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INFLUENCE OF VIDEO GAMES ON PRO-SOCIAL AND ANTI-SOCIAL BEHAVIOR

Summary: Development of information technologies and the Internet brought many changes in habits of children and adolescents, which carry numerous advantages but the risks as well. Among numerous technological achievements that reached the children and adolescents through the Internet and modern devices are video games with myriad of various themes and contents. The influence of video games on psychosocial development of adolescents is well-researched. In the majority of studies conclusions about harmful effect of video games in which the violent themes are dominating were drawn. Nonetheless, in recent time there are more and more studies that show that influence of video games on development and behavior of adolescents is positive and that playing video games is desirable as it develops thought process of children, empathy, pro-social forms of behavior, develops logic, social component of behavior etc. The goal of this paper is to point to positive and negative influences of video games on development of children and adolescents by comparative overview of the studies and the results the science achieved so far.

Key words: video games, pro-social and anti-social behavior, development of children, aggression

Introduction

Today it has become unimaginable that a day passes without mobile phones, films, TV, Internet, video games etc. What is offered in these contents is very diverse, and as many research show, sensationalist and negative blueprints dominate, which have negative influence both on younger and older members of society. With development of science and technology, means of mass communication are developed, and the adolescents do not resist them nearly at all. So nowadays less and less children spend their free time outdoors, doing sports or other recreational activities together with their peers, but they spent more and more time in front of a computer, with mobile phone, on the Internet, in arcades, in front of a TV, playing video

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games. At all of those places they are exposed to content that is not suitable for their age and psychosocial level of development. Children and adolescents try to adapt and accept what is offered to them, without critical approach and without any selection or control from the adults (Merdović, 2019: 129). A special place among that content belongs to video games. With development of science and technology, and information technology in particular, the video game industry had total expansion over the recent years. First video games appeared in 1980s and had educational character in order to allow the children to learn something new through playing and having fun. Nonetheless, it was clearly visible from the beginning that video games aside from its educational function can be used for massive entertainment, especially the younger part of the population. With development of technology the themes and the purpose of video games changed as well. The topics of video games underwent a change and have achieved level of near-lifelike realism through which an individual can experience nearly every situation that life can bring. Through expansion of quantity a qualitative change happened as well, and today the topics and contents that dominate are aggression, violence and other antisocial forms of behavior which simultaneously demolish some of the basic moral and ethical tenets. Playing video games on various consoles, computers, tablets and phones are present in our culture for more than two decades.

With development in themes and content of video games number of users meaning players changed and widened significantly. From the pre-school, school and adolescent age all the way to mature adults, video games have significant influence on behavior and development of each individual regardless of age. Playing video games is most common among children and adolescents, but the influence they have on this part of population is the greatest because of properties of psychosocial development. Because of that the influence of video games on children behavior is large and in some cases decisive, and is reflected on adoption and formation of moral value system. By spending time in front of the computer or in arcades, children become more alienated from the real world. Aside from all the positive potential carried by development of the information technologies and the Internet we have to be careful and critical towards content carried by video games. Some video games became so realistic and can mimic real life in so realistic fashion that it „supports” users to spend their free time, and often a large portion of time in general in virtual space. There are many classifications of video games in regard to their themes. We have action, strategy, adventure, sports, educational, racing, simulation games etc. Every one of these games has influence on behavior of an individual while playing the game, brings out certain feelings, develops certain abilities, but all of that is often reflected to behavior of a player in his real life and life situations as well.

Individuals who play video games learn content of the games they play. If they play educational games, they learn educational contents and can use it in school, if they play violent games, they learn violent content and can apply it to daily life situations. The context of video game can create various effects. One type of context within the game can be seen in video games with violent content whether the game is single player or multiplayer (Counter Strike i.e). In both cases it can be equally violent, but playing single player games can create more aggressive

thoughts, lower level of empathy and greater desensitization. If the context of a game demands players to cooperate in order to achieve goals, it can help development of skill necessary for team work and social cooperation and coordination. Therefore, the effects of the same game can be differing and depend on the way the game is played, on the personality of a gamer, on social surrounding, and even the place where game is physically played.

Influence of video games on anti-social behavior

Computers, laptops, smartphones and tablets represent the daily life of children, naturally, provided to them by their parents. By not wanting their children to be outside of the cliché their peers proclaim and playing of popular video games, parents buy certain video games to their children without critical approach. In the beginning these games are a substitute for parental care and oversight and give the parents a „possibility” to rest as the children are occupied by playing. Later it grows into worries about too much time spent in front of computer, arcades, poor academic results in school, loss of work habits, alienation from their peers and the society, creation of gamers subculture and numerous other consequences which affect behavior of children in real life. As the most harsh consequence of such frequent playing of video games is creating an addiction which becomes more important in the modern society and often requires serious intervention by experts of various profiles. Because of high level of aggression present in certain games, there is a fear that children might emulate actions and behavior of the game characters, create desensitization to violence and justify violence in everyday life. Significant number of experts warn about possible connection of video games and aggression in children. (Bilić i dr. 2010: 202).

Entertainment and gaming industry earns vast sums of money annually, which is measured in billions. Because of that, video game creators tend to attract the attention of the consumers with their products and their content, often without regard what consequences that product can have on children and adolescents who are majority of the players. It is necessary to understand and conclude by doing researches what elements attract so much attention from children and adolescents, why children spent so much time playing video games each day and why the attention of the youth is directed to video games where violence and aggression dominate. The majority of completed studies and analyses of video game influence shown that if the violent elements dominate the game, that elements correlate with violent forms of behavior in children. The largest number of studies researched this component in particular. The most frequent video games are action games with potentially violent content.

Reasons why children and adolescents play video games are varying. Children most often want to escape reality, the games often gives them feeling of success and vicorty, but belonging to a certain community as well, through rewards through points earned by completion of certain levels, then visual effects where certain moves and activities are congratulated on which gives the players a feeling of en-

couragement and rewards. Some of the negative attributes are decrease of social interaction outside the gamers' circle, danger of somatic diseases of bones as a product of long hours spent sitting, as well as certain stressful situations arising from failures in gaming. There is no general consensus among the scientists and experts in this field about harmful effects of video game influence on anti-social and asocial behavior in adolescents, among which violence and aggression have special place. Some scientists deduced that strong effects of violence in video games on aggressive behavior of adolescents are confirmed in large part of population, and particularly in adolescents (Anderson et al. 2008, Anderson, 2004). Children who often play violent video games get involved in quarrels and fights more often and generally saying in time become more verbally and physically aggressive, not only to their peers, but to their parents and teachers as well (Bjelajac, 2017: 538). On the other hand, there are studies and research whose results have shown that aggression in video games does not have a dominant influence on aggressive behavior of adolescents but that it is only one of the factors that increase aggression in those cases where children and adolescents were already exposed to violence from other factors (Giumetti, Markei 2007; Kirsh 1998; Markei, Scherer 2009). Critics of these research reacted by their own research that shown that effects of violence and aggression in video games have no influence on aggressive behavior of players whatsoever but that it is a consequence of other factors which are not related to video games. They also claimed that the research that confirm the influence of aggression in video games on adolescent behavior have numerous omissions and question their methodological concepts, as well as that they did not include numerous important variables that influence the behavior (Durkin, Barber 2002; Kutner, Olson 2008; Savage, Iancei 2008; Sherri 2007; Unsworth et al. 2007). According to some research done in the USA in time when video game industry dominated by themes and elements of violence and aggression saw expansion, the society saw significant decrease in number of crimes with elements of violence toward minors.

In scientific and expert literature, we can outline three basic theoretical viewpoints that explain connection of video game violence and aggressive behavior of adolescents.

- Exposure to violence in video games have causal effect based on learning with aggressive behavior of minors that shows later
- Minors who have already shown some forms of aggressive behavior and violence tend to play video games dominated by violent content. This viewpoint explains that an individual searches certain forms and content and himself choose video game genre dependable on his or her personal characteristics, which is not passive but active process (McCovn et al. 1997; Rentfrov, Gosling 2003).
- Any connection between violence in video games and aggressive behavior of adolescents who play these video games is a consequence of external factors that are not related to video games but to individual personal characteristics, family situation, peer groups etc. (Beaver et al. 2009; Pinker 2002).

Some theorists are keen to viewpoint that the expression of aggressive behavior and violence at persons who play video games are consequence of a large number of factors which corelate and intertwine. The „Catalyst” model suggests that

serious aggression and violence are consequence of genetic factors and close outside influences (such as family and peers), but that indirect factors of surroundings, such as media, have little influence on behavior (Ferguson, 2011: 380).

One of the basic attributes of playing video games is that player actively participates in the event and has a feeling of creation of certain situations and events. In a certain fight, action or game, the player moves to next levels more quickly while receiving rewards for it (better weapons, gear, currency, points etc) which stimulates the player to get immersed into the adventure and give their best in order to achieve the score as high as possible. According to research done in schools, nearly every adolescent had experience of playing video games (Colwell, Payne, 2000.; Wood at al., 2004.). If the virtual character is more like the players themselves, then identification with the character is stronger and it will have larger influence on players' behavior in the real life. In video games there is a greater chance for certain behavior patterns to be adopted since there is numerous repeating of certain levels or situations, and by such repetition of aggressive behavior there is an increased likelihood of repeating that aggressive behavior in the real world (Gentile, Anderson, 2003: 141). One of such examples is a massacre in a Colorado, USA high school where after detailed investigation it was concluded that the murderers, prior to execution of the massacre, have played video games with violent content that they „copied” into the real world up until such detail that the investigators were fascinated. According to research made after various school shootings it was determined that the perpetrators spent much time on the Internet. Their interests were prior mass murders or shootings, video games with violent content, interests for weapons and other violent content (Bjelajac, Merdović, 2019: 572).

As we already stressed, one of the most serious consequences of playing video games is forming of addiction, which is not yet considered a disease despite having all the symptoms as the other forms of addiction. Playing video games creates a special chemical reaction by increased dopamine levels which causes a person to feel pleasure, while on the other hand it increases a desire to play. Aside from this component, a psychological addiction is very visible, similar to other addictions. Dependence on video games and the Internet is a field interesting to scholars and researchers. Poor social competence and impulsiveness of the player are factors that can cause pathological addiction on video games (Gentile at al, 2011: 325). Video game addicts spent on average 31 hour weekly while playing video games and show lesser degree of pleasure with their real life, while they are happier in their virtual life, which is another indicator of addiction (Gaetan, Bonnet, Pedinelli, 2012). Gaming addiction is not yet perceive in our public as something that represents an important problem of adolescents while in some other countries it is considered a serious problem which demands serious reaction of the state. Therefore South Korea banned gaming after midnight with a goal to be proactive and prevent forming of dependence on video games of adolescents. In some other countries, such as China and the Netherlands, there are specialized clinics for treatment and prevention of video game and Internet addiction. A research made in Sweden with sample of 7,757 adolescents aged 13-18, with a goal to research amount of spent time and motives for playing video games shown that the majority of adolescents are with negative consequences.

They are reflected in lack of time for school obligations, poor sleep quality and insufficient sleeping, fights with parents and peers, poor organization of free time (Hellström, at al. 2012).

As we can see, there is much evidence in existing literature that suggests that exposure to video game violence increase aggressive behavior and other aggression-related matters. Nonetheless, lack of empirical data, together with various methodological problems and inconsistencies clearly suggest the need for additional research (Dill, K., Dill, C. 1998: 421). According to some theorists, virtual violence can replace real-life violence. They think that if a child satisfies its need for aggressive „release” through a video game, then the need for such behavior in real life will be much smaller. Still, it is impossible to a priori say whether playing of violent video games removes or complements aggressiveness, violence and antisocial behavior. With that in mind, it is possible that violent video games attract otherwise violent persons. Independent from the fact whether violent video games cause change in behavior by making the individual more violent, they can replace the time spent on violent activities and decrease total amount of violence performed.

Proving the causal relation between violence-dominated video games and aggressive behavior of the players is made more difficult by legislative, psychological, social and medical aspects of the problem. In addition, statistics show that despite the increase of video game sales from 4 billion USD in mid-1990s to more than 7 billion in 2004, the level of violent crime (rape, robbery, murder) dropped significantly in the USA. How much is then certain to make a connection between exposure to violent video games and aggressive behavior (Porter G, at. al. 2007: 422)? One of the criticisms attributed to frequent playing of video games not related to concept and content of the video game is that it negatively affects physical development and body musculature. Often the muscles are weakened and the spine is not in adequate position if physical activities of the children are disregarded. Therefore there must be a harmony between mental and physical health. Parents and teachers must create a balance until the child itself creates habits and understands that physical activity is as important as playing video games through which it develops numerous other skills.

Influence of video games on prosocial behavior

It is obvious that video games are a constant, dominant and dynamic phenomenon in experiences of children and adults, which necessarily influences development of a person, and indirectly influences development of culture and cultural values of a society. Contrary to numerous criticisms of negative influence of video games to children development there are other points of view that propagate the understanding that video games have positive influence on numerous thought processes at children. Some research and studies are focused on potential positive effects of video games, such as educational games and simulation games (Laniado, Pietra, 2005). Most often the arguments are pointed to usage of child's motivation to play video games, with changes only in themes of video games. Potential gains and usage

of electronic games are best understood in context of motivating children to play. The parents choose appropriate games for free time, educators search for games to complement teaching in classrooms, game programmers create games for educational purposes and mental health experts who use games in clinical situations, they all must know what will motivate a child and what emotional or developmental needs a young person can (consciously or not) develop and satisfy through video games (Von Salisch, Oppl, Kristen, 2006: 151). Advantage of video games is a new approach to learning. Educational games offer great source of information. Every learning through playing is easier, and what is learned is longer remembered as it is a part of personal experience, in contrast to classic sitting with a book in hands. With or without proof that supports learning from certain video games, since majority of pupils is very motivated to play video games outside of school, teachers should be motivated to integrate video games in their lessons wherever it is possible. Still, because the pupil has an opportunity to play video games and enjoy them only for fun, there are no guarantees that the pupils will accept similar activities in the classroom with joy (Salaway et al., 2007). Elaborate and well-designed games implemented in scientific fields and activities in learning offer a possibility to pupils to actively accept concepts, culture and practice of scientists and science institutions. Thoughtfully created surroundings for learning based on games and set in virtual worlds have a potential to satisfy unique and specific needs of pupils by providing clear information, possibilities for applied practice, feedback and good combination of inner and outside motivators customized to each pupil, who works on a task or works in a team with other pupils (Hirumi, 2010: 161). Video games develop imagination, creativity, concentration, attention, stimulate thought processes, associative and hypothetical thinking and help in coordination of movement (Laniado, Pietra, 2005:45).

Although it is evident that video games can have educational properties there are numerous obstacles to their implementation in the teaching process. Primary barriers for implementation of innovations are not technical nor economical, they are psychological, organizational, political and cultural. The degree that all the interested parties have overcome these obstacles will determine to what degree video games will be applied in the teaching process. This is particularly important from teacher aspect, who are slow to adapt new teaching materials and learning concepts, while keeping to traditional methods of lectures and relation teacher-pupil. Not all is up to teachers, as commercial video games often contain concepts and activities that teachers want pupils to adopt, but they also contain elements that lead to watering down the content with unnecessary information or inappropriate activities teachers and pupils cannot remove or ignore (Kirriemuir, McFarlane, 2004). Topics and contents that motivate pupils shall be represented in video games, in order for them to spend significant time honing their skills (Bruning et al. 2004). Pupils and children often like to learn things through trial and error and they yearn for engagement and interactivity. With regard to popularity of video games and their influence on players, the apologists of educational video games believe they are offering sustainable alternative form of teaching to traditional activities of learning focused on teaching. Nonetheless, studies of efficacy of educational games for increase of academic level

of pupils are scarce. It is necessary that teachers use materials they consider relevant, which would sometimes mean leaving of the field of traditional learning, in order to study communications and expression skills of pupils through media and information technologies. It is necessary for students to accept to apply different strategies of reading and learning, to analyze and understand the problem, as well as to choose a method for solving the problem (Alvermann, 2002: 199).

Due to scientific and technological revolution, development of information technologies and the Internet, the expansion of video games with various themes attract children and adolescents to spent more and more time playing, thinking, creating strategies, developing logical thought for solving problem situations. Prensky (Prensky, 2001: 160) compiled a list of attributes of video games and gfeelings they cause in the adolescents:

- Games are a form of entertainment (sense of pleasure and satisfaction)
- Games have rules (sense of structure and organization)
- Games have goals (supports motivation)
- Games are interactive (sense of responsibility)
- Games have goals and feedback (helps with learning)
- Games are adaptable (possibility of participation to different users)
- Games have conflict, competition, challenge, opposition (causing excitement and adrenaline rush)
- Games demand problem solving (creativity)
- Games demand interaction (developing group and team work)
- Games have themes and story (emotions)

Video games shall be used for nurturing discussions and debates, while allowing pupils to actively participate in search for solutions for problems and gaining life experiences. As teachers ask their pupils to learn to be active and to think about their social roles and responsibility in the community and environment, it is equally important that teachers are active and flexible when it comes to inclusion of video games into existing teaching curriculums. In that way video games offer great potential for engagement of pupils (Hirumi, 2010: 193).

Some video games with violent content, action games, imply very quick movements, high perceptive and motor stress, unpredictability and accent on details. In several completed studies it was proven that these games influenced various aspects of perceptive work, including multitude of following spatial resolutions and capabilities of central and peripheral sight. Constant need for player to „scan” the screen in order to see differences and detect threats within the game direct the attention itself to these details, which helps development of perception and attention. These are specific skills that can be applied to similar situations (such as perception skills), but not to the other areas of cognitive function (Bavelier, at al. 2011: 763). Greatest value of games in education is in fact that they are able to attract and keep the attention of children to the content, as well as to motivate them to be active and be involved in certain activities. The game has a quality that lacks in traditional teaching the most, and that is the motivation coming from the game itself.

Video games allow progression through a string of tries and overcoming obstacles. Development of critical thinking, as well as solving of concrete problems or adaptation to a certain situation comes out of that fact. Through video games child can change its emotional state and develop empathy. Child chooses video game that will help its positive mood and help to avoid negative emotions which are often a burden to children in the real world. By that video games offer a possibility of emotional control and self-regulation. Therefore video games can be considered as virtual environments children and adolescents can choose and can help their emotional balance. Because of that reason, certain video games are used by psychologists and psychoterapists in function of emotional control when a child is depressed. Games as virtual surroundings offer special possibilities. Pleasures occurring from playing video games are based on hedonism. The immersion into activities itself helps to draw the outside attention from inner feelings and decrease negative feelings (Pennebaker, Brittingham, 1982: 121). Aside from that, some children and adolescents do not want to establish new contacts or talk with people they know in real life. Online space and playing of video games gives them a chance to be alone or in group where they feel good during playing. Some video games are conceptualized and designed to be used in clinical treatments of children with special needs, especially children with autism. Children with developmental issues are facing significant hardships and are a challenge to their parents, guardians or teachers. Depending on nature of their challenge, communication skills are often limited, their cognitive processing is atypical, their behavior is difficult to control, they are emotionally unstable and usually they don't have interaction with outer world. Still, according to research, these children show interest for video games. As a result of time spent in from of a display where the child follows the video game, such children sit still and show larger level of attention and concentration (Durkin, 2101: 131). Some children suffering from autism are attracted to strong lights, glittering effects or rotated objects (Leekam et al., 2007: 900). Certain video games are used for treatment of children with sight deficiencies as stimulators for development of perception, attention, peripheral vision etc.

Numerous scientists and experts in field of video games and its positive influence on development of children think that video game designers should leave up to pupils to select the difficulty level of the game. This is important because when moving from easier to harder level, the game becomes more interesting and presents greater challenge to the player, but influences their motivation as well. Teaching model based on games is today used very successfully especially in developed countries of the West. These methods have many uses and functions, and recently research is focused on possibilities, advantages and limits of its use in education and learning.

Conclusion

Although we can read sensationalist headlines about effects of video games on development of children on a daily basis, this phenomenon should be analyzed

more realistically as the term video game does not have a unique construction or definition that science can confirm. We can hardly discuss general effects of video games while we know there are thousands of individual games, hundreds of genres and subgenres, and they can be played on computers, consoles, tablets and phones. Therefore if we want to discuss effects of video games we have to be ready to include numerous details on which the way they influence each individual depends, while taking into consideration numerous other individual and social factors. Majority of scientific research on effects of video games is focused on dimensions of content and less on other variables that can influence behavior. From that fact criticism and disputing of results of many studies done in developed Western countries comes.

Modern societies became massively engaged with media and dependent of it, through an immensely short period of time in our history. Among them video games found their place regardless of the way they are played, on consoles, computers, phones, tablets, online or offline. There is a great interest for playing video games, not only with children and adolescents, but the adults as well. Motivation of children is various, and it should be used for education, learning and practicing certain skills. As we stated, certain research and practical experiences show success in treatment of certain neurological problems, autism, damaged sight through specially designed and conceptualized video games. Still, pioneer work and enthusiasm of some experts is not enough to show the effects of application of video games in rehabilitation and education. Therefore it is necessary to deepen the research, take all aspects of video game into consideration, including its conceptual content, personality traits of players as well as factors of surroundings. Under pressure of scientific and expert public, authors and designers of video games turn more often to educational and clinical applications where educational and medical practitioners participate in creation process. The goal of this cooperation is to develop entertaining and attractive activities that would have educational or rehabilitational influence asked for by experts in their respective fields.

It often seems that playing video games is fun without any consequences. Still, despite being questionable, available data suggest that playing video games can be tied with aggressive, antisocial and sometimes criminal behavior. Research of this relation calls for multidisciplinary approach. Mental health experts, psychologists, sociologists, pedagogists and other relevant scientists should regularly study aggression and violent personality traits on which video games have effects through research, especially at children and adolescents. Focus shall be put on at-risk groups meaning children and adolescents who in addition to some aggressive personality traits have generational and genetic predisposition for violent behavior, children from families where expressing aggression and violence is possible. Playing video games with elements of violence with such persons can become significant predictive factor for expression of aggression and adopting a behavior model dominated by violence. When we sum results of numerous research we come to conclusion that it is necessary to control the time spend playing video games, as well as content of the games children play. The greatest responsibility is on the parents and teachers. The fact that clinics for Internet and video game addiction treatment are being opened is

a strong indicator that video games can have very negative influence and degrade psychosocial development of children. What is beyond any doubt is that video games cannot be avoided in this day and age and that children inevitably have to use modern technological achievements through which playing video games is inevitability. Therefore it is necessary to find balance between playing video games and the content presented in them, positive influences and helping education, learning and development of logical components of personality on one hand and possible negative consequences in aggression, alienation, isolation from social surroundings, lack of empathy, pathological dependence on playing up to physical deformities of the body.

Early prevention, education of parents and teachers and efficient education is one of the main preconditions for healthy growth with new information and communications technologies.

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УТИЦАЈ ВИДЕО ИГАРА НА ПРОСОЦИЈАЛНО И АНТИСОЦИЈАЛНО ПОНАШАЊЕ

Сажетак: Развој информационих технологија и интернета унео је велике промене у навикама деце и адолесцената који са собом носе бројне предности али и ризике. Међу бројним технолошким достигнућима које су путем интернет и савремених техничких средстава (компјутери, таблети, паметни телефони) нашли пут до деце и младих су видео игре са најразноврснијим садржајима и темама. Утицај видео игара на психосоцијални развој младих је испитиван бројним студијама. Готово увек су извођени закључци о штетности видео игара у којима доминирају теме насиља. У последње време све више студија настоје да покажу како је утицај видео игара на развој и понашање младих позитиван и да је играње видео игара пожељно јер развија мисаоне процесе деце, емпатију, мисли, осећања, просоцијалне облике понашања, развија логику, социјалну компоненту понашања и сл. Циљ овог рада је компаративним прегледом досадашњих студија и резултата до којих је наука дошла указати на позитивне и негативне утицаје видео игара на развој деце и младих.

Кључне речи: видео игре, просоцијално и антисоцијално понашање, развој деце, агресија