Personality traits associated with problematic and non-problematic massively multiplayer online role playing game use

Emily Collins *, Jonathan Freeman, Tomas Chamarro-Premuzic

Department of Psychology, Goldsmiths, University of London, United Kingdom

ABSTRACT

This research investigated the associations between personality traits and both normal and problematic massively multiplayer online role playing game (MMORPGs) play, as measured by a self report scale. A total of 225 participants completed the online questionnaire, 66 of whom played MMORPGs. Correlational analyses indicated that low levels of functional impulsivity and agreeableness alongside high levels of verbal aggression and video game dependency were associated with greater amount of time spent playing MMORPGs. When comparing problematic and non-problematic MMORPG players directly, problematic players were found to be lower in self regulation, dysfunctional impulsivity and agreeableness, suggesting that these traits may be important in the development and maintenance of problematic MMORPG use.

Keywords:
MMORPGs
Big Five
Emotional intelligence
Self regulation
Problematic video game use
Impulsivity
Sensation seeking
Massively multiplayer online role playing games

1. Introduction

1.1. Background

Problematic video game play (PVGP) is becoming an increasingly concerning issue, with studies estimating around 9.4% of gamers to be affected (Lemmens, Valkenburg, & Peter, 2009). Although at one point this may have implicated only a small number of people, recent figures suggesting that approximately 73% of the UK population play some form of video game (National Gamers Suvery, 2009) highlight how pertinent and widespread this concern may be. Significant controversy surrounds the notion of PVGP, but whether conceptualised as an addiction, an impulse disorder or just disordered behaviour, identifying its relationship with personality may be integral to fully understanding risk factors and causes. This is particularly important considering some of the negative consequences of PVGP that have been reported, for example the breakdown of family relationships or losing jobs (Chappell, Eatough, Davies, & Griffiths, 2006). As with problematic internet use, the prevalence of video game play amongst healthy populations makes it difficult to detect (Young & Rodgers, 1998) and knowing what personality traits or characteristics may differentiate problematic gamers from non-problematic players may assist in diagnosis. Research has also claimed that traits may predispose certain people to developing such conditions (e.g. Chak & Leung, 2004; Kim, Namkoong, Ku, & Kim, 2008) and although currently no causal evidence has been generated, knowing what psychological characteristics are associated with PVGP may inform later research that attempts to identify causal factors.

Many types of games have been implicated in PVGP but one that has received the most attention is the genre of massively multiplayer online role playing games (MMORPGs). These have a number of unique characteristics that contribute to the likelihood of the development of problematic gaming (Seay & Kraut, 2007). One of these characteristics is that game play occurs within a persistent virtual world that continues to exist and develop irrespective of individual players' presence in the game. This same world is accessed by all players of the game, meaning that logging out does not pause or stop the action as even if one person's character is not involved, those who remain can continue to play. In conventional gaming, the world is individual to each player and is unaffected by others' actions, with only those also playing from the same console or computer able to interact. Moreover, these games usually hold completing levels or challenges at the centre of their objectives, working towards the ultimate goal of completing the game which is achievable when all of these levels have been completed. MMORPGs, however, operate on a very different system.
1.2. Personality and video game addiction

Whilst a vast number of traits have attracted empirical interest, the research described here focuses on the Big Five (Costa & McCrae, 1985), sensation seeking, impulsivity, self esteem, aggression, self regulation, and trait emotional intelligence as those were deemed most interesting in terms of previous findings and theoretical contributions.

In the Big Five literature, whilst studies looking at online game players in general have indicated that players are more open, conscientious and extraverted than non-players (Teng, 2008; Yee, 2001), problematic online game use has been associated with higher neuroticism and lower agreeableness, conscientiousness and extraversion (Hugh & Bowman, 2008; Peters & Maleksy, 2008), highlighting a potentially very real personality difference within gamers according to the level and nature of their game play.

Although sensation seeking is positively correlated with PVGP (Chiu, Lee, & Huang, 2004), including more specifically compulsive online game (Mehroof & Griffiths, 2009) and MMORPG play (Jiang, 2008), the related construct of impulsivity (Barratt, 1972) has been relatively under-researched in this area. It has featured heavily into investigations into addictive behaviours (e.g. Dawe, Matthew, & Loxton, 2004) and problematic internet users do indeed display higher levels of impulsivity than controls in behavioural tests of the trait (Cao, Su, Liu, & Gao, 2007) but this finding has not been entirely consistent when employing self report measures (Armstrong, Phillips, & Saling, 2000).

Similarly, self esteem has often been linked to substance addiction and has demonstrated negative relationships with problematic internet use (Armstrong et al., 2000) but few studies have investigated an active role in PVGP. This trait has been negatively correlated with the number of hours spent playing video games (Colwell & Payne, 2000; Fling et al., 1992; Funk & Buchman, 1996) although Greenberg, Lewis, and Dodd (1999) failed to uphold hypotheses relating to associations between low self esteem and compulsive internet or video game use. Methodological differences as well as technological advancements and increases in the prevalence of PVGP since 1999 prevent generalisation of this finding and attempts to replicate these results are therefore needed.

A much more unified research base emerges when looking at other traits. Aggression for example has been highlighted as potentially influential by Oh (2003), suggesting that problematic internet use is characterised by aggression as well as impulsivity and irritability, and positive correlations between compulsive online game play and trait aggression measures have been found by several studies (Kim et al., 2008; Mehroof & Griffiths, 2009).

Likewise, self regulation has emerged as a highly important factor in the development and maintenance of problematic online gaming (Seay & Kraut, 2007) and has been held as central to the issue of problematic media use in general (LaRose, Lin, & Eastin, 2003), possibly due to the logical link between the ability to manage and control impulses and the avoidance of damaging behavioural patterns.

Although only supported by a limited number of studies, trait emotional intelligence (trait EI) may also be highly influential. Defined as an individual’s self-perceived ability to identify, process and appropriately apply emotional stimuli (Petrides & Furnham, 2000), it has been identified as an important predictor of a variety of addictions, as well as compulsive internet and game use in adolescents, with problematic users scoring lower in EI measures (Parker, Taylor, Eastabrook, Schell, & Wood, 2008). However, despite links with measures of general health and other health related behaviours (Green, Chamorro-Premuzic, Arteche, & Furnham, 2008), very few studies have further investigated this association.

1.3. Hypotheses for the current study

The present study aims to consolidate the current literature base and investigate the presence of the aforementioned traits more specifically in relation to problematic and non-problematic MMORPG use.

Based on the outlined literature and investigations into substance based addictions behavioural dependencies, it is predicted that those problematic MMORPG players will score significantly lower on measures of openness, conscientiousness, extraversion, self esteem, emotional intelligence and self regulation and higher on neuroticism, aggression, sensation seeking and impulsivity than non-problematic and non-gamers. Non-problematic MMORPG players, however, are predicted to score significantly higher on measures of openness, conscientiousness and extraversion than problematic or non-players. Further to this, it will be assessed whether excessive gaming follows a similar pattern to the above hypotheses concerning problematic MMORPG use, as well as investigating more general and non-genre specific video game addiction.

2. Method

2.1. Participants

A total of 225 participants were recruited (96 female) through advertising on social networking sites, a university website, local newspapers, forums and posters situated around the university building. They were incentivised by entry into a prize draw for £100 or, in the case of first year undergraduate psychology students, course credit. Ages ranged from 13 to 60 (M = 26.55, SD = 9.48) and the majority reported to be white (86.2%). A total of 33.8% were students.

Sixty-six participants reported to play MMORPGs, 15 of whom were female. Out of the MMORPG players, the average amount of time spent playing these games was 18.17 (SD = 18.74) hours per week, ranging from 1 to 110 h.

2.2. Materials

2.2.1. Personality

The ‘Big Five’ personality traits were measured by the 50 item International Personality Item Pool (IPIP) Big-Five Factor Markers
questionnaire (Goldberg, 1992). Answers were given on a five point scale ranging from ‘very inaccurate’ to 5 ‘very accurate’ with 24 items being reverse scored. This questionnaire measured, neuroticism, conscientiousness, openness to new experiences and agreeableness. Cronbach’s alpha was used to assess the reliability of the scales, all of which demonstrated acceptable levels (α = between .78 and .89).

Sensation seeking was assessed by the Brief Sensation Seeking Scale (BSSS; Hoyle, Stephenson, Palmgren, Lorch, & Donohew, 2002) which comprised of eight items and demonstrated acceptable reliability (α = .74). It contained four subscales although as Cronbach’s alpha fell below the acceptable threshold of 0.7, only the total score was included in the analysis. Answers took the form of a five point numeric scale indicating levels of agreement from strongly disagree to strongly agree.

The short version of the Trait Emotional Intelligence Questionnaire (TEIQue-SF; Petrides & Furnham, 2006) was also included which consists of 30 items (α = .90). Participants were required to answer on a 7-point Likert scale ranging from ‘strongly disagree’ to ‘strongly agree’.

Self regulation was measured by Kirk and Martin’s (1998) adapted English translation of Grossarth-Maticek and Eysenck’s (1990) self regulation scale which asked participants to answer 14 statements on a three point scale of ‘disagree’ ‘not sure’ or ‘agree’ (α = .73).

The Buss-Perry Aggression scale (Buss & Perry, 1992) was employed to measure trait aggression through likert scale based answers ranging from ‘extremely uncharacteristic of me’ to ‘extremely characteristic of me’ on 29 items (α = .90). These measure four subscales, namely physical aggression (nine items; α = .86), verbal aggression (five items; α = .79), anger (seven items; α = .84) and hostility (eight items; α = .87).

Self esteem was evaluated by the Single Item Self Esteem Scale (SISE; Robins, Hendin, & Trzesniewski, 2001) which included participants responding to the statement “I have a high self esteem” on a five point scale from ‘strongly disagree’ to ‘strongly agree’.

Finally, trait impulsivity was gauged by the short version of the Dickman Impulsivity Inventory (DII-S, Dickman, 1990) which consisted of 23 items requiring a true/false response (α = .81). A total of 11 of these items assessed functional impulsivity (α = .81) and the remaining 12 measured dysfunctional impulsivity, (α = .84).

2.2.2. Game and media use

Game use was evaluated by a questionnaire adapted from the Goldsmiths Play Leisure and You (PLaY) measure of media exposure. This assessed the level and type of game play, comprising of seven questions measuring the frequency and duration of play of different game genres, who else participates in this game play (both in person and over the internet), intentions for future game play and participants’ favourite games.

The Problem Video Game Playing Scale (PVP; Salguero & Morán, 2002) was also included to measure level of PVPG (α = .75). The PVP contained nine items that tapped into signs of problematic usage, to which participants were required to answer ‘yes’ or ‘no’ depending on whether they have experienced this.

2.3. Procedure

The aforementioned measures were completed in the form of an online questionnaire, constructed using the EFS Survey software (http://www.unipark.de). All data sets that completed the measures were included in the analysis and those not completing all measures (except the PVP which was only to be completed by those who play video games) were excluded.

3. Results

Due to the vast majority of the variables lacking a normal distribution, non-parametric correlational analyses were conducted (n = 225), the findings of which are summarised in Table 1. As the results concerning the PVP may be confounded by the fact that only gamers completed this measure, it was felt that separate analyses including only MMORPG players were also necessary. Non-parametric correlational analyses on this subset (n = 66) demonstrated that the number of hours spent playing MMORPGs correlated negatively with the BSSS total score (r = −.249, p < 0.01) and positively with the PVP (r = .274, p < 0.05). The PVP score on the other hand correlated positively with verbal aggression (r = .268, p < 0.05) and negatively with dysfunctional impulsivity (r = −.314, p < 0.05). Moreover, as the PVP is intended to be used to identify PVGPs and not just show where they may lie on a continuum, it was felt that comparing the addicted and non-addicted groups as identified by this measure would be necessary to gain a better understanding of the nature of this dysfunctional use. Lemmens et al. (2009) outline the theory that for addiction (or in this case, problematic use) to be present, the individual must meet half or more of the diagnostic criteria and therefore those scoring five or above out of a possible nine were classified as problematic MMORPG users (n = 21) and in accordance with this, those scoring four or below as non-problematic MMORPG users (n = 44). The mean rankings for each of the personality traits are outlined in Fig. 1. The problematic group were found to be significantly lower in self regulation (U = 280.5, p < 0.05), dysfunctional impulsivity (U = 268.5, p < 0.05) and agreeableness (U = 235.5, p < 0.05) than the non-problematic group. Both groups were then compared to non-players (n = 156), discovering that although no differences emerged between the non-players and non-problematic groups, problematic players were found to score significantly higher in physical aggression (U = 1057.5, p < 0.05) and verbal aggression (U = 1109.5, p < 0.05), and lower in impulsivity (U = 1011.0, p < 0.01), functional impulsivity (U = 1048, p < 0.05) and agreeableness (U = 821.5, p < 0.01) than non MMORPG players.

4. Discussion

These results indicate that although personality traits do differ between problematic and non-problematic MMORPG players, these differences do not necessarily mirror those found when focusing on substance based addictions (e.g. Dawe et al., 2004). This therefore means that the findings do not entirely support the hypotheses but important implications remain.

The negative correlations evident between impulsivity and both MMORPG use and the PVP score, for example, indicate that impulsivity is not a necessary trait for PVGP to occur and that in fact, high impulsivity may in some way be detrimental to the development of problematic MMORPG play. Previous studies have not distinguished between functional and dysfunctional impulsivity (e.g. Cao et al., 2007) and the discovery of patterns involving these subscales and not the full score indicate that this distinction may be important in understanding MMORPG play, both in terms of casual and compulsive use. Literature focusing on more general video game use or alternative addictions have indicated that addiction should coincide with high impulsivity, making the lower impulsivity levels evident in problematic MMORPG players, as well as the negative correlations with PVP scores and weekly MMORPG use especially interesting. This also highlights the unique properties of MMORPGs and the inappropriateness of generalising findings, as this lower impulsivity may be due to the strategic nature of MMORPGs in which being very impulsive may actually be
Table 1

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 1 | MMORPG Use | .477* | .110 | .005 | .124 | .156 | .037 | .037 | .101 | .291 | .158 | .135 | .097 | .097 | .097 | .097 | .097 |
| 2 | PVP | .005 | .827 | .005 | .124 | .156 | .037 | .037 | .101 | .291 | .158 | .135 | .097 | .097 | .097 | .097 | .097 |
| 3 | PVE | .027 | .827 | .005 | .124 | .156 | .037 | .037 | .101 | .291 | .158 | .135 | .097 | .097 | .097 | .097 | .097 |
| 4 | SR | .124 | .124 | .827 | .005 | .124 | .156 | .037 | .037 | .101 | .291 | .158 | .135 | .097 | .097 | .097 | .097 |
| 5 | BPAS PA | .156 | .156 | .156 | .827 | .005 | .124 | .156 | .037 | .037 | .101 | .291 | .158 | .135 | .097 | .097 | .097 |
| 6 | BPAS VA | .156 | .156 | .156 | .156 | .827 | .005 | .124 | .156 | .037 | .037 | .101 | .291 | .158 | .135 | .097 | .097 |
| 7 | BPAS VA | .037 | .037 | .037 | .037 | .037 | .827 | .005 | .124 | .156 | .037 | .037 | .101 | .291 | .158 | .135 | .097 |
| 8 | BPAS H | .101 | .101 | .101 | .101 | .101 | .101 | .827 | .005 | .124 | .156 | .037 | .037 | .101 | .291 | .158 | .135 |
| 9 | BPAS Total | .291 | .291 | .291 | .291 | .291 | .291 | .291 | .827 | .005 | .124 | .156 | .037 | .037 | .101 | .291 | .158 |
| 10 | BSSS | .158 | .158 | .158 | .158 | .158 | .158 | .158 | .158 | .827 | .005 | .124 | .156 | .037 | .037 | .101 | .291 |
| 11 | DIIS F | .135 | .135 | .135 | .135 | .135 | .135 | .135 | .135 | .135 | .827 | .005 | .124 | .156 | .037 | .037 | .101 |
| 12 | DIIS DF | .097 | .097 | .097 | .097 | .097 | .097 | .097 | .097 | .097 | .097 | .827 | .005 | .124 | .156 | .037 | .037 |
| 13 | DIIS Total | .135 | .135 | .135 | .135 | .135 | .135 | .135 | .135 | .135 | .135 | .135 | .827 | .005 | .124 | .156 | .037 |
| 14 | IPIP C | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .827 | .005 | .124 | .156 |
| 15 | IPIP O | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .827 | .005 | .124 |
| 16 | IPIP N | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .827 | .005 |
| 17 | IPIP E | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .827 |
| 18 | IPIP A | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 |
| 19 | IPIP O | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 | .018 |

**MMORPG** = Massively Multiplayer Online Role Playing Game, measured in hours per week. **PVP** = Problem Videogame Playing scale. **SR** = Self Regulation scale. **BPAS** = Bus-Perry Aggression Scale with PA referring to Physical Aggression, VA to Verbal Aggression, A to Anger and H to Hostility. **DIIS** = Dickman Impulsivity Inventory with F referring to functional and DF to dysfunctional. **IPIP** = International Personality Item Pool with E representing extraversion, A agreeableness; C conscientiousness; S stability (the reverse of neuroticism) and O, openness; **SISE** = Single Item Self Esteem scale. **p < 0.05.** **p < 0.01.**

The findings of this study in terms of aggression indicate that this trait may not be such a vital component of problematic MMORPG use, as argued by researchers such as Oh (2003). In non-genre specific PVP it does indeed correlate in the form of two subscales and the overall score, but this is reduced to only verbal aggression when focusing only on MMORPG players, suggesting that it is less of a defining feature (possibly due to the reduced amount of violent content). As no significant difference in aggression was found between problematic and non-problematic MMORPG players, only between problematic and non-players, it cannot be satisfactorily concluded that it is a necessary prerequisite for PVGP.

There are also implications for the role of agreeableness in problematic MMORPG use, as this trait doesn’t appear as prominently in the literature as the other Big Five traits despite it demonstrating itself to be very important in the present experiment, especially as a distinguishing characteristic between problematic and non-problematic players. Considering the associations between this trait and social interest (Digman & Takemoto-Choock, 1981) as well as likeability (Hogan, 1983), this may have connotations for those attempting to explain why compulsive MMORPG play develops.

Support is offered for previous discoveries that self regulation is an important factor in PVGP and more general theories of compulsive behaviour which hold self regulation at the centre of possible explanations (Seay & Kraut, 2007). Although this didn’t feature in the correlational analysis, it would appear that this is one important factor that may separate problematic from non-dependant players. This has implications for development of treatments for those affected by problematic MMORPG use as focusing on increasing the ability to regulate behaviour may have the most profound effect.

In regards to the null findings concerning problematic players not showing lower levels of openness, conscientiousness, extraversion self esteem and emotional intelligence, this provides further evidence against the idea that problematic MMORPG use develops because of low levels of socially orientated personality traits. Several possibilities exist as to why these results were so incongruent with the previous literature. Little consensus has been reached on what constitutes an appropriate sample for gaming research with some studies focusing on adolescent, student or all-male populations. Similarly, there are also discrepancies between the types of gamers studied, be they gamers in general, online gamers or users of a specific game, all of which may attract different types of people with different motivations. While the comparatively more diverse sample used in the present investigation could be argued to be an advantage in that the findings are more widely generalisable, it does mean that any effects that are present only in certain subsections would not have been identified following the present analyses, suggesting that some of the personality differences expected may not be general trends.

The fact that opposite or non-existent trends can emerge from differing samples has important implications for how clear cut the relationship between problematic MMORPG use and personality is as well as how appropriate it is perceived to be to focus on only one subgroup within an increasingly heterogeneous gaming population. These findings also indicate that while well established associations may exist between problematic online game play and traits such as impulsivity, emotional intelligence and sensation seeking, these may not be necessary for this dysfunctional behaviour to occur, as these were not found to be linked in this present context.
study. This calls into question theories that hold these traits to be central to compulsive media use or behavioural dependencies and highlights the need for far more detailed investigation into the vital components and causal influences of compulsive MMORPG use.

4.1. Conclusion

Overall, the topic of problematic online game or more specifically MMORPG play is a relatively new one, and as such the relevant research base is still in its infancy. For this reason, it is difficult to draw any concrete conclusions, especially when the results run counter to predictions as in the case of the present investigation. However, it would appear that problematic MMORPG players do not necessarily show evidence of personality traits associated with other compulsive media use or substance based addictions, suggesting that either personality does not predispose individuals to MMORPG dependence or that MMORPG dependence is a distinct and incomparable issue, making normal ‘risk factor’ personality patterns not applicable. An important role appears to be played by low levels of agreeableness and self regulation and these traits therefore may be central to determining whether playing MMORPGs goes from a past time to dysfunctional behaviour. Considering that the problematic group did not report low extraversion and self esteem or high neuroticism, further evidence is provided against the idea that problematic MMORPG use develops as a result of having a personality ill-equipped for social interaction. Although the lower levels of agreeableness in problematic players indicates that sociability may be more of a concern for this group, as this is the least understood of the Big Five (Jensen-Campbell & Graziano, 2001), it is difficult to establish what this means in terms of specific behavioural patterns.

Despite this ambiguity, this research forms a solid basis for more focused investigation into the nature and development of problematic MMORPG play, highlighting self regulation and agreeableness as particular traits that may be of importance when distinguishing problematic from non-problematic players. Moreover, it goes some way to suggest that generalising theories from substance addictions or compulsive gambling may be inappropriate due to the distinct properties of problematic MMORPG play and that therefore it must be investigated in its own right if a full understanding of treatment and prevention is going to be achieved.

References


Web references
