

PERSONALITY TRAITS AS THE REFERENCE FOR GAMING MOTIVATION AND GAMIFICATION

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Abstract. Gamification is one of the most resounding words in the world for the past 10 years. From its implementation in education, medicine, fitness and various research that showed excellent results in terms of using gamified platforms in these spheres, the interest for this “discipline“ spread to all spheres of life. Currently, large focus is placed on various fields of management – HR, marketing and organization. To what degree can gamification help management and organization, education and teachers? This paper shows recent literature on the subject of gamification, and a research started in order to better understand the correlation between types of personalities and the preferences of gamified elements. Maybe the key to motivation lies in gamified elements customized by personality traits.

Keywords: gamification, gamified elements, management, motivation, Big Five personality traits, personality dimensions, Bartle’s taxonomy of player types

1. INTRODUCTION

Games were part of our culture since the dawn of history, and they take on multiple socially useful roles: they represent tools for fun, imaginative ways to develop human relations, physical exercises and, even, tools for survival (we may all remember the gladiator games of ancient Rome). Games have their own language, set of rules and outcomes known only to those who play the game. In his book “Homo Ludens”, the historian Johan Huizinga even claims that games are older than culture itself, given that culture implies human society, and animals hadn’t waited for man to teach them how to play (Huizinga, 1944).

Over the last 50 years, with the appearance of video, and later, computer games, the gaming industry has grown into one of the largest industries of the world. Many authors highlight the multidimensionality of video games, and one paragraph in particular describes it best: “Video games are a legitimate artistic medium, subject to modification and reconstructing the context in manufacturing a specific experience for the player/user/audience and political acting by underlining certain social problems. Games are a high-tech medium that enhances the aesthetic potential of audio-visual performances with each new commercial game, and includes more complex narratives and characters/avatars.” (Maravic, 2011, p.93).

It is estimated that the global games market will be worth 128.6 billion dollars by the year 2020¹. Given this massive expansion and high impact on the global economic market, one can see the increase of interest in this medium. During the last few years, in the beginning of the 21st century, video

games have become the object of research as new media and have gained interest from theorists and explorers, who have decided to overcome the patronizing tone towards video games and consider them increasingly worth exploring (Maravic, 2014, p. 263). In the sea of different directions gaming and gaming industry research went, *gamification* stands out the most.

There is no single definition for the term gamification, but we will mention a few of the most popular, as a way to emphasize its main aspects. Gamification can be defined as “use of game elements in non-game context” (Deterding, Khaled, Nacke, 2011). Also, Deterding gives a broader definition specifying that gamification is a selective incorporation of game elements into an interactive system without the end goal of developing a game (Deterding, 2012). Furthermore, gamification is defined as a “process of enhancing a service with the possibility of adding game-like experience to create a greater value for the user” (Huotari&Hamari, 2012-19). This can be achieved by using game design elements – like scoring – in non-game contexts and situations (Deterding et al, 2011).

2. GAMIFICATION ON THE RISE

If we take a look at the interest shown for gamification among scientists and researchers in the last 5 years, we will observe a constant growth. By searching the most popular scientific databases from 2012 to 2017 (in conclusion with September), a stable growth of gamification based thesis is noticed (each paper with the term “gamification” mentioned in it).

By comparing the results gained through empirical research these last few years, a conclusion can be drawn – gamification certainly shows positive effects and benefits. For the purpose of this paper it is interesting to mention that success of gamification can depend on several factors, including user motivation and the nature of the gamified system (Hamari, Koivisto, Sarsa, 2014).

From an educational perspective, gamification can motivate since it puts “players“ in the centre of the system, and gives them a chance to be autonomous and have control, all the while having fun.

¹ According to research done by organizations Newzoo and their Global Games Market Report.

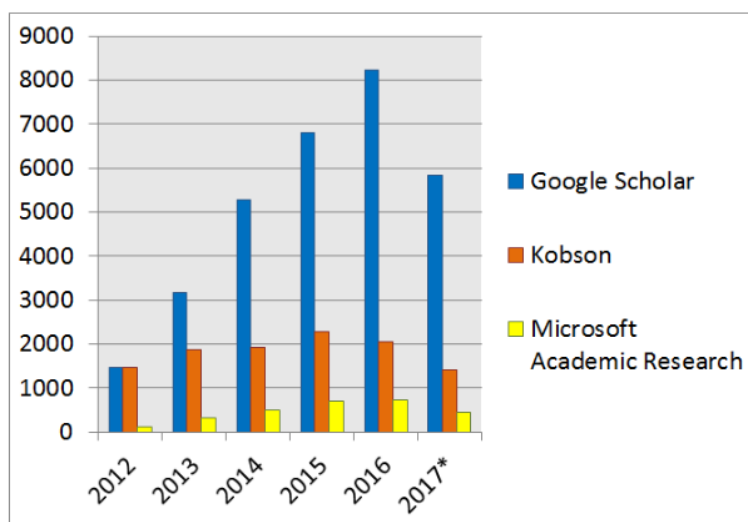


Chart 1. Search through databases of scientific papers for the term “gamification“

3. PERSONALITY AND ITS TRAITS

Just like with gamification and other terms intrinsically connected to our motivation, personality is hard to easily define. Many psychologists gave their versions depending on their scope of interest. However, given that the focus of our paper is on specific, game-loving, individuals, we will take into consideration one of the founders of psychology of the individual, Gordon Allport, who notes: „Personality is the dynamic organization within the individual of those psychophysical systems that determine his characteristic behaviour and thought“ (Allport, 1961, p.28). Within this organization Allport proposes over 4000 personality traits to define an individual and determine his behaviour (Allport 1961).

However, most contemporary psychologists agree that this list is too comprehensive, and that main personality traits that define our actions can be divided into 5 categories. These five basic dimensions are commonly referred to as The Big Five personality traits (The Big Five). Evidence of this theory has been growing for many years, beginning with the research

of D. W. Fiske (1949) and later expanded upon by other researchers including Norman (1967), Smith (1967), Goldberg (1981), and McCrae & Costa (1987) (as summarized by Goldberg, 1993). McCrae and his colleagues have also found that the big five traits are also remarkably universal. Their study examined people from more than 50 different cultures and found that the five dimensions could be accurately used to describe personality.

Before we specify each of these five personality traits, it is important to emphasize that each trait represents two sides of the trait spectrum (for example, extreme extraversion and extreme introversion). Although there is still some consensus to be met regarding the names of the Big Five, all researchers agree on their significance. The names most commonly used nowadays are:

1. Extraversion
2. Agreeableness
3. Conscientiousness
4. Neuroticism
5. Openness to experience

Table 1
Examples of Adjectives, Q-Sort Items, and Questionnaire Scales Defining the Five Factors

Factor		Factor definers		
Name	Number	Adjectives ^a	Q-sort items ^b	Scales ^c
Extraversion (E)	I	Active	Talkative	Warmth
		Assertive	Skilled in play, humor	Gregariousness
		Energetic	Rapid personal tempo	Assertiveness
		Enthusiastic	Facially, gesturally expressive	Activity
		Outgoing	Behaves assertively	Excitement Seeking
Agreeableness (A)	II	Talkative	Gregarious	Positive Emotions
		Appreciative	Not critical, skeptical	Trust
		Forgiving	Behaves in giving way	Straightforwardness
		Generous	Sympathetic, considerate	Altruism
		Kind	Arouses liking	Compliance
Conscientiousness (C)	III	Sympathetic	Warm, compassionate	Modesty
		Trusting	Basically trustful	Tender-Mindedness
		Efficient	Dependable, responsible	Competence
		Organized	Productive	Order
		Planful	Able to delay gratification	Dutifulness
Neuroticism (N)	-IV	Reliable	Not self-indulgent	Achievement Striving
		Responsible	Behaves ethically	Self-Discipline
		Thorough	Has high aspiration level	Deliberation
		Anxious	Thin-skinned	Anxiety
		Self-pitying	Brittle ego defenses	Hostility
Openness (O)	V	Tense	Self-defeating	Depression
		Touchy	Basically anxious	Self-Consciousness
		Unstable	Concerned with adequacy	Impulsiveness
		Worrying	Fluctuating moods	Vulnerability
		Artistic	Wide range of interests	Fantasy
		Curious	Introspective	Aesthetics
		Imaginative	Unusual thought processes	Feelings
		Insightful	Values intellectual matters	Actions
		Original	Judges in unconventional terms	Ideas
		Wide interests	Aesthetically reactive	Values

a. Adjective Check List items defining the factor in a study of 280 men and women rated by 10 psychologists serving as observers during an assessment weekend at the Institute of Personality Assessment and Research (John, 1989a).

b. California Q-Set items from self-sorts by 403 men and women in the Baltimore Longitudinal Study of Aging (McCrae, Costa, & Busch, 1986).

c. Revised NEO Personality Inventory facet scales from self-reports by 1,539 adult men and women (Costa, McCrae, & Dye, 1991).

Table 1. Examples of Adjectives, Q-sort Items and Questionnaire Scales Defining the Five Factors (McCrae, Oliver, 1992, p.178-179).

4. THE BIG FIVE AND MOTIVATION

The question of motivation has long intrigued scientists throughout the years – whether it is a question of motivation to learn new things, study, go to work or participate in team exercises. Ever since Maslow’s theory of needs (1943), we have tried to decipher what it is that moves an individual towards action. With the fame of the Big Five traits theory, many psychologists turned toward exploring the connection between these traits and motivation. Judge and associates give an excellent overview of research and meta-analysis (Judge, Heller, Mount, 2002). They have discovered that three of the five traits have a significant relation with job satisfaction, and our motivation to work. There was also other research showing that openness, extraversion and conscientiousness predicted motivation to learn. In addition, motivation to learn was positively related to objectively assessed development activity.

In other words, our personality traits can affect our motivation to learn or participate in team efforts. Given that computer games are comprised of elements that require constant learning and participation, and that the motivation for gamers to enter a game and plays for various hours is unwavering, it is clear why the subject of this paper is motivation through games, and more, through gamified elements.

Moreover, this paper proposes that personality traits influence our gaming experience, just as they influence our action and reactions in everyday life. Given that, it is interesting to see which traits influence which gaming elements, and what could we take away from this experience.

5. INDIVIDUALS AS GAMERS – QUESTIONNAIRE

For the purpose of this paper, a questionnaire was designed, comprising of 143 questions, based on previous research. The questionnaire is self-reflecting and anonymous for all respondents. It is designed with three major parts:

1. Demographic data for each respondent (sex, age, time spent in game playing and favourite type of game).

2. Standardized personality test HEXACO-PI-R, first developed in 2000, and revised in 2007. The test counts 100 questions measuring 6 personality dimensions (as opposed to the five factor models) – Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness to experience (Ashton & Lee, 2007).

3. Test about Gamer’s motivation and habits, developed in 2006 by Nick Yee. The test was translated into Serbian and modified to count 40 questions which monitor three dimensions of gaming experience – success, socialization and immersion – that is, three types of players according to Bartle: *the ones chasing success, social players and explorers* (Yee, 2007).

The purpose of the questionnaire was to get information about the way we group types of personalities and the way we group types of players. Additional research could show if the connection between standardized personality traits and player types can be implemented on students and employees.

6. METHOD

Statistical analysis of the questionnaire included descriptive analysis of the sample, testing the significance of difference in variables between men and women and the correlation

between variables connected to gaming motivation and personality traits. Descriptive statistics encompassed determining the mean value and standard variations (SD) for parametric data and frequencies and percentage for categorical data. The significance of the difference is determined with T test for parametric data and Chi-Squared test for categorical data. Correlation analysis included calculating Pearson or Spearman correlation coefficients.

7. RESULTS AND DISCUSSION

The sample consisted of 294 respondents – 174 male (59.2%) and 120 female (40.8%). The biggest percentage of respondents fits the age group of 21-3 years old (Chart 2). Also, the biggest percentage (37.1%) reported spending 2-4 hours per day playing games (Chart 3).

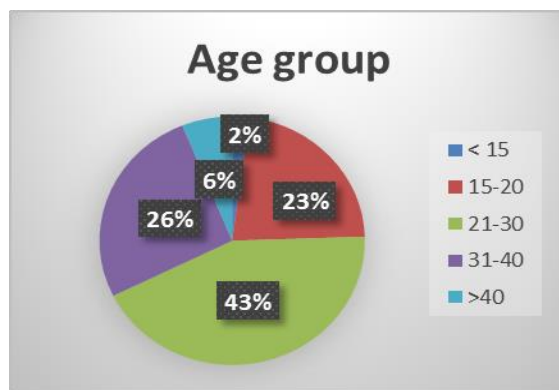


Chart 2. Age group of respondents



Chart 3. Reported hours spent playing games

Further, favourite type of game is shown in Chart 4, with RPG (Role-Playing Games) as leading game type favored by the respondents.

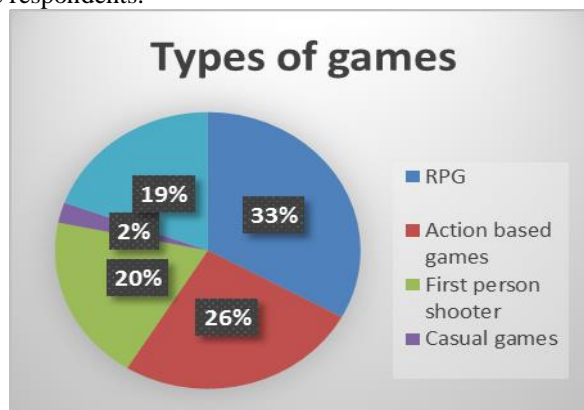


Chart 4. Types of games preferred by respondents

Mean values and standard deviation (SD) of variables connected to personality and gaming motivation are shown in Table 2.

	Mean value	SD
Honesty/Humility	3.4221	0.69499
Emotionality	3.3180	0.81321
Extraversion	3.1352	0.70690
Agreeableness	2.8223	0.62066
Conscientiousness	3.5731	0.60194
Openness	3.7647	0.58829
Success	3.2585	0.59101
Socialization	2.8314	0.73176
Immersion	2.9970	0.64825

Table 2. Mean values and SD for variables

Given the noted differences in tested variables between men and women (Table 3) further correlation were controlled for sex.

	Sex	Mean value	SD	p
Honesty/Humility	female	3.5021	0.68320	0.101
	male	3.3669	0.69963	
Emotionality	female	3.3563	0.82799	0.504
	male	3.2917	0.80420	
Extraversion	female	3.0927	0.79928	0.393
	male	3.1645	0.63622	
Agreeableness	female	2.7948	0.61367	0.529
	male	2.8412	0.62650	
Conscientiousness	female	3.6073	0.64195	0.420
	male	3.5496	0.57342	
Openness**	female	4.0063	0.51119	0.000
	male	3.5981	0.58136	
Success	female	3.2725	0.55296	0.737
	male	3.2489	0.61728	
Socialization *	female	2.9484	0.78062	0.023
	male	2.7508	0.68681	
Immersion **	female	3.2080	0.59807	
	male			

*p<0,05

**p<0,01

Table 3. Differences in sex.

Finally, correlation analysis has shown promising results of the research. Table 6 shows correlation coefficients (controlled by sex) between different aspects of gaming motivation and personality traits. The most significant correlation is shown between success and the personality trait honesty/humility (negative correlation). Statistically significant correlations are evidenced between success and these dimensions: emotionality, agreeableness and openness.

When it comes to socialization, it can be mentioned that there is a small, but statistically important positive correlation with extraversion (especially in females). Also, immersion

has shown significant negative correlation with honesty/humility and emotionality.

Furthermore, statistical analysis has uncovered positive correlation between aspects of motivation itself, the most significant one being the correlation between success and immersion.

What this questionnaire aimed to show is that there are certain correlations between personality traits and gamer types. If we know that, for example, extroverts react highly positively on social elements of the game (such as teamwork and chat rooms), we can use that knowledge to provide them this type of stimulation in non-game context, such as a classroom or place of work.

On the other hand, if the great desire and need to succeed in a game and be number one can negatively influence ethics and morality of a player, which means that we shouldn't put much emphasis on winning – it is important to build upon the socializing and fun-inducing elements of the gamified process.

8. CONCLUSION

Gamification is undeniably a new trend already proven itself across different industries as a highly useful tool to motivate users. Apart from that, gamification has found its place and justification for use in education improvement, medicine, sports and HR. Now, it is time to view it as a tool to better understand each individual and their motivation in order to customize approach for various uses.

This research has shown that certain personality traits bear statistically significant connection to specific motivations of game players. It is especially interesting to observe the negative connection between the motivations to succeed in games with humility/honesty as a trait, as well as the negative connection of immersion in game with the same trait. In other words, players most motivated to succeed and most motivated to explore are the ones with lowest scores on the humility/honesty trait. This can have significant implications for the use of gamification in the classroom or workplace, all the while warning us of the potential ethical and moral aspects of the phenomena.

With this in mind, this paper would suggest further analysis of the individual motivated by different needs, which can be awoken with the use of different gamified elements.

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	Honesty/ Humility	Emotionality	Extraversi on	Agreeablen ess	Conscienti ousness	Openness	Success	Socialization	Immersion
Success	-0.354**	-0.195**	0.028	-0.185**	-0.017	-0.161*	1.000	0.350**	0.502**
Socialization	-0.044	0.063	0.166**	0.108	-0.104	-0.008	0.350**	1.000	0.441**
Immersion	-0.237**	-0.182*	-0.065	-0.102	-0.073	0.050	0.502**	0.441**	1.000

*p<0,05

**p<0,01

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