specific game may be a useful measure of the amount of violence in video games compared to personal violence ratings.

Study 3 assessed whether exposure to violent video games creates a systematic reduction in individual's perceptions of the violent content of games; thereby reducing the usefulness of user violence ratings as a useful video game violence measure. In Study 3, differential exposure scores—video game violence exposure scores calculated without using user ratings of a particular game—did not reliably predict personal violence ratings of that video game. Differential exposure scores were not consistent in their ability to estimate the violent content across violent or even nonviolent games. Therefore, high exposure to violent video games does not lead to a systematic reduction in individuals' violence ratings of the games that they play.

The final aim of this dissertation was to determine whether different operationalizations of expert ratings predict scores on aggression related personality measures. Across the 9 studies, participants completed a variety of scales, including the Buss Perry Aggression Questionnaire, the Narcissistic Personality Inventory, the Attitudes Toward Violence Scale, the Dissipation-

Rumination Scale, and the National Youth Survey. All scales that were included in these analyses were measured in at least 3 studies.

In Study 4 there was no statistical advantage in using different operationalizations of violent video game exposure—mean game-specific exposure and mean person-game difference—compared to using the mean personal exposure score. Because there was no added benefit from using mean game-specific exposure or mean person-game difference, these two operationalizations are not recommended for use in future studies of violent video games. Exposure to video game violence, as measured by the mean personal exposure score, significantly predicted participants' scores on 11 out of 13 of the aggressive personality measures. Scores on all of these measures moved in a more aggressive direction as exposure to violent video games increased.

Analyzing data in this dissertation satisfies methodological curiosity about how best to measure violent video game exposure. The current studies used new methods of combining player's violence ratings across all players of a particular game. Busching, et al. (2013) concluded that player ratings and their operationalization of expert ratings were equally useful measures. However, these studies did not support the idea that there is a more accurate violence rating than personal violence rating. Furthermore, the ease of using personal violence ratings to assess the violent content of video games is far simpler than coding hundreds of games in order to calculate game-specific violence ratings. Busching, et al. (2013) compared the validity of using user ratings, expert

ratings, official agency ratings of individual game titles as well as expert ratings of game genres and concluded that the best practices included using either expert ratings or player ratings. The results of the present studies support that conclusion.

In conclusion, using self-ratings of video game violence is an acceptable measurement technique. Personal violence rating is a valid, cheap, and fast way to measure the violence in video games. Therefore, the current author's recommendation for future studies is to continue to use personal violence ratings as a measure of the violence in video games.

INTRODUCTION

The Problem

In Norway on July 22, 2011, Anders Behring Breivik set off an explosive device killing 8 before shooting another 69 people; in court, Breivik later testified that he trained for his attack by playing the video game "Modern Warfare 2" and that at one time he played "World of Warcraft" up to 16 hours a day (CNN Wire Staff, 2012). Adam Lanza, who shot and killed 26 people at Sandy Hook Elementary School in 2012, was described in the media as an avid gamer who played warfare games (Kleinfield, Rivera, & Kovaleski, 2013). Violent video games are often cited as explanations for shocking acts of violence; perhaps this is because video games are so prevalent.

Prevalence of Video Games

Eighty-seven percent of children regularly play video games (Walsh, Gentile, Gieske, Walsh, & Chasco, 2003); averaging 9 hours per week of video game play overall (Gentile, Lynch, Linder, & Walsh, 2004). Eighty-four percent of teen boys and 59% of teen girls reported playing video games in 2014 (Lenhart, April 2015). In 2011, consumers spent $16.6 billion on electronic games and $8.15 billion on video game equipment (ESA, 2012a; 2012b).

A survey of children and their parents in the USA found that about 67% of children named violent games as their favorites (Funk, Flores, Buchman, & Germann, 1999). Shibuya and Sakamoto (2003) reported similar results in

Japan, finding that 85% of the most popular video games of Japanese fifth graders contained violent content (for reviews on the content of video games, see Dill, Gentile, Richter, & Dill 2005; Smith, 2006).

Video Games are Violent

Decades of research shows a rise in the number of people playing video games, with the content of violent video games becoming increasingly realistic, interactive and unequivocal in depicting violent activity (Gitter, Ewell, Guadagno, Stillman, & Baumeister, 2013). Research also shows that exposure to video game violence increases aggression (for recent meta-analyses, see Anderson et al., 2010; Greitemeyer & Mügge, 2014). The combination of these two factors—growing numbers of players in addition to progressively violent games—appears to have important consequences.

According to a variety of published work, repeated exposure to violent video games has an assortment of important outcomes including: increases in aggressive behavior, aggressive affect, aggressive cognitions, physiological arousal, and decreases in prosocial behavior (for a review, see Anderson, 2004). Meta-analytic reviews on violent video-games reveal that violent video games increase aggressive behavior in children and adults (Anderson, et al., 2010; Anderson, 2004; Anderson & Bushman, 2001; Sherry, 2001). Experimental and nonexperimental studies in laboratory and field settings support this conclusion for both males and females (Anderson, et al., 2010). Aggressive behavior has also been positively associated with both real-life violent video game play and

laboratory exposure to violent video games (Anderson, 2004; Anderson & Dill, 2000; Anderson et al., 2003; Bushman & Anderson, 2009; Gentile, Lynch, Linder, & Walsh, 2004; Greitemeyer & Mügge, 2014). Violent video games are also a risk factor for delinquent behavior (Exelmans, Custers, & Van den Bulck, 2015). In sum, a review of media violence effects on aggression and aggression-related variables found "…unequivocal evidence that media violence increases the likelihood of aggressive and violent behavior in both immediate and long-term contexts" (Anderson et al., 2003, p. 81). The General Aggression Model (GAM) can be used to explain a broad range of the short and long term effects of violent video games (Anderson & Bushman, 2002).

The General Aggression Model

The General Aggression Model (GAM) is a social-cognitive model, delineating how characteristics of people and situations interact with one another (See Figure 1).It is often used in video game research to explain the behavioral outcomes resulting from the joint forces of person and situational variables. According to GAM, people bring to each situation a variety of relatively stable internal characteristics, including knowledge, beliefs, attitudes, values, scripts, goals, perceptual and expectation schemata, and personality characteristics. All of these person variables can influence aggression in a given situation. Characteristics of the situation can also influence a person's internal state and impact the likelihood of aggression occurring. For example, situations that

include provocation, frustration, or pain tend to increase the likelihood of aggression.

Person and situational variables jointly influence a person's present internal state, which consists of three related routes: affect, cognition, and arousal (Anderson & Bushman, 2002). The internal state is influenced not only by person and situation variables, but also by affect, cognition, and arousal. According to GAM, aggressive behavior is determined by a person's present internal state as well as appraisal and decision processes (Anderson & Bushman, 2002).

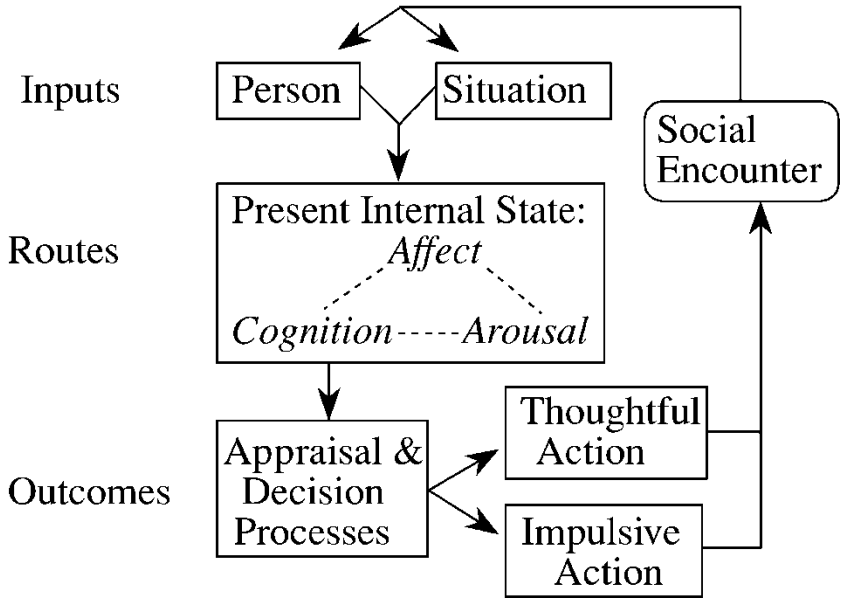

Figure 1. The General Aggression Model episodic processes. From Anderson and Bushman (2002).

An initial appraisal of the current situation is somewhat automatic and effortless. This kind of automatic appraisal is related to a person's own perceptual and expectation schemata, and personality characteristics. However, if a person is not content with the initial appraisal—and if there is sufficient time and cognitive capacity—he might reassess his initial appraisal of the situation. Although GAM does not specify whether an initial appraisal or a reappraisal would typically lead to an aggressive response, it is a dual process theory and such theories are characterized by their descriptions of a fast and seemingly automatic processing style that is based on well-learned prior associations and a second processing style that is more thoughtful but requires cognitive capacity and motivation (Smith & DeCoster, 2000; Uleman & Saribay, 2012). Thus, an initial appraisal is more likely to be aggressive for people who have more aggressive personalities, including aggressive beliefs, aggressive attitudes and aggressive cognitions.

The General Aggression Model demonstrates how factors in the immediate situation (e.g., having just played a violent video game) combine with factors that people bring with them to the situation (e.g. positive thoughts about using aggression) to influence a person in the short term (changing a reaction). In addition to describing how person and situational variables can influence aggression in the immediate situation, GAM also describes how multiple aggressive episodes can lead to long term changes in aggression related person variables (Anderson & Bushman, 2002).

Violent Video Games and Aggressive Personality

Playing violent video games has been linked to increases in aggressive personality. People exposed to excessive violent media tend to: (1) become meaner, more aggressive, and more violent, (2) become more desensitized to violence (both in the media and in real life), more callous, and less sympathetic to victims of violence, and (3) have an increased appetite to see more violent entertainment (Gentile & Anderson, 2003). Although the mechanisms of these effects are not entirely clear (Bartholow, Sestir, & Davis, 2005), research consistently shows that the prevalence of violent video games and the level of violent content in those games affect people in significant ways. Personality includes consistent patterns of experience, thoughts and behaviors that are seen across multiple situations (Allport, 1964). Personality also encompasses the psychological mechanisms behind those patterns (Funder, 1997); and includes the way persons perceive self, others and events (Rothbart & Ahadi, 1994). Personality also includes knowledge structures that are used to interpret events and to guide behavior (Anderson & Bushman, 2002). Knowledge structures influence perception; guide people's interpretations of and responses to their environments; and are connected to (or contain) affect, behaviors, and beliefs (Anderson & Bushman, 2002). Figure 2 shows five types of aggression related knowledge structures.

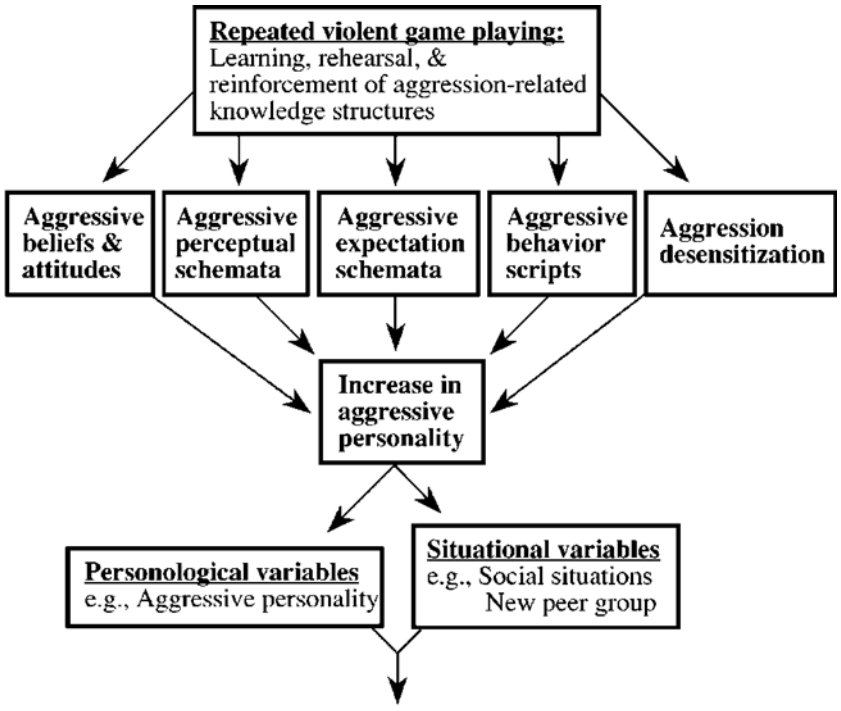

Figure 2. The General Aggression Model of personality processes. From Anderson and Bushman (2002).

Knowledge structures are created by experiences (Schneider & Schiffrin, 1977). As aggressive experiences cause aggressive knowledge structures to develop and become more accessible, these experiences may be changing a person's personality structure (Anderson & Dill, 2000). Personality is shaped by experience and requires repeated experiences to create lasting change (Mischel & Shoda, 1995; Roberts, Walton, & Viechtbauer, 2006). Once this change has occurred, new patterns of experience, thoughts and behaviors are expected to occur automatically (Anderson, et al., 2010). Thus, recurring experiences with violent video games can result in the development of an aggressive personality

over time. According to GAM, the effects of violent video game content are expected to increase with exposure. The General Aggression Model acknowledges that (a) experience influences knowledge, perception, affective states, and beliefs; (b) which are used to guide people's interpretations and behavioral responses to their social (and physical) environment; and (c) can become automatic with practice (Anderson & Bushman, 2002). It is the automatization that creates the relatively consistent patterns of thinking and behaving that are reflected in personality (Anderson & Bushman, 2002). Therefore, long-term effects, including changes to an individual's personality, result from the development, reinforcement and automatization of aggression-related knowledge and behaviors. This model was supported by the results of two meta-analyses, including studies across multiple countries (Anderson, et al., 2010; Greitemeyer & Mügge, 2014). Although, these effects have been shown before, these studies are particularly important in showing that this kind of personality change occurred in both long and short-term studies. Of particular interest among many violent video game researchers are the effects of prolonged exposure to violent video games on personality.

The creation and automatization of aggression-related knowledge structures leaves those who consume violent media over long periods of time with more aggressive perceptions of the world, attitudes, beliefs, and behavior than they had before the repeated exposure (Anderson & Bushman, 2002; Anderson, Gentile, & Buckley, 2007). In addition, according to GAM, this personality change may also impact the situational variables of future episodes.

For example, a person with an increasingly aggressive personality might find herself in increasingly aggressive situations in the future because she enjoys the company of similar people or because less aggressive people dislike her company.

Additionally, video games can affect the development and construction of new knowledge structures. How people perceive the world and react to it depends upon the particular situational factors in their world and on the knowledge structures they have learned and habitually use. People can learn many complicated behaviors, attitudes, expectations and beliefs through observation and participation in video games. As they observe and perform these new behaviors, people are also learning how to act in a variety of situations (Bellini & Akulliana, 2007). Once these scripts are learned, they can guide how we perceive and interpret similar situations, and can help us decide how to behave appropriately. The more similarities the current situation has with a previously experienced situation, the more likely those thoughts and behaviors will be activated. Overall, behavior is guided by learning, internalizing, and applying knowledge structures to other situations, and video games can affect the development and construction of new knowledge structures (Anderson, Gentile, & Buckley, 2007; Huesmann, 1986; Huesmann, 1998).

Finally, according to the corresponsive principle, experiences are most likely to affect the personality characteristics that initially drew us to those experiences (Caspi, Roberts & Shiner, 2005). For example, social responsibility—which includes dutifulness and sociability—at age 21 was related

to lower marijuana consumption at age 43; in addition, marijuana consumption at age 43 also predicted declines in social responsibility from age 43 to age 52 (Roberts & Bogg, 2004). Similarly, children with attention problems played more video games than children with no attention difficulties and, over time, the amount of video game playing further increased later attention problems in these children (Gentile, Swing, Lim, & Khoo, 2012). Thus, the traits that lead people to play violent video games should be most influenced by those experiences, although other traits should be less affected. Therefore, repeatedly playing violent video games is likely to disproportionately affect the aggressive knowledge structures of aggressive people (Anderson & Bushman, 2002; Huesmann & Miller 1994; Patterson et al., 1992).

Desensitization to Violence

Repeated exposure to violent video games results in desensitization to violence (Anderson et al., 2010; Gentile & Anderson, 2003). Desensitization to violence means that a person is experiencing milder physiological reactions and has become less anxious following repeated exposure to a stimulus (Anderson et al., 2010; Carnagey, Anderson & Bushman, 2007; Cline, Croft, & Courier, 1973). Desensitization comes from earlier systematic desensitization research in the cognitive-behavioral treatment of phobias (e.g., Wolpe, 1958, 1982). Desensitization is a gradual process that reduces an individual's initial arousal responses to stimuli (Carnagey, Anderson & Bushman, 2007). These cognitive and affective outcomes of desensitization then influence subsequent decisions

and actions. For example, people who played a violent video game later experienced lower heart rate and galvanic skin response while watching violence than those who played a nonviolent game (Carnagey, Anderson & Bushman, 2007). Additionally, those who played a violent video game rated a fight as less serious than those who played a nonviolent video game (Bushman & Anderson, 2009). Thus, desensitization to violence may be another relatively permanent change in personality that occurs after repeated exposure to violent video games. Specifically, people with more exposure to violent video games may experience a systematic reduction in perceptions of the violent content of video games. This process may reduce the usefulness of personal violence ratings as a valid measure of the violence in video games.

Assessing Violent Video Game Content

One key issue in the study of the effects of violent video games is how best to assess the violent content in these games. Three common methods of assessing the violent content in video games include: (1) participants' rating of the amount of violence in a game or genre (Anderson & Dill, 2000); (2) official game ratings, such as ESRB ratings (Przybylski, Ryan, & Rigby, 2009); and (3) independent raters' assessments of violent content in video games or genres (Weber, Ritterfeld, & Mathiak, 2006). Using participants' ratings is direct and has been found to be valid (Busching, et al., 2013). Busching, et al. found that user ratings and expert ratings were both reliable and valid measures of the violent content in video games. However, there is still little consensus of what is the best

practice when measuring the violent content in video games (Anderson et al., 2010). The most common types of ratings will now be discussed further.

User Ratings

User ratings of video games typically begin by asking participants to list the video games they play most. Next, participants are asked to rate their perception of the violence in each video game. These personal violence ratings are fairly quick to obtain; however, there may be bias in user ratings from several sources, including age, gender and user experience.

Currently, it is unknown whether there are age differences in ratings of video game violence. Most studies of violent video games include either children or adults; therefore, they lack the ability to evaluate the relationship between age and ratings of violent video game content. This is an important limitation that will be explored in this dissertation. In contrast, many studies find that although males play more violent video games than females (Anderson & Dill, 2000), there is no gender difference in how much aggression men and women display after playing violent video games (Anderson, et al., 2010). Another factor that influences players' ratings of video game violence is their experience playing violent games. Repeated exposure to violent video games increases desensitization to violence (Carnagey, Anderson & Bushman, 2007). People exposed to violent video games are more likely to make hostile attributions (Anderson, Gentile, & Buckley, 2007; Lynch, Gentile, Olson, & van Brederode, 2001), process affect in more aggressive ways (Kirsh, Olczak, & Mounts, 2005),

display a hostile expectation bias (Bushman & Anderson, 2002), and less likely to recognize positive affect (Kirsh, & Mounts, 2007). These effects might interfere with valid measurement of violence in video games.

Expert Ratings

Some studies use experts to rate the characteristics of video games (Dill, Gentile, Richter, & Dill, 2005). Typically in these studies, video game play is recorded and then these clips are rated by those who are familiar with games (e.g. researchers). Thus, these rating depend heavily on the representativeness of the sample of game play that is recorded. Most games have multiple characters, and game and difficulty levels; while researchers can attempt to record a similar sample from each game, key elements may be missed. Obtaining expert ratings of recorded clips of video game play is also more time consuming and possibly more expensive than other rating approaches, requiring: access to a capable player who can play the game to a representative level, equipment to record segments of video game play, and time to watch and rate multiple clips. These ratings depend on the experience and knowledge of the experts. Experts may be researchers trained to look for specific aspects of games (counting human and non-human targets), or experts may be other students—not study participants—who are already familiar with the games and can rate them on a variety of characteristics from memory (Möller & Krahé, 2009). Expert ratings—particularly those made by other video game players—may be affected by the same factors discussed above, which impact user ratings,

including gender and experience playing violent games. Expert ratings of the violent content in video games are reliable and show substantial interrater correlations (Busching, et al., 2013).

Industry Ratings

The need to establish the violent content in video games has recently become a global concern as seen in the development of the International Age Rating Coalition (IARC) in 2013. Despite the difference in rating systems across cultures, “professional rating systems” i.e. ESRB, Pan European Game information (PEGI) and Entertainment Software Self-Regulation Body (USK) - all come to similar conclusions regarding the violence in video games (Dogruel & Joeckel, 2013).In North America the Entertainment Software Rating Board (ESRB) assigns each game an age-based label created by assessing several content rating categories, including violence, use of illicit substances, ill-mannered language, nudity and sexual references (Pitofsky, 2000). ESRB ratings include games for early childhood (EC), audiences of every age (E), everyone 10 and up (E10+), teenagers (T), mature audiences only (M), or adults only (AO) (ESRB, May, 2015).

Critics of the ESRB maintain that the organization has a conflict of interest because of its direct ties to the video game industry, and that the ESRB has created a rating system that puts more importance on sexual content than violent content (Dogruel & Joeckel, 2013; Gentile, 2008) to protect their commercial viability. This has created a rating system in which M rated games are not the

only video games with violent content. One analysis found that about 89% of video games contain some violent content (Children Now, 2001). An analysis of T (Teen) rated games found that 98% involved intentional violence (Haninger, Ryan, & Thompson, 2004). An analysis of E (Everyone) rated games found that injuring other characters was rewarded or required for advancement in 60% of games (Thompson & Haninger, 2001). Many violent games are rated 'E' for everyone by the industry (Funk, Flores, Buchman, & Germann, 1999). Even if the ESRB changed their rating systems, this would not translate into children not having access to these games. This was demonstrated in a recent study of which 28.1% of US adolescents preferred a video game which the ESRB considers them too young to use (Dogruel & Joeckel, 2013). A quarter of games sold in 2011 were rated M by the ESRB (ESA, 2012a) making children's access to these game readily available. As more violent events are blamed on video game content, there needs to be a method to rate the violence in video games that does not rely on the gaming industry.

Until recently, it was unclear how well these different measurement techniques actually compared to one another or how well they measured the violent content of video games. Busching, et al. (2013) assessed user ratings, expert ratings, official agency ratings of individual games as well as expert ratings of game genres; they compared how well these different methods of measuring violence in video games converged, as well as what methods were associated with aggression-related outcomes. That study showed that most of the methods of measuring video game violence previously mentioned, showed

“sufficiently high reliability, convergent validity, predictive validity, and discriminant validity” (Busching, et al., 2013, p. 12). However, using ESRB ratings resulted in lower predictive validity for aggression-related outcomes as compared to user ratings. As a result, Busching, et al. recommended using player ratings over ESRB ratings as best practice (2013).

In conclusion, there are multiple methods for measuring the violent content of video games. Although each method has unique strengths and weaknesses, there is little consensus on best practices for measuring the violent content in video games. Therefore, this dissertation will attempt to fill some of the current gaps in the literature by exploring different methodologies to measure the violence in video games.

Current Studies: Aims

First, no study has looked at whether adults and children perceived the same level of violence in video games. In their meta-analysis, Anderson, et al. found no relationship between participant’s age and subsequent aggression in either experimental or longitudinal studies (2010). At the time of this meta-analyses there were no longitudinal studies on participants older than 16 (Anderson, et al., 2010). Consequently, it is unclear whether it is appropriate to combine adults and children into one sample or to analyze them separately. Therefore, AIM 1 is to address whether there are age related differences in perceptions of violence in video games. This analysis will determine whether

adults and children will be analyzed as one sample or separately in subsequent analyses in this dissertation.

The remaining 3 aims are extensions of research published by Busching, et al. (2013). That research was designed to assess how well different measures of the level of violence in video games actually assess that construct. Violent content was measured with user ratings, expert ratings, and official agency ratings of individual titles, in addition to expert ratings of game genres. These different measures were all found to be reliable and valid, and were associated with aggressive behavior both cross-sectionally and longitudinally, using three large data sets from three different countries.

Busching, et al. (2013) concluded that while the user ratings and expert ratings of the violent content in video games were both reliable and valid, the ESRB had lower predictive validity. They suggested that user ratings and expert ratings of violent video games were preferable to industry ratings. The second aim is to determine how well a novel operationalization of expert ratings can predict users' personal violence ratings of video games. To do this, a new version of an expert rating will be created using users' ratings. This was done in order to calculate a measure of exposure to video game violence that is less dependent on a player's own (potentially idiosyncratic) video game ratings and, therefore, potentially less influenced by an individual's own exposure.

Repeated exposure to violent video games results in desensitization to violence (Anderson et al., 2010; Gentile & Anderson, 2003). This means that people who are repeatedly exposed to violent video games perceive violence as

less serious (Anderson et al., 2010; Carnagey, Anderson & Bushman, 2007; Cline, Croft, & Courier, 1973) and are less physiologically reactive in the presence of violence (Bushman & Anderson, 2009).Therefore, the third aim of this dissertation is to assess whether repeated exposure to violent video games creates a systematic reduction in ratings of the violent content of these games. A process such as this might reduce the usefulness of user violence ratings as a valid video game violence measure.

Based on previous research and the General Aggression Model, we expect that violent video game exposure will affect people in such a way that those with high violent video game exposure will also have more aggressive personalities and behaviors. The personality traits analyzed in the current analyses have been previously linked to media violence (Adachi & Willoughby, 2011; Anderson, Buckley, & Carnagey, 2008; Anderson, et al., 2004; Anderson, & Dill, 2000; Anderson, et al., 2010; Bushman & Geen, 1990; Kim, Namkoong, Ku, & Kim, 2008; Teng, Chong, Siew, & Skoric, 2011). Thus, it is reasonable to expect that participants who have more exposure to violent video games will show higher scores in aggressive personality, attitudes toward aggression, narcissism and dissipation-rumination. The fourth aim of this dissertation is to determine how well novel operationalizations of exposure to violent video games predict scores on aggression related personality measures. These research questions are designed to further expand the conclusions of Busching, et al. (2013) and to clarify whether there is any statistical advantage to using the traditional exposure measure versus other measures of exposure.

STUDY 1 INTRODUCTION

In their meta-analysis, Anderson, et al. found no relationship between participant's age and subsequent aggression in either experimental or longitudinal studies (2010). At the time of this meta-analysis there were no longitudinal studies on participants older than 16 (Anderson, et al., 2010); and to date, no study has examined whether adults and children perceive the same level of violence in video games or other media. However, based on the concept of desensitization, people with more exposure to violent video games (typically adults) are expected to be more desensitized to violence than those people with less exposure to violent video games (typically children). This desensitization—the reduced arousal in response to violence in video games—then influences subsequent decisions, such as decreasing violence ratings of successive violent content. Such a systematic decrease, or flattening, of violence ratings would be a change expected to occur after repeated exposure to violence—something we would expect to see more in adults on average than in children.

Furthermore, for purposes of this dissertation, it was unclear whether it was appropriate to combine adults and children into one sample or to analyze them separately. Therefore, before all other analyses were performed, it was necessary to compare the personal video game violence ratings of children and adults to determine whether they rated video game violence differently. AIM 1 was to address whether there were age related differences in perceptions of violence in video games. In order to test this, multiple t-tests were used to compare the personal violence ratings of the same games between children and

adults. This analysis also determined whether adults and children would be analyzed as one sample or separately as multiple samples in this dissertation.

STUDY 1 METHODS

Design and Procedures

The current research utilized a cross-sectional study design, using preexisting data gathered as 9 separate studies collected 2001–2004. These studies were conducted at universities, elementary schools, and high schools as both laboratory experiments and in-class surveys. Of particular interest in the current research was previously un-analyzed data on participants' video game playing habits.

Participants

Participants were adults and children who originally participated in research studies affiliated with a university research program in the Midwest. Seven studies included undergraduates recruited from introductory psychology courses, 3 studies included high school students, and 2 studies included students from middle and elementary schools. In these analyses, adults (men and women) are participants aged 18 years or older and children (girls and boys) are those participants under 18 years. This secondary data analysis was exempt from human subjects review.

Participants in Study 1 varied, depending on the target game. Values might not add up to 100% due to missing data. Of the 10 most played violent and nonviolent video games in this study, participants played Diablo the least (N=125) and Mario Grand Prix the most (N=811) (Table 1). Adults (18-52 years)

played Mario Grand Prix the most (N=676) and Diablo the least (N=105), while children (8-17 years) played James Bond the most (N=163) and Halo the least (N=23).

Table 1. Violent and nonviolent target games by age.

		Target Game									
		Mortal Kombat	Grand Theft Auto	Diablo	Halo	James Bond	Mario Grand Prix	NBA Basket-ball	The Sims	Tetris	Solitaire
Age											
	Child	16	71	20	23	163	135	58	54	54	48
	Adult	158	316	105	163	527	676	203	214	627	461
Total		174	387	125	186	690	811	261	268	681	509

Measures

Game Coding

In each study, participants were asked to list either their top 3 or 5 most played video games. In order for the games to be used in analyses, each game was assigned a unique code. Video games with multiple versions were coded as one game when appropriate; for example, Diablo 1, Diablo 2 and Diablo 3 were coded as one game; see Appendix A).

Personal violence ratings

Personal violence ratings are participants' violence ratings of each game they listed. Participants rated the violent content of each game they listed. This question was measured on a 1-7 point scale in all but one study, which used a 1-5 point scale; higher numbers indicated more perceived violence (see Appendix

B). In order to make the violence ratings in all studies comparable, a transformation was performed so all studies were on a 1-7 point scale.

Target Games

To ensure a representative sample, analyses for Study 1 were restricted to those video games listed by at least 120 participants (for a breakdown of target games included by original study, see Table 2). Next, games were ranked by game-specific violence ratings and the 5 most commonly played violent and 5 most commonly played nonviolent video games were identified (Table 3). Violent games were categorized by game-specific violence ratings of 4 or more. Nonviolent games were those with game-specific violence ratings of 2 or less. Although the average violence ratings of the most played violent video games ranged between 4.62 and 5.22, several points below the high end of the scale, the median violence ratings of the most played violent and nonviolent video games, with a minimum of 4 points between them, were distinct.

Game-specific violence rating

Game-specific violence ratings were calculated by averaging the personal violence ratings for a particular game across all participants who listed that game. For example, many participants listed the game Mortal Kombat. The game-specific violence rating for Mortal Kombat is the average of the violence ratings given by every participant who listed that game. Due to the large number

of participant ratings, games used in this dissertation were rated by enough participants to calculate a game-specific mean.

Table 2. Target games by original study.

	Study[a]									
	1	2	3	4	5	6	7	8	9	N
Target Game										
Mortal Kombat	13	7	3	15	19	27	21	56	12	173
Grand Theft Auto	1	10	24	100	2	74	45	107	16	379
Diablo	4	2	6	15	7	22	24	33	10	123
Halo	0	0	4	49	0	49	15	56	10	183
James Bond	27	105	30	75	47	124	124	113	38	683
Mario Grand Prix	40	68	29	98	70	170	136	157	37	805
NBA Basketball	12	32	11	36	21	36	44	49	14	255
The Sims	5	12	8	49	18	57	42	65	6	262
Tetris	49	34	12	40	87	160	137	132	19	670
Solitaire	24	25	21	10	56	143	99	108	15	501
Total N for each study	175	295	148	487	327	862	687	876	177	

[a] Nine unique studies are represented in this table.

Table 3. Descriptives of the most commonly listed violent and nonviolent video games.

	N	Median	Mean Violence Rating	SD	Skewness
Violent Games					
Mortal Kombat	173	6.00	5.22	2.02	-0.95
Grand Theft Auto	379	5.44	4.89	2.09	-0.61
Diablo	123	5.00	4.83	2.00	-0.68
Halo	183	5.00	4.80	1.80	-0.69
James Bond	683	5.00	4.62	1.86	-0.68
Nonviolent Games					
Mario Grand Prix	805	1.00	1.97	1.54	1.84
NBA Basketball	255	1.00	1.90	1.67	1.96
The Sims	262	1.00	1.75	1.44	2.12
Tetris	670	1.00	1.46	1.28	2.89
Solitaire	501	1.00	1.33	1.07	3.68

Note: See Appendix A for coding scheme.

Statistical Analyses

Ten unpaired t-tests, 5 for violent video games and 5 for nonviolent video games, were conducted comparing each participant's personal violence rating of a particular game between children and adults. Because males tend to play more violent video games than females, gender was controlled for in this analysis. Due to the large number of analyses, a more conservative alpha level of 0.01 was employed to guard against Type 1 errors. The data analysis for this paper was generated using SAS (Version 9.3).

STUDY 1 RESULTS

Age Effects on Personal Violence Ratings of Target Games

Violent Video Games

Based on unpaired t-tests, the personal violence ratings of the video games Diablo and Halo did differ significantly by age (Table 4). However, the personal violence ratings of the video games Mortal Kombat, Grand Theft Auto, and James Bond did not significantly differ by age.

Table 4. Person violence ratings of 5 most played violent target games predicted by age.

		n	M	SD	*t*
Mortal Kombat					
	Child	16	3.39	1.80	-0.27
	Adult	158	3.51	1.40	
Grand Theft Auto					
	Child	71	2.95	1.37	-2.46
	Adult	316	3.40	1.45	
Diablo					
	Child	20	2.96	1.10	-4.24*
	Adult	105	4.18	1.51	
Halo					
	Child	23	2.56	1.11	-4.68*
	Adult	163	3.76	1.39	
James Bond					
	Child	163	3.37	1.39	1.58
	Adult	527	3.17	1.37	

*p < .01

Nonviolent Video Games

Based on unpaired t-tests, none of the personal violence ratings of the 5 most played nonviolent video games Mortal significantly differed by age (Table 5).

Table 5. Person violence ratings of 5 most played nonviolent target games predicted by age.

		n	M	SD	*t*
Mario Grand Prix					
	Child	135	2.25	1.30	-1.16
	Adult	676	2.39	1.39	
NBA Basketball					
	Child	58	2.39	1.31	-0.94
	Adult	203	2.57	1.32	
The Sims					
	Child	54	2.47	1.65	0.83
	Adult	214	2.31	1.23	
Tetris					
	Child	54	1.73	0.94	-1.84
	Adult	627	1.98	1.12	
Solitaire					
	Child	48	1.58	0.65	-1.47
	Adult	461	1.79	0.99	

*p < .01

Study 1 Conclusion

This is the first study to look at possible age differences in ratings of video game violence. Although it was hypothesized that adults may rate the violence in video games lower than children, in this analysis there were few significant differences between the violence ratings of children and adults. Of the 10 analyses conducted in this study, only 2 were significant. However, for 8 of the

10 games, mean violence ratings were higher for adults than for children. This was clearly not the direction suggested if adults are assumed to be more desensitized than children. Additionally, each of these games were listed anywhere from 3 to 10 times more often by adults than by children. Therefore, although age was not shown to be an effect modifier of ratings of video game violence, this study—the first to examine this relationship—is not conclusive. Consequently, age was still treated as a covariate in further analyses.

STUDY 2 INTRODUCTION

Busching, et al. (2013) concluded that user ratings and expert ratings of the violent content in video games were both reliable and valid, but that the ESRB ratings had lower predictive validity. They suggested that user ratings and expert ratings of violent video games were preferable to industry ratings.

This dissertation extended the definition of an expert rating of the violent content in video games used by Busching, et al. (2013). In that paper, expert ratings came from trained experts rating the violent content in clips of video game play. In this dissertation, a novel operationalization of expert ratings was created by averaging the violence ratings of a game across all players who listed that game. Not only is this a new expert rating compared to Busching, et al., but this new measure would be less sensitive to any possible flattening effects of desensitization on players' video game ratings.

Often in violent video game literature, exposure to violent video games is the measure used to predict aggressive outcomes. Exposure scores are created by multiplying a user's personal violence ratings of a video game by the time he spent playing that game. Therefore the second aim of this dissertation is to determine how well an exposure score created using this novel operationalization of expert ratings predicts users' personal violence exposure of video games.

In order to test this aim, first the average personal violence rating had to be calculated across all players who listed a game. Next, this mean rating for a target game was multiplied by the time a player spent playing that game. Finally, a linear regression was conducted to determine whether mean game-specific

violence exposure scores predicted the mean personal violence exposure for each participant.

STUDY 2 METHODS

The methods in this study build upon the methods in Study 1. For a detailed description of the study methods, see Study 1 Methods (page 21).

Participants

The total sample included 4,746 participants; due to missing data, numbers do not add to 100%. The sample included 1175 children (385 girls, 600 boys; 8-17 years), 3525 adults (1729 women, 1685 men; 18-52 years), 2311 males, and 2132 females. Only 3 of the 9 studies assessed ethnicity; 942 participants in these 3 studies were Caucasian and 134 were other ethnicities. Participants were recruited from university (N=3548), high school (N=809), middle school (N=301) and elementary school (N=88) classes.

Measures

Time

Participants reported how much time they recently spent playing each of the video games they listed. Time was measured on a 1-7 scale, ranging from ‘rarely’ to ‘often’. Higher numbers indicating more time played (Anderson, et al., 2004; Anderson & Dill, 2000).

Mean Personal Exposure to Violence

Mean personal exposure was calculated by multiplying the personal violence rating for each game a participant listed, by how much time a participant reported playing that game, thus obtaining a personal exposure score (See nomenclature, page vii). Finally, participants' personal exposure scores were averaged for each participant, across all games that participant listed.

Mean Game-Specific Exposure to Violence

Game-specific exposure was calculated by multiplying the game-specific violence rating for each game a participant listed by how much time a participant reported playing that game recently (See nomenclature, page vii). Finally, participants' game-specific exposure scores were averaged for each participant, across all games that participant listed.

Statistical Analyses

A linear regression was conducted in order to determine whether mean game-specific exposure scores predicted mean personal exposure scores. Age and gender were controlled for in this regression. Due to the large number of participants, a more conservative alpha level of 0.01 was employed to guard against Type 1 errors. The data analysis for this paper was generated using SAS (Version 9.3).

STUDY 2 RESULTS

Mean Game-Specific Exposure

Correlational analysis of mean personal exposure and mean game-specific exposure show that they are positively correlated (Table 6). Participants' mean personal exposure was significantly predicted by mean game-specific exposure, gender and age, $F(3, 4148) = 3158.09$, $p = .0000$, $r^2 = .70$. Mean game-specific exposure was still significant after controlling for gender and age, $\beta = 1.25$, $p = .0000$ (Table 7).

Table 6. Mean, standard deviation, and correlations of mean personal exposure, mean game-specific exposure, gender, and age.

		Mean (SD)	1	2	3
1.	Mean personal exposure	9.35 (0.28)	———		
2.	Mean game-specific exposure	8.53 (0.19)	0.80* 4481	———	
3.	Gender	0.53 (0.02)	0.28* 4199	0.35* 4191	———
4.	Age	0.79 (0.02)	-0.13* 4464	-0.24* 4458	-0.10* 4399

Table 7. Mean personal exposure scores predicted by mean game-specific exposure, age, and gender.

	t	*p*	β	*F*	*df*	*p*	Adj. R^2
Model				3158.09*	4148	0.0000	0.70
Mean game-specific exposure	90.68*	0.0000	1.25				
Age	3.61*	0.0000	0.71				
Gender	-1.05	0.2950	-0.17				

*p < .01

Study 2 Conclusion

Mean game-specific exposure—a novel operationalization of expert ratings of the violent content in video games—do predict users' personal violence ratings of video games. Therefore, the mean violence ratings of all participants who played a specific game may be a useful measure of the amount of violence in video games compared to personal violence ratings. This approach is valid; the mean violence ratings were able to predict personal violence ratings.

STUDY 3 INTRODUCTION

Bushman & Anderson (2009) found that those who played a violent video game rated a fight as less serious than those who played a nonviolent video game. This evidence may lead to doubts as to whether repeated exposure to violent video games interferes with the measurement of violence in video games. Therefore, Study 3 was an attempt to assess whether exposure to violent video games has a flattening effect on the violence ratings of video games. The third aim of this dissertation was to attempt to measure the flattening effects of desensitization on the violence ratings of video games.

In order to test this aim, differential exposure scores were calculated. First, video games were ranked by popularity and game-specific violence ratings were used to identify the 5 most commonly played violent and 5 most commonly played nonviolent video games. Next, differential exposure scores were calculated for each participant—separately for each of the target games. Finally, differential exposure scores were used in 10 separate linear regressions, 5 for violent video games and 5 for nonviolent video games, to predict participants' personal violence ratings of a target game.

STUDY 3 METHODS

The methods in this study build upon the methods in Studies 1 and 2. For a detailed description of the participant characteristics and study methods, see Study 1 Methods (page 21) and Study 2 Methods (page 31).

Participants

Participants in this study varied, depending on the target game. Values might not add up to 100% due to missing data. Of the 10 most played violent and nonviolent video games in this study, participants played Diablo the least (N=110) and Mario Grand Prix the most (N=787) (Table 8). Adults (18-52 years) played James Bond the most (N=499) and Mortal Kombat the least (N=154), while children (8-17 years) played The Sims the most (N=202) and Halo the least (N=4). Males played James Bond the most (N=428) and Mortal Kombat the least (N=83), while women played Mario Grand Prix the most (N=477) and Diablo the least (N=21). Based on the 3 studies that assessed ethnicity, both Caucasian and other ethnicities played Halo the least (N=13 and N= 1, respectively) and James Bond the most (N=157 and N=12, respectively). No participants recruited from elementary schools in this sample reported playing Grand Theft Auto, Diablo, Tetris or Solitaire. No participants recruited from middle schools in this sample reported playing Mortal Kombat, Diablo, Halo or Solitaire. Participants in these analyses who were recruited from elementary, middle, and high schools reported playing Mario Grand Prix (N=7, N=32, and N=91, respectively) and James Bond (N=3, N=31, and N=115, respectively) the most, while participants

who were recruited from universities played Mario Grand Prix and Tetris the most (N=657 and N=607, respectively).

Table 8. Demographics and sample type by violent and nonviolent target games.

	Target Game									
	Mortal Kombat	Grand Theft Auto	Diablo	Halo	James Bond	Mario Grand Prix	NBA Basketball	The Sims	Tetris	Solitaire
Age										
Adult	154	271	101	146	499	657	186	46	608	449
Child	12	34	9	4	142	130	43	202	53	48
Gender										
Male	83	220	89	127	428	310	177	115	201	108
Female	83	85	21	23	213	477	52	133	460	389
Ethnicity										
Caucasian	14	44	15	13	157	118	44	24	56	56
Other	8	2	3	1	12	10	11	2	8	4
Sampled from										
Elementary	1	0	0	1	3	7	2	2	0	0
Middle	2	3	2	2	31	32	5	26	13	2
High	10	35	8	5	115	91	38	19	41	45
University	153	267	100	143	492	657	184	201	607	450
Total N for each game	166	305	110	150	641	787	229	248	661	497

Differential exposure scores

First, video games were ranked by popularity and game-specific violence ratings were used to identify the 5 most commonly played violent and 5 most commonly played nonviolent video games (Table 3). Violent games were categorized by a game-specific violence rating of 4 or more. Nonviolent games were those with a game-specific violence rating of 2 or less. Each of the games included in this analysis was listed at least 120 times to ensure a representative sample (For a breakdown of target games included by original study, see Table 2). Next, a new type of expert rating was created that, like the game-specific

violence rating, was based on the average personal violence ratings for each game.

Differential exposure scores were calculated for each participant separately for each of the target games by calculating the mean of the game-specific exposure scores for a particular game using all participants who listed that game (See nomenclature, page vii). What makes this score different from the mean game-specific exposure scores used in Study 2, is that differential exposure scores exclude participants' exposure to the target game (for example calculation, see nomenclature, page vii).

This method of calculating exposure was derived in an attempt to calculate a measure of exposure to video game violence that excluded participants' exposure to a target video game from the calculation of their overall exposure scores, thus making differential exposure a measure that is not dependent on a player's own (potentially idiosyncratic) video game ratings. Using differential exposure scores to predict a personal violence rating of a target game is an attempt to assess desensitization, the systematic reduction in individual's perceptions of the violent content of games.

Like Study 2, mean game-specific exposure scores rely on the ratings of all players who played that game; however, where Study 2 analyzed the relationship between mean game-specific exposure scores and mean personal exposure scores across all games participants rated, this study is assessing the relationship between differential exposure scores and personal violence ratings of a specific game. For example, for participants who listed Grand Theft Auto, a

differential exposure score was calculated by averaging their exposure scores to all of the games they listed excluding Grand Theft Auto.

Statistical Analyses

Ten linear regressions, 5 for violent video games and 5 for nonviolent video games were conducted. Age was defined as a binary variable with those under 18 being classified as children and those 18 or older classified as adults. Both age and gender were treated as covariates and controlled for in each of these regression equations. Due to the large number of tests in these analyses, a more conservative alpha level of 0.01 was employed to guard against Type 1 errors. The data analysis for this paper was generated using SAS (Version 9.3).

STUDY 3 RESULTS

Differential Exposure Effects on Personal Violence Ratings of Target Games

Violent Video Games

Participants' personal violence ratings of the video game James Bond were significantly predicted by differential exposure scores, gender and age, $F(3, 628) = 12.17$, $p < .0001$ (Table 9). The personal violence ratings of James Bond increased slightly as differential exposure scores increased, $\beta = 0.034$, $p = .0040$. The r^2 for this model was .055. Differential exposure, gender and age significantly predicted the personal violence ratings of the video game Diablo, $F(3, 105) = 4.53$, $p = .0050$. However, differential exposure was not the reason this model was significant, $\beta = 0.034$, $p < .2238$. Differential exposure, gender and age did not significantly predict the personal violence ratings of the video games Mortal Kombat, Grand Theft Auto, or Halo (Table 9). Higher differential exposure scores mean greater exposure to violent games. Thus, the positive slopes reported in Table 9 are in the opposite direction of what a desensitization effect would predict.

Table 9. Personal violence rating of the 5 most played violent target games predicted by differential exposure, age, and gender.

	t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Mortal Kombat							
Model				0.54	160	0.6583	-0.01
Differential Exposure	0.92	0.3609	0.021				
Age	-0.04	0.9705	-0.023				
Gender	0.68	0.5004	0.212				
Grand Theft Auto							
Model				3.77	300	0.0111	0.03
Differential Exposure	1.80	0.0731	0.031				
Age	-0.96	0.3389	-0.352				
Gender	2.23	0.0263	0.574				
Diablo							
Model				4.53*	105	0.0050	0.09
Differential Exposure	1.22	0.2238	0.034				
Age	-1.09	0.2769	-0.759				
Gender	3.13*	0.0023	1.542				
Halo							
Model				0.83	143	0.4770	0.00
Differential Exposure	-0.38	0.7028	-0.008				
Age	1.14	0.2555	0.911				
Gender	1.02	0.3094	0.374				
James Bond							
Model				12.17*	628	<0.0001	0.05
Differential Exposure	2.89*	0.0040	0.034				
Age	-2.46	0.0143	-0.430				
Gender	3.27*	0.0011	0.517				

*p < .01

Nonviolent Video Games

Participants' personal violence ratings of the video game Mario Grand Prix were significantly predicted by differential exposure, gender and age, $F(3, 756) =$

39.48, $p < .0001$ (Table 10). Personal violence ratings of Mario Grand Prix increased as differential exposure increased after controlling for age and gender $\beta = 0.106$, $p < .0001$. The r^2 for this model was .135. Differential exposure, gender and age also significantly predicted the personal violence ratings of the video game Tetris, $F(3, 640) = 21.64$, $p < .0001$. Personal violence ratings of Tetris increased slightly as differential exposure increased, after controlling for gender and age, $\beta = 0.044$, $p = .0002$. The r^2 for this model was .092. Participants' personal violence ratings of the video game Solitaire and The Sims were significantly predicted by the overall model of the differential exposure, gender, and age, $F(3, 478) = 18.71$, $p < .0001$; and $F(3, 237) = 4.58$, $p < .0039$, respectively. However, after controlling for age and gender, differential exposure was not driving these models, $\beta = 0.003$, $p < .7966$; and $\beta = 0.037$, $p < .0112$, respectively. Differential exposure scores, gender and age did not significantly predict the personal violence ratings of the video games NBA Basketball, $F(3, 224) = 1.77$, $p = .1534$.

Table 10. Mean personal violence ratings of the 5 most played nonviolent target games predicted by differential exposure, age, and gender.

	t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Mario Grand Prix							
Model				39.48*	756	<0.0001	0.13
Differential Exposure	10.34*	<0.0001	0.106				
Age	0.85	0.3937	0.123				
Gender	0.37	0.7133	0.041				
NBA Basketball							
Model				1.77	224	0.1534	0.01
Differential Exposure	2.18	0.0306	0.039				
Age	0.99	0.3251	0.285				
Gender	0.15	0.8791	0.041				
The Sims							
Model				4.58*	237	0.0039	0.04
Differential Exposure	2.56	0.0112	0.037				
Age	-2.40	0.0173	-0.549				
Gender	-2.29	0.0226	-0.424				
Tetris							
Model				21.64*	640	<0.0001	0.09
Differential Exposure	3.81*	0.0002	0.044				
Age	2.46	0.0142	0.436				
Gender	5.61*	<0.0001	0.606				
Solitaire							
Model				18.71*	478	<0.0001	0.10
Differential Exposure	0.26	0.7966	0.003				
Age	3.71*	0.0002	0.594				
Gender	6.77*	<0.0001	0.796				

*p < .01

Summary of the Target Game Approach

The 5 most popularly listed violent games had an average violence score of 4.87 (99% CI = 4.30-5.63) while the 5 most popularly listed nonviolent games had an average violence score of 1.68 (99% CI = 1.21-2.18). The overall pattern of personal violence ratings for the 5 most commonly listed violent video games were not well predicted by exposure to violent video games as measured by differential exposure. Differential exposure, while controlling for age and gender, was a significant predictor of personal violence ratings for 1 of the 5 most played violent video games and 2 of the 5 most played nonviolent video games in this study. For both the violent and nonviolent games in which it was significant, the trend was that personal violence ratings increased as differential exposure scores increased; however, differential exposure was not a consistent predictor of personal violence ratings.

Study 3 Conclusion

Differential exposure scores—exposure scores calculated using a novel operationalization of video game exposure—did not reliably predict personal violence ratings of video games. This relationship was found in only 1 of the 5 most played violent video games and 2 of the 5 most played nonviolent video games in this study. Differential exposure scores were not consistent in their ability to estimate the violent content across violent or even nonviolent games.

Therefore, high exposure to violent video games does not lead to a systematic reduction in individuals' violence ratings.

STUDY 4 INTRODUCTION

The final aim of this dissertation was to determine how well different operationalizations of expert ratings predict scores on aggression related personality measures. Study 4 is both a replication and an extension of Busching et al. (2013). In this study, the ability of personal exposure to predict aggressive personality scores is assessed (replication) and a comparison is made between the predictive validity of several novel operationalizations of expert ratings with the predictive validity of personal violence ratings (extension). Furthermore, an analysis was conducted to assess the predictive validity of mean game-specific violence ratings. This last analysis was designed to assess whether game-specific violence ratings predict aggressive personality without including time spent playing the listed games (i.e. using game-specific violence *ratings* instead of game-specific violence *exposure*). This relationship would suggest that in the future, researchers could collect violence ratings of particular games in one study to use with other datasets that don't already have violence ratings.

To determine the predictive validity of these measures of exposure, multiple linear regression analyses were conducted using the averages of personal exposure, game-specific exposure and person-game difference scores, separately, to predict aggressiveness, attitudes toward violence, narcissism, rumination and delinquent behaviors as measured by the AQ, ATVS, NPI, DRS and NYS. In order to test the predictive validity of mean game-specific violence ratings, linear regression analyses were conducting using mean game-specific violence ratings to predict these same aggressive personality scores.

STUDY 4 METHODS

The methods in this study build upon the methods in Studies 1 and 2. For a detailed description of the study methods, see Study 1 Methods (page 21) and Study 2 Methods (page 31).

Participants

Participants in this study varied depending on the personality scale being assessed; values might not add up to 100% due to missing data.

Buss Perry Aggression Questionnaire

Overall, 3,179 participants completed this questionnaire, including 5 children (4 girls, 1 boy; 8-17 years), 3128 adults (1,626 women, 1,488 men; 18-52 years), 1512 males, and 1648 females. Of the 3 studies that assessed ethnicity, 231 participants who completed this questionnaire were Caucasian and 55 were other ethnicities. Participants who completed this questionnaire were all recruited from university classes (N=3179).

Narcissistic Personality Inventory

A total of 1,357 participants completed this assessment, including 1 child (1 girl, 0 boys; 8-17 years), 1,317 adults (657 women, 656 men; 18-52 years), 675 males, and 674 females. Based on the 3 studies that assessed ethnicity, 229 participants who completed this assessment were Caucasian and 55 were other

ethnicities. All participants that completed this assessment were recruited from university classes (N=1,357).

Attitudes Toward Violence Scale

Overall, 1,604 participants completed this scale, including 157 children (65 girls, 92 boys; 8-17 years), 1,404 adults (749 women, 648 men; 18-52 years), 760 males, and 829 females. Of the 3 studies that assessed ethnicity, 410 participants who completed this scale were Caucasian and 59 were other ethnicities. Participants were recruited from university (N=1,415) and high school (N=189) classes.

Dissipation-Rumination Scale

A total of 1,423 participants completed this scale, including 3 children (3 girls, 0 boys; 8-17 years), 1,381 adults (735 women, 639 men; 18-52 years), 658 males, and 753 females. Based on the 3 studies that assessed ethnicity, 231 participants who completed this scale were Caucasian and 55 were other ethnicities. All participants who completed this scale were recruited from university classes (N=1,423).

National Youth Survey

Overall, 1,248 participants completed this survey, including 563 children (91 girls, 288 boys; 8-17 years), 643 adults (220 women, 327 men; 18-52 years), 635 males, and 325 females. Of the 3 studies that assessed ethnicity, 414

participants who completed this survey were Caucasian and 59 were other ethnicities. Participants were recruited from university (N=650), high school (N=341), middle school (N=169) and elementary school (N=88) classes.

Reliability of Personality Measures

Because these measures were assessed across nine separate studies, with a variety of samples, the reliability of each sub-scale was first checked using Cronbach's alpha. The reliability for the sub-scales in these analyses was sufficiently large; all of the sub-scales had an alpha of greater than 0.7, with the exception of those in the Narcissistic Personality Inventory (NPI) (Table 11). However, the scale reliabilities obtained in analyses of the Narcissistic Personality Inventory are comparable to those previously reported (Ackerman, Donnellan, & Robins, 2012). Correlations among personality measures are also reported in Table 11. As expected, correlations are higher among scales measuring more similar constructs.

Table 11. Mean, standard deviation, Cronbach's alpha, and correlations with sample size for personality scales.

Personality Scale	Mean (SD)	Cronbach α	1	2	3	4	5	6	7	8	9	10	11	12
Buss Perry														
1. Physical Aggression	24.42 (11.27)	0.87	———											
2. Verbal Aggression	16.71 (7.22)	0.81	0.57 3179	———										
3. Anger	19.73 (7.43)	0.82	0.55 2930	0.53 2930	———									
4. Hostility	22.69 (9.8)	0.85	0.46 3179	0.45 3179	0.53 2930	———								
Narcissistic Personality														
5. Leadership /Authority	4.43 (3.16)	0.75	0.10 1356	0.19 1356	0.02 1356	-0.10 1356	———							
6. Grandiose exhibitionism	2.8 (2.51)	0.69	0.10 1356	0.11 1356	0.05 1356	-0.05 1356	0.61 1357	———						
7. Entitlement/ Exploitative -ness	0.7 (0.97)	0.46	0.24 1356	0.23 1356	0.23 1356	0.17 1356	0.41 1357	0.33 1357	———					
Attitudes Toward Violence														
8. Penal code attitudes	19.73 (5.26)	0.76	0.26 1410	0.10 1410	0.18 1410	0.15 1410	0.05 575	0.02 575	0.06 575	———				
9. Attitudes toward war	35.59 (7.63)	0.85	0.32 1410	0.15 1410	0.13 1410	0.13 1410	0.01 575	0.00 575	-0.01 575	0.55 1604	———			
10. Corporal punishment of children	16.09 (6.12)	0.87	0.36 1410	0.20 1410	0.19 1410	0.16 1410	0.09 575	0.06 575	0.13 575	0.35 1604	0.36 1604	———		
11. Intimate Violence	9.94 (3.84)	0.90	0.31 1410	0.12 1410	0.21 1410	0.19 1410	-0.13 575	-0.05 575	0.03 575	0.14 1604	0.17 1604	0.49 1604	———	
12. Dissipation -Rumination	35.52 (9.5)	0.89	0.46 1422	0.34 1422	0.50 1422	0.50 1422	-0.06 575	-0.04 575	0.15 575	0.30 1411	0.21 1411	0.21 1411	0.25 1411	———
13. National Youth Survey	31.29 (62.89)	0.82	0.40 290	0.26 290	0.30 290	0.18 290	0.18 288	0.11 288	0.20 288	0.08 477	0.14 477	0.05 477	0.04 477	0.29 290

Measures

Exposure to Violence

Three exposure scores were used to test this hypothesis, mean personal exposure, mean game-specific exposure, and mean person-game difference exposure. Mean game-specific exposure has been previously discussed (see Study 2 Methods, page 31). Mean personal exposure was calculated by

multiplying the personal violence rating for each game a participant listed, by how much time a participant reported playing that game recently to obtain a personal exposure score (See nomenclature, page vii). Finally, participants' personal exposure scores were averaged for each participant, across all games that participant listed to obtain the mean personal exposure score.

To reflect the differences between individual violence ratings and mean violence ratings of the same games, a person-game difference score was calculated by subtracting each participant's personal violence rating for each game from the game-specific violence rating for each game (See nomenclature, page vii). Higher absolute values reflect a larger difference between the average violence rating of a particular game and the personal violence rating of that game, with positive scores indicating that personal rating was less than the game-specific rating. Next, these difference scores for each game a participant listed were multiplied by how much time a participant reported playing that game recently to obtain a person-difference exposure score (See nomenclature, page vii). Finally, person-game difference scores were averaged for each participant, across all games that participant listed to obtain the mean difference exposure score.

Personality scales

Across the 9 studies, participants completed a variety of scales, including the Buss Perry Aggression Questionnaire, the Narcissistic Personality Inventory, the Attitudes Toward Violence Scale, the Dissipation-Rumination Scale, and the

National Youth Survey. All scales that were included in these analyses were measured in at least 3 studies (Table 12). Detailed information of the scales included here are as follows:

Table 12. Personality measures included by study.

		Study								
		1	2	3	4	5	6	7	8	9
Buss Perry (N=3,179)	N	249	0	0	0	287	845	726	782	290
	Physical Aggression	*a	---	---	---	*	*	*	*	*
	Verbal Aggression	*b	---	---	---	*	*	*	*	*
	Anger	---	---	---	---	*	*	*	*	*
	Hostility	*c	---	---	---	*	*	*	*	*
Narcissistic Personality (N=1,357)	N	0	0	0	0	287	0	0	782	288
	Leadership/ Authority	---	---	---	---	*d	---	---	*	*
	Grandiose exhibitionism	---	---	---	---	*e	---	---	*	*
	Entitlement/ Exploitativeness	---	---	---	---	---	---	---	*	*
Attitudes toward Violence (N=1,604)	N	0	0	189	0	287	840	0	0	288
	Penal code attitudes	---	---	*	---	*	*	---	---	*
	Attitudes toward war	---	---	*	---	*	*	---	---	*
	Corporal punishment of children	---	---	*	---	*	*	---	---	*
	Intimate Violence	---	---	*	---	*	*	---	---	*
Dissipation-Rumination (N=1,423)	N	0	0	0	0	288	845	0	0	290
		---	---	---	---	*	*	---	---	*
National Youth Survey (N=1,248)	N	0	0	189	767	0	0	0	0	292
		---	---	*f	*g	---	---	---	---	*

Notes:
* indicates that the complete scale was included in this study;
--- indicates that these questions were not included in this study;
*a only includes items 1, 2, 7, 9;
*b only includes item 10;
*c only includes items 22, 24, 28, 29;
*d only includes items 1, 5;
*e only includes item 4;
*f only includes items 7, 10, 12, 14, 19, 20, 21, 26, 27, 28;
*g only includes items 7, 12, 14, 19, 20, 21, 26, 27, 28.

Buss Perry Aggression Questionnaire

The Buss Perry Aggression Questionnaire (AQ) measures trait aggressiveness and 4 distinct sub-traits: physical and verbal aggression, anger and hostility (Buss & Perry, 1992; see Appendix C). The 29 item AQ is measured on a 7 point Likert scale and higher scores indicate more aggressive personalities. The AQ includes such items as: “Given enough provocation, I may hit another person” (physical aggression), “I can’t help getting into arguments when people disagree with me” (verbal aggression), “I flare up quickly but get over it quickly” (anger), and “Other people always seem to get the breaks” (hostility).

Narcissistic Personality Inventory

The Narcissistic Personality Inventory (NPI) measures the tendency to be self-absorbed, including three distinct components: leadership/authority, grandiose exhibitionism, and entitlement/exploitativeness (see Appendix D) (Ackerman, Donnellan, & Robins, 2012; Raskin & Terry, 1988). The 40 item Narcissistic Personality Inventory is a forced-choice, dichotomous scale and includes “I have a natural talent for influencing people” (leadership/authority), “Modesty doesn’t become me” (grandiose exhibitionism), and “If I ruled the world it would be a much better place” (entitlement/exploitativeness). Higher scores indicate more narcissistic personalities.

Attitudes Toward Violence Scale

The Attitudes Toward Violence Scale (ATVS) measures attitudes toward violence including four distinct violence subtypes: penal code, war, corporal punishment of children, and intimate violence ((Anderson, Benjamin, Wood, & Bonacci, 2006; Velicer, Huckel, & Hansen, 1989); see Appendix E). The 39 item ATVS is measured on a 7 point Likert scale and higher scores indicate more attitudes supporting violence. The ATVS includes items such as: “Violent crimes should be punished violently” (penal code), “Our country has the right to protect its borders forcefully” (war), “Punishing a child physically when he/she deserves it will make him/her a responsible and mature adult” (corporal punishment of children), and “It is all right for a partner to choke the other if insulted or ridiculed” (intimate partner violence).

Dissipation-Rumination Scale

The Dissipation-Rumination Scale (DRS) assesses a person’s tendency to think about or get over an offense (Caprara, 1986); see Appendix F)). The 20 item DRS is measured on a 6 point Likert scale and includes 5 control items that are not scored. Items on the DRS include: “I never help those who do me wrong” and “The more time that passes, the more satisfaction I get from revenge.” Higher scores indicate higher tendencies toward rumination.

National Youth Survey

The National Youth Survey (NYS) is a self-report measure of delinquent behaviors and drug use among minors ((Elliott, Huizinga, & Ageton, 1985). It includes 45 questions measured on a rating scale and higher scores indicate more delinquent behaviors (see Appendix G). The National Youth Survey includes items such as: “How many times in the last year did you purposely damage or destroy other property that did not belong to you?” and “How many times in the last year did you lie about your age to gain entrance or to purchase something; for example, lying about your age to buy liquor or get into a movie?”

Statistical Analyses

To determine which measure of exposure best predicted personality and behaviors, multiple regression analyses were then conducted using the averages of personal exposure, game-specific exposure, and person-game difference scores, separately, to predict aggressiveness, attitudes toward violence, narcissism, rumination and delinquent behaviors as measured by the AQ, ATVS, NPI, DRS and NYS. Then, the variance for all three models was compared. A second analysis was conducted using participants’ average of their game-specific violence ratings to predict their aggressive personality and behaviors. Due to the large number of tests in these analyses, a more conservative alpha level of 0.01 was employed to guard against Type 1 errors. Age and gender were

controlled for in these models. The data analysis for this paper was generated using SAS (Version 9.3).

STUDY 4 RESULTS

Comparing Exposure Measures in Relation to Personality

See Tables 13-17 for a comparison of the variance of each personality measure accounted for by participants' three exposure scores. There was no difference in the variance explained in 7 of the 13 measures (Verbal Aggression, Hostility, Leadership/Authority, Corporal Punishment of Children, Intimate Violence, Dissipation-Rumination, and delinquency as measured in the National Youth Survey). There was a difference in the variance explained in 6 of the 13 measures (Physical Aggression, Anger, Grandiose Exhibitionism, Entitlement/Exploitativeness, Penal Code Attitudes, and Attitudes Toward War.). These differences in the variance explained by the mean of participants' personal exposure scores, mean game-specific exposure and mean person-game difference exposure measures were minimal, at most 0.02. Thus, there is no statistical advantage in using these novel operationalizations of violent video game exposure compared to using an exposure score calculated using personal ratings of video game violence (mean personal exposure). In addition, all measures except for 1 sub-scale, grandiose exhibitionism, were significantly predicted by all three exposure scores when age and gender were controlled (Tables 13-17). Therefore, the remaining results will be presented using only the mean personal exposure.

Personal Exposure and Personality

Buss Perry Aggression Questionnaire

Mean personal exposure to video game violence significantly predicted participants' scores on the Physical Aggression subscale, controlling for gender and age, $\beta = 0.26$, $p < .0001$ (Table 13). As mean personal exposure increased, so did Physical Aggression scores. Participants' scores on the Verbal Aggression subscale were also significantly predicted by mean personal exposure, controlling for gender and age, $\beta = 0.08$, $p < .0002$. Verbal Aggression scores increased as mean personal exposure increased. Mean personal exposure to video game violence significantly predicted participants' scores on the Anger subscale, after controlling for gender and age, $\beta = 0.13$, $p < .0001$. As mean personal exposure increased, so did Anger scores. Participants' scores on the Hostility subscale were significantly predicted by mean personal exposure, controlling for gender and age, $\beta = 0.13$, $p < .0001$. Hostility scores increased as mean personal exposure increased.

Table 13. Amount of variance in Buss Perry aggressive personality measures, accounted for by age and gender along with the listed measure of exposure.

		t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Buss Perry								
	Physical Aggression							
	Model				249.40*	3029	<0.0001	0.20
	Mean Personal Exposure	8.41*	<0.0001	0.257				
	Age	-0.66	0.5101	-2.991				
	Gender	18.59*	<0.0001	7.846				
	Model				231.68*	3022	<0.0001	0.19
	Mean Game-Specific Exposure	5.51*	<0.0001	0.215				
	Age	-0.81	0.4187	-3.699				
	Gender	20.55*	<0.0001	8.541				
	Model				240.97*	3027	<0.0001	0.19
	Mean Difference Exposure	-7.04*	<0.0001	-0.392				
	Age	-0.76	0.4474	-3.462				
	Gender	22.90*	<0.0001	8.821				
	Verbal Aggression							
	Model				55.35*	3029	<0.0001	0.05
	Mean Personal Exposure	3.76*	0.0002	0.080				
	Age	0.13	0.8996	0.398				
	Gender	8.91*	<0.0001	2.611				
	Model				51.66*	3022	<0.0001	0.05
	Mean Game-Specific Exposure	2.06	0.0392	0.055				
	Age	0.04	0.9713	0.114				
	Gender	10.04*	<0.0001	2.882				
	Model				55.82*	3027	<0.0001	0.05
	Mean Difference Exposure	-3.91*	<0.0001	-0.151				
	Age	0.11	0.9127	0.345				
	Gender	10.73*	<0.0001	2.858				

*p < .01

Table 13. Continued.

		t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Anger								
	Model				26.40*	2793	<0.0001	0.03
	Mean Personal Exposure	5.58*	<0.0001	0.127				
	Age	-0.22	0.8246	-0.729				
	Gender	3.33*	0.0009	1.059				
	Model				20.68*	2786	<0.0001	0.02
	Mean Game-Specific Exposure	3.94*	<0.0001	0.114				
	Age	-0.31	0.7558	-1.026				
	Gender	4.38*	<0.0001	1.360				
	Model				22.17*	2791	<0.0001	0.02
	Mean Difference Exposure	-4.35*	<0.0001	-0.180				
	Age	-0.30	0.7608	-1.003				
	Gender	5.31*	<0.0001	1.545				
Hostility								
	Model				23.71*	3029	<0.0001	0.02
	Mean Personal Exposure	4.49*	<0.0001	0.132				
	Age	-1.66	0.0970	-7.240				
	Gender	3.85*	<0.0001	1.562				
	Model				19.49*	3022	<0.0001	0.02
	Mean Game-Specific Exposure	2.71*	0.0068	0.101				
	Age	-1.75	0.0796	-7.668				
	Gender	4.99*	<0.0001	1.981				
	Model				23.38*	3027	<0.0001	0.02
	Mean Difference Exposure	-4.34*	<0.0001	-0.231				
	Age	-1.69	0.0907	-7.381				
	Gender	5.45*	<0.0001	2.009				

*p < .01

Narcissistic Personality Inventory

Mean personal exposure to video game violence did not predict participants' scores on the Leadership/Authority subscale, $p < .0301$ (Table 14). Participants' scores on the Grandiose Exhibitionism subscale were significantly predicted by the mean personal exposure, after controlling for gender and age, $\beta = 0.03$, $p < .0017$. As exposure increased, so did Grandiose Exhibitionism scores. Mean personal exposure to video game violence significantly predicted participants' scores on the Entitlement/Exploitativeness subscale, after controlling for gender and age, $\beta = 0.01$, $p < .0056$. Entitlement/Exploitativeness scores increased as mean personal exposure increased.

Table 14. Amount of variance in Narcissistic Personality measures, accounted for by age and gender along with the listed measure of exposure.

	t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Narcissistic Personality							
Leadership/Authority							
Model				9.42*	1244	<0.0001	0.02
PE_{mean}	2.17	0.0301	0.030				
Age	0.91	0.3622	2.874				
Gender	3.07*	0.0022	0.629				
Model				10.69*	1237	<0.0001	0.02
GE_{mean}	2.95*	0.0033	0.053				
Age	0.90	0.3698	2.825				
Gender	2.61*	0.0093	0.538				
Model				7.90*	1242	<0.0001	0.02
DE_{mean}	-0.19	0.8499	-0.006				
Age	0.93	0.3538	2.930				
Gender	4.54*	<0.0001	0.841				
Grandiose exhibitionism							
Model				4.73*	1244	0.0028	0.01
PE_{mean}	3.14*	0.0017	0.034				
Age	1.00	0.3154	2.478				
Gender	0.02	0.9839	0.003				
Model				4.68*	1237	0.0030	0.01
GE_{mean}	3.14*	0.0017	0.045				
Age	1.00	0.3191	2.464				
Gender	-0.08	0.9339	-0.013				
Model				2.55	1242	0.0544	0.00
DE_{mean}	-1.84	0.0665	-0.047				
Age	1.03	0.3052	2.538				
Gender	1.23	0.2184	0.179				

*p < .01

Table 14. Continued.

	t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Entitlement/Exploitativeness							
Model				20.48*	1244	<0.0001	0.04
Mean Personal Exposure	2.78*	0.0056	0.011				
Age	0.48	0.6320	0.445				
Gender	5.02*	<0.0001	0.302				
Model				23.53*	1237	<0.0001	0.05
Mean Game-Specific Exposure	3.43*	0.0006	0.018				
Age	0.46	0.6452	0.417				
Gender	4.89*	<0.0001	0.290				
Model				19.61*	1242	<0.0001	0.04
Mean Difference Exposure	-2.05	0.0405	-0.020				
Age	0.50	0.6190	0.462				
Gender	6.58*	<0.0001	0.359				

*p < .01

Attitudes Toward Violence Scale

Attitudes about the penal code were significantly predicted by mean personal exposure, after controlling for gender and age, β = 0.09, p < .0001 (Table 15). As the mean personal exposure scores increased, so did attitudes about the penal code. Mean personal exposure to video game violence significantly predicted participants' attitudes toward war, after controlling for gender and age, β = 0.18, p < .0001. Attitudes toward war increased as mean personal exposure increased. Participants' attitudes toward the corporal punishment of children was significantly predicted by the mean of participants' personal exposure scores, after controlling for gender and age, β = 0.10, p <

.0001. As mean personal exposure increased, so did attitudes toward the corporal punishment of children. Mean personal exposure to video game violence significantly predicted participants' attitudes about intimate violence, after controlling for gender and age, β = 0.05, p < .0004. Intimate violence attitudes increased with the increase in the mean of participants' personal exposure scores.

Table 15. Amount of variance in Attitude Toward Violence measures, accounted for by age and gender along with the listed measure of exposure.

	t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Attitudes Toward Violence							
Penal code attitudes							
Model				13.55*	1449	<0.0001	0.03
Mean Personal Exposure	4.59*	<0.0001	0.091				
Age	2.97*	0.0031	1.390				
Gender	1.74	0.0826	0.506				
Model				13.23*	1441	<0.0001	0.02
Mean Game-Specific Exposure	4.59*	<0.0001	0.120				
Age	3.16*	0.0016	1.481				
Gender	1.55	0.1218	0.452				
Model				7.98*	1447	<0.0001	0.01
Mean Difference Exposure	-2.25	0.0245	-0.107				
Age	2.59*	0.0096	1.220				
Gender	3.03*	0.0025	0.846				
Attitudes toward war							
Model				36.87*	1449	<0.0001	0.07
Mean Personal Exposure	6.46*	<0.0001	0.181				
Age	1.71	0.0872	1.131				
Gender	5.36*	<0.0001	2.203				
Model				36.14*	1441	<0.0001	0.07
Mean Game-Specific Exposure	6.57*	<0.0001	0.241				
Age	1.97	0.0494	1.299				
Gender	5.05*	<0.0001	2.077				
Model				26.58*	1447	<0.0001	0.05
Mean Difference Exposure	-3.62*	0.0003	-0.243				
Age	1.19	0.2324	0.796				
Gender	7.23*	<0.0001	2.853				

*p < .01

Table 15. Continued.

		t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Corporal punishment of children								
	Model				44.70*	1449	<0.0001	0.08
	Mean Personal Exposure	4.46*	<0.0001	0.099				
	Age	1.66	0.0962	0.869				
	Gender	8.32*	<0.0001	2.699				
	Model				41.60*	1441	<0.0001	0.08
	Mean Game-Specific Exposure	3.62*	0.0003	0.105				
	Age	1.68	0.0936	0.878				
	Gender	8.47*	<0.0001	2.761				
	Model				43.55*	1447	<0.0001	0.08
	Mean Difference Exposure	-3.98*	<0.0001	-0.209				
	Age	1.27	0.2041	0.663				
	Gender	9.67*	<0.0001	0.663				
Intimate Violence								
	Model				31.91*	1449	<0.0001	0.06
	Mean Personal Exposure	3.54*	0.0004	0.050				
	Age	-1.32	0.1883	-0.438				
	Gender	7.04*	<0.0001	1.457				
	Model				29.30*	1441	<0.0001	0.06
	Mean Game-Specific Exposure	2.63*	0.0085	0.049				
	Age	-1.25	0.2104	-0.420				
	Gender	7.21*	<0.0001	1.506				
	Model				31.59*	1447	<0.0001	0.06
	Mean Difference Exposure	-3.39*	0.0007	-0.114				
	Age	-1.63	0.1043	-0.541				
	Gender	8.06*	<0.0001	1.591				

*p < .01

Dissipation-Rumination Scale

Scores on the Dissipation-Rumination Scale were significantly predicted by mean personal exposure, after controlling for gender and age, $\beta = 0.16$, $p < .001$ (Table 16). As mean participants' personal exposure scores increased, so did Dissipation-Rumination scores.

Table 16. Amount of variance in Dissipation-Rumination measures, accounted for by age and gender along with the listed measure of exposure.

		t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Dissipation-Rumination								
	Model				10.52*	1304	<0.0001	0.02
	Mean Personal Exposure	3.86*	<0.0001	0.161				
	Age	-0.51	0.6102	-2.774				
	Gender	1.57	0.1170	0.945				
	Model				9.05*	1296	<0.0001	0.02
	Mean Game-Specific Exposure	3.17*	0.0015	0.176				
	Age	-0.46	0.6430	-2.528				
	Gender	1.90	0.0583	1.157				
	Model				8.50*	1302	<0.0001	0.02
	Mean Difference Exposure	-2.87*	0.0042	-0.264				
	Age	-0.67	0.5050	-3.633				
	Gender	3.21*	0.0014	1.739				

*p < .01

National Youth Survey

Mean personal exposure to video game violence did not predict participants' scores on the National Youth Survey delinquency scale, $p < .9933$ (Table 17).

Table 17. Amount of variance in National Youth Survey measures, accounted for by age and gender along with the listed measure of exposure.

		t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
National Youth Survey								
	Model				4.23*	778	0.0056	0.01
	Mean Personal Exposure	-0.01	0.9933	-0.002				
	Age	3.43*	0.0006	15.154				
	Gender	0.91	0.3606	4.450				
	Model				4.08*	768	0.0069	0.01
	Mean Game-Specific Exposure	0.79	0.4282	0.257				
	Age	3.24*	0.0013	14.189				
	Gender	0.95	0.3405	4.500				
	Model				4.22*	775	0.0056	0.01
	Mean Difference Exposure	0.42	0.6725	0.110				
	Age	3.50*	0.0005	15.516				
	Gender	0.71	0.4757	3.529				

*p < .01

Mean Game-Specific Violence Ratings and Personality

Buss Perry Aggression Questionnaire

Mean game-specific violence ratings significantly predicted participants' scores on the Physical Aggression subscale controlling for age and gender, β = 0.733, p = .0020 (Table 18). As mean game-specific violence ratings increased, so did Physical Aggression scores. Participants' scores on the Verbal Aggression, Anger, and Hostility subscales were not significantly predicted by mean game-specific violence ratings, controlling for age and gender.

Table 18. Amount of variance in each personality scale, accounted for by mean game-specific violence rating, age and gender.

	t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Buss Perry							
Physical Aggression							
Model				223.11*	3030	0.0000	0.18
Mean Game-Specific Violence Rating	3.04*	0.0020	0.733				
Age	-1.05	0.2940	-4.810				
Gender	21.28*	0.0000	8.956				
Verbal Aggression							
Model				50.43*	3030	0.0000	0.05
Mean Game-Specific Violence Rating	0.50	0.6190	0.083				
Age	-0.05	0.9580	-0.165				
Gender	10.63*	0.0000	3.079				
Anger							
Model				15.65*	2794	0.0000	0.02
Mean Game-Specific Violence Rating	1.04	0.3000	0.188				
Age	-0.49	0.6250	-1.615				
Gender	5.49*	0.0000	1.734				
Hostility							
Model				17.54*	3030	0.0000	0.02
Mean Game-Specific Violence Rating	1.62	0.1060	0.372				
Age	-1.87	0.0620	-8.178				
Gender	5.31*	0.0000	2.132				
Narcissistic Personality							
Leadership/Authority							
Model				10.42*	1241	10.4200	0.02
Mean Game-Specific Violence Rating	2.65*	0.0080	0.320				
Age	0.88	0.3780	2.778				
Gender	2.43	0.015	0.529				
Grandiose exhibitionism							
Model				2.44	1241	0.0627	0.00
Mean Game-Specific Violence Rating	1.61	0.1070	0.154				
Age	1.00	0.3190	2.477				
Gender	0.62	0.5330	0.107				
Entitlement/Exploitativeness							
Model				23.46*	1241	0.0000	0.05
Mean Game-Specific Violence Rating	3.38*	0.0010	0.117				
Age	0.44	0.6610	0.397				
Gender	4.34*	0.0000	0.271				

*p < .01

Table 18. Continued.

	t	*p*	*β*	*F*	*df*	*p*	Adj. R^2
Attitudes Toward Violence							
Penal code attitudes							
Model				7.02*	1450	0.0001	0.01
Mean Game-Specific Violence Rating	1.58	0.1150	0.274				
Age	2.68*	0.0080	1.258				
Gender	2.46	0.0140	0.744				
Attitudes toward war							
Model				25.06*	1450	0.0000	0.05
Mean Game-Specific Violence Rating	3.23*	0.0010	0.791				
Age	1.30	0.1930	0.865				
Gender	5.79*	0.0000	2.478				
Corporal punishment of children							
Model				39.74*	1450	0.0000	0.07
Mean Game-Specific Violence Rating	2.86*	0.0040	0.549				
Age	1.28	0.2000	0.667				
Gender	8.22*	0.0000	2.760				
Intimate Violence							
Model				26.83*	1450	0.0000	0.05
Mean Game-Specific Violence Rating	1.57	0.1170	0.193				
Age	-1.55	0.1230	-0.517				
Gender	7.08*	0.0000	1.527				
Dissipation-Rumination							
Model				5.64*	1301	0.0008	0.01
Mean Game-Specific Violence Rating	0.96	0.3380	0.345				
Age	-0.59	0.5580	-3.201				
Gender	2.78*	0.0060	1.750				
National Youth Survey							
Model				4.20*	774	0.0058	0.01
Mean Game-Specific Violence Rating	0.86	0.3900	2.004				
Age	3.23*	0.0010	14.109				
Gender	0.89	0.3750	4.119				

***p = < .01**

Narcissistic Personality Inventory

Mean game-specific violence ratings of video game violence predicted participants' scores on the Leadership/Authority subscale controlling for age and gender, $\beta = 0.32$, $p = .0080$ (Table 18). Leadership/Authority scores increased as mean game-specific violence ratings increased. Participants' scores on the Grandiose Exhibitionism subscale were not significantly predicted by mean game-specific violence ratings, controlling for age and gender. Mean game-specific violence ratings of video game violence significantly predicted participants' scores on the Entitlement/Exploitativeness subscale controlling for age and gender, $\beta = 0.12$, $p = .0010$. Entitlement/Exploitativeness scores increased as mean game-specific violence ratings increased.

Attitudes Toward Violence Scale

Attitudes about the penal code were not significantly predicted by mean game-specific violence ratings controlling for age and gender (Table 18). Mean game-specific violence ratings of video game violence significantly predicted participants' attitudes toward war controlling for age and gender, $\beta = 0.79$, $p = .0010$. Attitudes toward war increased as mean game-specific violence ratings increased. Participants' attitudes toward the corporal punishment of children was significantly predicted by mean game-specific violence ratings controlling for age and gender, $\beta = 0.55$, $p = .0040$. As mean game-specific violence ratings increased, so did attitudes toward the corporal punishment of children. Mean

game-specific violence ratings of video game violence did not significantly predict participants' attitudes about intimate violence controlling for age and gender.

Dissipation-Rumination Scale

Scores on the Dissipation-Rumination Scale were not significantly predicted by mean game-specific violence ratings (Table 18).

National Youth Survey

Mean game-specific violence ratings of video game violence did not predict participants' scores on the National Youth Survey delinquency scale (Table 18).

Study 4 Conclusion

In the first analysis there was no statistical advantage in using mean game-specific exposure or mean person-game difference compared to using mean personal exposure. Moreover, calculating these variables was demanding. In order to calculate game-specific violence ratings—a variable required to calculate both of these alternative exposure scores—close to 20,000 games were classified within the series they belong to; for example, James Bond and 007 were classified as the same game. Next, the mean violence rating (referred to as the game-specific violence rating in this dissertation) had to be calculated for each game. Because of the demanding process of creating these variables,

and also because there was no added benefit of using mean game-specific exposure or mean person-game difference, these two operationalizations are not recommended for use in future studies of violent video games. Therefore, only the predictive validity of mean personal exposure will be discussed here. Exposure to video game violence—as measured by the mean of participants' personal exposure scores—significantly predicted participants' scores on 11 out of 13 of the aggressive personality measures. Scores on all of these measures moved in a more aggressive direction as exposure to violent video games increased.

In the second analysis, mean game-specific violence ratings of video game violence did significantly predict participants' scores on 5 of the 13 aggressive personality measures. Thus, these game-specific violence ratings do show consistent predictive validity. This suggests that future researchers should not collect violence ratings of particular games in one study to be used as a form of expert rating in studies in which the games are assessed, but not violence or frequency ratings.

DISCUSSION

The current studies were intended to address questions regarding the measurement of violence in video games. No study has compared whether adults and children perceive the same level of violence in the same video games. Therefore, AIM 1 was to address whether there were age related differences in perceptions of violence in video games. In Study 1, the mean violence ratings of children and adults were not significantly different, suggesting that children and adults perceived the same level of violence in video games. This finding is important as it is not necessarily intuitive. Although it has been proposed that children might be more sensitive—or that adults might be desensitized—to violent content, these suggestions were not supported with this result. Perhaps finding no differences in the violence ratings of children and adults reflects a generational shift of this cohort of children. This cohort of children may have been affected by violent video games during earlier stages of cognitive development than this cohort of adults. Although this phenomenon may have been captured in this dissertation, it is also possible that children and adults merely perceive the violence in video games the same. In order to gain a better understanding of why there is no age difference in assessing the violent content of video games, future studies are needed.

The second aim was to determine whether a novel operationalization of expert ratings predicted users' personal violence rating of video games. To do this, a new version of an expert rating was created using users' ratings. This was done in order to calculate a new operationalization of exposure to video game

violence that is less dependent on a player's own video game ratings and, therefore, potentially less influenced by an individual's own exposure. In Study 2, mean game-specific exposure—one operationalization of expert ratings using the mean game-specific violence ratings of the games a participant listed—predicted users' personal violence ratings of video games. This indicates that mean game-specific violence ratings may be useful violence exposure scores.

In Study 3, differential exposure — video game violence exposure scores calculated without using user ratings of a particular game—were not a strong reliable predictor of personal violence ratings of target video games. These results indicate that high exposure to violent video games does not lead to a systematic reduction in individuals' violence ratings of the games that they play (see Tables 9 and 10).

Based on previous research and the General Aggression Model, we expected that people with high violent video game exposure would also have more aggressive personalities and behaviors (Anderson & Bushman, 2001). The third aim was to test the predictive validity of some different operationalizations of expert ratings by determining whether they predicted scores on aggression related personality measures. In Study 4, mean personal exposure, mean game-specific exposure and mean person-game difference scores all significantly predicted aggressiveness, attitudes toward violence, narcissism, rumination and delinquent behaviors as measured by the AQ, ATVS, NPI, DRS and NYS. The difference in the variance explained by mean personal exposure, mean game-specific exposure, and mean person-game difference scores was minimal, at

most 2%. This was not a large enough difference in variance to conclude that there is any statistical advantage to using the more complicated mean game-specific exposure or mean person-game difference scores measures instead of using the simpler personal exposure score as a measure of violent video game exposure. Furthermore, as expected, exposure to video game violence significantly predicted participants' scores on 11 out of 13 of these aggression related personality measures. Scores on all of these measures moved in a more aggressive direction as exposure to violent video games increased.

These results are consistent with previous research linking violent video game play to increased aggressive personality. According to GAM, changes to an individual's personality, result from the development, reinforcement and automatization of aggression-related knowledge and behaviors. The creation and automatization of aggression-related knowledge structures leaves those who consume violent video games over long periods of time with more aggressive perceptions, attitudes, beliefs, and behavior than they had before the repeated exposure (Anderson & Bushman, 2002).

The question addressed here, and raised by Busching, et al. (2013), was whether there was any advantage to measuring video game violence exposure by using ratings other than personal ratings. While Busching, et al. (2013) used trained experts who watched recorded clips as their expert ratings, the current studies used different methods of combining player's violence ratings across all players of a particular game. Busching, et al. (2013) concluded that player ratings and their operationalization of expert ratings were equally useful measures.

However, in the current study the operationalization used was not equally useful. In study 2 , mean game-specific exposure proved to be a useful predictor of personal violence ratings; yet, in study 4 mean game-specific exposure was not a better predictor of aggressive personality than the mean of participants' personal exposure scores.

In study 3, differential exposure did not reliably predict personal violence ratings. The idea of creating the differential exposure scores came from discussions about whether player's violence ratings might not be valid due to desensitization—or other possible unknown factors that would invalidate personal violence ratings. Study 3 tested the relationship between exposure to other video games and ratings of a specific game; thus testing the idea that those who played a lot of violent games may give relatively lower violence ratings to target violent games. However, after controlling for age and gender, differential exposure was not a significant predictor of personal violence ratings for 4 of the 5 most played violent video games or 3 of the 5 most played nonviolent video games. Study 3 did not support the idea that high exposure to violent video games would lead to a decrease in violence ratings.

Analyzing data in this dissertation satisfies some methodological curiosity about how to best measure violent video game exposure. However, these studies did not support the idea that there is a more accurate exposure score than personal violence ratings. All three exposure scores in Study 4 (personal, game-specific, and person-game difference) predicted similar amounts of variance in aggressive personality and behavioral measures. These three

exposure scores showed predictive validity. The difference in the variance explained by these three measures was 2% or less. Thus, neither the game-specific nor the person-game difference scores were an improvement over the commonly used personal violence ratings. In Study 4 game-specific violence ratings were not significantly related to aggressive personality. This means that researchers should not use these group average ratings of a game's violence as valid predictors in future studies.

Busching, et al. (2013) compared the validity of using user ratings, expert ratings, official agency ratings of individual game titles as well as expert ratings of game genres and concluded that the best practices included using either expert ratings or player ratings. The results of the present studies support that conclusion. Although inconsistencies across participants are to be expected, user ratings of the violent content in video games are reliable and show substantial interrater correlations (Busching, et al., 2013). There was no statistical advantage to using a form of game-specific or person-game difference measures instead of using personal exposure as a measure of violent video game content.

In conclusion, using self-ratings of video game violence is an acceptable measurement technique. Personal violence rating is a valid, cheap, and fast way to measure the violence in video games. Therefore, the current author's recommendation for future studies is to continue to use personal violence ratings as a measure of the violence in video games.

REFERENCES

Ackerman, R. A., Donnellan, M. B., & Robins, R. W. (2012). An item response theory analysis of the Narcissistic Personality Inventory. *Journal of Personality Assessment, 94*(2), 141-155.

Adachi, P. J., & Willoughby, T. (2011). The effect of video game competition and violence on aggressive behavior: Which characteristic has the greatest influence?. *Psychology of Violence, 1*(4), 259.

Allport, G.W. (1964). *Pattern and growth in personality*. Oxford, England: Holt, Reinhart & Winston.

Anderson, C.A. (2004). An update on the effects of violent video games. *Journal of Adolescence, 27,* 113-122.

Anderson, C. A., Benjamin, A. J., Wood, P. K., & Bonacci, A. M. (2006). Development and testing of the Velicer Attitudes Toward Violence Scale: Evidence for a four-factor model. *Aggressive Behavior*, *32*(2), 122-136.

Anderson, C. A., Buckley, K. E., & Carnagey, N. L. (2008). Creating your own hostile environment: A laboratory examination of trait aggressiveness and the violence escalation cycle. *Personality and Social Psychology Bulletin, 34*(4), 462-473.

Anderson, C.A., & Bushman, B.J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological Science, 12,* 353-359.

Anderson, C.A., & Bushman, B.J. (2002). Human aggression. *Annual Review of Psychology, 53,* 27-51.

Anderson, C. A., Carnagey, N. L., Flanagan, M., Benjamin, A. J., Eubanks, J., & Valentine, J. C. (2004). Violent video games: Specific effects of violent content on aggressive thoughts and behavior. *Advances in Experimental Social Psychology, 36*, 199-249.

Anderson, C.A., & Dill, K.E. (2000). Video games and aggressive thoughts, feelings, and behavior in the laboratory and in life. *Journal of Personality and Social Psychology, 78,* 772-790.

Anderson, C. A., Gentile, D. A., & Buckley, K. E. (2007). *Violent video game effects on children and adolescents: Theory, research, and public policy.* Oxford University Press.

Anderson, C. A., Shibuya, A., Ihori, N., Swing, E. L., Bushman, B. J., Sakamoto, A., ... & Saleem, M. (2010). Violent video game effects on aggression,

empathy, and prosocial behavior in eastern and western countries: A meta-analytic review. *Psychological Bulletin*, *136*(2), 151-173.

Bartholow, B. D., & Anderson, C. A. (2002). Effects of violent video games on aggressive behavior: Potential sex differences. *Journal of Experimental Social Psychology, 38*(3), 283-290.

Bartholow, B. D., Sestir, M. A., & Davis, E. B. (2005). Correlates and consequences of exposure to video game violence: Hostile personality, empathy, and aggressive behavior. *Personality and Social Psychology Bulletin, 31*(11), 1573-1586.

Bellini, S. & Akulliana, J. (2007). Meta-Analysis of video modeling and video self-modeling interventions for children and adolescents with autism spectrum disorders. *Exceptional Children, 73*(3), 264-287.

Busching, R., Gentile, D. A., Krahé, B., Möller, I., Khoo, A., Walsh, D. A., & Anderson, C. A. (2013). Testing the Reliability and Validity of Different Measures of Violent Video Game Use in the United States, Singapore, and Germany.

Bushman, B. J., & Anderson, C. A. (2002). Violent video games and hostile expectations: A test of the general aggression model. *Personality and Social Psychology Bulletin*, *28*(12), 1679-1686.

Bushman, B. J., & Anderson, C. A. (2009). Comfortably numb: Desensitizing effects of violent media on helping others. *Psychological Science, 20*(3), 273-277.

Bushman, B. J., & Geen, R. G. (1990). Role of cognitive emotional mediators and individual differences in the effects of media violence on aggression. *Journal of Personality and Social Psychology, 58*(1), 156.

Buss, A. H., & Perry, M. P. (1992). The aggression questionnaire. *Journal of Personality and Social Psychology, 63*, 452-459.

Caprara, G. V. (1986). Indicators of aggression: The dissipation-rumination scale. *Personality and Individual Differences, 7*(6), 763-769.

Carnagey, N. L., Anderson, C.A. & Bushman, B. J. (2007). The effect of video game violence on physiological desensitization to real-life violence. *Journal of Experimental Social Psychology 43* (3)*,* 489-496.

Caspi, A., Roberts, B. W., Shiner, R. L. (2005). Personality development: Stability and change. *Annual Review of Psychology, 56*, 453–84.

Children Now (2001, December). *Fair play? Violence, gender and race in video games.* Sacramento, CA: Author.

Cline, V. B., Croft, R. G., & Courrier, S. (1973). Desensitization of children to television violence. *Journal of Personality and Social Psychology, 27*(3), 360.

CNN Wire Staff (2012, April 19) Norway's Breivik wanted to kill PM, other ministers. Retrieved on February 10, 2015 from http://www.cnn.com/2012/04/19/world/europe/norway-breivik-trial/index.html?hpt=hp_t1

Dill, K. E., Gentile, D. A., Richter, W. A., & Dill, J. C. (2005). Violence, sex, race, and age in popular video games: A content analysis. In E. Cole, & J. Daniel (Eds.) *Featuring females: Feminist analysis of media. Psychology of women book series.* (pp. 115-130). Washington, DC: American Psychological Association.

Dogruel, L., & Joeckel, S. (2013). Video game rating systems in the US and Europe Comparing their outcomes. *International Communication Gazette, 75*(7), 672-692.

Elliott, D. S., Huizinga, D., & Ageton, S. S. (1985). *Explaining delinquency and drug use.* Beverly Hills, CA: Sage Publications.

Entertainment Software Association (2012a). *Essential facts about the computer and video game industry: 2012 sales, demographic and usage data.* Retrieved on February 10, 2015 from http://www.theesa.com/facts/pdfs/esa_ef_2012.pdf

Entertainment Software Association (2012b). *Industry facts.* Retrieved from http://www.theesa.com/facts/

Entertainment Softwatre Rating Board (ESRB) (2015, May). ESRB Ratings Guide. Retrieved on February 10, 2015 from http://www.esrb.org/ratings/ratings_guide.jsp

Exelmans, L., Custers, K., & Van den Bulck, J. (2015). Violent video games and delinquent behavior in adolescents: A risk factor perspective. Aggressive Behavior.

Funk, J.B., Flores, G., Buchman, D.D., & Germann, J.N. (1999). Rating electronic games: Violence is in the eye of the beholder. *Youth & Society, 30,* 283-312.

Gentile, D. A. (2008). The rating systems for media products. In S. Calvert & B. Wilson (Eds.), Handbook of children, media, and development (pp. 527–551). Oxford, England: Blackwell Publishing. doi:10.1002/9781444302752.ch23

Gentile, D.A., & Anderson, C.A. (2003). Violent video games: The newest media violence hazard. In D. Gentile (Ed.) *Media Violence and Children* (pp. 131-152), Westport, CT: Praeger.

Gentile, D.A., Lynch, P.L., Linder, J.R., & Walsh, D.A. (2004). The effects of violent video game habits on adolescent hostility, aggressive behaviors, and school performance. *Journal of Adolescence, 27,* 5-22.

Gentile, D. A., Swing, E. L., Lim, C. G., & Khoo, A. (2012). Video game playing, attention problems, and impulsiveness: Evidence of bidirectional causality. *Psychology of Popular Media Culture, 1*(1), 62-70.

Gitter, S. A., Ewell, P. J., Guadagno, R. E., Stillman, T. F., & Baumeister, R. F. (2013). Virtually justifiable homicide: The effects of prosocial contexts on the link between violent video games, aggression, and prosocial and hostile cognition. *Aggressive behavior, 39*(5), 346-354.

Greitemeyer, T., & Mügge, D. O. (2014). Video games do affect social outcomes: A meta-analytic review of the effects of violent and prosocial video game play. Personality and Social Psychology Bulletin, 0146167213520459.

Haninger, K., Ryan, M. S., & Thompson, K. M. (2004). Violence in teen-rated video games. *Medscape General Medicine, 6*(1), 1.

Huesmann, L.R. (1986). Psychological processes promoting the relation between exposure to media violence and aggressive behavior by the viewer. *Journal of Social Issues, 42,* 125-139.

Huesmann, L.R. (1998). The role of social information processing and cognitive schema in the acquisition and maintenance of habitual aggressive behavior. In R.G. Geen, & E. Donnerstein (Eds.), *Human aggression: Theories, research, and implications for social policy* (pp. 73-109). San Diego, CA: Academic Press, Inc.

Kim, E. J., Namkoong, K., Ku, T., & Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *European Psychiatry, 23*(3), 212-218.

Kirsh, S. J., & Mounts, J. R. (2007). Violent video game play impacts facial emotion recognition. *Aggressive Behavior*, *33*(4), 353-358.

Kirsh, S. J., Olczak, P. V., & Mounts, J. R. (2005). Violent video games induce an affect processing bias. *Media Psychology*, *7*(3), 239-250.

Kleinfield, N. R., Rivera, R. & Kovaleski, S. F. (March 28, 2013). Newtown killer's obsessions, in chilling detail. Retrieved on February 10, 2015 from http://www.nytimes.com/2013/03/29/nyregion/search-warrants-reveal-items-seized-at-adam-lanzas-home.html?pagewanted=all&_r=0

Lenhart, A., Pew Research Center. (April 2015). Teen, Social Media and Technology Overview 2015.

Lynch, P. J., Gentile, D. A., Olson, A. A., & van Brederode, T. M. (2001, April). The Effects of Violent Video Game Habits on Adolescent Aggressive Attitudes and Behaviors. Paper presented at the *Biennial Conference of the Society for Research in Child Development*, Minneapolis, Minnesota. Retrieved on February 10, 2015 from http://files.eric.ed.gov/fulltext/ED461420.pdf

Mischel, W. (1973). Toward a cognitive social learning reconceptualization of personality. *Psychological Review, 80,* 252-83.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review, 102,* 246-268.

Möller, I., & Krahé, B. (2009). Exposure to violent video games and aggression in German adolescents: A longitudinal analysis. *Aggressive Behavior, 35*(1), 75-89.

Pitofsky, R. (2000). Marketing violent entertainment to children: A review of self-regulation and industry practices in the motion picture, music recording, and electronic game industries. *Committee on Commerce, Science, and Transportation, United States Senate, Washington, DC*.

Przybylski, A. K., Ryan, R. M., & Rigby, C. S. (2009). The motivating role of violence in video games. *Personality and Social Psychology Bulletin, 35*(2), 243-259.

Raskin, R., & Terry, H. (1988). A principal-components analysis of the Narcissistic Personality Inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology, 54*(5), 890.

Roberts, B. W., & Bogg, T. (2004). A longitudinal study of the relationships between conscientiousness and the social–environmental factors and substance-use behaviors that influence health. *Journal of Personality, 72*, 325– 354.

Rothbart, M.K., & Ahadi, S.A. (1994). Temperament and the development of personality. *Journal of Abnormal Psychology, 103*, 55–66.

Schneider, W., & Shiffrin, R. M. Controlled and automatic human information processing: I. Detection, search, and attention. *Psychological Review*, 1977, 84, 1-66.

Sherry, J.L. (2001). The effects of violent video games on aggression: A meta-analysis. *Human Communication Research, 27*, 409-431.

Shibuya, A., & Sakamoto, A. (2003). The quantity and context of video game violence in Japan: Toward creating an ethical standard. In K. Arai (Ed.), *Social contributions and responsibilities of simulation & gaming* (pp. 305-314). Tokyo, Japan: Association of Simulation and Gaming.

Smith, B.P. (2006). The (computer) games people play: An overview of popular game content. In P. Vorderer, & J. Bryant, (Eds.) *Playing Computer Games - Motives, Responses, and Consequences.* Mahwah, NJ: Lawrence Erlbaum Associates.

Smith, E. R., & DeCoster, J. (2000). Dual-process models in social and cognitive psychology: Conceptual integration and links to underlying memory systems. *Personality and social psychology review*, 4(2), 108-131.

Teng, S. K. Z., Chong, G. Y. M., Siew, A. S. C., & Skoric, M. M. (2011). Grand theft auto IV comes to Singapore: Effects of repeated exposure to violent video games on aggression. *Cyberpsychology, Behavior, and Social Networking, 14*(10), 597-602.

Thompson, K. M., & Haninger, K. (2001). Violence in E-rated video games. *JAMA: The Journal of the American Medical Association, 286*(5), 591-598.

Uleman, J. S., & Saribay, S. A. (2012). Initial impressions of others. The *Oxford handbook of personality and social psychology*, 337.

Velicer, W. F., Huckel, L. H., & Hansen, C. E. (1989). A measurement model for measuring attitudes toward violence*. Personality and Social Psychology Bulletin, 15*(3), 349-364.

Walsh, D., Gentile, D., Gieske, J., Walsh, M. Chasco, E. (2003, December). *Eighth Annual Video Game Report Card*. Minneapolis, MN: National Institute on Media and the Family.

Weber, R., Ritterfeld, U., & Mathiak, K. (2006). Does playing violent video games induce aggression? Empirical evidence of a functional magnetic resonance imaging study. *Media psychology, 8*(1), 39-60.

APPENDIX A

VIDEO GAME CODING FOR THE TEN MOST COMMONLY LISTED VIOLENT AND NONVIOLENT GAMES

Code	Video games listed by participants
293	Halo
4733	Solitaire
4733	Solitaire on Comp
5042	Sim Ant
5042	Sim City
5042	Sim City 2000
5042	Sim City 4
5042	Sim City Classic
5042	Sim City X
5042	Sim Island
5042	Sim Life
5042	Sim Safari
5042	Sim Theme Park
5042	Sims Vacation
5042	Sims/The Sims
5054	Mortal Kombat / Mortal Kombat 1
5054	Mortal Kombat 2
5054	Mortal Kombat 3
5054	Mortal Kombat 4
5054	Mortal Kombat Deadly Alliance

APPENDIX A CONTINUED

Code	Video games listed by participants
5075	Basketball Street
5075	NBA
5075	NBA Action 1994
5075	NBA Allstar
5075	NBA Basketball
5075	NBA Courtside
5075	NBA Games
5075	NBA Grand Slam
5075	NBA Hangtime
5075	NBA Hoops
5075	NBA Inside drive
5075	NBA Jam
5075	NBA Live
5075	NBA Night
5075	NBA Pro Basketball
5075	NBA Sessions
5075	NBA Shootout
5075	NBA Showtime
5075	NBA Streets
5075	Street Ball
5075	Street Hoops
5075	Street Jams
5392	Diablo
5392	Diablo 1
5392	Diablo 2
5392	Diablo 3

APPENDIX A CONTINUED

Code	Video games listed by participants
5469	007 Golden Eye James Bond
5469	007 James Bond
5469	007 James Bond: Agent Under Fire
5469	007 James Bond: Die Another Day
5469	007 James Bond: Goldeneye
5469	007 James Bond: Nightfire
5469	007 James Bond: The World is not enough
5469	007 James Bond: Tomorrow Never Dies
5469	Goldfinger
5469	James Bond
5469	James Bond: Tomorrow Never Dies
5488	Mario Grand Prix
5488	Mario Kart Double Dash
5488	Mario Kart Racing
5488	Mario Kart/ Super Mario Kart
5488	Mario Magic Cart
5488	Mario Racer
5488	Mario Racing
5488	Super Mario Kart
5488	Super Mario Race
5622	Grand Theft Auto 1 (GTA 1)
5622	Grand Theft Auto 2 (GTA 2)
5622	Grand Theft Auto 3 (GTA 3)
5622	Grand Theft Auto 4 (GTA 4)
5622	Grand Theft Auto: Vice City / GTA: Vice City
5622	GTA/Grand Theft Auto
5708	Tetris
5708	Tetris 2
5708	Tetris Attack
5708	Tetris Worlds
5708	The New Tetris

APPENDIX B

VIDEO GAME PREFERENCE QUESTIONNAIRE

Please write down the titles of your five most played VIDEO GAMES since 7th grade in the spaces below. If you have never played a video game in your life, please leave the questions blank.

1) Title of your most played video game: _____

2) Title of your 2nd most played video game: _____

3) Title of your 3rd most played video game:_____

4) Title of your 4th most played video game:_____

5) Title of your 5th most played video game:_____

Now, please rate each **video game** by answering the questions that follow.

For the following items, rate the game you listed as your most played video game:

How often have you played this video game?						
1	2	3	4	5	6	7
Rarely			Occasionally			Often
How violent is the content of this video game?						
1	2	3	4	5	6	7
Little or No Violent Content					Extremely Violent Content	
How bloody and gory are the graphics of this video game?						
1	2	3	4	5	6	7
Little or No Blood & Gore					Extremely Bloody & Gory	

For the following items, rate the game you listed as your 2nd most played video game:

How often have you played this video game?						
1	2	3	4	5	6	7
Rarely			Occasionally			Often
How violent is the content of this video game?						
1	2	3	4	5	6	7
Little or No Violent Content					Extremely Violent Content	
How bloody and gory are the graphics of this video game?						
1	2	3	4	5	6	7
Little or No Blood & Gore					Extremely Bloody & Gory	

APPENDIX B CONTINUED

For the following items, rate the game you listed as your <u>3rd most played</u> video game:

How often have you played this video game?

1	2	3	4	5	6	7
Rarely			Occasionally			Often

How violent is the content of this video game?

1	2	3	4	5	6	7
Little or No Violent Content					Extremely Violent Content	

How bloody and gory are the graphics of this video game?

1	2	3	4	5	6	7
Little or No Blood & Gore					Extremely Bloody & Gory	

For the following items, rate the game you listed as your <u>4th most played</u> video game:

How often have you played this video game?

1	2	3	4	5	6	7
Rarely			Occasionally			Often

How violent is the content of this video game?

1	2	3	4	5	6	7
Little or No Violent Content					Extremely Violent Content	

How bloody and gory are the graphics of this video game?

1	2	3	4	5	6	7
Little or No Blood & Gore					Extremely Bloody & Gory	

For the following items, rate the game you listed as your <u>5th most played</u> video game:

How often have you played this video game?

1	2	3	4	5	6	7
Rarely			Occasionally			Often

How violent is the content of this video game?

1	2	3	4	5	6	7
Little or No Violent Content					Extremely Violent Content	

How bloody and gory are the graphics of this video game?

1	2	3	4	5	6	7
Little or No Blood & Gore					Extremely Bloody & Gory	

APPENDIX C

BUSS PERRY AGGRESSION QUESTIONNAIRE

Please rate each of the following items in terms of how characteristic they are of you

	Extremely Characteristic						**Extremely Uncharacteristic**
Once in a while I can't control the urge to strike another person.	1	2	3	4	5	6	7
Given enough provocation, I may hit another person.	1	2	3	4	5	6	7
If somebody hits me, I hit back.	1	2	3	4	5	6	7
I get into fights a little more than the average person.	1	2	3	4	5	6	7
If I have to resort to violence to protect my rights, I will.	1	2	3	4	5	6	7
There are people who pushed me so far that we came to blows.	1	2	3	4	5	6	7
I can think of no good reason for ever hitting a person.	1	2	3	4	5	6	7
I have threatened people I know.	1	2	3	4	5	6	7
I have become so mad that I have broken things.	1	2	3	4	5	6	7
I tell my friends openly when I disagree with them.	1	2	3	4	5	6	7
I often find myself disagreeing with people.	1	2	3	4	5	6	7
When people annoy me, I may tell them what I think of them	1	2	3	4	5	6	7
I can't help getting into arguments when people disagree with me.	1	2	3	4	5	6	7
My friends say that I'm somewhat argumentative.	1	2	3	4	5	6	7

APPENDIX C CONTINUED

	Extremely Characteristic						**Extremely Uncharacteristic**
I flare up quickly but get over it quickly.	1	2	3	4	5	6	7
When frustrated, I let my irritation show.	1	2	3	4	5	6	7
I sometimes feel like a powder keg ready to explode.	1	2	3	4	5	6	7
I am an even-tempered person.	1	2	3	4	5	6	7
Some of my friends think I'm a hothead.	1	2	3	4	5	6	7
Sometimes I fly off the handle for no good reason.	1	2	3	4	5	6	7
I have trouble controlling my temper.	1	2	3	4	5	6	7
I am sometimes eaten up with jealousy.	1	2	3	4	5	6	7
At times I feel I have gotten a raw deal out of life.	1	2	3	4	5	6	7
Other people always see to get the breaks.	1	2	3	4	5	6	7
I wonder why sometimes I feel so bitter about things.	1	2	3	4	5	6	7
I know that "friends" talk about me behind my back	1	2	3	4	5	6	7
I am suspicious of overly friendly strangers.	1	2	3	4	5	6	7
I sometimes feel that people are laughing at me behind my back.	1	2	3	4	5	6	7
When people are especially nice, I wonder what they want.	1	2	3	4	5	6	7

APPENDIX D

NARCISSISTIC PERSONALITY INVENTORY

This test consists of forty pairs of statements. For each pair you should select the one that you feel best reflects your personality.

A	I have a natural talent for influencing people.
B	I am not good at influencing people.
A	Modesty doesn't become me.
B	I am essentially a modest person.
A	I would do almost anything on a dare.
B	I tend to be a fairly cautious person.
A	I know that I am good because everybody keeps telling me so.
B	When people compliment me I sometimes get embarrassed.
A	If I ruled the world it would be a much better place.
B	The thought of ruling the world frightens the hell out of me.
A	I can usually talk my way out of anything.
B	I try to accept the consequences of my behavior
A	I like to be the center of attention.
B	I prefer to blend in with the crowd
A	I will be a success.
B	I am not too concerned about success.
A	I think I am a special person.
B	I am no better or no worse than most people.
A	I see myself as a good leader.
B	I am not sure if I would make a good leader.
A	I am assertive.
B	I wish I were more assertive.
A	I like having authority over people.
B	I don't mind following orders.
A	I find it easy to manipulate people
B	I don't like it when I find myself manipulating people
A	I insist upon getting the respect that is due me
B	I usually get the respect that I deserve
A	I like to display my body
B	I don't particularly like to show off my body
A	I can read people like a book
B	People are sometimes hard to understand
A	I like to take responsibility for making decisions
B	If I feel competent I am willing to take responsibility for making decisions

APPENDIX D CONTINUED

A	I want to amount to something in the eyes of the world
B	I just want to be reasonably happy
A	I like to look at my body
B	My body is nothing special
A	I am apt to show off if I get the chance
B	I try not to be a show off
A	I always know what I am doing
B	Sometimes I am not sure of what I am doing
A	I rarely depend on anyone else to get things done
B	I sometimes depend on people to get things done
A	Everybody likes to hear my stories
B	Sometimes I tell good stories
A	I expect a great deal from other people
B	I like to do things for other people
A	I will never be satisfied until I get all that I deserve
B	I take my satisfactions as they come
A	I like to be complimented
B	Compliments embarrass me
A	I have a strong will to power
B	Power for its own sake doesn't interest me
A	I like to start new fads and fashions
B	I don't very much care about new fads and fashions
A	I like to look at myself in the mirror
B	I am not particularly interested in looking at myself in the mirror
A	I really like to be the center of attention
B	It makes me uncomfortable to be the center of attention
A	I can live my life in any way I want to
B	People can't always live their lives in terms of what they want
A	People always seem to recognize my authority
B	Being an authority doesn't mean that much to me
A	I would prefer to be a leader
B	It makes little difference to me whether I am a leader or not
A	I am going to be a great person
B	I hope I am going to be successful
A	I can make anybody believe anything I want them to
B	People sometimes believe what I tell them

APPENDIX D CONTINUED

A	I am a born leader
B	Leadership is a quality that takes a long time to develop
A	I wish somebody would someday write my biography
B	I don't like people to pry into my life for any reason
A	I get upset when people don't notice how I look when I go out in public
B	I don't mind blending into the crowd when I go out in public
A	I am more capable than other people
B	There is a lot that I can learn from other people
A	I am an extraordinary person
B	I am much like everybody else

APPENDIX E

ATTITUDES TOWARD VIOLENCE SCALE

Please indicate the extent to which you agree or disagree with the following statements.

	Strongly Disagree	**Disagree**	**Neither Agree or Disagree**	**Agree**	**Strongly Agree**
War is often necessary.	**1**	**2**	**3**	**4**	**5**
The government should send armed soldiers to control violent university riots.	**1**	**2**	**3**	**4**	**5**
Any nation should be ready with a strong military at all times.	**1**	**2**	**3**	**4**	**5**
Children should be spanked for temper tantrums.	**1**	**2**	**3**	**4**	**5**
Any prisoner deserves to be mistreated by other prisoners in jail.	**1**	**2**	**3**	**4**	**5**
Violence against the enemy should be part of every nation's defense.	**1**	**2**	**3**	**4**	**5**
Prisoners should have more sever labor sentences than they do.	**1**	**2**	**3**	**4**	**5**
Killing of civilians should be accepted as an unavoidable part of war.	**1**	**2**	**3**	**4**	**5**
No matter how severe the crime, one should pay an eye for an eye and a tooth for a tooth."	**1**	**2**	**3**	**4**	**5**
Punishing a child physically when she/she deserves it will make him/her a responsible and mature adult.	**1**	**2**	**3**	**4**	**5**
Violent crimes should be punished violently.	**1**	**2**	**3**	**4**	**5**

APPENDIX E CONTINUED

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
Our country has the right to protect is borders forcefully.	**1**	**2**	**3**	**4**	**5**
The manufacture of weapons is necessary.	**1**	**2**	**3**	**4**	**5**
It is all right for a partner to choke the other if insulted or ridiculed.	**1**	**2**	**3**	**4**	**5**
The death penalty should be a part of every penal code.	**1**	**2**	**3**	**4**	**5**
Prisoners should never get out of their sentence for good behavior.	**1**	**2**	**3**	**4**	**5**
Universities should use armed police against students who destroy university property.	**1**	**2**	**3**	**4**	**5**
It is all right for the government to stop violent outbursts in neighboring countries with our armed sold punished physically.	**1**	**2**	**3**	**4**	**5**
Giving mischievous children a quick slap is the best way to quickly end trouble.	**1**	**2**	**3**	**4**	**5**
It is all right for a partner to slap the other's face if insulted or ridiculed.	**1**	**2**	**3**	**4**	**5**
Capital punishment is often necessary.	**1**	**2**	**3**	**4**	**5**
A violent revolution can be perfectly right.	**1**	**2**	**3**	**4**	**5**

APPENDIX E CONTINUED

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
A parent hitting a child when he/she does something bad on purpose teaches the child a good lesson.	**1**	**2**	**3**	**4**	**5**
A child's habitual disobedience should be punished physically.	**1**	**2**	**3**	**4**	**5**
It is all right for a partner to slap the other's face if challenged.	**1**	**2**	**3**	**4**	**5**
Partners should work things out together even if it takes violence	**1**	**2**	**3**	**4**	**5**
The male should not allow the female the same amount of freedom as he has.	**1**	**2**	**3**	**4**	**5**
An adult should beat a child with a strap or stick for being expelled.	**1**	**2**	**3**	**4**	**5**
Young children who refuse to obey should be whipped.	**1**	**2**	**3**	**4**	**5**
It is all right for a partner to choke the other if they hit a child.	**1**	**2**	**3**	**4**	**5**
Spying on our nation should be severely dealt with.	**1**	**2**	**3**	**4**	**5**
It is all right to coerce one's partner into having sex when they are not willing by forcing them.	**1**	**2**	**3**	**4**	**5**
University police should shoot students if they are demonstrating.	**1**	**2**	**3**	**4**	**5**
Every nation should have a war industry.	**1**	**2**	**3**	**4**	**5**

APPENDIX E CONTINUED

	Strongly Disagree	Disagree	Neither Agree or Disagree	Agree	Strongly Agree
An adult should choke a child for breaking the law.	**1**	**2**	**3**	**4**	**5**
It is all right for a partner to shoot the other if they flirt with others.	**1**	**2**	**3**	**4**	**5**
A teacher hitting a child when he/she does something bad on purpose teaches the child a good lesson.	**1**	**2**	**3**	**4**	**5**
War in self-defense is perfectly all right.	**1**	**2**	**3**	**4**	**5**
The partner is the appropriate one to take out the frustrations of the day on.	**1**	**2**	**3**	**4**	**5**
It is all right for a partner to shoot the other if they are unfaithful	**1**	**2**	**3**	**4**	**5**
A law enforcement officer should shoot a citizen if they are a murder suspect.	**1**	**2**	**3**	**4**	**5**
University police should beat students if they are obscene.	**1**	**2**	**3**	**4**	**5**
War can be just.	**1**	**2**	**3**	**4**	**5**
It is all right to coerce one's partner into having sex when they are not willing by giving the other alcohol or drugs.	**1**	**2**	**3**	**4**	**5**
The dominant partner should keep control by using violence.	**1**	**2**	**3**	**4**	**5**

APPENDIX F

DISSIPATION-RUMINATION SCALE

Using the following scale, indicate the response which reflects your first reaction to each statement by marking an appropriate number before each item. Please do not leave out any item and be spontaneous and accurate as much as possible within the limits of choices offered below:

	Completely False For Me	**Fairly False For Me**	**False To A Certain Extent**	**True To A Certain Extent**	**Fairly True For Me**	**Completely True For Me**
I never help those who do me wrong.	**0**	**1**	**2**	**3**	**4**	**5**
I will always remember the injustices I have suffered.	**0**	**1**	**2**	**3**	**4**	**5**
The more time that passes, the more satisfaction I get from revenge.	**0**	**1**	**2**	**3**	**4**	**5**
It is easy for me to establish good relationships with people.	**0**	**1**	**2**	**3**	**4**	**5**
It takes many years for me to get rid of a grudge.	**0**	**1**	**2**	**3**	**4**	**5**
When somebody offends me, sooner or later I retaliate.	**0**	**1**	**2**	**3**	**4**	**5**
I do not forgive easily once I am offended.	**0**	**1**	**2**	**3**	**4**	**5**
I often bite my fingernails.	**0**	**1**	**2**	**3**	**4**	**5**
I won’t accept excuses for certain offenses.	**0**	**1**	**2**	**3**	**4**	**5**

APPENDIX F CONTINUED

	Completely False For Me	Fairly False For Me	False To A Certain Extent	True To A Certain Extent	Fairly True For Me	Completely True For Me
I hold a grudge, for a very long time, towards people who have offended me.	**0**	**1**	**2**	**3**	**4**	**5**
I remain aloof towards people who annoy me. in spite of any excuses.	**0**	**1**	**2**	**3**	**4**	**5**
I can remember very well the last time I was insulted.	**0**	**1**	**2**	**3**	**4**	**5**
I am not upset by criticism.	**0**	**1**	**2**	**3**	**4**	**5**
I enjoy people who like jokes.	**0**	**1**	**2**	**3**	**4**	**5**
I still remember the offenses I have suffered, even after many years.	**0**	**1**	**2**	**3**	**4**	**5**
If somebody harms me, I am not at peace until I can retaliate.	**0**	**1**	**2**	**3**	**4**	**5**
When I am outraged, the more I think about it, the angrier I feel.	**0**	**1**	**2**	**3**	**4**	**5**
I like people who are free. [1]	**0**	**1**	**2**	**3**	**4**	**5**
I am often sulky.	**0**	**1**	**2**	**3**	**4**	**5**
Sometimes I can’t sleep because of a wrong done to me.	**0**	**1**	**2**	**3**	**4**	**5**

APPENDIX G

NATIONAL YOUTH SURVEY

This questionnaire contains a number of questions about your behavior in the last year. Please answer all of the questions as accurately as you can. All the information you provide is totally confidential and will not be shown to anyone else. So you do not need to try to look good or bad.

For each question, indicate how often you did the described behavior in the last year by circling your best estimate.

	0	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28+
Purposely damaged or destroyed property belonging to your parents or other family members.	A	B	C	D	E	F	G	H	I	J	K
Purposely damaged or destroyed property belonging to a school.	A	B	C	D	E	F	G	H	I	J	K
Purposely damaged or destroyed other property that did not belong to you (not counting family or school property).	A	B	C	D	E	F	G	H	I	J	K
Stolen (or tried to steal) a motor vehicle, such as a car or motorcycle.	A	B	C	D	E	F	G	H	I	J	K
Stolen (or tried to steal) something worth more than $50.00.	A	B	C	D	E	F	G	H	I	J	K
Knowingly bought, sold, or held stolen goods (or tried to do any of these things).	A	B	C	D	E	F	G	H	I	J	K
Thrown objects (such as rocks or bottles) at cars or people.	A	B	C	D	E	F	G	H	I	J	K
Run away from home.	A	B	C	D	E	F	G	H	I	J	K
Lied about your age to gain entrance or to purchase something; for example, lying about your age to buy liquor or get into a movie.	A	B	C	D	E	F	G	H	I	J	K

APPENDIX G CONTINUED

	0	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28+
Carried a hidden weapon other than a plain pocket-knife.	A	B	C	D	E	F	G	H	I	J	K
Stolen (or tried to steal) things worth $5 or less.	A	B	C	D	E	F	G	H	I	J	K
Attacked someone with the idea of seriously hurting or killing him/her.	A	B	C	D	E	F	G	H	I	J	K
Been paid for having sexual relations with someone.	A	B	C	D	E	F	G	H	I	J	K
Been involved in gang fights.	A	B	C	D	E	F	G	H	I	J	K
Sold marijuana or hashish (“pot” “grass” “hash).	A	B	C	D	E	F	G	H	I	J	K
Cheated on school tests.	A	B	C	D	E	F	G	H	I	J	K
Hitchhiked where it was illegal to do so.	A	B	C	D	E	F	G	H	I	J	K
Stolen money or other things from your parents or other members of your family.	A	B	C	D	E	F	G	H	I	J	K
Hit (or threatened to hit) a teacher or adult at school.	A	B	C	D	E	F	G	H	I	J	K
Hit (or threatened to hit) one of your parents.	A	B	C	D	E	F	G	H	I	J	K
Hit (or threatened to hit) other students.	A	B	C	D	E	F	G	H	I	J	K
Been loud, rowdy, or unruly in a public place (disorderly conduct).	A	B	C	D	E	F	G	H	I	J	K
Sold hard drugs, such as heroin, cocaine, and LSD.	A	B	C	D	E	F	G	H	I	J	K
Taken a vehicle for a ride (drive) without the owner’s permission.	A	B	C	D	E	F	G	H	I	J	K

APPENDIX G CONTINUED

	0	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28+
Had (or tried to have) sexual relations with someone against their will.	A	B	C	D	E	F	G	H	I	J	K
Used force (strong-arm methods) to get money or things from other students.	A	B	C	D	E	F	G	H	I	J	K
Used force (strong-arm methods) to get money or things from a teacher or other adult at school.	A	B	C	D	E	F	G	H	I	J	K
Used force (strong-arm methods) to get money or things from other people (not students or teachers).	A	B	C	D	E	F	G	H	I	J	K
Avoided paying for such things as movies, bus or subway rides, and food.	A	B	C	D	E	F	G	H	I	J	K
Been drunk in a public place.	A	B	C	D	E	F	G	H	I	J	K
Stolen (or tried to steal) things worth between $5 and $50.	A	B	C	D	E	F	G	H	I	J	K
Stolen (or tried to steal) something at school, such as someone's coat.	A	B	C	D	E	F	G	H	I	J	K
Broken into a building or vehicle (or tried to break in) to steal something or just to look around.	A	B	C	D	E	F	G	H	I	J	K
Begged for money or things from strangers.	A	B	C	D	E	F	G	H	I	J	K
Skipped classes without an excuse.	A	B	C	D	E	F	G	H	I	J	K
Failed to return extra change that a cashier gave you by mistake.	A	B	C	D	E	F	G	H	I	J	K
Been suspended from school.	A	B	C	D	E	F	G	H	I	J	K
Made obscene telephone calls, such as calling someone and saying dirty things.	A	B	C	D	E	F	G	H	I	J	K

APPENDIX G CONTINUED

	0	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28+
Used alcoholic beverages (beer, wine, and hard liqueur).	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Used marijuana-hashish (grass, pot, hash).	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Used hallucinogens (LSD, Mescaline, Peyote, Acid)	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Used amphetamines (uppers, speed, whites)	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Used barbiturates (downers, reds)	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Used heroin (horse, smack)	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Used cocaine (coke)	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**