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The ethics of mayhem: A cognitive bias in computer games!- act 2

Abstract

Assuming that violent computer games influence gamers' moral reasoning is still a controversial assumption. The reason for this claim is quite simple: previous studies acknowledge paradoxical outcomes due to their nature (traditionally quantitative vs. qualitative studies) and analytical aims. This manuscript sheds some light over Polish gamers' retort regarding potential mayhem engagement (emotional bond to aggressive conduct) and cognitive bias feedback loops (reason for social behaviour and decision making). For that, the respondents answered a web questionnaire during March 2011 which acknowledged interesting qualitative empirical results. Likewise, the paper is divided into six key components: games (concept, analytical dimensions and philology); moral decision making (moral reasoning and moral intelligence); research problem (aims and objectives and methodology); questionnaire layout (design, types of queries and limitations); empirical findings (section 1, section 2 and section 3); and, discussion.

Introduction

Computer games acknowledge dissimilar philology due to their several features, as for instance: scenarios, game mechanisms or groups of recipients (gamers)¹, as well as, resume cultural and social elements². Besides, some game creators are legendary for their boldness and it repeatedly occurs that their products stir up debates pertaining to racism, drug abuse, violence, cruelty, rape and mayhem engagement (e.g. *Grand Theft Auto*)³. As a result, regions like US, Japan or European Union have produced legislation concerning computer game market, despite abundant cases of moral ambiguities (interest groups actions)⁴.

It is between these ambiguities that literature has been investigating the psychological and social outcomes of playing violent games⁵, namely mayhem engagement (emotional connotation to hostility)⁶ and cognitive bias (cause upon social behaviour and decision making)⁷. However, studies acknowledge paradoxical results regarding computers games violence⁸, addiction⁹, or violent engagement¹⁰.

Hitherto, literature seems to neglect if violent computer games negatively persuade gamers' moral reasoning, despite the vast work concerning moral development¹¹, or even moral competence¹². This manuscript (act 2) aims to highlight Polish gamers' retort regarding potential mayhem engagement and cognitive bias feedback, while acts 1 and 3 illustrate

¹ J. Kücklich, Perspectives of computer game philology, "The International Journal of Computer Game Research", 2003, no. 3, vol. 1, <http://gamestudies.org/0301/kucklich/>, 01.06.2011.

² M. Filiciak, *Wirtualny plac zabaw. Gry sieciowe i przemiany kultury współczesnej*, "Broszurowa", Warszawa 2006 (in Polish).

³ L. Kutner, K. C. Olson, *Grand Theft childhood: The surprising truth about violent video games and what parents can do*, "Simon & Schuster", New York 2008, NY.

⁴ H. Jenkins, *Convergence culture. Where old and new media collide*, "New York University Press", New York 2006, NY.

⁵ K. Sanford, L. Madill, I'm a warrior, I'm a monster- Who am I anyway? Shifting/shaping identity through video game play, "Loading", no. 1, vol. 1, <http://journals.sfu.ca/loading/index.php/loading/article/view/18/18>, 01.06.2011.

⁶ D. Gotterbarn, The ethics of video games: Mayhem, death, and the training of the next generation, [in:] ETHICOMP 2008: Living, working and learning beyond technology, eds. T. W. Bynum, M. Calzarossa, I. Lotto, S. Rogerson, "University of Pavia", Mantua 2008, p. 322-333.

⁷ S. J. Kirsh, P. V. Olczak, J. R. W. Mounts, Violent video games induces an affect processing bias, "Media Psychology", 2005, no. 7, vol. 3, p. 239-250.

⁸ K. Durkin, B. Barber, Not so doomed: Computer game play and positive adolescent development, "Journal of Applied Developmental Psychology", 2002, no. 23, vol. 4, p. 373-392.

⁹ R. Cover, Gaming (ad)diction: Discourse identity, time and play in the production of the gamer addiction myth, "Game Studies- The International Journal of Computer Game Research", 2006, no. 6, vol. 1, <http://gamestudies.org/0601/articles/cover>, 01.06.2011.

¹⁰ E. T. Vieira, M. Krcman, The influences of video gaming on US children's moral reasoning about violence, "Journal of Children and Media", 2011, no. 5, vol. 2, p. 113-131.

¹¹ S. J. Reynolds, T. L. Ceranic, On the causes and conditions of moral behaviour: Why is this all we known, [in:] Psychological perspectives on ethical behaviour and decision making, ed. D. De Cremer, "Information Age Publishing Inc", Charlotte 2009, NC, p. 17-34.

¹² O. Podolskiy, *Moral competence of contemporary adolescents: Technology-based ways of measurement*, Unpublished PhD Dissertation, "Albert-Ludwigs-Universität Freiburg", Breisgau 2008.

Portuguese empirical evidences and both countries cross-cultural comparison respectively. For that, the work of Schonlau, Fricker and Elliott¹³ in conducting web questionnaires (including cross-cultural) will act at some extent as praxis (execution procedures).

Games

Concept

A computer game is basically a game activated by a computer, in which gamers control the items visible on the screen just for fun¹⁴. Although, what it means computer or video games? According to Esposito¹⁵, a videogame resumes an *audiovisual apparatus* with the intention to play, as well as, may involve a story. Or, “a game is a voluntary interactive activity, in which one or more players follow rules that constrain their behaviour, enacting an artificial conflict that ends in a quantifiable outcome”¹⁶.

Philology

Computer games philology reveals a lack of consensus, although following Squire¹⁷ (2003) exist the following game categories:

- casual- entail less complex controls and the game itself which implies popularity and accessibility¹⁸;
- skill- facilitate players’ mental or physical development¹⁹;
- strategy- the designer produces rules and objectives and the players decide about their strategies²⁰;
- simulation- mock-up of an actual or imaginary system²¹;

¹³ M. Schonlau, R. D. Fricker, M. N. Elliot, *Conducting research surveys via e-mail and the web*, “Rand Corporation”, Santa Mónica 2001, CA.

¹⁴ T. Feibel, *Zabójca w dzieciennym pokoju. Przemoc i gry komputerowe*, “Broszurowa”, Warszawa 2006 (in Polish).

¹⁵ N. Esposito, A short and simple definition of what a videogame is, [in:] *Proceedings of DiGRA 2005 Conference*, eds. Z. K. McKeon and W. G. and Swenson, <http://www.digra.org/dl/db/06278.37547.pdf>, 10.06.2011.

¹⁶ E. Zimmerman, Narrative, interactivity, play, and games: Four naughty concepts in need of discipline, http://www.ericzimmerman.com/texts/Four_Concepts.html, 10.06.2011.

¹⁷ K. Squire, Video games in education, <http://simschoolresources.edreform.net/download/278/IJIS.doc>, 10.06.2011.

¹⁸ International Game Developers Association, *Casual games 2006 white paper*, http://www.igda.org/casual/IGDA_CasualGames_Whitepaper_2006.pdf, 10.06.2011.

¹⁹ L. Carswell, D. Benyon, An adventure game approach to multimedia distance education, “Integrating Tech. into C.S.E.”, 1996, no. 6, vol. 96, p. 122-124.

²⁰ R. E. Pedersen, *Game design foundations*, “Wordware Publishing Inc.”, Plano 2003, TX.

²¹ Ibidem

- training- help tutors to uphold participant interest, as well as, it implies a enjoyable and fun training²²;
- educational- games which purpose is an explicit educational goal²³.

Legislation

European and US games legislation embraces two components: rating about age appropriateness; and, content description²⁴²⁵²⁶. Age appropriateness in European and US rating systems acknowledge some differences (table 1), although the bureaucratic process as regards to rating is similar. Content description qualification in both regions refers to the absence of: violence in its different forms (blood, physical contact and aggressive behaviour); sexual themes and nude activities; obscene language; real gambling (use of real cash); promotion or use of drugs, alcohol or tobacco; scary scenes.

Table 1. Rating system differences about age appropriateness

Pan European Game Information	Entertainment Software Rating Board
Age of 3- content suitable for all age groups. Is acceptable comic violence (e.g. Tom & Jerry cartoon), because the gamer do not possess the ability to relate the character with real life situations. It resumes the total absence of content description features	Age of 3- designed for ages of 3 and older, since parents will not find inappropriate content
Age of 7- previous games that include some content description features (e.g. visual/audio scary scenes and partial nudity)	Age of 6- content has to be appropriate for ages 6 and older. Include fantasy violence or frequent use of soft language
Age of 12- content description features include fantasy violence and nudity in a	Age of 10+- it may enclose more fantasy violence, infrequent obscene language and

²² J. J. Kirk, R. Belovics, An intro to online training games, <http://www.learningcircuits.org/2004/apr2004/kirk.htm>, 10.06.2011.

²³ C. Aldrich, *The complete guide to simulations and serious games*, "Pfeiffer", San Francisco 2009, CA.

²⁴ Pan European Game Information, About PEGI- PEGI ok label, <http://www.pegi.info/en/index/id/1382/>, 09.06.2011.

²⁵ Pan European Game Information, About PEGI- What do the labels mean, <http://www.pegi.info/en/index/id/33/>, 09.06.2011.

²⁶ Entertainment Software Rating Board, Game ratings & descriptor guide, http://www.esrb.org/ratings/ratings_guide.jsp, 09.06.2011.

slightly more graphic nature	suggestive scenes
Age of 16- when violence, sexual content is similar to real life context. It may also include bad language and criminal activities	Age of 13- violence, suggestive themes, minimal blood, gaming simulation, and infrequent use of obscene language is possible
Age of 18- adult rating resumes all content description features, as well as, it is compulsory to indicate the reasons for this rating into the game package	Age of 17- it allows extreme violence (including blood), sexual content and obscene language
	Age of 18- it encompasses long scenes of intense violence, sexual content and nudity

Moral decision making

Moral reasoning

Moral decision making is an intricate process as literature recognises²⁷; even so, Jones²⁸ argues that moral reasoning is a blend between moral intensity (MI), and moral sensibility (MS). MI refers to “the extent of issue-related moral imperative in a situation through six constructs”²⁹: degree of consequences (trade-off among positive or negative situations resulting from the moral act); social consensus (extent of social agreement about the ethical validity of an action); probability of effect (action and circumstance potential occurrence); temporal immediacy (timeline involving the action and its consequences); proximity (social, cultural, psychological, or physical intimacy of the moral agent concerning other individuals); concentration of effect (impact against the amount of individuals affected). MS is the individual cognitive process (competence achievement)³⁰, which is highly influenced by the work of cognitive development of Piaget³¹. Consequently, moral competence is “the capacity

²⁷ A. Bennet, D. Bennet, The decision-making process in a complex situation, [in:] Handbook on decision support systems 1- Basic themes, eds. F. Burstein, C. W. Holsapple, “Springer-Verlag”, Leipzig 2008, p. 3-20.

²⁸ T. Jones, Ethical decision making by individuals in organizations: An issue-contingent model, “Academy of Management Review”, 1991, no. 16, vol. 2, p. 366-395.

²⁹ Ibidem, p. 372

³⁰ Ibidem

³¹ J. Piaget, *The moral judgment of the child*, “Free Press”, New York 1965, NY.

to make decisions and judgments which are moral (i.e., based on internal principles) and to act in accordance with such judgments”³².

Moral intelligence

From the above information, Reynolds³³ argument that “stages of moral decision making may not be discrete elements of a formulaic thought process but may actually be interrelated in a very complex way” is clearly reasonable, as well as, it resumes the concept of moral intelligence. Moral intelligence resumes the operational interaction among three levels of moral conduct (action, cognition, spirituality)³⁴, or according to Lennick and Kiel³⁵ is “the mental capacity to determine how universal human principles should be applied to our values, goals and actions”.

Research design

Aims and objectives

The main research question aims to comprehend if violent computer games persuade negatively gamers’ moral reasoning through mayhem engagement and cognitive bias. Thus, the following objectives arise:

- understand which games individuals consider violent;
- reveal which characteristics individuals acknowledge in violent games;
- comprehend the potential relationship among moral reasoning and mayhem engagement by gender and age;
- and, reveal possible impacts of Polish national culture.

Methodology

Research methods

Qualitative research refers to social and cultural phenomena³⁶, so the researcher deals with a little number of cases and several variables. Besides, the researcher’s intuitions and reactions

³² L. Kohlberg, Development of moral character and moral ideology, [in:] Review of child development research- Vol. I, eds. M. L. Hoffman, L. W. Hoffman, “Russel Sage Foundation”, New York 1964, NY, p. 381-431., cit p. 425.

³³ S. J. Reynolds, Moral awareness and ethical predispositions: Investigating the role of individual differences in the recognition of moral issues, “Journal of Applied Psychology”, 2006, no. 91, vol. 1, p. 233-243, cit 241.

³⁴ L. Panã, Artificial intelligence and moral intelligence, “Triple C”, 2006, no. 4, vol. 2, p. 254-264.

³⁵ D. Lennick, F. Kiel, *Moral intelligence: Enhancing business performance & leadership performance*, “Prentice Hall”, Upper Saddle River 2005, NJ, cit 7.

³⁶ K. Gilbert, Introduction: Why we are interested in emotions?, [in:] The emotional nature of qualitative research, ed. K. Gilbert, “CRC Press”, Boca Raton 2001, FL, p. 3-15.

are frequently significant data sources³⁷, because data collection involves it, as well as, the participants in an organic way³⁸ and induces several angles of analysis³⁹. Hence, the qualitative analysis highlights if computer games violence may influence gamers' moral decision making in their cultural environments.

Interpretivism resume a socially constructed reality through consciousness and shared meanings, which influences and is influenced by the context⁴⁰, and the outcome of an interpretive investigation is to understand an event rather than figures and percentages⁴¹. In this case, shared meanings embrace the subjectivity of Polish cultural context, as well as, the interpretation of questionnaires results.

A case study approach⁴² is considered in order to describe Polish gamers behaviour, because it refers an occurrence in real contexts⁴³.

Data collection and analysis

Wood, Griffiths and Eatough⁴⁴ explore the importance of online questionnaires into computer games empirical research, so the authors' option is easily validated. Besides, the questionnaire components (see layout section) allow observing possible contradictory opinions and beliefs (interpretative flexibility)⁴⁵.

Regarding data analysis, multiple choice queries resumed a numerical approach⁴⁶ in spite of the philosophical, cultural and even psychological concern⁴⁷ of this statement. And, ask for agreement queries implied a categorical aggregation through open coding⁴⁸ since the process of meaning making is complex, which was later re-read in order to understand potential connections amongst divergent perspectives.

³⁷ M. D. Myers, *Qualitative research in business & management*, "Sage", London 2009.

³⁸ A. Bryman, E. Bell, *Business research methods*, 2nd ed, "Oxford University Press", New York 2007, NY.

³⁹ J. W. Creswell, *Research design: Qualitative, quantitative and mixed methods approaches*, 2nd ed, "Sage", Thousand Oaks 2003, CA.

⁴⁰ M. D. Myers, Hermeneutics in information systems research, [in:] *Social theory and philosophy for information systems*, eds. J. Mingers, L. P. Wilcocks, "John Wiley & Sons", Chichester 2004, p. 103-128.

⁴¹ G. Walsham, *Interpreting information systems in organizations*, "Wiley", Chichester 2003.

⁴² R. Yin, *Case study research: Design and methods*, 2nd ed, "Sage Publishing", Thousand Oaks 1994, CA.

⁴³ L. Cohen, L. Manion, K. Morrison, *Research methods in education*, "Routledge", New York 2007, NY.

⁴⁴ R. A. Wood, M. D. Griffiths, M. A. Eatough, Online data collection from video game players: Methodological issues, "Cyberpsychology & Behaviour", 2004, no. 7, vol. 5, p. 511-518.

⁴⁵ N. Doherty, C. Combs, J. Loan-Clarke, A re-conceptualization of the interpretative flexibility of information technologies: Redressing the balance between the social and the technical, "European Journal of Information Systems", 2006, no. 15, vol. 6, p. 569-582.

⁴⁶ J. W. Creswell, *Research design: Qualitative, quantitative and mixed methods approaches*, 2nd ed, "Sage", Thousand Oaks 2003, CA.

⁴⁷ M. Alaranta, Combining theory-testing and theory-building analyses of case study data, <http://is2.lse.ac.uk/asp/aspecis/20060059.pdf>, 18.01.2010.

⁴⁸ R. Stake, *The art of case study research*, "Sage", Thousand Oaks 1995, CA.

However, in order to avoid criticism the authors introduce two examples, one for each form of analysis: 33% male vs. 64% female respondents in Polish questionnaires (numerical approach); and, “first scenario was just a game, second scenario was real life” (Q59_PL_M, real life vs. virtual life) (open coding, which combines questionnaire ID_Country_Gender, content analysis).

Questionnaire layout

Design

According to Toepoel, Das and Soest⁴⁹ visual and verbal cues add meaning to a web questionnaire, so the authors have complied with this assumption in order to achieve a higher response rate. In spite of this assumption is vital to shed some light over the questionnaire layout (sections and their questions):

- section 1- aims to recognise the gamers’ profile, namely as regards to gender, age, number of gaming years, daily hours of gaming, potential amusement with violence in computer games, and if these play violent games and how many hours (daily);
- section 2- intends to understand which games are considered violent (list) and their characteristics, as well as, until what extent the gamer agrees with the existing legislation (age categories) for playing violent games;
- section 3- resumes game scenarios versus real life contexts with similar violent circumstances in order to understand if the respondent sustains its moral decision making. Game scenarios “design” highlights some potential cases when playing for example *Postal 2*⁵⁰, or *Grand Theft Auto*⁵¹; and real life contexts “design” considers several daily examples around the world^{52,53}.

Types of queries

After debating the web questionnaire layout, it is vital to understand the relationship among each section and the type of queries. Therefore:

⁴⁹ V. Toepoel, M. Das, A. van Soest, Design of web questionnaires: The effect of layout in rating scales (discussion paper 30-2006), <http://arno.uvt.nl/show.cgi?fid=53906>, 11.06.2011.

⁵⁰ YouTube, GTA IV kill people and dead!!!,

<http://www.youtube.com/watch?v=W9Tos7m37FI&feature=related>, 01.07.2011.

⁵¹ YouTube, Postal23, <http://www.youtube.com/watch?v=X6xtv-xS04s>, 01.07.2011.

⁵² A. Zabjek, Edmonton teen sentenced for string of violent robberies,

<http://www.edmontonjournal.com/news/Edmonton+teen+sentenced+string+violent+robberies/5128020/story.html>, 20.07.2011.

⁵³ P. Hickey, Gun, knife used in violent Victoria Park carjacking, <http://www.perthnow.com.au/news/western-australia/gun-knife-used-in-violent-victoria-park-carjacking/story-e6frg13u-1226088638291>, 07.07.2011.

- section 1 and 2- encompass multiple choice queries, because the respondent has to reflect upon his profile and violent games characteristics;
- section 3- resumes a blend of multiple choice and ask for agreement queries, since the respondent has to order his moral decisions from 1 (immediate) to 6 (final decision) in extreme situations (game vs. real life) (multiple choice), as well as, to justify their behaviour through an ask for agreement query.

The authors' choice is validated through the work of Lee⁵⁴, since "each potential question should be screened with respect to (1) how the answers to it will be analysed, (2) the anticipated information it will provide, and (3) how the ensuring information will be used".

Limitations

Wright⁵⁵ refers that web questionnaires reveal some advantages and disadvantages, as for instance: access to unique populations, time and cost (advantages); sampling issues, access issues (disadvantages). In this case the most representative disadvantage is sampling issues, namely as regards to respondents age and samples size. Respondents' age vary from 18-25 years in Poland, as well as, the Polish sample with 64 responses maybe considered diminutive. Both disadvantages are consistent with Wright's argument regarding sampling issues in web questionnaires. Another important limitation is the harmonization process between source and target language which requires some adaptations⁵⁶. This process may generate some lost of sensitive meaning, as the questionnaire translation from English to Polish acknowledge, as well as, vice versa for the answers analyses.

Empirical findings

Section 1

Questionnaires sampling resumed the following results:

- Gender- 33% of male and 64% female respondents;

⁵⁴ S. H. Lee, Constructing effective questionnaires, [in:] Handbook of human performance technology, ed. J. A. Pershing, 3rd ed, "Pfeiffer", San Francisco 2006, CA, p. 760-779, cit. p. 762.

⁵⁵ K. B. Wright, Researching Internet-based populations: Advantages and disadvantages of online survey research, online questionnaire authoring software packages, and web survey services, "Journal of Computer-Mediated Communication", 2005, no. 10, vol. 3, article 11, <http://jcmc.indiana.edu/vol10/issue3/wright.html>, 12.06.2011.

⁵⁶ J. Harkness, I. Bilken, A. C. Cazar, L. Huang, D. Miller, M. Stange, A. Villar, Questionnaire design guidelines, <http://ccsg.isr.umich.edu/qnrdev.cfm>, 12.06.2011.

- Age- the empirical results revealed two age groups exist: 41% (18-21 years old) and 59% (22-25 years old);
- Years of gaming- the results were consistent with the age groups, since the outcomes resumed 39% (0-4 years), 31% (5-9 years), 28% (10-14 years), 2% (15-19 years);
- Average gaming hours per day- 28% of Polish gamers' devoted less than an hour to gaming. In addition, one-two represented 20%, two-three 11% and more than four hours of playing embraced 20%;
- Potential enjoyment with violence in games- the empirical results illustrated 33%, despite an equal value for lack of response;
- Play violent games- 72% of Polish gamers' revealed that play this taxonomy of games;
- Average gaming hours per day of violent games- contrarily to generic playing hours 50% played less than an hour. Although more than four hours of gaming represented over 16%. This evidence was also verified in 2-3 and 3-4 hours of playing, as the authors demonstrate: 12% and 8% correspondingly.

Nevertheless, is vital to detail the empirical results by gender and age group to permit a better enlightenment regarding each query. It was interesting to denote that female gamers clearly exhibited less years of gaming: 91% within the group of 0-4 gaming years; and, 74% female to 5-9 gaming years. The outcomes confirmed the importance of the 22-25 years group within the sample, since its value is always higher in every group for gaming years (except 0-4 years).

On the topic of average gaming hours per day the evidences highlighted opposite results, since females spend more time gaming until 3 hours: 83% until 1 hour, 71% amid 1-2 hours and 55% between 2-3 hours. Age group distribution is similar for less than hour until two hours of gaming (around 50% each), but into the remaining options their behaviour is inverse: $2 < \text{hours} < 3$ (64% for 18-21 years old) and $3 < \text{hours} < 4$ (62% for 22-25 years old).

When confronted with a query about their potential amusement with violence in computer games 33% responded affirmatively, despite a high rate of non-answers (33%). Male gamers encompassed for positive answers 72%, which demonstrated a correlation with age group analysis: 18-21 years old (65%); and, negative responses to oldest age groups: 22-25 years old (61%).

Play violent games corresponded for each gender 41% male vs. 57% female. This scenario was more extreme concerning the negative answer: 15% male vs. 83% female. Again these

results were consistent with generic data, as well as, age groups structure. Moreover, when asked about gaming violent games (in hours per day), Polish respondents acknowledged the following results:

- males- lower than one hour (24%), played between 1 < hours < 2 (55%), 2 < hours < 3 (63%) and greater than 4 hours (70%), although age group distribution is equal to “regular” gaming hours;
- females- less than one hour (63%), from 1 < hours < 2 (10%), 2 < hours < 3 (5%), 3 < hours < 4 (12%), and above 4 hours (7%). Again, age distribution was similar among both groups.

Section 2

The first aim was to introduce an extensive list of games (according to their philology) in order to respondents’ score which were considered violent. The top five for violent games were Hitman (69%), Mortal Kombat (69%), Killzone (67%), Dead or Alive (64%) and Postal (56%). Even so, games such as Quake, Uncharted, CRYISIS, Manhunt, Fallout and Call of Duty were rated above 45%! Pertaining to the non-violent their choice embraced Rugby (17%), Super Mario (20%), Soul Calibur (22%), Sonic (33%) and Sims (39%).

Violent games features, by importance, revealed the following results: high levels of massive destruction (70%); graphical realism (69%); blood consistency (59%); death consistency (45%); language and obscene content (42%); and, absence of rules for inappropriate behaviour (36%); however, a higher level of detail for each option by gender and age is required.

Results for massive destruction acknowledged: 60% for female gender and the age groups presented a similar behaviour; 36% for male respondents and each age group (18-21 and 22-25 years old) encompassed 50%. Although, is vital to bear in mind female relative weight within the sample. Graphical realism was considered 59% by Polish females and age groups analyses were extremely similar with massive destruction results; and, 36% of male gamers pointed out this option. In addition, 18-21 years old group acknowledged 38% and 22-25 resumed 62%.

With reference to blood consistency Polish gamers pointed out 47% (male) and 53% (female), and again age groups analysis were consistent with the previous results: approximately 50% for 18-21 and 22-25 years old for male gender; and, female responses highlighted 55% for 18-21 and 45% for years old. The option for language and obscene content verified 44% for men and 52% for women, as well as, age group analysis revealed: 33% vs. 50% (18-21 years old),

and 67% vs. 50% (22-25 years old) respectively. The absence of rules for inappropriate behaviour was dominated by male gender (52%), although female gamers represent 43% due to not available answers. As regards to age group analysis the results were equal to the previous alternative.

Afterwards, gamers commented the existing European rating system through two analytical dimensions: agreement with the rating legislation; and, a negative answer implied to refer which assumptions required attention. With reference to legislation 61% of Polish gamers claimed a negative answer, as well as, this value was equally substantiated by both genders. However, age group distribution encompassed considerable differences: while female gender resumed around 50% in each age group, male gamers obtained 43% for 18-21 years old and 57% for 22-25 years old. Furthermore, Polish gamers focused their attention on game designers responsibilities (51%), insufficient legislation (41%), correspondence between ages vs. violence (41%), cultural incompatibilities (38%), obscene contents (31%), excessive violence (23%), and other options (18%). Even so, gender and age group analyses entailed the outcomes reproduced in table 2.

Table 2. Gender and age group analyses regarding non-agreement with legislation by importance

Analytical results (%)				
Assumption	Gender		Age	
	M	F	M	F
Game designers responsibilities	50	50	G1 (25), G2 (75)	G1 (40), G2 (60)
Insufficient legislation	38	56	G1 (40), G2 (60)	G1 (56), G2 (44)
Correspondence between ages vs. violence	38	56	G1 (50), G2 (50)	G1 (56), G2 (44)
Cultural incompatibilities	47	47	G1 (71), G2 (29)	G1 (71), G2 (29)
Obscene contents	42	58	G1 (20), G2 (80)	G1 (57), G2 (43)
Excessive violence	45	55	G1 (40), G2 (60)	G1 (50), G2 (50)
Other options	57	29	G1 (25), G2 (75)	G1 (50), G2 (50)

Legend:

1: M- Male; F- Female

2: G1- Age group 1 (18-21 years old); G2- Age group 2 (22-25 years old)

Section 3

As previous explained, in this section gamers were confronted with moral decisions making for violent circumstances in games and real life. In this case each respondent needed to qualify his/her decisions from 1 (immediate) to 6 (final).

Table 3. Scenarios for moral decision making

Context	Scenario	Options
Game 1	The character is walking on a semi-abandoned street, having at its disposal all the game tools (hammer, fuel, lighter to set fire, weapons, etc.). Assuming that character, when encounter an elderly, what would you do?	a) Dump fuel and set fire on the character b) Do absolutely nothing c) Smash completely his head with a sledgehammer d) Give a series of punches and kicks e) Use a bazooka to exterminate him f) Give a kick
Game 2	The character is walking along the street and resolves to steal a police vehicle through carjacking. Again, you can use all the game tools. Assuming player role, what actions would you perform?	a) Do not performed carjacking b) Proceed with carjacking and beat the cop c) Beyond carjacking and beat, use the vehicle for run down pedestrians d) Steal another car and exceed speed limits e) I rather use a machine gun to destroy the car f) Carjacking, beat, run down pedestrians and destroy a store with the car
Real life 1	Imagine that you are a criminal that decides to assault an old man. Consider that you are in possession of a machete, a weapon and sulphuric acid. What would you do?	a) Regret and do not perform the robbery b) Use a machete to exterminate him c) Give a series of punches and kicks d) Smash completely the elderly head, and push it repeatedly against a wall e) Give a kick f) Dump sulphuric acid on him
Real life 2	Imagine that you are a drug addict that needs to suppress such addiction. So, your intention is to do carjacking	a) Expecting lower possibilities, steal other car b) Do carjacking, beat and run over the cop that tries to intervene c) Perform carjacking, beat and run the cop, use

nearby traffic lights and preferably at dusk. Yet, you decide to carry a machete, a weapon and sulphuric acid. What would you do?	the car to run down pedestrians d) Beyond carjacking and beat, you perform other thefts e) Quit carjacking, as well as, drug addiction f) Proceed with carjacking and beat the driver
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Gender analysis recognized fascinating results: Polish gamers illustrated lower levels of violence for real life contexts, contrarily to more violent decision making in gaming (always lower for females) (table 4). Not available was around 5% for each scenario.

Table 4. Game scenarios results

Context	Gender	Empirical results
Game 1	Male	Use a bazooka; dump fuel and set fire; and, smash completely his head (initial decisions). Contrarily, do absolutely nothing was the fifth decision
	Female	Do absolutely nothing; give a kick; and, smash completely his head (initial decisions). Give a kick was the latest decision
Game 2	Male	Beyond carjacking and beat, use the vehicle for run down pedestrians (first and third decision). The ultimate decision was again the less violent option
	Female	Do not perform carjacking; steal another car and exceed speed limits; and, beyond carjacking and beat, use the vehicle for run down pedestrians (initial decisions). Carjacking, beat, run down pedestrians and destroy a store with the car (last decision)
Real life 1	Male	Regret and do not perform the robbery; give a kick; give a series of punches and kicks (early decisions). The final decision was dump sulphuric acid
	Female	Remarkably identical to the previous answers
Real life 2	Male	Quit carjacking and drug addiction; expecting lower possibilities, steal other car; proceed with carjacking and beat the driver (top choices). Carjacking, beat and run the cop, use the car to run pedestrians (last decision)
	Female	Quit carjacking and drug addiction; beyond carjacking and beat, you

perform other thefts; carjacking, beat and run the cop, use the car to run pedestrians (top choices). Final decision was again the second option

Age group analysis resumed again some fascinating results: the youngest age groups comprised the most violent option (in each potential decision), which is consistent with the results with reference to gaming hours for violent games. To shed additional light over this discussion the authors introduce the radial graphs that resume the bond between context (real life and game scenarios) vs. gender.

Figure 1. Male decision making for game scenario 1

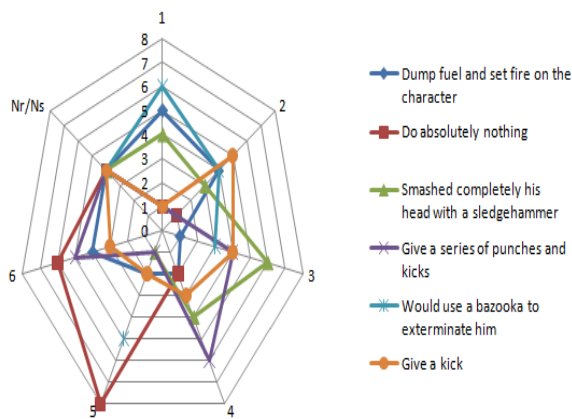
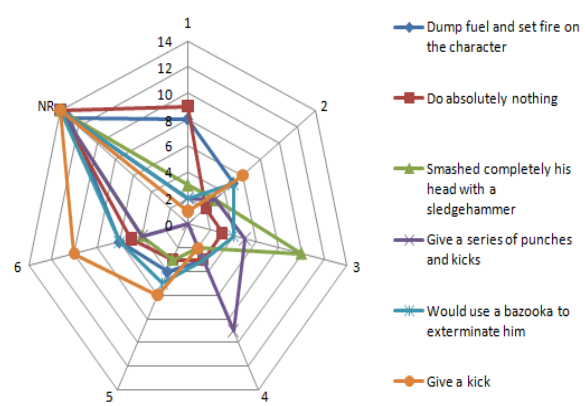


Figure 2. Female decision making for game scenario 1



The non response achieved around 14 (females) vs. 4 (males) answers for each option within the scenario, as well as, systemically these respondents enounced their aversion to violence within the ask for agreement queries. This scenario validated the previous outcomes, namely pertaining to gaming hours, gaming hours of violent games, and potential enjoyment with violence.

Figure 3. Male decision making for game scenario 2

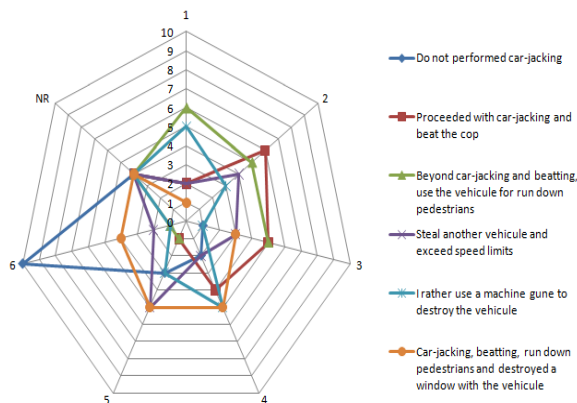
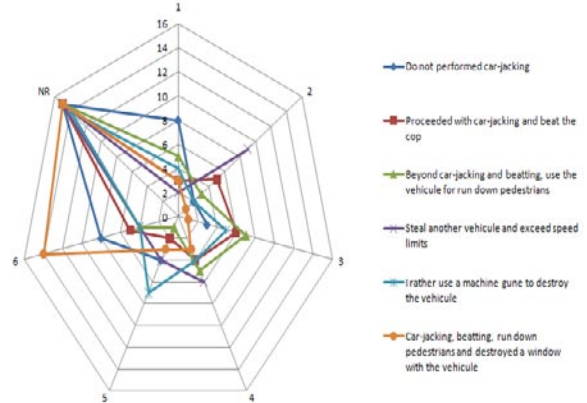


Figure 4. Female decision making for game scenario 2



Beyond the data reported on table 4, it was verified several similarities with the preceding game scenario. Female gamers revealed a higher rank of non-violent options, as well as, disregarded to answer to this query (15 in each option). Contrarily, male respondents acknowledged only 4 answers in each scenario and explored the most violent ones: beyond carjacking and beat (6), use the vehicle for run down pedestrians (5), and their combination (6). Once more, the respondents justified their options within the ask for agreement queries as summarized in table 5.

Figure 5. Male decision making for real life 1

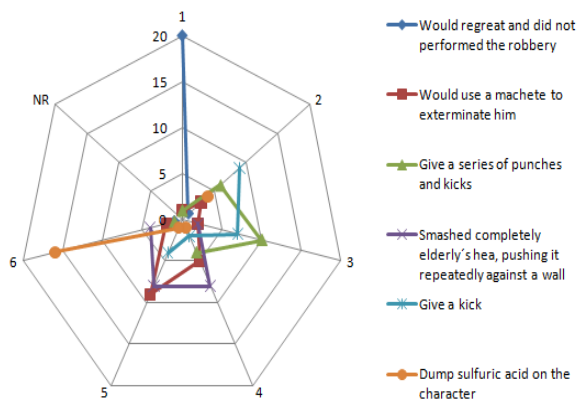
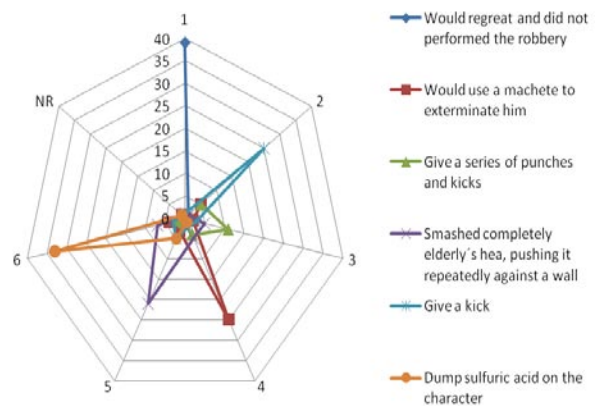


Figure 6. Female decision making for real life 1



Dump sulphuric acid as a final decision was much more intense in female gamers, since obtained 33 vs. 16 retorts (male gamers). This assumption it was also verified for the initial decisions (assuming an identical order for genders):

- regret and do not perform the robbery- 39 vs. 20 answers;
- give a kick- 25 vs. 9 responses.

Figure 7. Male decision making for real life 2

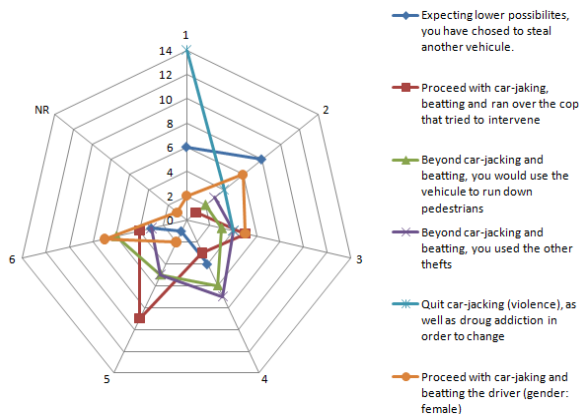
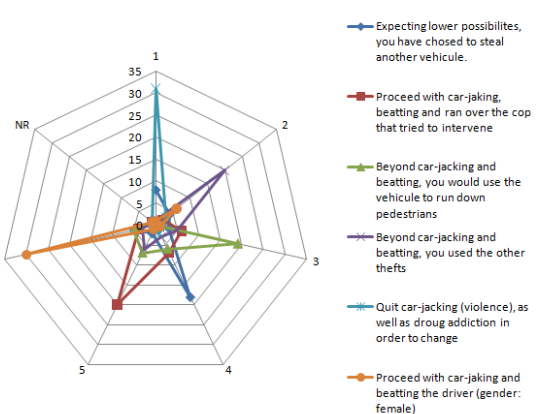


Figure 8. Female decision making for real life 2



The level of intensity as regards to the first decision (quit carjacking and drug addiction) was again higher in female gamers (31 vs. 14 answers). Finally, the ask for agreement query that allowed gamers to justify their options for each scenario engaged the following open coding: aversion to violence (22 answers); real life vs. virtual life (28 responses); regret due to impetuous actions in real life (9 retorts); games without social constraints (14 replies); violent behaviour consistent with game objectives (2 answers); and, stress relieve (5 respondents).

Table 5. Answers content analysis

Answers	Open-coding
<i>"I do not like violence in video games. I wanted to minimize the violence"</i>	Q34_PL_M, aversion to violence
<i>"It would be impossible for me to make some violence to other people in real life (in computer games also)"</i>	Q51_PL_M, aversion to violence
<i>"I do not like violence: in games and also in life"</i>	Q31_PL_F, aversion to violence
<i>"I think it is my nature- I do not like killing, even in computer games"</i>	Q64_PL_F, aversion to violence
<i>"The perspective of decision making was different: from one hand- virtual world, from the other hand- real world"</i>	Q48_PL_M, real life vs. virtual life
<i>"In a video game I can use the bazooka, but in real life unfortunately I cannot"</i>	Q51_PL_M, real life vs. virtual life
<i>"Scenario (Postal 2) is only a video game. Scenario (real life) is ... real life"</i>	Q53_PL_F, real life vs. virtual life
<i>"There is no game without the violence, although in real life is different"</i>	Q63_PL_F, real life vs. virtual life
<i>"Well, killing in game is fun! But, doing harm in real life is rather not!"</i>	Q8_PL_M, games without social constraints
<i>"In a video game is good to act brutally and effectively, but in real life you cannot kill other people"</i>	Q62_PL_M, games without social constraints
<i>"I will go to jail if similar things done in computer games occur in real life"</i>	Q29_PL_F, games without social constraints
<i>"Only in video games we can kill other people. Not in</i>	Q44_PL_F, games without social

<i>real life of course"</i>	constraints
<i>"If it is a game, you simply do some actions in order to go to the next level (...)"</i>	Q35_PL_M, violent behaviour consistent with game objectives
<i>"In games you should follow the scenario. If games introduce options for brutal actions, you must do it because you gain points for it"</i>	Q46_PL_M, violent behaviour consistent with game objectives
<i>"Main reason of games brutality is to limit the anger in real life. So there is no way to behave in real world exactly the same like in games world"</i>	Q27_PT_M, stress relieve
<i>"Video games help people limit their brutal nature, so they are more peaceful in real life"</i>	Q52_PL_M, stress relieve

A closer look highlighted interesting results, since: aversion to violence was extremely intense into female gamers; violent behaviour consistent with game objectives was simply a male answer; and, the remaining responses were referred by both genders (similar value). Besides, each "gender coding" was consistent with age groups previous outcomes: aversion to violence was rated over 90% (45% in each age group); regarding stress relieve, gamers between 18-21 years old corresponded to 75% of this query; and violent behaviour consistent with game objectives illustrated 50% for each age group.

Discussion

Bearing in mind the Polish gamers results, male gamers highlighted more years of gaming and more gaming hours per day (above 4 hours). This was consistent with potential amusement with violence, since male answers were relatively higher when compared to sample characteristics, as well as, gaming hours as regards to violent games (superior in every time categories, except less than one hour). Likewise, it was not a shocker that males assumed a relative lower tendency for scoring violent games like Hitman or Mortal Kombat. This assumption was clearly observed also into Uncharted, CRYISIS and Soul Calibur; or, into Sonic, Sims or Super Mario (games rated above 90% by Polish females). These evidences were validated throughout violent computer games features, because male gender results disclosed blood consistency, absence of rules for inappropriate behaviour and at some extent graphical realism (relative weight). It was also interesting to denote that female respondents were a large portion of not answering to this query, as well as, massive

destruction (non-physical consequences). Games rating legislation encompassed a similar behaviour for both genders considering a relative weight analysis. Even so, male respondents' argument for criteria as correspondence between ages vs. violence and insufficient legislation was clearly lower (around 15% if compared with female gamers- relative analysis).

The decision making process for both contexts, game ad real life, engaged always a higher number of non-responses for female gamers. Another important distinction among both genders, namely in computer games, was that male gamers options were more violent. Even so, their relative weight diminished in real life contexts, as well as, the ask for agreement queries illustrated a relationship with game objectives and stress relieve (potential validation for non persuasion). This assumption is even more obvious into female gender, since their answers were:

- computer games- around four times more for non-responses and the option do absolutely nothing;
- real life contexts- the difference was almost equal in relative terms for both possibilities.

Finally, age groups analyses illustrated that female gamer's behaviour was quite similar into all queries; and, male gamers acknowledged differences in gaming hours of violent games and which ones were considered violent. This statement may explain, at some extent, male gamers options regarding decision making (particularly from 18-21 years old).

Conclusion

This manuscript identifies some remarkable empirical findings about Polish gamers' latent mayhem engagement and cognitive bias. The assumption is validated through four arguments: literature; research design; questionnaire layout; and, empirical findings. The ambiguities that former studies exhibit has been recognized, as the subsequent examples underline: *"I'd rather help the old man, buy a beer and play with him"* (Q9_PL_F, real life vs. virtual life) and *"You must be aware that Postal is a game, and if you do it, is for fun. These behaviours must not exist in real life, despite some persons do not realize it, and replicate their gaming behaviours"* (Q46_PT_M, real life vs. virtual life). Yet, the impact is minimal due to the empirical findings richness, as well as, research design and questionnaire layout positive response (multiple choice and ask for agreement queries). Although, comments will be welcome during the presentation in Media, Ethics and Culture!