The role of social motivation and sociability of gamers in online game addiction

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Abstract

Massively multiplayer online (MMO) games represent a long-standing, intensive and widespread type of online applications whose popularity continues to grow. Although just a mere entertainment and leisure activity for most gamers, its potentially negative and addictive outcomes were intensively studied and recently also acknowledged by the American Psychiatric Association (2013). MMOs are essentially a social activity, but empirical studies are equivocal in identifying whether and to what extent the social factors help develop the addictive gaming habits associated with these applications. The present study seeks to directly identify the role of social factors in online addictive gaming. Survey data from 667 MMO gamers were analysed. Together with an online game addiction scale, the investigated psychological factors included social motivation for gaming, online peer attachment and social self-efficacy. The results revealed that although social motivation was a predictor of addictive gaming, high social motivation was typical for intensive gamers regardless of their level of addiction. However, gamers at-risk of addiction scored lower in their social self-efficacy and interpersonal trust measured by peer attachment. This supports the poor-get-poorer hypothesis, that generally less socially skilled gamers face further problems online. However, social factors were only modestly associated to online addictive gaming which indicates higher relevance of other factors identified by literature, e.g. immersion and in-game rewards systems.

Keywords: online game addiction; social motivation; sociability; social self-efficacy; peer-attachment

Introduction

The Internet as an entertainment medium has proliferated through contemporary society along with the multitude of its online applications. Online computer games in general and the MMO genre (massively multiplayer online games) in particular are one of the online applications which became immensely successful and changed the way many people spend their free time. For instance, World of Warcraft, one of the most popular MMORPGs (role playing games), boasted 12 million subscribers in 2010 (Blizzard, 2010). With the spread of free-to-play games, it seems that the number of MMO players has been on a constant rise. According to the Entertainment Software Association (ESA, 2013), in 2012 the computer games market reached about 14 billion dollars in the U.S. alone and an overwhelming majority of this profit was generated by online games. Many of the MMOs, including e.g. World of Warcraft, became so widespread that they can be easily recognized as pop-cultural symbols.

What attracts the attention of both the public and academics is the intensity with which MMOs are played. Most of the existing data claim that the average amount a player spends in MMOs is about 25 hours a week (Griffiths, Davies, & Chappell, 2004; Smahel, Blinka, & Ledaby, 2008; Williams, Yee, & Caplan, 2008), but many gamers play significantly more than that – about 11% of players spend 40 hours a week in-game. Additionally, the majority of gamers have indulged in very long gaming sessions. As reported by
Yee (2006), 60% of MMO players have spent 10 continuous hours in-game without a break. Such loyalty and compulsiveness of many players has been studied for a decade and half now and has generated a relatively extensive body of existing literature on this topic. More often than not, the psychological paradigm of so called Internet gaming addiction has been applied to approach this intensity of time investment. Researchers have agreed that many heavy gamers actually develop symptoms similar to the symptoms of other behavioural addictions – these include jeopardization of interpersonal and social relationships, obsession by the game, persistence in gaming patterns despite being aware of their negative consequences, experiencing of withdrawal symptoms while not able to be online, and relapsing back into heavy gaming after periods of relative control (for an overview see e.g. Blinka & Smahel, 2011a; Kuss & Griffiths, 2012). Recently, the online games disorder was added as an experimental diagnosis in the 5th revision of the Diagnostic and Statistical Manual of Mental Disorders (APA, 2013).

Some research suggested a more distinct typology rather than just the distinction of problematic and non-problematic internet users and online gamers. For example, Dreier and colleagues (2014) identified four different types of excessive internet users who differed in their level of controlling the behaviour and thus only some of these could be considered to be at-risk of addiction. Similarly, in case of online gamers, Charlton and Danforth (2007; 2010) described a third group in addition to the addicted and non-problematic groups, which is characterized by high engagement – and despite being highly involved in the activity and even showing some signs of peripheral addiction factors, this group should not be labelled as pathologically addicted. In the present study we adopt this notion and we investigate not only addictive gaming as a continuum but also three distinct types of users in relation to their level of addictive gaming – i.e. casual (non-problematic) gamers, highly engaged (non-pathologic) gamers, and gamers at-risk of addiction.

The literature has identified several personality factors associated with the tendency to use online games excessively or even pathologically. For example, Mehroof and Griffiths (2010) found that online game addiction is associated with neuroticism, sensation seeking and state and trait anxiety of the gamers, while Caplan, Williams and Yee (2009) found a similar tendency with loneliness as the single strongest predictor, followed by introversion and depression of the gamers. Kuss and Griffiths (2012) summarized the factors associated with riskier gaming patterns as introversion, neuroticism and impulsivity. This seems to be in line with results of studies examining the main gameplay motivations of problematic gamers. Along with achievements – earning points, progressing, and levelling (King, Delfabbro, & Griffiths, 2011), the major reasons for playing MMOs were namely immersion and escapism (Yee, 2006; Caplan et al., 2009; King et al., 2011), e.g. using the game as a mood management tool to cope with negative emotions (Hussain & Griffiths, 2009).

However, online games are also inherently a social activity, played with or against others, and offering opportunities to make new friends online. Players often attribute the appeal of online games to the community formed by other gamers. This is clearly visible on the positive relationship of the number of in-game friends and the amount of time players invest into the games (Cole & Griffiths, 2007). Emotional and behavioural investment seems to go hand in hand, and not only in terms of quantity of friends. Caplan and colleagues (2009) found that one of the strongest predictors of pathological gaming was the use of voice technology – this is usually used in a very social style of game play and the players using this technology interact with others in the game more intensively. On the other hand, however, the same study found no significant relationship between social factors and pathological gaming (Caplan et al., 2009) - a finding also supported by Kardefelt-Winther (2014). Despite the link between social factors and development of excessive and pathological gaming has been consistently described by qualitative studies (e.g. Haagsma, Pieterse, Peters, & King, 2013; Karlsen, 2011), the state of quantitative research seems to be rather equivocal in assessing the role of social factors in problematic game play.

Based on the reviewed literature on personality factors and gaming addiction, one of the explanations of what leads to problematic game play seems to be the so-called social compensation hypothesis. According to Lo, Wang and Fang (2005) many players use the MMO environment to overcome their feelings of isolation and social anxiety by immersing themselves into intensive online gaming and into building social relationships within these games, which temporarily brings a sense of relief. Some studies indicated positive outcomes of social online game play – for example in expanding social capital (Zhong, 2011) and transferring the social connections formed in the game to the offline environment (Trepte, Reinecke, & Juechens, 2012). However, many studies have shown that the social capital acquired in online games is a bridging social capital – loose relationships, characterized by their width – rather than bonding social capital – close relationships characterized by emotional support (Huvila, Holmberg, Ek, & Widen-Wulff, 2010; Williams, 2007). Thus online relationships may suffer from their superficiality and the fact that some of the gamers may be caught in a vicious cycle, where the game and social interaction leads to further isolation (Lo et al., 2005).
However, some researchers describe the actual situation as being more complex. Trepte and her colleagues (2012) found that the players in closer physical and social proximity to other players (e.g. those more involved in organisation of the gaming clans and guilds, those more in touch with other players) yield more positive outcomes from the game. These players create not only the bridging but also the bonding social capital which positively affects the social support they receive. Similarly, Smahel, Brown, and Blinka (2012) found that the best adapted individuals (who report highest number of friends and close friends) are those who report a balanced number of online and offline friends – they are able to use both the online and offline environment to their benefit. Recently, it was for example Collins and Freeman (2013) who found that problematic gamers report higher online social capital and lower offline social capital, while in the case of the non-pathological gamers the negative effect of lowering offline social capital was not reported and only the positive remained. Based on this we propose the following hypotheses below.

**The Present Study**

The purpose of this study is to examine whether the social factors – measured by social motivation for gaming – and sociability – measured by social self-efficacy and peer attachment – are related to online game addiction. Based on the reviewed literature, we hypothesize that:

**H1:** Social motivation for gaming is positively related to online gaming addiction.

Some studies showed social aspects of online gaming as a motivational factor for gaming itself, both pathological and non-pathological. Still, literature has shown that overcoming social isolation via social game play is an important empowerment factor of pathological gaming. Thus we hypothesize that:

**H2:** Gamers at-risk of addiction, highly engaged non-pathological and casual gamers are different in respect to their social motivation for gaming.

The potential that lower sociability of gamers is a predictor of addictive gaming has been stated in research. Also, pathological gamers were identified to possess personality traits that are associated with lower social involvement and lower feelings of security in social situations. Thus we hypothesize that:

**H3:** Social self-efficacy is negatively associated with addictive gaming.

**H4:** Gamers at-risk of addiction, highly engaged non-pathological and casual gamers are different with respect to their self-efficacy.

**H5:** Perceived online peer attachment is negatively associated with addictive gaming.

**H6:** Gamers at-risk of addiction, highly engaged non-pathological and casual gamers are different with respect to their perceived online peer attachment.

**Methods**

**Participants**

The sample used in this study consisted of 667 MMORPG players (ages 11-54, $M = 22.71, SD = 6.66$; 84% male), predominantly from the Czech Republic and Slovakia. Players were recruited during Spring 2011 through discussion forum posts or by server-wide in-game promotions after contacting several server administrators. In several cases, participation was incentivized by in-game rewards which may have led several people to "click through" the survey, therefore everyone who completed the survey in less than 4 minutes was omitted from the final sample, as well as everyone who consistently selected the same response or did not respond to more than 50% of the relevant items.

On average, players in our sample spent 22 hours in MMORPGs every week ($SD = 17.62$), and played mostly World of Warcraft (45%). There were no differences between males and females in terms of age (Males: $M = 22.69, SD = 6.47$, Females: $M = 22.88, SD = 7.67$, $t[649] = 0.74, p = .459$), and hours played per week (Males: $M = 21.72, SD = 17.42$, Females: $M = 23.12, SD = 18.79$, $t[649] = 0.25, p = .800$).
Measures

**Online game addiction.** To assess the level of online game addiction, ten Likert-type questions on a 4-point scale ranging from 'never' to 'very often' were used. This scale was designed and developed by Blinka and Smahel (2011a) based on six criteria of addictive behaviour as proposed by Griffiths (e.g. Griffiths, 2000; 2005) – salience (two items, divided into cognitive and behavioural salience), withdrawal symptoms (one item), euphoria (one item), tolerance (two items); conflicts (two items); relapse and reinstatement (two items). Sample items included "have you been unsuccessful in trying to limit time spent online" (relapse and reinstatement) or "do your family, friends, job, and/or hobbies suffer because of the time you spend with online gaming" (conflict). We created an online game addiction index as a mean value of the 10 items (Cronbach’s alpha = .76).

Following and expanding Charlton and Danforth’s (2007; 2010) notion of distinction between addicted and highly-engaged players, we chose to define and compare three groups of players, based on their level of addiction and intensity of game play. The authors argue that there is a difference between intensive players who are simply passionate about the games, yet do not experience negative consequences associated with their gaming patterns, and those who do. We chose to compare these highly engaged players to those at risk of addiction, and to further provide contrast by including a group of casual or recreational players. Thus we divided players into the following three groups: the "addiction at-risk" group (12.1%, n = 81) consisted of players reported "often" or "very often" in at least three criteria on the addiction scale, as well as the conflict criterion; the "highly engaged" group (29.5%, n = 197) contained players who did not meet the criteria of the first group, but reported playing more than average time (22 hours) weekly; finally, "casual gamers" (58.3%, n = 389) were those that did not report the necessary criteria for addiction and also reported playing below average time per week. The gender distribution across the three groups was found to be equal ($\chi^2 [2] = 2.80, p = .246$). Comparing the groups on their addiction scale scores shows that the groups are distinct in the severity of reported issues ($F[2,664] = 223.54, p < .001$, casual: $M = 1.77$, highly engaged: $M = 1.94$, at-risk: $M = 2.65$, all statistically significant from each other at the $p < .001$ level).

**Social motivation.** To measure the players’ enjoyment of the social aspects and their motivation to play MMOs for these reasons, we utilized a number of items from the most common questionnaires measuring this construct (Hsu, Wen, & Wu, 2009; Koo, 2009; Yee, 2006). Selected items focused on the individual's attitudes instead of frequencies (such as those with response scales ranging from never to very often) and loaded strongly on their respective factors in the original studies. Nine items in total were chosen to create a three-component measure (socialization & community inclusion, relationships & support, and teamwork). Sample items included “I like being a member of the gaming community”, and the 4-point response scale ranged from "completely disagree" (1) to "completely agree" (4). After testing for internal consistency, one item was omitted due to its low contribution to Cronbach’s alpha of the scale. After the exclusion the scale alpha was $\alpha = .78$.

**Perceived Social Self-Efficacy.** Smith and Betz (2000) Perceived Social Self-Efficacy Scale was used to measure the extent to which respondents viewed themselves as confident in performing various social interactions. Sample items included "make friends in a group where everyone else knows each other" and "put yourself in a new and different social situation". Response categories ranged from "no confidence at all" (1) to "complete confidence" (5) and $\alpha = .94$.

**In-Game Friendship Quality (peer attachment).** To assess the perceived quality of friendships formed with other players within the MMOs, we used the peer section of Armsden and Greenberg's (1987) Inventory of Parent and Peer Attachment with modified instructions asking respondents to think of their online friends as the reference category for the items. Sample items included "I trust my friends" and "I feel my friends are good friends". Response categories ranged from "completely disagree" (1) to "completely agree" (5). Due to data entry errors two of the twenty-five items were omitted. Despite this issue, the scale reliability was more than adequate ($\alpha = .90$).

**Results**

Pearson’s correlations revealed that online game addiction is positively related to in-game time and social motivation for gaming, while being negatively related to social self-efficacy of gamers. Interestingly, although social motivation and social self-efficacy are positively related, their relation to addiction is opposite. Social motivation is positively related to in-game addiction while social self-efficacy is negatively related to in-game addiction. Table 1 summarizes the results of correlational analysis.
Table 1. Correlations of main study variables.

<table>
<thead>
<tr>
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<th>(1)</th>
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<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
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<tbody>
<tr>
<td>Addiction (1)</td>
<td>-</td>
<td>-.08</td>
<td>.13**</td>
<td>-.16***</td>
<td>-.09*</td>
<td>.24***</td>
</tr>
<tr>
<td>In-Game Friendship (2)</td>
<td>-</td>
<td>.42***</td>
<td>.39***</td>
<td>-.07</td>
<td>.14***</td>
<td></td>
</tr>
<tr>
<td>Social Motivation (3)</td>
<td></td>
<td></td>
<td>.27***</td>
<td>-.06</td>
<td>.16***</td>
<td></td>
</tr>
<tr>
<td>Social Self-Efficacy (4)</td>
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<tr>
<td>Age (5)</td>
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<tr>
<td>Play time (6)</td>
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Note: * p < .05, ** p < .01, *** p < .001

A two-step hierarchical linear regression was used to determine associations between online game addiction and social self-efficacy, social motivation for gaming and quality of in-game friendships, and after controlling for demographic variables and intensity of gaming. Model 1 includes only control variables (age, gender and play time), and variables measuring social attitudes and skills are added in Model 2 (see Table 2).

Table 2. Linear regression: Social and control factors associated with online game addiction.

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>B 1.90***</td>
<td>B 2.17***</td>
</tr>
<tr>
<td>Age</td>
<td>B -.01*</td>
<td>B -.01*</td>
</tr>
<tr>
<td>Gender</td>
<td>B 0.04</td>
<td>B 0.03</td>
</tr>
<tr>
<td>Play time</td>
<td>B 0.01***</td>
<td>B 0.01***</td>
</tr>
<tr>
<td>Social Motivation</td>
<td></td>
<td>0.17***</td>
</tr>
<tr>
<td>Social Self-Efficacy</td>
<td>-0.09**</td>
<td>0.03</td>
</tr>
<tr>
<td>In-Game Friendship</td>
<td>-0.13**</td>
<td>-0.14</td>
</tr>
</tbody>
</table>

R² 0.062  0.113
F 13.797***  13.073***
Δ R² 0.050***

Note: * p < .05; ** p < .01; *** p < .001

In the first step of the regression, as expected, time spent in-game was a positive predictor of addiction. While age was a negative predictor, i.e. younger gamers were more prone to addictive gaming, there was no effect of gender. These control variables accounted for 6% of the variance in the addiction scores. Social motivation for gaming was positively associated with gaming addiction even after controlling for demographic variables – supporting hypothesis H1. The quality of in-game friendships and social self-efficacy were both negatively related to gaming addiction, providing support for hypotheses H3 and H5. Social variables accounted for about 5% of the variance in the addiction score over and above age, gender, and play time.

To analyse inter-group differences, a series of ANOVAs was conducted. Table 3 displays that in social motivation the groups of highly engaged and at-risk of addiction did not differ significantly. The two groups did however differ significantly from the third one – the casual players, both reporting higher mean score of social motivation and offering support to H2. Concerning social self-efficacy, the at-risk of
addiction group reported the lowest mean score. However they differed significantly only from the casual group, again supporting our H4. In terms of the perceived in-game quality of friendships, it was again the highly engaged gamers who scored highest and in that respect they differed from both the casual and at-risk group (who reported the lowest score). Hence H6 was also supported.

Table 3. Differences by intensity and pathology of gaming in social and control variables.

<table>
<thead>
<tr>
<th></th>
<th>Casual (389)</th>
<th>Highly engaged (197)</th>
<th>At-risk of addiction (81)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>Social Self Efficacy</td>
<td>3.23</td>
<td>0.68</td>
<td>3.20</td>
</tr>
<tr>
<td>In-Game Friendship</td>
<td>3.68</td>
<td>0.47</td>
<td>3.81</td>
</tr>
<tr>
<td>Social Motivation</td>
<td>2.80</td>
<td>0.43</td>
<td>2.97</td>
</tr>
<tr>
<td>Age</td>
<td>22.56</td>
<td>6.60</td>
<td>23.29</td>
</tr>
</tbody>
</table>

Note: Groups with different superscripts are statistically significantly different from each other based on Scheffe's post-hoc tests, * p < .05; ** p < .01; *** p < .001

Discussion

The aim of this investigation was to examine the role of social motivation, sociability – self-confidence in social situations, and perceived quality of online peer relationships in problematic online game play or online game addiction. Each of the three social variables included in our model do have a unique, statistically significant relationship with online game addiction, even after controlling for age, gender, and play time.

Social motivation appeared to be positively associated with online game addiction, which suggests that higher levels of social motivation for gameplay are likely to be accompanied by problematic game play, at least to a certain degree. When comparing the groups of casual, highly engaged and at-risk players this pattern becomes even easier to identify. The motivation to play with other players, team up, and share the game with others is on average higher among highly engaged and pathological gamers than among casual gamers. Social motivation for playing online games has been acknowledged as an important factor in gaming behaviour (Yee, 2006) and especially in excessive gaming. For example, Seay, Jerome, Lee and Kraut (2004) reported a higher amount of time spent in-game by players who were engaged in community-based play compared to solo-players. Also, Hsu et al. (2009), Caplan et al. (2009), and Haagsma et al. (2013) found that the role of belonging to an online community and the associated feeling of obligation were very important predictors of online game addiction. It seems that the breadth of social interaction opportunities offered by online games are alluring to gamers and may eventually lead to the negative consequences of online gaming.

Social self-efficacy, the belief of one’s competence in establishing and maintaining relationships with others and/or confidence in group activities, is negatively associated with gaming addiction. Longitudinal data would be necessary to even begin to disentangle the directionality of this effect, yet it seems that gamers reporting higher negative consequences of their gameplay trust their social skills less. This was again supported by the group comparisons. Pathological gamers – those at-risk of addiction – tend to score lower in their social self-efficacy than casual gamers. The role of highly engaged gamers seems to be equivocal in this regards, showing no significant difference from either of the groups, potentially suggesting a transitional role of this gaming pattern.

Perceived quality of in-game friendships, the need for social contact, and the level of perceived trust and understanding towards their online friends is inversely related to gaming addiction. Here the group difference pattern is slightly clearer, with the highly engaged group reporting closer relationships than the other two groups.

According to the social compensation hypothesis, lonely and socially anxious individuals are especially inclined towards online gaming as it may help, temporarily, to overcome the feelings of isolation from their offline lives which may consequently lead to gaming addiction (Lo et al., 2005). However, even
though Caplan with colleagues (2009) found that loneliness predicts problematic game play, they did not find a similar association between problematic gameplay and social motivation. This slightly contradicts the social compensation hypothesis. Our study found that social motivation plays a role in increasing the gaming addiction score. A direct comparison between groups showed that the highly engaged and at-risk gamers both score higher than casual gamers. Additionally, the highly engaged group also showed higher satisfaction with their online companions. Moreover, highly engaged gamers did not differ from the casual gamers in their social skills and feelings of security in social situations. Thus, the highly engaged but non-pathological gamers are those for whom the social style of gaming is more typical. This suggests that social motivation is an important and attractive feature of the game which can explain why people tend to play online games in such large numbers and why they devote so much time to playing. However, it cannot explain why some of the gamers develop addictive usage.

This explanation may lay elsewhere. As our study suggests, gamers at-risk of addiction scored the lowest in both perceived quality of peer relationships (along with casual players) and social self-efficacy (along with highly engaged players). Thus it may be the player’s social skills that make the difference. The socially skilled do not face problems related to online gaming as often as those who are less skilled. Thus it seems that the valid explanation could be what Kraut and colleagues (2002) called the rich-get-richer and poor-get-poorer hypothesis – socially well adapted individuals are able to use the online environment to gain even higher social benefits, while those socially handicapped face further deterioration of their psychosocial well-being online.

However, it must be noted that the currently observed associations were rather modest – e.g. social variables explained only one twentieth of the variance of the online game addiction score. The mean differences in sociability between groups, although significant, were very small. On the other hand, some differences, although ostentatiously significant, were not, potentially due to low statistical power resulting from a small sample size (especially in the case of the at-risk group). The estimated power for a small effect (Cohen's $d = 0.25$) to be found between the highly engaged and at-risk group is .30 as obtained from the Bonferroni correction (alpha level of .0167), which is inadequate to conclude that the differences between groups do not exist.

The small effects of the social variables hint at increased relevance of other studies which found that the most significant roles in developing problematic gameplay are played especially by the factors of immersion and escapism, the system of in-game rewards and achievements (e.g. Hsu et al., 2009; King, Delfabro & Griffiths, 2010; Kirby, Jones & Copello, 2014). However the lower role of social factors in problematic gameplay contradicts the results found by qualitative studies (e.g. Beranuy, Cardonell, & Griffiths, 2013; Haagsma et al., 2013; Karlsen, 2011). These report, in the players’ own words, that it is the social aspect of game what leads to over-engagement in the game and later to the pathology. Future studies, both qualitative and quantitative, should address the issue of these rather incompatible and inconsistent results. Furthermore, longitudinal studies on this topic would be beneficial to examine the directionality of these effects and look at whether it is lower confidence in one’s social skills that leads a player to become addicted, or the amount of time spent in-game and the resulting negative consequences that lead players to lose their confidence.

Our study unfortunately faces several limitations, similarly to many other studies on this topic. Convenience sampling and self-selection may lead to biased results due to potential constraints of the variance. The second problem, usually accompanying the first one, is that samples with mixed cultural backgrounds are used. Large cross-cultural differences in predictors of excessive internet use in European youth have been reported (Blinka & Smahel, 2011b) and we could expect similar differences also in specific online applications like online games and in the adult population. Both issues could be addressed by using nation-wide representative samples, which are still more common in studies of children and adolescents (e.g. van Rooij et al., 2010). Despite these limitations, our study expands the literature by examining the roles of social self-efficacy, motivation for social play, and quality of in-game relationships in problematic game play, and provides a unique contrast of three groups of players divided by their gaming patterns.

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