Escaping in digital games: The relationship between playing motives and addictive tendencies in males

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ABSTRACT

Problematic playing behaviour in terms of addiction is well known to be associated with specific traits (e.g., self-esteem) and weak social settings (e.g., negative relationships). What remains unclear is the impact of playing motives on addictive tendencies. We investigated how playing motives were related to problematic playing behaviour. Using ratings indicating explicit motives and response latencies indicating the activation of implicit motives, we investigated Yee’s (2006) three main playing motives: social interaction, achievement, and immersion. All three implicit motives were found to be highly activated among problematic players while only explicit immersion was judged as less important by non-problematic and excessive players. In addition, implicit immersion together with explicit immersion and playing hours were found to be strong predictors for problematic playing behaviour. We discuss motives, especially immersion, as possible risk factors for addictive tendencies when motives become internalised and therefore automatically activated by thoughts about digital games.

1. Introduction

Digital games and their possible positive and negative influences on adolescents and young adults are still discussed in the media and in research. Especially digital game addiction has come into focus of these debates. Game addiction is often compared to gambling addiction due to its similarities (Griffiths & Wood, 2000). However, debates do not further focus on its existence but instead emphasize diagnostic instruments (Byun et al., 2009), treatments (Yellowlees & Marks, 2007), or causes of this pathological behaviour (Byun et al., 2009).

Playing time is still considered as main diagnostic value as it was found to be strongly connected with problematic playing behaviour (Hellström, Nilsson, Leppard, & Åslund, 2012). Of course, behaviourally addicted persons show more of the concerning behaviour than non-addicted persons do. Therefore playing time cannot be seen solely as the risk factor per se (Hellström et al., 2012). Risk factors have been found among traits and social settings such as, for instance low, self-esteem (Collwell & Payne, 2000; Niemz, Griffiths, & Banyard, 2005) and loneliness (Lemmens, Valkenburg, & Peter, 2011; Whang, Lee, & Chang, 2003). Some researchers found a bi-directional connection between these possible causes and problematic gaming behaviour (Gentile, 2009). Only a few studies focused on the motives for game playing and their role in explaining the relationship between real life problems and addictive tendencies concerning digital games (Hellström et al., 2012). Thus, the aim of our study was the investigation of implicit and explicit playing motives and their role in game play addiction.

2. Theoretical background

2.1. Traits, social settings, and further psychological problems

As regards players’ traits, recent research focused on personality traits, demography, social settings, and psychological problems (Yang & Tung, 2007). Gender and age were found to reinforce problematic playing behaviour (Chak & Leung, 2004; Niemz et al., 2005). Boys were found to be more endangered than girls (Gentile et al., 2011) and adolescents tended more to neglecting their duties concerning work and/or school than adults (Gentile, Lynch, Linder, & Walsh, 2004). Moreover, intelligence also contributes to game addiction. Less intelligent adolescents were at a higher risk to get addicted than more intelligent adolescents (Engelberg & Sjöberg, 2004).

Research has provided evidence for low self-esteem influencing addictive tendencies (Armstrong, Phillips, & Saling, 2000; Caplan, 2002; Yang & Tung, 2007). It was also shown that loneliness and shyness enhanced problematic playing behaviour (Chak & Leung, 2004; Hur, 2006). (Lemmens et al., 2011) also provided evidence...
for loneliness being a risk factor for future problematic playing behaviour but simultaneously showed that pathological playing behaviour enhanced future loneliness.

In terms of social settings, poor parental relationships and poor connections to teachers (Niemz et al., 2005) were found to be related to problematic playing behaviour. Concerning psychological problems, research showed that depression (Caplan, 2002; Kim et al., 2006), compulsion (Whang et al., 2003), suicidal tendencies (Kim et al., 2006), attention deficit and hyperactivity (Yoo, Cho, Ha, & Yune, 2004) were risk factors.

Gentile et al. (2011) investigated the interaction of different possible risk factors and addictive playing behaviours among children and adolescents. They found that pathological game play was related to risk traits and social settings. Moreover, pathological game play enforced impulsivity, depression, social phobia, low social competence, low empathy, and low emotional regulation mechanisms. Therefore, these risk factors and problematic playing behaviour seem to causally influence each other.

2.2. Motives for playing digital games

Digital, especially online games seem to offer perfect coping strategies for all real life problems that have been found to be risk factors for problematic playing behaviour. The virtual worlds of Massively Multiplayer Online Role-Playing Games (MMORPGs) offer the opportunity to engage a virtual life that substantially differs from the problematic real life: players are able to create their own character which corresponds to their ideal identity; they can find new friends and families (guilds). Moreover, they have the possibility to achieve something that they might not find in real live. Besides social connections and achievements these games can be used to cope with real-world related stress. Yee (2006) describes these three dimensions as the main motives for playing MMORPGs.

This well-known player motivational taxonomy suggests three main motivational reasons for digital game play in terms of MMORPGs: achievement, social interaction, and immersion. Achievement is described as the motivation to compete with other players and it includes advancement, mechanics, and competition. Social interaction is concerned with socialising with others, for instance, communication and helping, teamwork, and being part of a social group. The third motivational dimension, “immersion”, is described as a cultivation of game characters and includes escapism, thus relaxing by escaping from the real world and avoiding real world problems.

2.3. Association between explicit and implicit motives and negative outcomes

No one starts to play digital games with the intention to become addictive. Persons start to play due to motivational reasons. The question arises if some motives constitute risk factors for future problematic behaviour.

The relationship between explicit playing motives and negative outcomes was focussed by Hellström et al. (2012). They provided evidence for social interaction and achievement decreasing negative outcomes. In contrast, the higher the motive immersion was judged, the higher were the negative outcomes. Klimmt, Schmid, and Orthmann (2009) could show that motives for game playing had an impact on problematic playing behaviour, explaining even negative outcomes better than time spent on games. In contrast to Hellström et al. (2012) they found that problematic players enhanced all three motives if these motives were used to cope with real life problems.

These studies provided evidence that explicit playing motives have an important influence on problematic playing behaviour. Thus, these studies ignore implicit motives which might play an important role in performing a particular behaviour. Explicitly asking for playing motives strongly depends on the players’ ability and motivation to report their motives (e.g., Fazio & Towles-Schwen, 1999; Wiers, Van Woerden, Smulders, & De Jong, 2002). In addition, in some situations, they might not have the opportunity to reflect upon their behavioural motives. Thus, implicit motives often play an important role in guiding the behaviour.

Particularly, when habits develop, implicit motives might be crucial for performing the behaviour. Explicit motives for the behaviour and the behaviour itself often occur simultaneously, thus establishing a cognitive link between both concepts. When habits develop, the motives causing the behaviour operate automatically and therefore become implicit (Aarts & Dijksterhuis, 2000; Bargh & Ferguson, 2000). If explicit motives have become implicit, they might guide behaviour, as often as implicit attitudes guide behaviour (e.g., Fazio, 1990; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Fazio & Towles-Schwen, 1999).

It is plausible to assess motives implicitly and explicitly when it comes to game play addiction. Some motives might be explicitly mentioned as more important while another one already has become implicit and has an indirect influence on problematic playing behaviour which might be even stronger. Research has shown that other risk factors than playing motives which are related to problematic playing behaviour might lead to game play addiction and that, in return, problematic playing behaviour increased these risk factors (Gentile et al., 2011). However, in terms of pathological gaming behaviour, it is still unclear whether players with problematic gaming behaviour show different implicit and/or explicit motives than healthy players.

2.4. Research questions

The aim of our study was threefold. Firstly, we aimed at investigating the implicit motives among adult players with non-problematic, excessive, and problematic playing behaviour. Secondly, we investigated the explicit motives among adult players with non-problematic, excessive, and problematic playing behaviour. Thirdly, we compared implicit and explicit motives among players with non-problematic, excessive, and problematic playing behaviour and explored the role of implicit and explicit motives in game play addiction.

3. Method

3.1. Participants and design

A 3 × 3 mixed design was chosen, combining playing behaviour (non-problematic vs. excessive vs. problematic) as between-subjects factor and playing motives (social interaction, achievement, immersion) as within-subject factor. We only searched for male digital game players and recruited male players by mailing lists from the University of Cologne. In addition, we contacted hosts of computer game parties and asked them for help. We visited the parties we were invited to and asked male players to join our study. We were able to recruit 90 players for this laboratory study who all participated voluntary and without payment. Before participants started the study, they were told that we were interested in digital game play motivation. The real purpose of the study (the relationship between motivation and addiction) was revealed at the end of the study. All participants had digital game playing experience: Hours per week: $M = 25.32, SD = 16.48$; years of playing experience: $M = 10.71, SD = 5.10$. Mean age was 22.83 years, $SD = 3.77$. 


3.2. Assessments, measures, and data preparation

3.2.1. Implicit playing motives
To measure the implicit activation of playing motives, we used a lexical decision task. In a lexical decision task, participants have to decide as quickly and accurately as possible whether the shown letter strings are real words or fake non-words. To prevent effects due to practice, the first four items are fixed in place and are excluded from further analyses, whereas the following items are presented randomly. The lexical decision task assesses the activation of concepts (e.g., Baldwin, Fehr, Keidian, Seidel, & Thomson, 1993; Fazio, 2001); thus, participants should respond faster to words representing activated motives than to words reflecting a playing motive which is not activated at this time.

To construct stimulus material for the lexical decision task, we used the three motives for game play from Yee (2006). For each motive we chose 54–60 related adjectives (immersion: N = 55; achievement: N = 54; social interaction: N = 60). The resulting 169 adjectives were pre-tested by 53 undergraduates (mean age 32.34, SD = 7.91). Participants had to judge the fit of each adjective concerning the related category on a 7-point Likert Scale (1 = does not fit at all, 7 = fits perfectly). For each of the three dimensions, twenty adjectives were chosen (lowest fit was 5.25, highest 6.80).

In the main study, each participant underwent 120 trials while response latencies were assessed. The lexical decision task consisted of 60 non-words and 60 words. Each playing motive was represented by 20 words. For data preparation, we computed three mean latencies for each participant regarding the categories social interaction, achievement, and immersion. Before computation of mean latencies, data were checked for extreme outliers: responses were excluded if they deviated from the mean more than 3 standard deviations. Furthermore, we checked data for extremely high error rates. The participants’ performance on the lexical decision task was more than 95% accurate; therefore, false negatives were not excluded for further analyses. Due to different word lengths, response latencies were divided by the number of characters of each corresponding word (Duffy, Morris, & Rayner, 1988; Rayner & Duffy, 1986).

3.2.2. Explicit playing motives
To assess explicit playing motives, participants were asked to judge different playing motives on a 7-point Likert-Scale (1 = does not fit at all; 7 = fits perfectly) including two questions for each of the three dimensions. “When I play digital games this is motivated by...”: (1) Friendship and (2) Joy due to support (for social interaction); (3) Achievement and (4) Competition (for achievement); (5) Stimulation and (6) Escapism (for immersion). These questions were based on the two items with highest means for each related scale concerning the pre-test of the implicit playing motives.

Internal consistencies of each explicit playing motive scales were (Cronbach’s alpha) x = .83 for social interaction, x = .63 for achievement, and x = .67 for immersion. For further analyses, means for the ratings of social interaction, achievement, and immersion were computed for each participant.

3.2.3. Playing behaviour
Problematic, excessive, and non-problematic playing behaviour was assed via the addiction scale of Grüsser & Thalemann (2006). This scale included five questions participants had to answer on a 6-point-Likert Scale (1 = does not fit at all; 6 = fits perfectly): (1) Have you ever missed a meeting with friends because you played digital games instead? (2) Do you neglect your duties due to your playing behaviour? (3) Do you think about playing digital games while doing something else? (4) Have you ever slept less than 8 h due to digital game play? (5) Do you feel nervous if you are not able to play any digital games?

For further analyses, the total sum for the addictive scale was calculated for each participant. The classification for playing behaviour of participants was as follows (Grüsser & Thalemann, 2006): Participants with a sum score from 5 to 9 were considered to have non-problematic playing behaviour (N = 28, M = 8.33, SD = 1.53). A sum score from 10 to 12 on the addiction scale was classified as excessive playing behaviour (N = 35, M = 11.79, SD = 0.81) and participants with a sum score from 13 to 30 were considered to have problematic playing behaviour (N = 27, M = 16.00, SD = 1.71). See Table 1 for mean age, playing hours per week, and years of playing experience of all three groups.

3.3. Procedure
In order to activate implicit playing motives, all participants were instructed to describe in their own words their experiences including emotions and thoughts when playing digital games. This task took 5 min and was followed by the lexical decision task. Afterwards, participants were asked to fill in the questions concerning their explicit playing motives and the questions of the addiction scale. At the end of the study, participants filled out demographical questions including playing time per week.

4. Results
4.1. Implicit playing motives
We analysed the response latencies in milliseconds per character using a 3 (playing behaviour: non-problematic vs. excessive vs. problematic) × 3 (implicit playing motives: social interaction vs. achievement vs. immersion) mixed ANOVA, with repeated measures on the last factor.

The main effect for playing behaviour reached significance, F (2, 87) = 13.66, p < .001, ηp2 = .24. Participants with problematic playing behaviour (M = 91.91, SD = 18.28) responded faster than participants with excessive playing behaviour (M = 115.93, SD = 20.01), t (53) = 4.57, p < .001, d = 1.85, and participants with non-problematic behaviour (M = 119.13, SD = 25.20), t (60) = 4.86, p < .001, d = 2.09.

We found a significant main effect for implicit playing motives, F (2, 174) = 7.67, p < .001, ηp2 = .24. Response latencies for immersion (M = 113.27, SD = 26.92) increased in comparison to social interaction (M = 106.59, SD = 23.91), t (89) = 4.58, p < .001, d = 0.48, and achievement (M = 109.30, SD = 26.36), t (89) = 4.58, p < .001, d = 0.24.

The interaction effect between playing behaviour and implicit playing motives was marginally significant, F (2, 120) = 2.13, p = .08, ηp2 = .05. Single comparisons showed that participants with problematic playing behaviour responded faster to social interaction, achievement, and immersion, than any other condition what is due to the main effect of playing behaviour, all p < .01. However, single comparisons also revealed significant differences between social interaction and immersion among non-problematic players, t (27) = 2.43, p < .05, d = 0.46, and among excessive players, t (34) = 3.67, p < .05, d = 0.62. Response latencies for immersion increased. This effect was not significant for problematic players, t (26) = 1.58, n.s. The same pattern was found for differences between achievement and immersion for non-problematic players, t (27) = 2.17, p < .05, d = 0.41, excessive players t (34) = 2.22, p < .05, d = 0.38, and for problematic players, t (26) = 1.65, n.s. In contrast, simple comparisons between social interaction and achievement did not reach significance for non-problematic players, t (27) = 0.21, n.s., and for excessive players, t (34) = 0.65, n.s., but did for problematic players, t (26) = 2.51, p < .05, d = 0.48 (see Table 2 for all means and standard deviations).
4.2. Explicit playing motives

Mean ratings of participants were analysed using a 3 (playing behaviour: non-problematic vs. excessive vs. problematic) × 3 (explicit playing motives: social interaction vs. achievement vs. immersion) mixed ANOVA with repeated measures on the last factor. ANOVA revealed a main effect for explicit playing motives, $F(2, 174) = 18.90$, $p < .001$, $\eta^2_p = .18$. Ratings for immersion were lower than for achievement, $t(89) = 4.73$, $p < .001$, $d = .50$, and for social interaction, $t(89) = 5.75$, $p < .001$, $d = .61$. In addition, the interaction effect for playing behaviour and explicit playing motives reached significance, $F(2, 174) = 2.71$, $p < .05$, $\eta^2_p = .06$. Ratings for achievement were higher than for immersion for non-problematic players, $t(27) = 4.68$, $p < .01$, $d = .59$, and for excessive players, $t(34) = 3.78$, $p < .001$, $d = .64$, but not for problematic players, $t(26) = 1.08$, n.s. The same pattern emerged for simple comparisons between social interaction and immersion for non-problematic players, $t(27) = 4.68$, $p < .001$, $d = .88$, excessive players, $t(34) = 4.30$, $p < .001$, $d = .73$, and problematic players, $t(26) = 0.83$, n.s. (see Table 3 for all means and standard deviations). No further simple comparisons reached significance.

4.3. Comparison between implicit and explicit playing motives and the role of playing hours

In order to compare implicit and explicit playing motives, we translated ratings and response latencies into z-values. Z-values for response latencies were further reversed in order to interpret higher values as stronger associated with the concerning motive.

We conducted $t$-tests for each playing behaviour group to test for differences between explicit and implicit playing motives. For non-problematic players, only the $t$-test for immersion reached significance, $t(27) = 2.63$, $p < .014$, $d = .52$. Results indicate that immersion as implicit game playing motive was weaker ($M = 0.32$, $SD = 0.95$) than immersion as explicit motive ($M = 0.38$, $SD = 1.96$) among non-problematic players. We did not find any significant differences between implicit and explicit motives for excessive players. Only immersion reached marginal significance, $t(35) = 1.99$, $p < .055$, $d = .38$. Excessive players showed stronger explicit ($M = -0.13$, $SD = 1.06$) than implicit motives ($M = -0.31$, $SD = 0.84$).

Problematic players showed significant differences between all explicit and implicit motives. Social interaction was a stronger implicit motive ($M = 0.073$, $SD = 0.71$) than an explicit motive ($M = -0.09$, $SD = 1.22$), $t(26) = 2.49$, $p < .019$, $d = .41$. Achievement was found to be a weaker explicit game play motive ($M = 0.04$, $SD = 1.22$) than an implicit one ($M = 0.55$, $SD = 0.88$), $t(26) = 2.11$, $p < .044$, $d = .49$. Immersion was a stronger implicit ($M = 0.80$, $SD = 0.63$) than explicit motive ($M = 0.49$, $SD = 0.80$), $t(26) = 7.30$, $p < .001$, $d = 1.43$.

In order to investigate the role of motives and playing time in game play addiction, we conducted multiple regression analyses using immersion as implicit and explicit motive and playing time as predictors and the sum score on the game addiction scale from Grüsser and Thalemann (2006) as criterion (see Table 4 for beta weights and values for explained variance). Because of the results of the ANOVAs, which displayed immersion as implicit and explicit motive that differentiated between the different playing groups, we only considered this motive as predictor.

Multiple regression analysis showed that immersion as implicit playing motive explained the most part of the variance in game addiction, followed by immersion as explicit playing motive. Playing time also had a significant predictive value. These three factors together explained 43% of the variance in game addiction, which is rather high.

5. Discussion

While the impact of traits and social settings on digital game addiction is well investigated, the role of playing motives is still unknown. Recent research suggested that Yee’s (2006) three playing motives are connected to problematic playing behaviour (Hellström et al., 2012; Klimmt et al., 2009). However, these studies only assessed explicit playing motives while the influence of implicit motives might be even stronger concerning addictive tendencies.

Our study focused on implicit and explicit playing motives and their association to problematic playing behaviour. We found that ratings for immersion as an explicit playing motive were judged as high as for social interaction and achievement but only for problematic players. Non-problematic and excessive players rejected immersion as an explicit playing motive and judged social

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### Table 1
Age, playing hours per week, and playing years of all players.

<table>
<thead>
<tr>
<th></th>
<th>Age M, SD</th>
<th>Hours/week M, SD</th>
<th>Years spent M, SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-problematic players</td>
<td>22.21, 4.08</td>
<td>21.09, 11.95</td>
<td>9.30, 4.12</td>
</tr>
<tr>
<td>Excessive players</td>
<td>23.71, 3.85</td>
<td>25.20, 17.88</td>
<td>12.08, 5.67</td>
</tr>
<tr>
<td>Problematic players</td>
<td>22.33, 3.22</td>
<td>29.50, 16.59</td>
<td>10.38, 4.93</td>
</tr>
</tbody>
</table>

### Table 2
Means and standard deviations for response latencies of implicit playing motives.

<table>
<thead>
<tr>
<th></th>
<th>Social interaction M, SD</th>
<th>Achievement M, SD</th>
<th>Immersion M, SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-problematic players</td>
<td>116.55, 26.55</td>
<td>117.21, 25.28</td>
<td>123.63, 28.51</td>
</tr>
<tr>
<td>Excessive players</td>
<td>112.05, 19.12</td>
<td>114.15, 25.72</td>
<td>121.58, 22.49</td>
</tr>
<tr>
<td>Problematic players</td>
<td>94.81, 23.07</td>
<td>89.19, 16.90</td>
<td>91.73, 16.86</td>
</tr>
</tbody>
</table>

### Table 3
Means and standard deviations for explicit playing motives.

<table>
<thead>
<tr>
<th></th>
<th>Social interaction M, SD</th>
<th>Achievement M, SD</th>
<th>Immersion M, SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-problematic players</td>
<td>5.55, 0.87</td>
<td>5.23, 1.38</td>
<td>4.13, 1.18</td>
</tr>
<tr>
<td>Excessive players</td>
<td>5.37, 1.05</td>
<td>5.47, 1.11</td>
<td>4.36, 1.31</td>
</tr>
<tr>
<td>Problematic players</td>
<td>5.31, 1.31</td>
<td>5.44, 1.46</td>
<td>5.13, 1.00</td>
</tr>
</tbody>
</table>
interaction and achievement as being more important, which is in line with the findings of Hellström et al. (2012).

Regarding implicit motives, we found for all three motives a higher activation in problematic players than in excessive and non-problematic players. In addition, the excessive and non-problematic players’ activation of social interaction and achievement increased compared to immersion. Players with problematic playing behaviour activated immersion as high as social interaction and achievement. In order to find out if specific implicit motives became stronger when problematic playing behaviour occurred, we analysed differences between implicit and explicit motives. The comparisons between explicit and implicit playing motives indicate that all three game playing motives became automatically when problematic playing behaviour occurred. This internalization was more pronounced in the case of immersion as playing motive. Non-problematic and excessive players’ implicit and explicit motives did not differ in social interaction and achievement. In contrast, players with problematic playing behaviour showed stronger implicit than explicit motives concerning social interaction and achievement. This means that both motives have already been internalised among problematic players and are, in return, automatically activated when digital games come into mind.

Hellström et al. (2012) as well as Klimmt et al. (2009) found immersion to be the most important risk factor in terms of playing motives. We could not only replicate these findings but our results for the differences between implicit and explicit motives concerning immersion might hold as explanation for the impact of immersion on addictive tendencies. Immersion was found to be a weaker implicit motive than an explicit one for non-problematic players. When playing behaviour starts to get problematic, this pattern begins to switch. Excessive players still showed immersion to be a marginally stronger explicit than implicit motive. In contrast, problematic players showed immersion to be a stronger implicit than explicit motive. Compared with social interaction and achievement, immersion is not internalised for non-problematic and excessive players but a strong explicit motive. This difference seems to reverse when playing behaviour changes. Problematic players showed the opposite pattern of non-problematic players: immersion has become a stronger implicit than explicit motive. They automatically activate immersion when thinking about digital games.

Because of this specific role of immersion as risk factor for addictive tendencies, we analysed this motive as predictor for problematic playing behaviour. Explicit and implicit immersion, together with playing time, were found to be strong predictors of addictive tendencies. In addition, implicit immersion could explain more variance than immersion as explicit motive and playing hours.

Our study is limited in several ways. We only investigated male players. Even if most studies concerning digital game addiction showed that problematic players are mainly male (e.g., Chak & Leung, 2004), our results have to be replicated for female players. It might be the case, that female players show different results concerning implicit and explicit playing motives and problematic playing behaviour. In addition, we only measured implicit and explicit motives as well as problematic playing behaviour once. Further studies should include several measurements over time to see if changes in problematic playing behaviour occur due to specific motives. We did not investigate the interaction between specific traits and/or social settings and playing motives. Further studies should try to combine risk factors concerning personality, social surroundings, and motives. In addition, our definition of problematic playing behaviour is very strict. Whether these problematic players are really addicted is questionable. Future research should focus on addicted players in order to investigate their implicit and explicit motives compared to healthy players.

However, our results are an important contribution for future diagnostic instruments and intervention programs. Problematic players show differences concerning both explicit and implicit playing motives. They internalise all motives and therefore activate them automatically when digital games come into mind. Current diagnostic instruments all are based on self-reported data which often include several problems when it comes to addiction, for instance social desirability. The development of a diagnostic instrument which assesses addictive tendencies in an implicit way might contribute to the standard assessment of digital game addiction. More research is needed in order to investigate the value of implicit measures for the differentiation between healthy and problematic game play. The results of our study have to be replicated in an addictive and non-addictive player sample to explore the discriminative validity of the implicit measure. However, the automatic activation of immersion can be a promising factor that might play a crucial role in diagnostic instruments.

In terms of intervention, the internalization of the playing motives should be focused in future research and evaluation programs. The automatic activation of game play motives, especially of immersion, could be used and it should be disrupted in intervention programs. Automatic activation of concepts can be disrupted and be trained so to avoid this activation. Research on stereotype suppression has provided evidence for the training of incongruent associations leading to a reduction of activation and being long-term resistant (Kawakami, Dovidio, Moll, Hermens, & Russin, 2000). Avoiding automatic activation often works with the activation and affirmation of counter-concepts (Gawronski, Deutsch, Mbirikou, Seibt, & Strack, 2008). Thus, training addictive players in the association between “counter-immersion” (i.e., non-relaxing, stressful) and digital games might lead to an unlearning of the automatic activation of immersion as playing motives.

References


