Different PEGI age labels and their effect on aggressive affect, aggressive cognition and arousal

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Abstract

This study investigated the effects of three different Pan European Game Information (PEGI) age labels on aggression. These three different age labels, 3+, 12+ and 18+, were a reflection of three different degrees of violence. Based on the General Aggression Model (GAM), aggressive affect, aggressive cognition and arousal were measured by means of an experiment. The results show that aggressive affect increased after playing 18+ labeled video games, which was in line with the GAM. Aggressive cognition decreased after playing 18+ labeled video games, which contradicted the GAM. For arousal, no effect was found. However, the arousal measurement turned out not to be a valid reflection of arousal in the GAM. Since no comparison between PEGI and other video game content rating systems has taken place and since there is uncertainty about the effect of violent video games on aggressive behavior in general, it is not possible to draw any conclusions about the academic value of PEGI.

Introduction

The video game industry is a large industry, and growing. Having its origins in the 70s, video games at that time were very primitive compared to current standards. Hand in hand with technological innovations since that period, video games have become more and more realistic. Realism in video games can manifest itself in different ways: graphical improvement is an important one. In the beginning, video games were nothing more than a number of geometrical shapes, nowadays they are a clear resemblance of the real world. Another way of growing realism is in the details. For example, a moving mouth when the character of the player is spoken to by another character, a hit in the limb which does not result in a direct kill compared to a headshot in a shooter game, or a player's character who dies by falling from a great height in a platform game instead of the staying away of this physical injury after such a fall. A third way in which realism can manifest itself is the controls. Traditionally, console games were played by a controller with buttons on it. These buttons were mainly meant for movement and action, but in the middle of the 90s the movement buttons were largely replaced by analogue sticks to enable the character to move in more specific directions. In 2006, Nintendo introduced a revolutionary motion control system: for example sports games could now be played imitating movements which are necessary when practising that specific sport for real. Video games getting more realistic and the video game market being adjusted from games for children to all kinds of target groups, people spend more time playing them, and more money buying them. Their status have reached that of the cultural mainstream nowadays, like movies or books. In 2008, 12,61 million consoles, console games and PC games were sold in the Netherlands, grossing €654 million (Nationaal Gaming Onderzoek 2008, GfK Retail and Technology Benelux B.V.).

Increasing realism in video games means more realistic violence too. Realistic violence in video games and the growing number of people playing violent video games is a reason for raised concern about the negative consequences for the player when being exposed to this virtual realism. Since the number of sales of video games increased, the body of research about the relation between violence in video games and aggression in real life increased as well: especially after the Columbine High School Massacre this alleged relation turned in an hot-debated issue, because the shooters were highly immersed in games like Doom and Wolfenstein 3D.

The 'Pan European Game Information' rating system

As a result of the growing concern about the possible negative consequences of violent video games, national rating systems came into existence and in 2003 most of them in Europe merged into the "Pan European Game Information" (PEGI). The goal of PEGI is to assist European parents with making thoughtful decisons when buying video games for their children. Age logos and content descriptors are used to clarify what the content of the game is. On the front side of the game box an age logo can be found which means that a game is only suitable from that age. The different age logos are 3+, 7+, 12+, 16+ and 18+ (see Figure 1). On the back side of the game box content descriptors are found: these pictograms show whether there might be some objectionable content in it. The different content descriptors are the following: bad language, discrimination, drugs, fear, gambling, sex and violence. These content descriptors are the main reason why a certain age label is given to a game.

The first step of the realization of the rating is the completion of an online form by the publisher of the game. On the form, the publisher is asked to reveal aspects of the content of the game: the possible presence of objectionable content based on the content descriptors is taken into account. Based on this information, a provisional age rating is given to the game, together with the content descriptors to explain why that age rating is given to the game. The next step in the process is reconsidering this provisional rating, which is done by the Netherlands Institute for Classification of Audiovisual Media (NICAM, for games rated 3+ and 7+) or the Video Standards Council (VSC, for games rated 12+, 16+ and 18+). After granting the game a final rating, the publisher is allowed to use the age rating logo and the content descriptors for the game.

Fig. 1 The PEGI age labels and content descriptors

A study released by the the developer of PEGI, the Interactive Software Federation of Europe (ISFE), which was held in 2008 among 6000 video game players from 25 countries aged between 16 and 49, showed that 62% of the consumers are aware of the European game rating system: this percentage drops to 32% when the name 'PEGI' is mentioned. However, this number is growing year by year. 93% of the participants recognized the age rating labels and 49% of the parents considered the age rating labels as useful when buying a game, compared to 35% of the whole population researched. Opposed to the 93% familiarity with the age labels, only 50% recognized the content descriptors. Only 24% found these content descriptors useful. For parents, the percentage of familiarity is lower: 43%. However, 34% of the parents consider these content descriptors as useful.

The usefulness percentages are studied by Nikken, Jansz & Schouwstra (2007) as well, who concluded that the majority of Dutch parents found it necessary to have ratings. They also found that a number of content descriptors were ambigious: opposed to the ones for 'bad language' and 'alcohol', the ones for violence, fear and nudity were perceived differently. Building on that, an important finding was that parents wanted to be warned about the degree of 'gore and gross' in a game: according to them explicit sexual acts and horrific, realistic violence is in the same category of gore and gross, as opposed to non-sexual nudity and mild fantasy violence. Thus, the severity of certain content is more important than the type of

content. Since the content descriptors show the type of content of a game, this distinction can not be captured in the current system. The suggestion of these researchers to alter the current system of content descriptors with the goal to put more emphasis on the severity of a certain content instead of merely showing what kind of content there is in the game, could strengthen the so-called 'forbidden fruit effect': The presence of age labels and content descriptors are making the video games more attractive (Funk, Flores, Buchman & Germann, 1999; Bijvank, Konijn, Bushman & Roelofsma, 2009).

The effect of violent video games on aggression

Despite the fact that society deems it necessary to have a rating system with the goal to protect children from harmful content, the scientific community has not reached a consensus concerning the negative effects of violent video games. Research of violent video games and its effect on aggression has yielded mixed results. A number of meta-analyses and literature reviews have been conducted, which also came to different conclusions. An early literature review suggests that violent video games increases aggressive behavior, but that more research is needed (Dill & Dill, 1998). Another literature review states that all video game research have methodological impairments and only measures short term aggression (Griffiths, 1999). Two meta analyses concluded that violent video games resulted in aggressive behavior (Anderson & Bushman, 2001; Anderson, 2003), while other ones did not find this effect (Sherry, 2001; Sherry, 2007). Ferguson (2007) attempts to stress the finding that there is a so-called 'publication bias' ongoing: studies which have found an effect are more likely to be published than studies which have not found any effect. Including non-published studies in his meta-analysis have led to the conclusion that there is no effect of violent-video games on aggression. A literature review by Anderson and Carnagey (2004) has the same conclusions as Anderson's meta-analyses: violent video games cause aggressive cognition, aggressive affect, aggressive behavior and a decrease in prosocial behavior.

Besides the lack of consensus about the negative effects of violent video games there is also a discussion about the effectiveness of different types of research conducted. Some researchers say that both correlational and experimental studies show that violent video games cause aggression (Anderson & Bushman, 2001; Anderson, 2003; Anderson & Carnagey, 2004), while others stress that correlations found does not mean there is a causal relationship (Funk et al, 1999; Goldstein, 2005). Griffiths (1999) stated that the only solid finding that violent

videogames cause aggressive behavior is in observational studies of very young children, but it is admitted that the type of methodology could contribute to the effect.

Most researchers acknowledge the lack of longitudinal research in the field of negative effects of violent video games. As a response to that, a one-month lengthy study was undertaken to investigate the effects of playing a violent "massively multiplayer online role playing game" (MMORPG) on aggression, but it turned out that playing such a game did not lead to real-world aggression (Williams & Skoric, 2005).

Another point of discussion is the external validity of experimental violent videogame research. Anderson & Bushman (1997) showed in a meta analysis, in which media violence was one of the situational variables, that there was a solid external validity from laboratory experiment aggression to real world aggression. More specifically to the negative effects of violent video games, this external validity was mentioned again in the literature review of Anderson and Carnagey (2004). On the other hand, it is suggested that most laboratory experiments are based on solo-play, while video game playing in the natural setting is a highly social experience (Sherry & Lucas, 2003). On top of that, it is stated that in laboratory settings the concept of 'play' is violated: obliging a subject to play a video game for a short time is not 'playing' (Goldstein, 2005), because 'playing' is a voluntary, self-directed activity (Garvey, 1991).

On top of these areas of discussion a number of further disputes can be mentioned, like the sample size to use, the differences between violent and nonviolent content, the way in which aggression is measured, and the magnitude of the effects of violent video games (Anderson & Carnagey, 2004).

Underlying mechanisms

It is important to understand the psychological effects that underlie the possible negative effects of violent video games on aggressive behavior. The most frequently cited mechanism is social learning theory (e.g., Bandura, 1971). This theory assumes that learning occurs by means of observation and imitation. Specifically for violent video games, it is argued that learning takes place by observation and imitation of attractive models which are rewarded. To illustrate this, a protagonist of a violent video game is supposed to use violence to make progress. In this way, the use of violence is rewarded and it can be imitated by the player to solve real-world conflicts. This unintentional learning is strengthened when attention during

game play is high and when identification with the protagonist is strong, according to proponents of this theory (Sherry, 2001).

Another explanation for negative effects of violent video games is arousal and excitation transfer. Arousal and valence are two dimensions of emotion. Arousal can be explained as the intensity of the experience: it ranges, for example, from feeling energized or alert, to calm and sleepy. As arousal is the intensity of an experience, valence is about the attractiveness or aversiveness of the experience (Reeves & Nass, 1996). For example, when one is playing and enjoying a violent video game, arousal is probably high and valence is positive. When somebody is watching but is heavily disgusted by what he or she is seeing on the screen, arousal is high as well but valence is negative. The idea of excitation transfer (Zillman, 1971) is that heightened arousal influences or increases subsequent emotions. When one is playing a violent video game and is having an argument with another person, his or her reaction can be more severe because of the tranfer of the arousal which was a result of playing the game.

A third explanation is the neo-associative networks or priming effects mechanism. This theory states that when a person is repeatedly exposed to violent media, this can lead to increased aggression or hostility because semantically connected informational nodes are triggered as a result of the exposure (Berkowitz & Rogers, 1986). When one is playing a violent video game, aggressive cognitions and associated affect are triggered. The likelihood of aggressive responses in the real world is increased when the exposure is repeated often, because these triggered cognitions and affect then become chronically accessible (Dill & Dill, 1998).

It is also possible that a person can become desensitized. This is closely related to prosocial behavior: desensitization means that repeated exposure to violent video games leads to decreased levels of arousal. Because of this decline of arousal, the possibility exists that one will act less prosocially. This is confirmed by Anderson (2003).

A different explanation of the effect of violent video games is catharsis: it is assumed that violence in video games have actually a positive effect on users. It states that video games with violent content can be a safe outlet for aggressive thoughts and feelings (Calvert & Tan, 1994). In this way, playing violent video games offers opportunties to act out aggression which is not allowed in the real world (Sherry, 2001).

The General Aggression Model

All the mechanisms described above were merged into an eclectic model, called the General Aggression Model, of which the latest version can be seen in figure 2 (Anderson & Bushman, 2002).

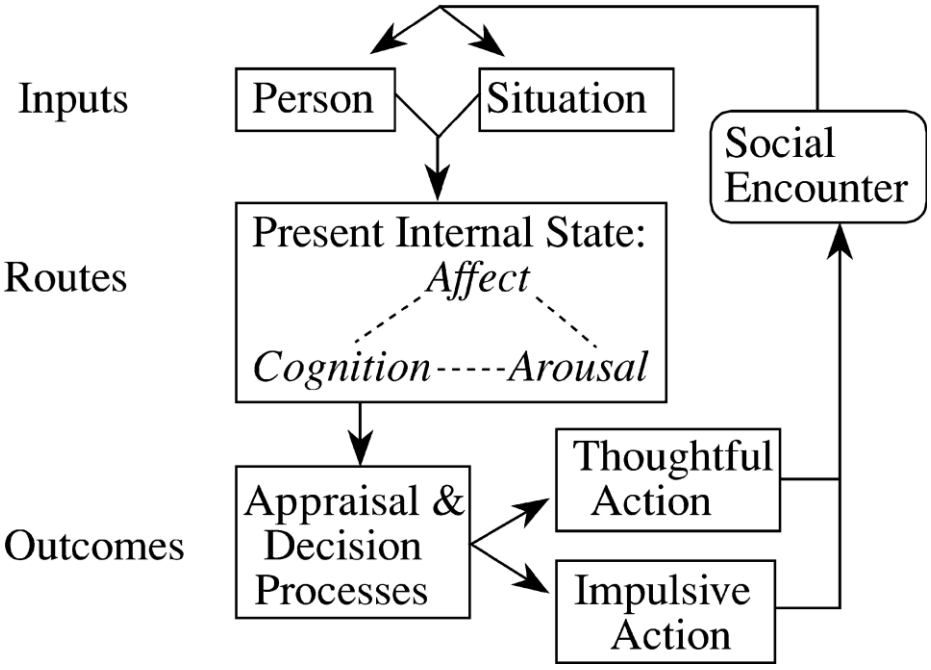

Fig 2. The single episode General Aggression Model

The model consists of three phases, namely inputs, routes and outcomes. The input is twofold: both personal and situational factors matter. The personal input is actually the sum of different knowledge structures, like their schemata, scripts and other structures. As a result of the consistent use of these knowledge structures, a person has some stable factors (factors that remain consistent across time and across situations, or both) like personality traits, attitudes and genetic predispositions. The knowledge structures can tell to what extent a person is prone to aggress (Anderson & Bushman, 2002). The situational input is an actual situation or experience: exposure to a violent video games can be such a situation. Both the personal and situational variables have an effect on the present internal state on three levels: affect, cognition and arousal. Thus, when a person is playing a violent video game his or her present internal state will be influenced, and this has an effect on the way desicions are made: will the

person react thoughtfully or impulsive in an ambigious situation? This behaviour will subsequently influence the next cycle of input, routes and outcome.
Anderson and Bushman (2002) state that when a person is going through a lot of these cycles a player of violent video games will be exposed to a lot of situations in which the use of violence is the best way to act. This leads to aggressive beliefs, attitudes, schematas and scripts, and to increased desensitization. As a result an aggressive personality is developing.
Since there is a great lack of longitudinal studies in the body of literature, this long term effect is merely hypothetical (Anderson & Bushman, 2001).

Hypotheses

Besides the scientific community, PEGI as well has given their position about the negative consequences of violent video games on behaviour. In the frequently asked questions (FAQ) section of the website, the following answer is given on the question whether games have an influence on children:
‘’The research on the impact of videogames has been focused primarily on violence. Numerous studies have been published, but until today there is no evidence that playing violent video games causes any long-term or lasting increase in aggressiveness or violence among players.”
In this answer it is implicitly stated that besides the presence of violence in a video game, there are more types of content which can be harmful for children. The age labels however, which are based on the content descriptors, are largely explained by means of the presence of violence in the game.

With the goal to assist parents to make thoughtful decisions about buying suitable video games for their children, PEGI have given age and content labels to over 11.000 videogames until 2009. The research topic of this study is to examine to what extent these age labels are in accordance with the disputed scientific findings that violent video games lead to aggression. Since a higher age label corresponds with a more realistic and disturbing violence in a video game, the following hypotheses, based on the routes in the GAM, will be tested:

H1: The higher the age label of the game played, the higher the aggressive response is on the affective route.

H2: The higher the age label of the game played, the higher the aggressive response is on the cognitive route.
H3 The higher the age label of the game played, the more aroused the player will be.

These hypotheses will be tested by means of an experiment in which the particpants will play violent video games with different age labels and thus different degrees of violence. The participants will be subjected to a pretest, subsequently they shall play a videogame, and then a posttest is conducted. More specific information about the experiment is described in the methods section.

Method

Participants

In this experiment, 84 subjects participated. 34 of them were male, 50 female. 45 of them were Dutch and 39 were German. All participants were students at the University of Twente, most of them studying social sciences. The average age of the participants was 22.08 (SD= 2,62). In exchange for participation, most of the participants received research credits, while other ones participated voluntarily.

Materials

For this experiment, six games were used: two of them labeled 3+, two of them 12+ and the other two 18+. For each age group, two games were used to increase generalizability. The main reason for choosing these three age categories is that both the ends and the middle of the age label range are represented. The possibility to include all age categories in the study was abandoned due to practical reasons.
The 3+ labeled games used were Shrek 2: Team Action (released in 2004 in the EU) and Lemony Snicket: a Series of Unfortunate Events (2004), both by Activision. On the PEGI website, the explanation for 3+ age label states that games in this category are allowed to have violence in it, but only when it is totally fantasy and the child is not able to connect the in-

game violence with the real world. In Shrek 2: Team Action the player is able to hit not-living objects like bags or stones to obtain items which are useful in the remainder of the game. On top of that semi-living fantasy creatures like giant sole eyes for example, can be hit. In Lemony Snicket: a Series of Unfortunate Events the player must eliminate a group of crabs on a beach with a fantasy bubble shooting weapon, and later a rat in a house with the same weapon.

The 12+ rated games were Prince of Persia: the Sands of Time by Ubisoft (2003) and the Lord of the Rings: the Fellowship of the Ring by Surreal Software (2002). The explanation for 12+ labeled games provided by PEGI is that the violence in the game can be somewhat more realistic against fantasy characters, or less realistic violence but then directed against human-like characters or recognizable animals. In the Lord of the Rings: the Fellowship of the Ring the protagonist has to defeat giant spiders by hitting them with a stick or throwing rocks. In Prince of Persia: the Sands of Time the player has to defeat enemies which are almost human-like, but they are able to dissappear instantly while in combat and reappaer in another spot to resume fighting. A major difference between the 12+ labeled games and the 3+ labeled games is that the enemies are fighting back in the first category: the 12+ games have violent content descriptors, while the 3+ games don't have them.

The 18+ rated games were Severance: Blade of Darkness by Codemasters (2001) and Silent Hill 2: Directors's Cut by Konami (2003). Unfortunately, these games are not PEGI rated. The reason for this is that the PEGI rating system was not yet developed while these games were first released (not necessarily in the EU). The British Board of Film Classification (BBFC), the British national rating system for films and some video games which was used before the full adoption of PEGI, rated Severance: Blade of Darkness with 18+. The American counterpart of PEGI, the Entertainment Software Rating Board (ESRB) rated it 'Mature' (17+). On top of that, a warning has been put on the front of the game box: *'this game features explicit blood, gore and violence. Some people may find this disturbing'*. Silent Hill 2 is rated 15+ by the BBFC, and Mature by the ESRB. This label is explained by stating that the game has violent content and blood and gore in it. Although both these games have no PEGI rating, the explanation given for the 18+ labels suits these games well, because the violence is very severe and can be considered disturbing. In Severance: Blade of Darkness the player has to defeat armed skeletons to make progress, and in Silent Hill 2 the player is attacked by zombies. Both games have in common that body parts of the enemies can be cut of their bodies, which does not necessarily mean that the enemy is defeated. In the event that the enemy is defeated, the possibility exists to keep hitting them.

Besides the gradation of severity of the violent content in each game used, which was the main reason for selecting them, some other features were also considered while selecting the games:

- all games are from a third person view;
- all games contain fantasy violence: there is no or hardly an equivalent of it in the real world;
- all games use fists or short range weapons when the protagonists engage in violent acts;
- all games are released in a time range of three years and thus the graphical realism is similar;
- all games were set on the easiest difficulty level.

It was important to keep other influential aspects as constant as possible among the games, with the goal to let the difference in severity of violence be the only aspect measured.

The experiment was conducted in six small rooms (Cubicles): each game had his own room. In each of the rooms there was a PC with the game installed on it. Headphones were connected to the PCs to enable the participant hearing the sound of the game. The PCs were also used for completing the questionnaires before and after playing the game. Because all cubicles were equipped with a camera, the experimenter was able to watch the participants doing the experiment on a screen outside the cubicles.

Questionnaires

During the experiment, several questionnaires were used which were programmed in Surveymonkey. The first one was a demographic questionnaire, in which nationality, gender and education were assessed, as well as video game preferences and experience. The other questionnaires each belong to one of the three internal states of the GAM: affect, cognition and arousal. To measure affect, the State Hostility Scale (SAS) (Anderson, Deuser & DeNeve, 1995) was administered, both pre- and posttest. The SAS is a 35 item likert scale with items like ‘I feel mad’, ‘I feel like banging on a table’, ‘I feel outraged’ etc. Participants had to rate these statements from 1 (I totally disagree) to 5 (I totally agree). For this experiment, the items were translated in Dutch.

To measure cognition, the Word Pair Rating Task was used (Bushman, 1996). This scale consists of twenty words, of which ten are aggression related words (e.g., murderer, blood, shotgun) while the other ten are aggression unrelated (e.g., animal, movie, bottle) Each possible pair of two words had to be rated to what extent the participant found them related or associated with each other on a seven point likert scale, ranging from 1 (not at all related) to 7 (completely related). Just as the SAS, this test was translated in Dutch. Another similarity with the SAS is that the order of the items presented was different for each participant to prevent any undesired sequence effects.

To measure arousal, the Self-Assessment Manikin (Bradley & Lang, 1994) was used (see figure 3). This scale is a nine point scale which is meant to assess arousal by means of a set of pictures. The most left picture is 'highly aroused', and the most right picture is 'not aroused at all'. The participants had to rate their perceived arousal by marking the picture, or a space between two pictures, which corresponded mostly with their current state.

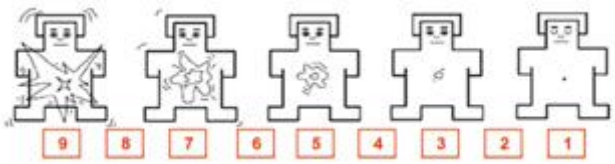

Fig. 3. The arousal scale of the Self-Assessment Manikin

Procedure

The participants were welcomed and brought to one of the six Cubicles randomly. After they were seated, the experimenter explained what the participants could expect during the experiment and handed them an informed consent sheet which they had to read and sign. After that, the demographic questionnaire and State Hostility Scale had to be filled in. When completed, the participant had to warn the experimenter, who then started the game for them at the desired point. The experimenter also showed the participants what the basic controls of the game were, and this was also presented to them on a sheet of paper. They had to play the game for fifteen minutes. After that, the participants were required to fill in the paper-and-pencil SAM scale. When the SAM scale was completed, the State Hostility Scale had to be filled in again and after that the Word Pair Ratings Task. Finally, some questions were asked about how the participants experienced the experiment. When they were finished, the subjects were thanked by the experimenter.

Results

Aggressive Affect

The State Hostility Scale, which was administered both pre- (α =.83**)** and posttest (α = .82), was analyzed using a GLM repeated measures. It turned out that there was a significant difference between the three conditions: $F(2,83) = 8.28$, $p < .001$. This effect can be seen in the figure below:

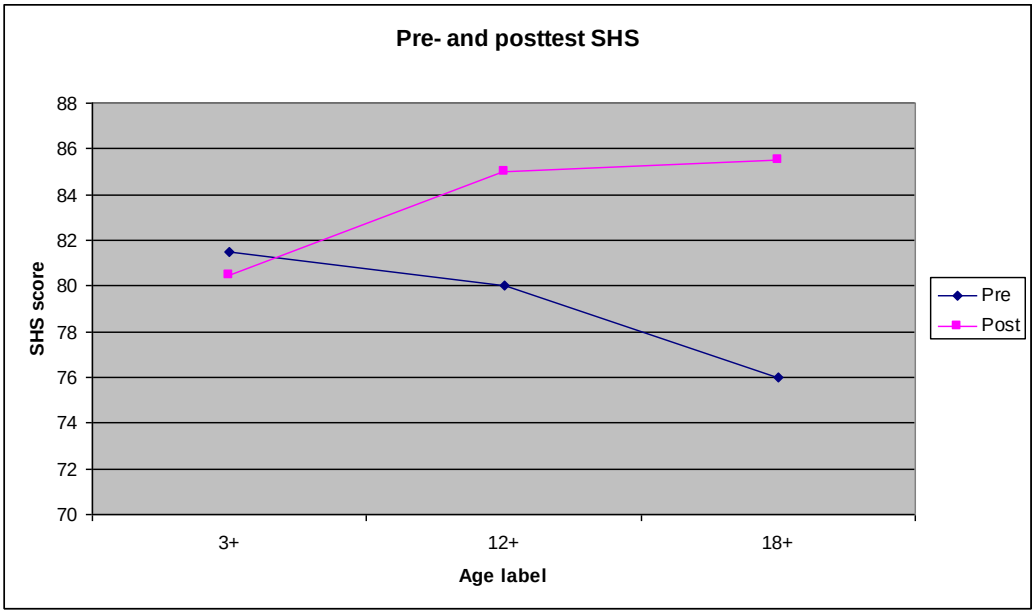

Fig. 4. Pre- and Post SHS scores for each of the conditions

The blue line reflects the pre-test scores, the pink one the post-test scores. The x-axis shows the three age labels, while the y-axis shows the score on the SHS. Besides the significant main effect, it can be seen that the higher the age label of the games, the bigger the difference is between the pretest and the posttest measurement. The blue line also shows that the pretest scores were not randomly distributed among the conditions.

Aggressive Cognition

Concerning the word pair rating task, there were 190 pairings. 45 of them were Aggressive - Aggressive, 45 Ambiguous - Ambiguous, and the other 100 Aggressive - Ambiguous. Using ANOVA, it turned out that between the three age conditions there was a significant difference on the Aggressive - Ambiguous dimension $F(2,83) = 3{,}313$, $p = < .05$. More specifically, it was found that the 18+ condition scored significanly lower on this dimension compared to the 12+ and the 3+ conditions. The average score for 18+ was 2,90, for 12+ it was 3,39 and for 3+ it was 3,38. The figure below shows the results of the Aggressive - Ambiguous dimension: on the x-axis the age labels are represented and on the y-axis the mean scores of the Aggressive - Ambiguous word pairs.

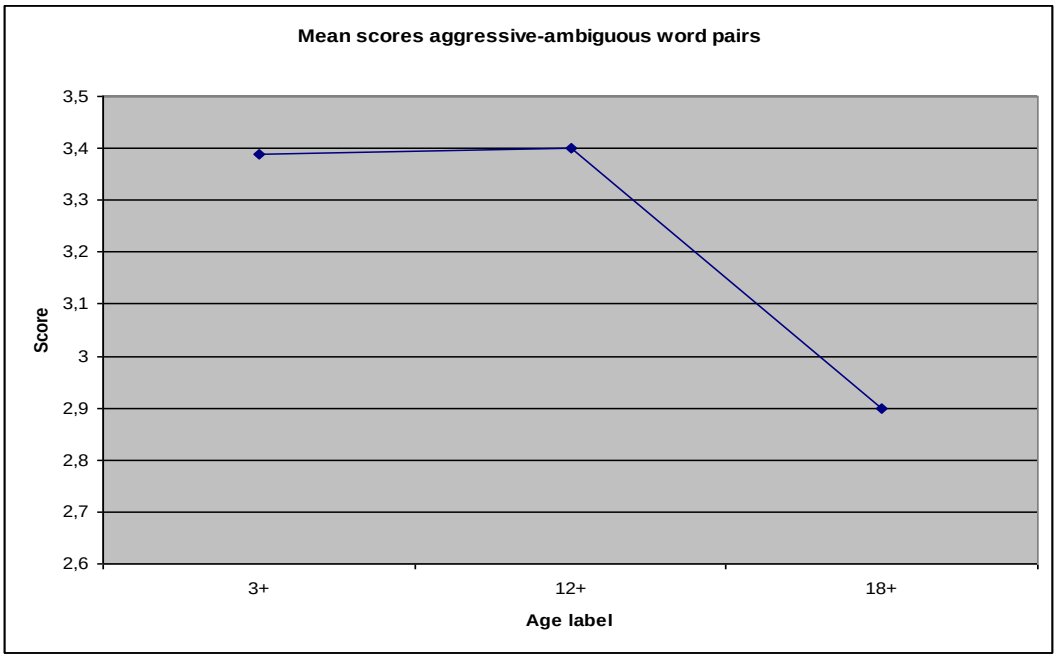

Fig 5. Mean scores on the Aggressive – Ambiguous dimension for each of the conditions.

Arousal

The SAM measurements yielded no significant effect on arousal after playing the game. This was also the case when examining the three conditions separately.

On top the of the analyses described above, the interaction effect between gaming experience and affect, cognition and arousal was examined. No significant effects were found.

Conclusion and Discussion

Aggressive Affect

Concerning the State Hostility Scale, It appeared that a significant difference was found between the pretest scores and the posstest scores. The higher the age category, the stronger the effect. It can thus be seen that playing a game in a higher age category leads to more aggressive answers. The first hypothesis is thus supported.

Aggressive cognition

The word pair rating task yielded a quite unexpected result: It appeared that the 18+ category scores significantly lower on the Ambiguous – Aggressive dimension than the 12+ and 3+ condition. This is exactly the opposite effect of the second hypothesis, which stated that playing a game in a higher age category would lead to a higher score on this dimension. A possible explanation for this effect could be the catharsis theory: the 18+ games actually have a positive effect on players in such a way that they are an outlet for aggression. In other words, playing them has the consequence that there is a decrease in aggression.

Arousal

There was no significant difference in reported arousal between the three conditions. A reason for this can be that the way of measuring arousal was different than the way arousal was measured in the studies described in the introduction. The SAM is a tool to self-report arousal, while the other studies measured physiological arousal. Due to practical reasons, it was not possible to measure physiological arousal in this study.
On top of this, it was seen that there was no correlation between the arousal scores on the one side and the affect and cognition scores on the other side, while there was a small correlation between the affect and the cognition scores: r (84) =.28, $p < .05$. Because of this, it can be stated that the arousal measurement in the current study is not a valid reflection of arousal in the GAM and therefore no concluding remarks can be made of it in relation to the model.

Weaknesses and directions for further research

The General Aggression Model states that violent video game players are influenced by three routes: affective, cognitive and arousal. This study only found support for the affective route, while for the cognitive route a possible catharsis effect was found. This is remarkable, since catharsis is considered to be an unlikely explanation of media effects (Gunter, 1994). In recent violent video game research, no studies can be reported which found a catharsis effect. Because of this, it is very hard to draw conclusions about why such an effect was found on cognition, while on affect the expected result was found.

The results can question the support of the GAM and its underlying mechanisms as a solid predictor of the effects of playing violent video games. It could also be possible that there are several weaknesses in the study which account for the lack of support for the hypotheses. One of these weaknesses is the choice of conducting a laboratory experiment: as described in the introduction, the external validity of these kinds of experiments is disputed, the concept of 'play' is violated, and gaming as a highly social activity is altered into a solo-play session. On top of that, the selection of participants is an important issue. Since the main goal of PEGI is assisting parents in protecting children for violent content, the ideal experiment would be using children in the experiment. Mainly for ethical reasons, this is not a possibility. The next best option would be to select participants based on gaming experience so that the lack of this would not be an unwanted, interfering variable. Unfortunately, a majority of the participants had no gaming experience. However, the results show that there was no interaction effect between gaming experience and the three different internal states.

The goal of this study was to examine the relationship between playing violent videogames with different age labels, which are the result of different degrees of violence, and the aggressive response on playing them. The emergence of video game content rating systems like PEGI are the result of growing concern about the negative consequences of violent video games, while the core of the violent video games research is very similar, if not the same, as this concern: the effect of violent video games on behavior. From this point of view, it is quite remarkable that this is the first study which attempts to establish a connection between the academic and the societal response of this growing concern. However, the connection between these two responses is not so straight-forward as one might think. Quite paradoxically, the position of PEGI about the relationship between violent video games and aggressive behavior is that this is not proven (in any case not on the long term). One could then ask if there is no such a relationship, why use a rating system at all? A possible answer

on this question is that the origins of rating systems are subject of moral values, not academic findings (Valkenburg, Beentjes, Nikken & Tan, 2002; Olsberg, 2003). To illustrate this, a study comparing the classification of 426 video games between PEGI and ESRB found that the ESRB rated these games 1,35 years higher than PEGI, and the ESRB gave 1,34 content descriptors to each game on average, compared to 0,8 to each game by PEGI (Franken, 2008). Another answer could be that PEGI also uses other content descriptors besides aggression, as can be seen in figure 1, which do not get the same amount of attention in the video game research. An important question is whether it is desirable that moral values are such an important factor in the classification process.

This study could be criticized for the rather artificial role PEGI has in it: basically it is a study examining the influence of several degrees of violence, and these degrees are covered by different age labels. A suggestion for further research would be to expand on the current study and compare PEGI with other video game content rating systems to find out whether there is a difference in aggressive response within a certain age label depending on which content rating system has given this age label to the game. In this way, valuable conclusions can be drawed about the functioning of PEGI and other rating sytems. This study is not able to provide these kinds of conclusions, but this is also due to the fact that there is uncertainty about the (negative) effects of violent video games on aggression in general. Perhaps it is the case that this uncertainty must become a certainty in the first place, to find out what the academic values of PEGI and other rating systems are.

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