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TEZE DISERTAČNÍ PRÁCE

What makes a reasonable player: self-regulation, time perspective and habits in
online gaming

Co tvoří rozumného hráče: seberegulace, časová perspektiva a zvyky
v online hraní

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Introduction

Playing online computer games is a leisure activity, relating to the area of media use. There is a broad discussion involving scholars, policy makers and general public about popular virtual gaming worlds of massive multiplayer online role-playing games (MMORPGs). Adolescents and young adults invest a considerable amount of time into playing these games. Scientific discussion has presented a large variety of motives. There is a growing body of research emphasizing **positive outcomes**, which players can obtain via playing—e.g., experiencing competence, making social connections, decreasing of negative feelings, exploring new roles and identities, learning new skills (Barnett & Coulson, 2010; McGonigal, 2010; Yee, 2006a).

On the other hand, there are many studies that emphasize the **negative correlates** of gaming such as physical problems (i.e., fatigue, physical pain, reducing sleep time, skipping meals), personal life problems (i.e., conflicts with friends or family, low social engagement, decreased time management skills, sacrificing hobbies), and professional/academic problems (i.e., work or school absence, deteriorated performance) and more other, e.g., declines in verbal memory performance, lower psychosocial well-being, loneliness, increased suicidal thoughts (Kuss & Griffiths, 2012). These outcomes are usually **related to playing too much—excessive gaming—or gaming addiction**. According to a review on Internet Gaming Addiction (Kuss & Griffiths, 2012) addicted online gamers likely represent a minority of the gaming community. Many players however perceive their playing as excessive and out of control, although they do not meet the criteria for IGA (Yee, 2006b). Many authors confirmed that among the media users, **the MMORPG players are the most prone to develop addictive usage** (Ng & Wiemer-Hastings, 2005; Smyth, 2007; Cole & Hooley, 2013; Kuss & Griffiths, 2012). **Identifying individuals who are at risk of problematic excessive use in this particular context is therefore important for focusing prevention and treatment efforts.**

In my thesis I focused on online gamers—specifically MMORPG players — and I decided **to discover factors and mechanisms that enable online gamers to play reasonably** and thus with lesser risk to develop excessive use or even addictive symptoms. In the search of both positive and negative factors **I focused specifically on the habitual regulation of behavior** that is learned, stable and largely unconscious, **Zimbardo's time perspective as the personal factor** that is believed to influence self-regulation as well as the variety of behavior, **and on the strategies that players use for controlling their playing time**.

Structure of the thesis

The theoretical part of my thesis (Part One) begins with a brief description of MMORPGs—their history, how their playing looks like, and the main specifics of the genre within the computer games (Chapter 1.0). The main purpose of the part one is to present and discuss appropriate theoretical frameworks for excessive and problematic gaming. I began with the most usual addiction-oriented paradigm, revealing its limitations for prevention, prediction and treatment (Chapter 1.1). In Chapter 1.2, I presented an alternative paradigm for excessive and problematic media usage, which is the deficiency in self-regulation, and I argued for its use within the MMORPGs excessive and problematic gaming research. I discuss selected theories focusing on the individual self-regulation such as Bandura's self-efficacy theory (Chapter 1.4.1), the theory of self-control strength (Chapter 1.4.2) and Zimbardo's time perspective theory (Chapter 1.4.3). I also present the online gaming as an easily available, highly immersive, intrinsically motivated activity (Chapter 1.3). Those traits make online gaming an ideal market product, whose consumption is difficult to regulate. This position asks for broadening the unit of analysis from the individual player struggling with the self-control to the whole system of MMORPGs development, sale and consumption. In the Chapter 1.4.4, I present an analysis of MMORPG within the framework of the cultural-historical activity theory, CHAT, and I argue that the excessive consumption is in the very roots of this activity. I therefore argued that for regulating the consumption of MMORPGs, one has to take an agentive action and use relevant mediating artifacts, through which the action can be taken. In the Chapter 1.5, I consider habitual regulation as another important factor that influences MMORPG usage and I present the conceptualization of usage habits via sensitivity to cues.

In the second part, I present four pieces of original research, which I made to (1) confirm the presumed relationships between MMORPG consumption intensity, self-regulation, time orientation and newly designed concept of cues sensitivity that reflects the habitual regulation of gaming; (2) reveal and evaluate the strategies that players use to control their game consumption; (3) reveal how gaming patterns can develop in time in different players in respect to their habitual and conscious regulation of gaming.

Goal

Generally, my thesis' major concern is **how to promote the healthy usage of the highly immersive activity**. I reveal the importance of the habitual regulation of behavior and show some ways how habits can be influenced by conscious intentions. I thus believe that principles revealed within this thesis will be useful within as well as outside the area of online gaming.

PART ONE: SEARCHING FOR APPROPRIATE THEORETICAL FRAMEWORK FOR EXCESSIVE AND PROBLEMATIC GAMING

What are the MMORPGs (and why they are worthy of investigation)?

MMORPGs are artificially made virtual places (usually in medieval fantasy or sci-fi style), where thousands of users interact with each other and with the virtual environment (therefore Massive Multiplayer Online) in the guise of virtual characters—avatars (therefore Role-Playing Game).

Castranova (2005) in his economical analysis of MMORPGs pointed out that when the significant amount of people start to create virtual products rather than real, it would have consequences for the global economics. As psychologists, we could ask what consequences it would have when the significant amount of people start to make emotional investments in the virtual rather than real world. MMORPGs seem perfect for blurring the lines between real and virtual. As Castranova (2005) noticed, a player very easily acquires “a real emotional investment in an event in the virtual world.” (e.g., when your avatar is scammed by another avatar in the game, you feel angry). Moreover, Castranova (2005) argued that the virtual world itself (its rules and content) has some impact on you: “Your mind, when confronted with this new place, automatically developed some desires with respect to it.” (p. 45)

Many MMORPG users acknowledge that it is hard for them to stay away from the playing even when they would like to. On the other side, there is a lot of users for which MMORPG playing is a casual and satisfying leisure activity. This difference seems to me crucial. Do we understand well what does it constitutes? **Do we know what makes the difference between excessive and casual player? Is it just the player's choice?**

Excessive and problematic gaming as a symptom of an addiction and its limits

Despite of popularity of Internet Addiction (IA) as a research topic, there is no agreement on definition, etiology or even prevalence of this condition (Fu, Chan, Wong, & Yip, 2010; Chakraborty, Basu, & Vijaya, 2010). According to systematic reviews, the prevalence of IA in population range wildly, from 0.9% to 38% (Chakraborty et al., 2010), respectively from 1% to 35% (Moreno et al., 2011). It seems that scientific measurement of IA is not very reliable and vary extremely in respect with the measurement method, population sample or other research conditions. However, investigators seem to agree that IA involves **problematic computer usage that is time-consuming and causes distress or impairs functioning in important life domains** (Chakraborty

et al., 2010). Proposed diagnostic criteria varied widely, developing both initial branches — substance abuse and pathological gambling (respectively impulse control disorder).

Etiology of IA and media consumption

According to LaRose, Lin, and Eastin (2003), who focused on the media addiction, there are two predominant views on the development of addictive media consumption. One branch of theories attributed the addiction development to **the addictive personality**, the second branch of theories explains the addiction through **the operant conditioning processes**.

While there are ambivalent evidences for the addictive personality model, **the operant conditioning model** of addiction (Marks, 1990; Marlatt et al., 1988) is more often cited by media addiction researchers. According to this model, the consumption behavior progresses in four phases: initiation, transition to ongoing use, addiction, and behavioral change (Marlatt et al., 1988). Various mechanisms related to habitual or consciously controlled behavior operate in each phase. Learning factors such as classical and operant conditioning, observational and social learning and higher cognitive processes (beliefs, expectations etc.) are considered to be common to all forms of addictions (Marlatt et al., 1988).

Excessive gaming as a deficit in self-regulation

In the rational theories of addiction, people seek the repetition of the pleasant activity consciously, because it gives them desired and expected outcomes. LaRose et al. (2003) pointed out that the role of the conscious decision gradually fades as the mind tries to economize on the mental effort invested in executing of repetitive behaviors. As this happens the behavior becomes automatic rather than controlled. **The habit formation is accompanied by decreased attention to self-monitoring** (important mechanism in self-regulation). Moreover, within the immersive activities, such as online gaming, the self-monitoring processes are always somehow weakened. Consequently, it is less likely that the behavior will be consciously moderated. “Unregulated” habitual use (operantly conditioned through incentives that are no longer actively attended to) is opposed to “regulated” intentional uses, motivated by active consideration of gratification expectations (LaRose et al., 2003).

LaRose et al. (2003) made a great step forward while they reinterpreted the excessive media usage as the habitual usage rather than addictive usage. In the next chapters, I tried to reveal some individual or activity-specific factors that positively or negatively influence the ability to maintain the conscious self-regulation in the immersive and intrinsically motivated activities such as online gaming. I also further discussed the concept of habitual regulation and its possible roles in online games consumption.

Immersion and flow, which is often present within online gaming (Chapter 1.3) may distort

self-regulation, because it weakens the self-monitoring, which together with personal standards motivates the self-regulative effort according to Bandura's social cognitive theory of self-regulation (Chapter 1.4.1). The important mechanism proposed by Bandura is self-efficacy. Different self-efficacy beliefs are responsible for differences in self-regulation effectiveness. According to the theory of Self-control Strength (Chapter 1.4.2), the self-regulation may fail when self-control resources are depleted, e.g. by coping with stress or negative feelings and thoughts. Both social cognitive theory of self-regulation and the theory of self-control strength relate to Zimbardo's Time Perspective theory (Chapter 1.4.3). Future TP is the motivator of self-regulation and therefore people with higher orientation toward Future should more often exert the regulative effort. I believe, that the orientation toward positive aspects of past and future suggests the higher levels of self-efficacy, while the orientation toward negative aspects within each time frame suggests the low self-efficacy beliefs. The Negative TP is also connected with negative thoughts and feelings which may cause the depletion of self-control strength. Within the CHAT analysis of online gaming (Chapter 1.4.4), I argued that the excessive usage is in the very nature of the MMORPG playing activity. That implies that for many players some special actions (agentive actions) must be taken to ensure casual non-problematic gaming. I also argued that apart from the conscious regulation, that requires the exertion of effort, there is another independent source of online gaming regulation, which is the habitual regulation. Unlike the previous work on the role of habits in media usage, I believe that habits may either promote or prevent excessive and problematic usage, depending on the learned sensitivity toward Proplay and Contraplay cues (Chapter 1.5).

PART TWO: THE ROLE OF HABITUAL AND CONSCIOUS REGULATION IN MMORPGS USAGE

In order to further clarify and confirm relationships proposed in the theoretical part of the thesis, I conducted two research studies. Both studies are based on inventory responses and involved MMORPG players recruited online via the gaming forums advertisements.

Respondents recruited for Study 2 in 2012 was asked again to participate in Follow-up study in 2015. Within Study 2 in 2012 were apart from quantitative data collected also qualitative data concerning players' strategies for playing time control. Study 3 reffers to the analysis of those qualitative data.

Research studies that were presented in the thesis:

Studies	Conducted in	N	Main focus
Study 1	2009	154	Measuring Time perspective in MMORPG players together with MMORPG usage (time spent playing).
Study 2	2012	377	Path-modelling of relationships between Time Perspective, conscious and habitual regulation of gaming and MMORPG usage (time spent playing, problematic usage symptoms).
- Follow-up	2015	76	Identifying of factors that lead to change in gaming patterns.
Study 3	2012	164	Categorization of strategies that players use for controlling the time spent playing.

Study 1

Design and Hypotheses

The major hypothesis of Study 1 concerned the Time Perspective to be a predictor of MMORPGs consumption. On the basis of the previous research on the time perspective and repetitive behavior (especially substance use and abuse, gambling), I expect to find:

- 1) Positive relationships between present time orientations (Present-Hedonistic and Present-Fatalistic) and the average time spent playing by week and session (“playing time”);
- 2) Negative relationships between future time orientation (Future-positive) and playing time.

I also hypothesized that the balance between Future and Present factors might be even better predictor of high MMORPGs usage than independent factors.

Results: The hypotheses testing

We found a **significant positive relation between playing time and the Present Fatalistic TP**. Surprisingly, the relationship between playing time and the present hedonistic factor was not significant. We also found, in accordance with our hypotheses, a **negative relationship between the Future TP and playing time**. We obtained convincing results in the case of the relationship between **future-present balance and playing time**. As shown in Table 1, we found significant results for all correlation tests, except for the relationship between future minus present hedonistic and HpW. Differences in playing time between low- and high-scorers in each TP factors are shown in the thesis, p.72.

Table 1: Pearson's Correlation Coefficients Between Time Perspective Factors and Playing Time

	Hours per week	Hours per session
Past-Negative (PaNe)	0.06	0.02
Past-Positive (PaPo)	-0.09	-0.02
Present-Hedonistic (PrHe)	0.06	0.09
Present-Fatalistic (PrFa)	0.21 **	0.26 **
Future (Fu)	-0.12	-0.23 **
Future minus Present-Hedonistic	-0.12	-0.19 *
Future minus Present-Fatalistic	-0.20 *	-0.30 ***

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Discussion

TP proved to be relevant for MMORPG playing. We demonstrated that different TP profiles relate to different frequencies of playing. Larger amounts of playing time correlates with lower level of Future TP and higher levels of Present TP, especially Present Fatalistic. This unbalance of present factors toward present fatalistic is worth of noting, because it constitutes a difference from reported studies on TP and drug abuse and gambling, where present hedonistic factor was demonstrated as the key variable. Present fatalistic is connected with dissatisfaction, aggression, and depression.

Study 2

Design and Hypotheses

The main objective of Study 2 was to empirically test the weight of predictors of MMORPG usage as they emerged from theoretical analysis presented in the first part of this thesis.

Via inventory-based research, I measured two dependent variables – Playing time and Problematic usage – and three predicting (explanatory) variables – Time perspective (Future positive TP and Negative TP), Habitual regulation (Contraplay cues sensitivity, Proplay cues sensitivity), and Conscious control of MMORPG usage (Control effort and Control success). The conceptual framework is depicted in Figure 1.

I presumed the Zimbardo's time orientation to be the most general and stable factor (close to personality trait or cognitive habit) that affected Problematic usage, especially through its effect on Control success (positive effect of Future positive and negative effect of Negative TP). Control success together with Cues sensitivity are believed to be rather specific and proximal factors influencing MMORPG usage (both Playing time and Problematic usage). Given to conceptualization of Time Perspective as general cognitive habits, I also hypothesized relationships

between TP and Cues sensitivity, which is presumed to express habits related to MMORPG usage.

Data was analyzed statistically. Mainly linear regression analysis and Partial Least Squares Path Modeling (PLS-PM) were used.

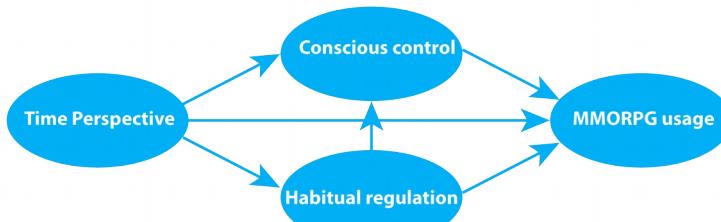


Figure 1. Conceptual framework of Study 2

Results

The comprehensive model of MMORPG usage with all proposed predicting and mediating variables was tested independently for both MMORPG usage variables – Problematic usage (Figure 2) and Playing time (Figure 3).

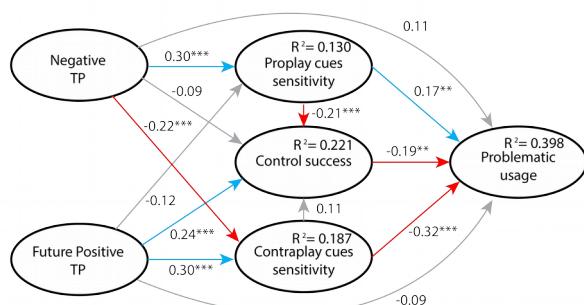


Figure 2. Structural model with path coefficients. The effects of TP on Cues sensitivity, Control success and Problematic usage (full model); N=256.

** $p<0.01$, *** $p<0.001$

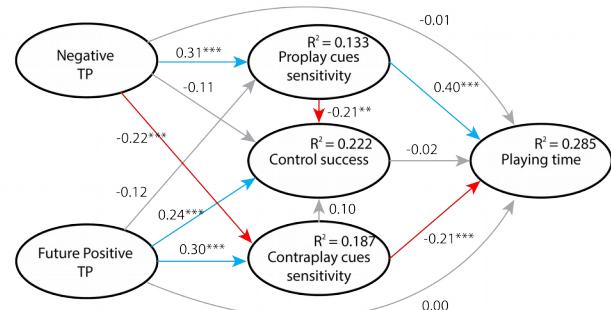


Figure 3. Structural model with path coefficients. The effects of TP on Cues sensitivity, Control success and Playing time (full model); N=256.

** $p<0.01$, *** $p<0.001$

Results for model depicted at Figure 2 showed that proposed predictors were able to explain a moderate amount of variability in Problematic usage ($R^2 = 0.398$). The coefficient of determination for other endogenous variables were between low and moderate. In sum 14 paths has been tested within the model and 8 had been found statistically significant.

Results for model depicted at Figure 3 showed that proposed explanatory variables were

together able to explain a moderate amount of variance in Playing time ($R^2 = 0.285$). Either Time Perspective factors or Control success showed no significant direct effect on Playing time. Only significant direct predictors were Cues sensitivity. Therefore, the simpler model without Control success was tested. As presumed, the coefficient of determination remained the same after excluding Control success and direct paths between TP factors and Playing time ($R^2 = 0.285$) suggesting that the final simpler model holds the same predictive power.

Discussion

The main concern of Study 2 was to develop a model of MMORPG usage predictors. Given to relatively low level of prior knowledge in the new area of online gaming, the PLS-Path Modeling was used rather than covariance-based SEM. Two comprehensive models were developed, one for Problematic usage (the presence of addictive usage symptoms) and one for Playing time (the overall usage expressed by three measures: Hours per Week, Hours per Session, Free Time Ratio). Both models showed moderate amount of explained variability in dependent variable, almost 40% in case of Problematic usage and almost 30% in case of Playing time.

According to theoretical background presented in Part One of this thesis, variables related to either conscious regulation (Future Positive Time Perspective, Negative Time Perspective, Control success), or habitual regulation (Proplay and Contraplay Cues Sensitivity) were proposed as predictors. It had been confirmed that all proposed variables affected significantly Problematic usage in expected ways.

Future Positive Time Perspective, which is believed to be the important prerequisite for conscious self-regulation, affected positively the efficiency of players in controlling their playing time (**Control success**) and also **Contraplay Cues Sensitivity**. Both these variables (Control success and Contraplay cues sensitivity) had significant direct negative effect on Problematic usage. **All three variables therefore function as the protective factor against problematic MMORPG usage.**

On the other hand, **Negative Time Perspective** affected positively **Proplay Cues Sensitivity**, which was the variable with significant positive effect on Problematic usage, which was partially mediated through **Control success**. **Orientation on negative aspects of life therefore lead to stronger Proplay habits, worse control of time spent playing and eventually to occurrence of problems connected with gaming activity.**

The proposed predictors were generally less successful in explaining of variability in Playing time. Either Time Perspective factors or Control success showed no significant direct effect on Playing time. Gaming habits (Cues sensitivity) on the other hand had been confirmed as significant predictors, explaining together moderate amount of variability. Similar as in Problematic usage, **Contraplay cues sensitivity functions as the protective factor from excessive gaming and**

Proplay cues sensitivity leads to increase of time spent playing.

Apart from models discussed above, I believe that Study 2 brought some other minor implications for further research on MMORPG usage. I discussed them within thesis.

Study 2 – Follow up

In order to see how MMORPG usage will develop in different players in respect to their previous MMORPG usage, Controlling effort, Cues Sensitivity and Time Perspective, the follow-up study were conducted in June 2015, after almost three years since Study 2.

Hypotheses

The main concern of the follow-up was to reveal whether some variables measured in Study 2 can predict, whether the player stays active or quits, or whether he changes his usage appropriately to the changes in life. I presumed that given the average age of respondents, the changes in life would be rather those that limit the gaming as respondents would start their career and/or family life. I therefore presumed that **the differences between MMORPG usage scores in 2012 and 2015 would rather decrease than increase over time**. I also believed that the decrease in MMORPG usage would depend either on Life change reported by respondents, or on Time Perspective factors as measured in 2012, because TP should be relatively stable, had been found to affect the current usage and is also presumed to affect the ability to consciously regulate the gaming.

Discussion

Almost all variables measured in 2012 and 2015 showed moderate or high correlation coefficients, suggesting high reliability of measurement as well as the relative stability of the measured concepts. This was expected in TP factors, while they are close to personality traits, but it was rather surprising in gaming habits and usage variables, which were believed to be more situationally dependent.

The small amount of respondents participating in follow up of Study 2 was the main limiting factor, however some promising findings have been revealed.

All MMORPG usage variables showed in average **the significant decrease over time**, suggesting that in non-problematic players it is common to decrease the usage of MMORPGs. However, this was not true for players with **high Negative TP, which was revealed to significantly contradicts Playing time decrease**.

Subjectively perceived changes in gaming (Gaming change) was not strongly related to

“objectively” measured changes in game usage (MMORPG-usage-change variables), the only significant relationship was found between FTR-change and Gaming change. In accordance with presumptions, Gaming change was significantly predicted by Life change, suggesting that gaming patterns changes as the players' life situation changes.

Study 3

Design and hypotheses

The major concern of Study 3 was to analyze strategies that players reported to use for controlling their playing time. We had two research questions:

- (1) how players' strategies can be categorized;
- (2) what can the categories tell about players' theories of time regulation within MMORPG playing (what are the most problematic parts according to them; how their strategies are focused).

Analysis and Results

Within analysis of open codes, four major categories emerged (Table 31).

Table 31. Major categories of MMORPG usage regulation strategies and their subordinate codes.

Category	Open codes
Prevent longtime immersion	Monitor time, Create distraction, Seek other activities (while playing), Make regular pauses, Break immersion
Fight appeal	Be limited by other activities, Know life priorities, Set up other activities, Create obstacles
Prevent overlong sessions	Naturally stop, Willpower, Persuade to stop, Persuade not to play, Schedule, Set up stop time, Set up alarm, Limit playing time per day, Plan session, Keep routine, Be limited by other people,
Do not feel obliged to play	Play only when..., Avoid feeling to be obliged to play

Discussion

The main purpose of all strategies was to control time spent playing, however, they differed in the specific goals that they presume to ensure the purpose. According to goal (problem), strategies can be divided into four well represented categories: Prevent longtime immersion, Fight appeal, Prevent overlong sessions, Do not feel obliged to play.

Prevent longtime immersion

According to some users, the main problem of regulation within MMORPGs playing relates to the immersion or flow phenomenon that disables a player to monitor passing time and thus in fact prevents the regulation. Respondents overcome the problem usually by **constant or regular monitoring of time** by watching watches **and/or by distracting themselves** and thus break immersion and regain self-reflection.

Prevent overlong sessions

Many reported strategies focused on the problem of prolonged sessions. The ability to end the session “in the right time” was the main concern of these strategies. To some extent the problem of regulation is similar as within ”Prevent longtime immersion” category, because immersion or flow also leads to prolonged sessions. The solution reflected within “Prevent overlong session” category was however different. The key regulative action was **to define a stop cue** (e.g., the exact time, the in-game goal reaching, alarm clock signal) and to end the session when the cue comes. Therefore I believe that the main problem of gaming regulation revealed within these strategies concerns the lack of natural stop cues within MMORPGs. The trouble with some “artificial” cues (e.g., the exact time) is that they do not match with what is going on in the game. Some respondents expressed that the end of session, when the cue comes is rather conditional – e.g., they usually do not end, when they participate in raid. The frequent approach was to set a stop cue related to the game (usually reaching of some game goal).

To have gaming routinized was another way to prevent prolonged sessions. The stop cues are in this case probably habitualized and thus require less regulative effort. The obvious danger here is that the routine may be set inappropriately in the first place (leading to neglecting some other important life activity) and may be difficult to adjust, when life conditions change (e.g., the player will have less time due to the increasing amount of duties).

Finally, some respondents reported that ending of game session is very easy for them, requiring no regulative effort. I believe that also those players have **habitualized stop cues, which they may not be aware of**. The advantages and disadvantages of this “natural stopping” is the same as those of routinized gaming.

Fight appeal

Many statements concern gaming in relation with their other activities. They reflect that **gaming is not regulated for its own sake but rather for the sake of other activities**. Therefore, the motivation strength of these other activities is a crucial factor in gaming regulation.

Respondents often emphasized the motivating power of **duty**, some however believed that setting up **other appealing activities** is needed to regulate gaming.

For some respondents the motivating force of other activities seems insufficient and thus they actively prevent themselves from gaming by making gaming more difficult (e.g., they leave their computer in the office).

All these strategies have in common that they are focused on **restraining from gaming** rather than on the ending a session. The regulative actions therefore are not taken within gaming session.

Do not feel obliged to play

Several statements indicated that the main problem of MMORPG overuse is that a player **feels to be obliged to play** and thus he plays even when tired, not in the right mood, or bored with game. Reported reasons of this compulsive gaming were guild membership (and resulting raid participation), but also the business model of MMORPGs based on monthly subscription that guarantees unlimited playing time.

According to our findings, to achieve successful control over gaming, a player (1) needs to be motivated either by external urges such as duty, or by competing appeals to resist the urge to enter gaming world; (2) needs to prevent prolonged sessions either by breaking immersion (flow) or by installing stop cues into sessions; (3) needs to avoid feeling to be obliged to play, which may be induced by several causes such as subscription business model, guild membership, the fact that virtual world is always present and eventful (and feeling that I am missing something when I am out) or rigid gaming habits.

3. Conclusions

An extensive theoretical analysis and three research studies were conducted in order to answer the question what makes the reasonable (non-problematic and non-excessive) player of MMORPGs.

Within the theoretical part, arguments were given for a shift from addiction oriented paradigm to paradigm focused on self-regulation, time perspective, habits, the nature of activity and agency.

This focus among else led me to identify protective factors of MMORPG usage – factors that are ignored within addiction oriented etiological models. Within Study 2, I showed that these protective factors (Future Positive Time Perspective, Control success, Contraplay Cues Sensitivity) have significant explanatory power. Negative Time Perspective and Proplay cues sensitivity were conversely found to be factors promoting excessive and problematic usage. Negative TP was also identified as the factor behind non-decreasing the MMORPG usage measured after three years.

Time Perspective in MMORPG usage

Time Perspective has been previously found to be relevant for many kinds of human behavior, including repetitive problematic behavior such as gambling. The role of Time Perspective in MMORPG usage was analyzed within Study 1 and Study 2. Study 1 showed that Future positive TP correlates negatively with excessive MMORPG usage, while Present fatalistic TP correlates positively. Surprisingly, the effect of Present hedonistic TP on Playing time was not confirmed. Within Study 2 those relationships were further analyzed using the path-modelling methodology. It has been revealed that the effect of TP on Playing time and Problematic usage symptoms was partially mediated through the conscious control of gaming, which was significantly predicted by both measured TP factors – Future positive TP and Negative TP (composite score of Past negative, Present fatalistic, and Future negative). The distinction between positive and negative orientation was much more important for differences in usage than distinction between present and future orientation, that was previously investigated in relation to problematic and/or hedonistic behavior. This might be true also for other behavior patterns confirmed to relate to TP, such as school achievements, procrastination, health-related behavior and others. The significance of these findings is thus not limited to the area of MMORPG research.

Time Perspective factors showed relatively high stability measured after three years. Negative TP was found to be significant predictor of long-term development of MMORPG usage. Although all measured usage variables showed a significant decrease after three years, Negative TP affected significantly and negatively this trend, preventing the decrease.

Habits in MMORPG usage

LaRose et al. (2003) argued that excessive media usage should be viewed within the paradigm of self-regulation rather than addiction, emphasizing that deficient self-regulation is implicitly in many definitions of behavioral addiction and explicitly in many diagnostic criteria (e.g., loss of control, relapse). Thus, the indicators of so-called “media addictions” may be reinterpreted as markers of deficient self-regulation and the process of addiction as the struggle to maintain effective self-regulation over problematic media behavior. Scholars focused on self-regulation (e.g., Aarts et al., 1998) pointed out that in theories of conscious behavior is often omitted that most of human activities have repetitive nature and thus the role of habit is crucial.

Usually habits are supposed to initiate the behavior in question, however I believe that habits might either initiate or prevent the behavior, depending on other life activities and person's attitude toward them. The relationships between the analyzed behavior and other life activities are often neglected, which is then reflected in a simplistic measurement of habits assessing only the strength of habit compared to conscious regulation. To overcome this, I proposed the measurement based on situational cues. Some of these cues relate to the analyzed activity (in this case MMORPG playing),

but some of them relate to other life activities, such as work or socializing. I developed two-scales measurement of gaming habits in order to investigate, how sensitive users are to various Proplay Cues (cues that encourage usage) and Contraplay Cues (cues that prevent usage). As expected, Cues Sensitivity factors were moderately strong predictors of MMORPG usage and they functioned in presumed directions – Proplay Cues Sensitivity led to excessive and problematic usage, while Contraplay Cues Sensitivity had the opposite effect. Although Cues Sensitivity was believed to be relatively situationally dependent, it showed surprising stability after three years, suggesting that gaming habits are either quite rigid or influenced by some stable (personality) traits.

Habitual regulation thus confirmed its high relevance in research concerning repetitive and problematic behavior. Further investigation would be needed to define relationships between Cues Sensitivity and self-regulation, however Study 2 results suggest they are rather independent concepts.

Cues-sensitivity based measurement of habits seemed to be a promising method that can be easily applied also in other areas concerning usage behavior.

Strategies of MMORPG usage regulation

Within the theoretical part, I identified some features of MMORPGs that might have consequences for MMORPG usage and its regulation, namely the ability of MMORPGs to induce flow, which was supposed to work as intrinsic motivator for usage and at the same time to restrain self-regulation; and the selling model of subscription with unlimited playing time and the ever-present gaming world, which was also supposed to motivate usage. These relationships were not properly tested in this thesis, however both presented problems were identified within qualitative analysis of strategies for playing time control reported by players (Study 3). The analysis of strategies also confirmed that gaming should be analyzed in relation to other life activities, because they often function as the natural limitation of usage. Further research is needed to investigate thoroughly these activities and their exact relations to MMORPG usage.

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