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Abstract of the dissertation entitled:

Cognitive functioning of school adolescents playing video games as a component of learning attitudes

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Abstract

Introduction. Playing video games is the second most popular activity declared by today's adolescents. This operation may improve cognitive performance of schoolchildren and thus contribute to increase of learning opportunities. This has been noticed, among others, by the polish legislator, who has introduced the video game to the reading list in secondary schools. Despite the highlighted benefits in the literature, regarding, among others, the connection of playing video games with individual components of student's emotional, behavioral and cognitive learning attitude, teachers themselves extremely rarely refer to games as a tool to aid the learning process.

Aim of the study. The primary aim of the study was to enrich knowledge in range of defining differences which occur in functioning of the learning attitude's cognitive component of school adolescents who play and don't play video games. Specific aims were also separated. The first objective was related to the enrichment of knowledge on the functioning of elementary cognitive processes, i.e. attention, perception, memory and cognitive control among secondary school students who play and don't play video games; The second objective was to formulate recommendations for educational institutions regarding the proper organization of the educational environment of adolescents, enriched by purposely chosen video games. In addition specifying the effectiveness of video games in learning the specific subject, learning strategy based on the use of video games and change of the teacher's attitude towards after school activity of the students, which is playing video games.

Materials and methods. The study involved 121 participants aged from 14 to 16 years (15 on average). They were students from six secondary schools from the *Małopolska* and *Podkarpacie* voivodships. Finally, 3 groups were distinguished due to declaration and frequency of playing video games: those who play on regular basis, those who play occasionally and a group of

non-players. 22 teachers' opinions were also obtained in terms of cognitive functioning of the students who play video games and their school achievements. The following research tools were used in the study: *Student questionnaire* - including characteristics of video game use, extended by demographic data, as well as school achievement information; *Teacher questionnaire* - including opinions on students' cognitive functioning in the context of video games; *Color Trails Test* - version for children and six psychometric tools designed to test cognitive functions, implemented in an innovative psychological diagnostic system called *SDP - system*.

Results. Answering the posted research questions concerning the differences in functioning of cognitive base component of the learning attitude in schoolchildren who play video games compared to peers, based on own research results were obtained, which differ in a statistically significant way. Schoolchildren who play games regularly or occasionally were characterized by better reaction times, higher scores and fewer mistakes compared to schoolchildren who don't play games. In addition it was found, that the higher efficiency in the range of elementary cognitive functions is influenced by the category of used video game . Students using strategic, sports and arcade games often scored better than players who played the other categories. Furthermore based on own research the answer for the final research question was obtained concerning the differences in cognitive functioning of the students who play video games in range of their school achievements , stating a lack of correlation between the level of cognitive functioning of the students who play video games and their learning achievements. Teacher's opinions on the issue of dependency of playing video games and cognitive functioning as well as dependency of playing games with processes of learning were also obtained. By the competent judges influence of video games on cognitive functioning of schoolchildren is neutral and negative. Similar opinions were expressed by the teachers in aspect of the impact of playing video games on academic performance. However, most results indicated a significant proportion of subjective evaluations.

Conclusions. (1) Higher efficiency of elementary cognitive functions (attention, memory, perception and cognitive control) of the student contributes to student's more effective learning process. (2) Playing video games (occasionally or regularly) has an important impact on improvement of student's cognitive functioning in range of elementary cognitive functions. (3) People who don't play video games, regardless of whether they have played in the past, are characterized by poorer cognitive performance. (4) The genre of the video game used is important in terms of the student's cognitive performance. (5) Teachers express negative or neutral opinions

when asked about the relationship between playing video games and students' cognitive functioning. (6) Based on own research no correlations between elementary cognitive performance and academic achievement was found among the students surveyed.

Keywords. Learning attitude, cognitive component, cognitive functions, video games, schoolchildren.