Video Gamers and Personality: A Five-Factor Model to Understand Game Playing Style

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The authors explored personality dimensions of World of Warcraft (WoW) players and examined the differences between the 44-item personality measure Big Five Inventory (BFI) and WoW players. The BFI measures personality traits based on the five broad domains of openness, conscientiousness, extraversion, agreeableness, and neuroticism. The authors focused on the specifics of participant's primary play style (player versus player [PVP], player versus environment [PVE], or role-playing [RP]), specialization of the character (tank, healer, damage), character race (13 races), character class (11 classes), and gender as it relates to the BFI personality elements. A total of 1,210 WoW players, >18 years of age, participated in the study dispersed over 188 WoW realms. The author's findings, based on multivariate statistical analysis (MANOVA), establish a connection between personality characteristics of the BFI and the style of play of the participants. Gender differences among agreeableness, openness, and neuroticism were also found, which was consistent with past research (Costa, Terracciano, & McCrae, *Journal of Personality and Social Psychology* 2001; *81:* 322–331; Schmitt, Realo, Voracek, & Allik, *Journal of Personality and Social Psychology* 2008; *94:* 168–182). No statistical differences were found among other areas of interest including specialization of the character, character race, and character class. In addition, there was no support found for antisocial behavior or aggressiveness from personality scores of WoW players when compared with suggested markers of antisocial personality factors (Markey & Markey, *Review of General Psychology* 2010; *14,* 82–91).

Keywords: world of warcraft, big five inventory, personality, video games, violence

Video games have gained a significant focus in research on technology due to tragic events (e.g., Sandy Hook), aggressiveness of players, and attempts to understand the individual's draw to video games (Bartle, 1996; Dill & Dill, 1998; Kleinfield, Rivera, & Kovaleski, 2013; Ryan, Rigby, & Przybylski, 2006). Scholars have emphasized various themes that have emerged in each game and this has included developing a greater understanding of how players immerse themselves in virtual worlds that involve a wide range of social interactions, environments, and characters (Bartle, 1996, 2004; Yee, 2006; Yi, 2004). Much of the current literature has focused on the video game and violence debate.

While some research has found results that support the notion that violent video games increase aggression (Anderson & Bushman, 2001; Anderson & Dill, 2000; Arriaga, Esteves, Carneiro, & Monteiro, 2006; DeLisi, Vaughn, Gentile, Anderson, & Shook, 2013), a number of other studies have found no support for this statement (Brown vs. EMA, 2011; Ferguson, 2007; 2013; Hall, Day, & Hall, 2011). Furthermore, research on video games has been branching out into other realms of game play such as motivation, medicinal purposes, training, education, and community engagement and these types of gaming have not explored the personality of the gamer (Kato, 2010; Markey & Markey, 2010; Ryan et al., 2006). As personality is a key concept for psychology (e.g., therapy, understanding individuals. interpersonal relationships, engaging with the world) it is important to discover whether there are differences among gamers and nongamers. This article will attempt to build on the current liter-

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ature of video games and expand it by examining personality elements of World of Warcraft (WoW) and its players.

The Entertainment Software Association (ESA) has reported that 49% of the U.S. households own at least one video game console. The mean age of a gamer is reportedly 30 years and has been playing for 12 years. In addition, males comprise 53% of the gamer population (ESA, 2012). Individuals who play online games account for 15% of all video gamers in the United States. Individuals also reported spending more time playing video games than other routine activities (ESA, 2012).

Video games have incorporated increasingly sophisticated graphics, which have allowed players to immerse themselves into the games with greater ease. Furthermore, the act of playing video games, or "gaming," has become one of the fastest growing recreational activities (Gentile & Anderson, 2003; Olson, 2010). Whether gaming involves strategy-based, massive multiplayer online, or adventure games, the public and lawmakers have become highly involved with video games (Brown vs. EMA, 2011; Ferguson, 2013; Siwek, 2010).

Central to understanding video games and their players is the interaction of personality, motivation, and gaming. Personalities consist of complex interworkings that cause people to react differently to various environmental interactions and have been shown to influence motivating factors of play (Carver, & Scheier, 2004; Phares & Chaplin, 1997; Przybylski, Ryan & Rigby, 2009; Sharp, 1987; Yee, 2006). Due to the relatively new beginning of video game difficulties within a clinical setting (e.g., addiction, externalizing behaviors), little research has been conducted on personality characteristics and the impact video games may have on the individual from different personalities (Markey & Markey, 2010). These concepts have been used in research as main focal points of gaming attitudes and beliefs. While there is certainly a motivational element to gaming, it seems by stating gamers participate in video games due to intrinsic values is just a beginning to understanding and describing what draws gamers into the virtual worlds created by video games (Przybylski et al., 2009).

While the personality of gamers requires further research, a taxonomy of gamers has been provided by scholars. Bartle (1996, 2004) pro-

posed a typology of players to explain why individuals play video games and organized them into Killers, Achievers, Socializers, and Explorers. These four types were based on the orientation of the individual toward game play. Killers are individuals who "impose" themselves on other players and attempt to "kill" off the other's avatar to create distress; the more distress caused, the more enjoyment killers obtain. Achievers focus on obtaining end game content, accomplishing difficult feats within the game, and leveling up to the max level possible; all other game play is secondary. Socializers play the game for the social aspect and are interested in interactions with other individuals within the game. Finally, explorers explore the environment for new and novel experiences inside the virtual reality. Bartle (1996, 2004) further proposed that if an individual is high in one category, then he or she would be low in another.

Yee (2006) researched Bartle's proposed taxonomy to determine the validity of his suggested categories. He surveyed 3,000 participants from massive multiplayer online role-playing games (MMORPGs). Ten components emerged in the results and accounted for 60% of the variance among the sample. The 10 factors were further identified into the following three main elements of motivation: achievement, social, and immersion. Most of these factors did not clearly coincide with Bartle's classification although Yee did find similarities with Bartle's (1996, 2004) Achievers and Socializers. Despite these two similarities, Yee found multiple components that did not agree with Bartle's categorization, suggesting further information is required (Yee, 2006).

Yee's research into the typology supports the notion of more information being necessary to determine factors that may explain why gamers play video games. The Big Five Inventory (BFI) allows a deeper understanding of possible characteristics that may influence gamer's game play and additionally begin the ability to determine further typologies of gamers. Owing to the large population (Activision, 2013) and exceptionally long life of the game WoW, it presents an ideal game by having a large amount of individuals playing the video game for an extended period. Discovering personality characteristics of WoW players may allow a greater under-

standing of inner dynamics of the MMORPG player.

The Video Game Violence Debate

Scholars have studied the relationship between gaming and violent behavior, poor social skills, lower grades and achievement in school, and interpersonal relationships. Some scholars have concluded that the more gamers identified with violence-inducing avatars, the more they were prone to aggressive characteristics shortly after playing (Anderson, 2000; Anderson & Bushman, 2001; Anderson & Dill, 2000; Arriaga et al., 2006; Dill & Dill, 1998; Markey & Markey, 2010; Seung-A, 2011). In particular, Markey and Markey (2010) discovered high neuroticism, low agreeableness, and low conscientiousness predicted higher aggressiveness after playing violent video games. In contrast, individuals who did not portray these traits were not found to have higher aggressiveness after playing violent video games.

Video game research and violence culminated in a Supreme Court decision in 2011 during the Brown versus EMA case concerning the sale of violent video games to minors without parental supervision. The Brown versus EMA case struck down the California law banning the sale of violent video games (Brown vs. EMA, 2011; Narcisse, 2011). The Supreme Court revoked the law on constitutional grounds of the first and fourteenth amendment that video games fell under protection of other media (Brown vs. EMA, 2011; Labrecque, 2011). In the decision, the Supreme Court was critical of the current research conducted and emphasized a need for quality research of video games (Brown vs. EMA, 2011). Recent articles additionally have raised important points regarding the authorship bias, moral panic agendas, and confounded methodologies of current video game studies. This suggests that the literature is both controversial and the results are unclear (Ferguson, 2007; 2013; Hall, Day, & Hall, 2011). What can be determined as clear is the requirement for more research on video games, aggression, and other areas of video game play including the choice of avatars.

Present Study

Within the virtual world of WoW, the player has the choice of various abilities to develop their character, race, class, specialization of character, and choice of faction: Horde or Alliance. It is unclear why these choices are made by the gamer and the impact it has on their own development within the game. Current research on WoW, one of the most commonly played games, has focused on economics (Read, 2008), teamwork (Meijer, 2012), and "modding" the game (changing computer scripts for easier game play; Read, 2008). However, there is a lack of research on whether there is a personality element to choice of character specifics and primary game play style. Due to the largest running subscription rate among MMORPGs and it being the longest running MMORPG, WoW was chosen among other important choices such as League of Legends, Second Life, or Star Wars: The Old Republic.

Currently, there has been no research on the personality of individuals and their characters on WoW even though it is the most frequently and longest played video game with an estimated 8.3 million subscribers (Activision, 2013; Tassi, 2013). The present study was designed to discover personality elements, if any, involved in the choice of characters played in MMORPGs and video game play style. By using the Five-Factor Model, it is thus expected that WoW players will place themselves into specific personality types that correspond with their own personalities. It is hypothesized that individuals playing WoW will choose their main character based in part on the personality traits of the player. It is further hypothesized that individuals will have different personality attributes associated with the different playable virtual characters (11 classes, 13 races) and specializations of these characters (Tank, Healer, Damage). It is also expected that individual's playing styles of WoW (PVP, PVE, RP) will be impacted by different personality characteristics. Finally, WoW player's personality elements will be compared with past research on aggressive personality characteristics and video games while also being contrasted with the overall general population of the BFI to determine whether there is a difference between a normed populace and WoW players (Markey

& Markey, 2010; Srivastava, John, Gosling, & Potter, 2003).

Method

Measures

The BFI is a self-report inventory composed of 44 statements presented on a five-point Likert scale ranging from *disagree strongly* (1) to *agree strongly* (5) broadly assessing the following five domains of personality: openness to experience (*inventive/curious* vs. *consistent/cautious*), conscientiousness (*efficient/organized* vs. *easygoing/careless*), extraversion (*outgoing/energetic* vs. *solitary/reserved*), agreeableness (*friendly/compassionate* vs. *cold/unkind*), and neuroticism (*sensitive/nervous* vs. *secure/confident*) (Atkinson, Atkinson, Smith, Bem, & Nolen-Hoeksema, 2000; John, Donahue, & Kentle, 1991; John, Naumann, & Soto, 2008). The survey questions and format are designed to be nonthreatening to the participant's physical or psychological health, takes 10–15 min to complete, and can be administered in an online format. Rammstedt and John (2007) reported test-retest reliabilities of .84, overall mean intercorrelation of .21, external validity of .56, and convergent validity of .78. The BFI has been shown to be valid and reliable across multiple cultures (Benet-Martinez & John, 1998; Grucza & Goldberg, 2007; Rammstedt & John, 2007). External validity was established for the BFI and the scores were found to accurately correspond with expected scores on the related NEO-PI-R for several samples including cross-national populations (e.g., American and German). Researchers have used the BFI owing to its "structured taxonomy" and "broad expanse of personality and can summarize almost any personality construct" along with "a useful coordinate system for categorizing various personality constructs within its five dimensions" (Markey & Markey, 2010, p. 83; Ozer & Reise, 1994).

To gather information concerning participants' background and experiences, a short demographics questionnaire was developed. The questionnaire consisted of questions related to age, gender, race, and educational status. Additionally, items related to video game playing and preferences were included. The questions associated with video game playing asked about their preferred primary style of play (PVP, PVE, RP), how many years the participant had played WoW, character specialization, faction played as (Horde or Alliance), average hours and days per week played, character race and class, gender of character, character level, and virtual server played on.

World of Warcraft

WoW is a MMORPG placed in a virtual world by Blizzard Entertainment. Blizzard Entertainment boasts 8.3 million subscribers as of May, 2013 making the MMORPG the world's most subscribed to video game (Activision, 2013; Snow, 2007; Tassi, 2013). Individuals have to pay a monthly fee to play within the game's virtual world. Players have to choose a server to play on, and each server is interconnected by cross realm zones (cross realm zones allow players to interact with other players from different servers or realms to quest just like they normally would) and endgame content using a party finder tool for raids, dungeons, arenas, and scenarios. No player can cross to another server freely without paying a fee for each transfer (Blizzard Entertainment, 2013). Each server is an individual realm that gamers play in, what happens in that server, stays on that server.

There are four available realm types and each one has its own general restrictions on what style of play can be conducted. The four categories are PVE, PVP, normal role play (Normal RP), and player versus player/role-playing (PVP-RP; Blizzard Entertainment, 2013). Even though the realms are categorized as such, any style of play (PVP, PVE, and RP) can be conducted on any realm. At best, the realm types can be considered suggestive to the players on the server. On a PVE server, or primary choice of play, environmental game play, defeating virtual monsters, end game content, questing, and RP are the focuses of play. There is an allowance of PVP combat, but it has to be consensual. PVP servers, or primary choice of play, add in the option of open PVP combat in certain areas of the game in addition to the options of a PVE server. Players can be attacked by an opposing faction within most of the virtual world with no consent being given. Normal RP servers allow all the characteristics of the PVE server except for the PVP element; it has to be consensual between players. RP characters

primarily focus on RP with their characters within the environment. Finally, PVP-RP servers introduce a mixture of PVP and RP realms where individuals can role play along with battle between factions (Blizzard Entertainment, 2013).

Players have a choice of two factions, Horde or Alliance, in which the story line behind each one has a different philosophical backing. The Alliance is considered to be the heroes of the world striving for peace and prosperity for all as opposed to the Horde who want to control the world and run it as they see fit. It can also be thought of as two sides of the same coin where one faction believes the other is wrong and doing harm and vice versa. Once the choice for a faction has been made, it cannot be undone except by starting a new character on the server. Individuals who choose to play primarily as PVE focus on end game content, environmental game play, questing, and defeating various virtual monsters located within the virtual realm. PVP individuals focus on the destruction of other players within the game, usually during end game content via arenas and high-level areas; but this is not always so. Players who specialize in PVP may also traverse the virtual world, attempting to kill anyone they come across. Role Players focus in on collecting gear to role play in with their faction or guild, speak in the natural dialect of their character, and partake in events created in game for pleasure. As can be seen from above, different playing styles require different approaches to the virtual world. There are similarities to each style of play such as all have to participate in PVE to level up to a point, yet there are key distinctions for each style the gamer chooses to primarily play.

Players choose a server or domain that they wish to play in they then have a choice on what race their character will be after choosing a faction to play as. The player currently has 13 different avatars to choose from and each race has specific racial perks (Blizzard Entertainment, 2013). The gamer further refines his/her character by gender and class. In total, there are 11 different classes from range fighters to healers to tanks to melee specializations. Each class plays differently and has special talents (Blizzard Entertainment, 2013). As the character gains levels and experience, new and more powerful talents become available. When this occurs, the gamers can further refine their skills and choose whether to be a character that tanks, heals, or damages other characters. Tanks are characters with the ability to have nonplayer characters (NPCs) focus their attacks on them. Healers keep the group alive by healing any damage that occurs. Damagers fire their abilities at other characters in hopes of defeating them (Blizzard Entertainment, 2013).

Participants

This study solicited participants from a variety of online locations including WoW forums (online meeting chat boards), other online forums, in-game messaging, and participant referral using a generic message. A total of 1,349 participants responded, but 139 did not provide a date of birth or were under the minimum age requirement of 18 years, and were therefore excluded from the analysis, leaving 1,210 participants that were included in the study. The central WoW forums were queried, with a response rate of 188 realms (79% of the possible virtual worlds), and other gamer sites were requested for participation in an attempt to include as much of the WoW population as possible. The style of play was dispersed unevenly across the three playing styles, but statistically controlled for the analysis. Mean participant's age for the participants was 26.88 years old, primarily male (71%), and Caucasian (85%), evenly distributed between the two philosophically different factions of Alliance (49%) and Horde (51%), and have or are currently attended a collegiate school (73%), with the average years of education being 14.21. The participant's mean playing length of WoW was 5.45 years, logging into the game 5.76 days every week, and playing an average of 25.95 hr during that time. Participant's choice of character gender was primarily male (52%), which was lower than the participant's reported gender. This study was approved by the Pacifica Graduate Institute Institutional Review Board.

Procedures

Forum posts were staggered during 3–6 hr blocks daily, three servers per posting period, with a maximum of nine server posts per day. Randomization of the forums was made possi-

ble by assigning each forum a random number and using a random number generator to determine the order of forum query. The forums were monitored for 5 days after the initial posting to ensure that any questions posted on the forum and not directed to the email provided were answered. Gamers were asked to click on a link that took them to a blog post, which explained the context of the study and informed consent. When the participant clicked the link at the bottom of the web page, informed consent was given and the participant was taken to the survey. Participants were directed to answer the BFI in accordance with the personality test directions followed by the demographic questions. At the end of the survey, they had the option of having their personality results emailed to them and, if requested, the study results.

Statistical Analyses

A total of ten *t* tests were used to examine personality differences among gender and faction (alpha adjusted to .005). A one-way between-groups MANOVA was performed to investigate personality differences in play style, character race and class, and specialization of the character. The five internal scales of the BFI were used as dependent variables. The independent variables were play style, specialization of character, gamer's character race, and gamer's character class. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with Levene's Test equality of error variances being significant. To compensate for this, Pillai's Trace was used to assess significance on the MANOVA. However, Box's *M* was not significant, suggesting that the sample is robust (*p* = .009; Tabachnick & Fidell, 2013). There were statistically significant differences between gamer's choice of play style on the combined dependent variables, but no significance was found from the MANOVA for specialization of character, character race, or character class, but differences across the mean scores were observed (see Table 1). The univariate tables were examined for consistency and possibility of significance for the MANOVA results.

Table 1
MANOVA Across Play Style, Specialization, Character Class and Character Race

Domain	Pillai's value	*p*	Power
Play style	.067	<.001*	1.00
Specialization	.010	.695	.394
Character class	.068	.530	.974
Character race	.109	.058	.999

* *p* < .001.

Results

Ten independent-samples *t* tests were conducted to compare the personality scores for gender and faction choice (alpha adjusted to .005). Females scored statistically higher on the personality dimensions of agreeableness, neuroticism, and openness when compared with the male participants (see Table 2). The magnitude of the differences in the means was medium for agreeableness (Cohen's *d* = .31), large for neuroticism (Cohen's *d* = .62), and medium for openness (Cohen's *d* = .31). The *t* test for faction choice did not reach statistical significance.

The conducted MANOVA did not return statistically significant results for specialization of character, character class, and character race; however, playing style of the participants did yield statistical significance (see Table 1). When the results for the dependent variables (extraversion, agreeableness, conscientiousness, neuroticism, and openness) were considered separately for playing style, four of the five scales reached statistical significance: extraversion, conscientiousness, neuroticism, and openness (see Table 3). An inspection of the mean scores indicated that individuals who played primarily as PVP had statistically higher mean scores than RP for extraversion, PVE had statistically higher mean scores than PVP and RP for conscientiousness, RP had statistically higher mean scores than PVP and PVE for neuroticism, and RP had statistically higher mean scores than PVP and PVE for openness. An inspection of the univariate table showed statistical significance in all four areas of personality suggested above, but also in agreeableness for RP when compared with PVE (see Table 3).

When inspecting the univariate tables for consistency of significance, it was found that openness reached statistical significance for

Table 2
Means of Personality Scores Across Gender

Personality scales	Gender	M (SD)	M difference	p	Cohen's d
Extraversion	Male	24.63 (6.91)	.72	.113	
	Female	23.91 (7.04)			
Agreeableness	Male	32.10 (6.16)	1.85	<.001*	.31
	Female	33.95 (5.87)			
Conscientiousness	Male	31.50 (5.80)	.44	.250	
	Female	31.94 (5.93)			
Neuroticism	Male	20.55 (6.21)	3.94	<.001*	.62
	Female	24.49 (6.46)			
Openness	Male	37.00 (5.86)	1.79	<.001*	.31
	Female	38.79 (5.57)			

Note. M = Mean; SD = Standard deviation.
* $p < .001$, two-tailed.

choice of character race; $F = (12, 700) = 1.88$, $p = .033$, $\eta^2 = .03$. An inspection of the mean scores revealed no statistically significant difference among the means of character race, character class, or specialization of character. There were also no statistically significant differences between interaction effects of play style, choice of character class, race of character, and specialization.

Discussion

This study investigated personality elements among WoW gamers, their choice of character, and style of play in WoW. With increasing concern about the impact of video games on the individual (e.g., Ferguson, 2013; DeLisi et al., 2013), it is suggested through the results of this study that the average individuals who play WoW do not usually fit the characteristics of an antisocial personality markers (low conscientiousness, low agreeableness, and high neuroticism) as suggested by some research (Markey & Markey, 2010). By WoW gamer's scores being conceptually equal to the average population of the BFI (even lower in the case of neuroticism) suggesting that "violent video games" exacerbate aggression and antisocial characteristics

Table 3
Means of Personality Scores Across Play Style

Personality scales	Play style	M (SD)	p	Power
Extraversion	PvP*	25.64[b] (6.96)	.002**	.903
	PvE*	24.06 (6.90)		
	RP*	22.49[a] (7.19)		
Agreeableness	PvP*	32.98 (5.70)	.200	.342
	PvE*	32.01[c] (6.29)		
	RP*	34.81[c] (5.25)		
Conscientiousness	PvP*	30.29[a] (6.18)	.004**	.850
	PvE*	32.02[b] (5.57)		
	RP*	29.50[a] (5.79)		
Neuroticism	PvP*	20.72[a] (6.08)	<.001***	.968
	PvE*	21.46[a] (6.49)		
	RP*	25.42[b] (6.99)		
Openness	PvP*	37.24[a] (6.03)	.026*	.677
	PvE*	37.21[a] (5.65)		
	RP*	39.72[b] (6.87)		

Note. M = Mean; SD = Standard Deviation; PvP = Player vs. Player; PvE = Player vs. Environment; RP = Role-playing.
[a,b] MANOVA statistically significant from each other. [c] Univariate statistically significant from each other.
* $p < .05$. ** $p < .005$. *** $p < .001$.

appears to be unfounded at least for the average person playing WoW (Anderson & Bushman, 2001; Anderson & Dill, 2000; Arriaga et al., 2006; DeLisi et al., 2013). This finding is further remarkable owing to the Entertainment Software Rating Board of WoW as a "T" game (teen rating) because "Content is generally suitable for ages 13 and up. May contain violence, suggestive themes, crude humor, minimal blood, simulated gambling and/or infrequent use of strong language" (ESRB, 2013). Gamers of WoW overall appear to have average levels of conscientiousness, agreeableness, openness to experiences, extraversion, and to be slightly less neurotic than the overall population. This is different from the neurotic, antisocial, disagreeable individual suggested in some of the literature (DeLisi et al., 2013; Srivastava et al., 2003).

Consistent with previous research, female scores on the BFI were higher on openness, agreeableness, and neuroticism when compared with males (Costa, Terracciano, & McCrae, 2001; Schmitt, Realo, Voracek, & Allik, 2008). It is interesting to note the difference of openness and agreeableness scores as women are becoming more involved with the gaming community they may need to have a certain level of openness, possibly more than what is considered normal, to venture into this area when compared with men. This may be because it has been considered more socially acceptable for men to play video games compared with women in the past and this has only recently begun to change in gamer culture (Bendixsen, 2011; Brown, 1996; Locker, 2012). Women constituted a lower percentage in this study (29%) than what was normally found in recent surveying of gamers from the ESA (women: 47%, men 53%; 2012). This finding may be explained by a possible greater appeal of the video game WoW to men.

The relationship between personality dimensions and style of play found that gamers that chose to play PVP styles were more extroverted, less neurotic, and had a lower tendency for openness to experiences when compared with participants who selected PVE and RP styles. This is suggestive of participants who selected PVP styles to have more high positive emotions, enjoy the company of others, and have high social engagement when compared with participants who preferred PVE and RP styles. PVP may not be as open to other avenues of playing the game compared with RP styles of play due to the lower

scores obtained on the BFI. They may not have as wide interests and may not seek out new and novel experiences within the game or rely as heavily on interpersonal connections as other players who have different styles of play (Atkinson et al., 2000; McCrae, Harwood, & Kelly, 2011). It is important to discover whether this finding applies only within the game, extends into their everyday life, or both.

Players that choose to play as PVE in WoW overall were less agreeable, less open to experiences, and more conscientious when compared with the participants selection of other styles of play (PVP and RP). However, PVE play styles were more extraverted and less neurotic than player's whose style of play was RP, but were less extraverted and scored higher on neuroticism than PVP play styles. These individuals tend to be more reserved than PVP, but not as much as RP. They may not dwell on insignificant events and may be able to continue on within the game with more ease in comparison with the RP scores. Additionally, their scores may suggest they were not as open to playing different avenues of the game as other styles of play. They did not have as high scores on agreeableness as Role Players, but their scores do reflect the possibility of more sympathy in regard to others along with a deeper sense of other's well-being. Scores for PVE also suggested that they may have higher self-discipline, moralistic views of the world, and aim for high achievement even if outside expectations are not available when compared with the other styles of play (Atkinson et al., 2000; McCrae et al., 2011).

RP had higher agreeableness, neuroticism, openness, and lower extraversion and conscientiousness when compared with the participants selecting other styles of play. Role Players tended to be more agreeable with other players, open to different styles of play, which is consistent with RP within the game, but also more neurotic along with being more reserved. In addition, individuals who prefer a RP style may be more emotionally reactive and become more easily anxious and upset than other participants in the sample. Situational life factors may also be of concern to the Role Players as suggested by the higher neuroticism scores. RP scores suggest a higher appreciation for art, imagination, curiosity, and creative expressions when compared with their peers in this study. Their scores on conscientiousness were the lowest of all three groups, but were still sug-

gestive of self-care and interest in other's well-being (Atkinson et al., 2000; McCrae et al., 2011).

The style of play gamers gravitate toward appears to be at least partially dependent on their personality, and there seems to be differences between the various styles of play and personalities, at least with MMORPGs. Specialization of the gamers' character, race, and class of the character did not appear to be significantly correlated with personality areas; however, variability of the means scores in the three areas were observed

suggesting personality may play a smaller role in these areas than hypothesized (see Table 4). This may be due to the racial and class bonuses and particular specializations the characters have. For the gamer population, it may prove to be more important to select a character's race, class, and specialization dependent on bonuses received from the choice and not personality traits.

Although the results did not reach statistical significance, it is important to look at the scores obtained for these areas in this sample as they do

Table 4
Means and Sample Sizes of Styles of Play, Specializations of Character, and Races and Classes of Character Across the BFI Domains of Personality

Domain	N	E[*] M	A[*] M	C[*] M	N[*] M	O[*] M
Styles of play						
PvP[*]	776	25.64[b]	32.98	30.29[a]	20.72[a]	37.24[a]
PvE[*]	343	24.06	32.01[a]	32.02[b]	21.46[a]	37.21[a]
RP[*]	89	22.49[a]	34.81[b]	29.50[a]	25.42[b]	39.72[b]
Missing	2					
Specialization						
Tank	180	25.39	32.98	31.84	20.66	38.04
Healer	356	24.16	33.71	30.93	21.99	37.88
Damage	673	24.08	32.37	30.71	22.23	37.39
Missing	1					
Character class						
Priest	155	24.46	33.20	32.01	22.16	37.07
Warlock	76	25.38	33.86	32.83	20.86	37.99
Shaman	115	23.18	32.84	29.86	22.96	36.55
Mage	88	22.41	32.08	30.09	22.09	38.26
Druid	150	24.70	33.12	30.94	22.34	38.40
Paladin	169	25.20	33.53	30.93	21.65	37.41
Warrior	125	24.14	33.33	31.37	20.19	37.16
Rogue	85	23.86	31.62	29.47	23.37	37.96
Hunter	110	25.34	32.04	30.87	22.27	36.30
Death knight	82	25.06	31.10	31.71	22.74	39.11
Monk	55	24.31	34.00	30.40	19.51	39.02
Character race						
Worgen	55	23.11	30.34	30.19	21.75	39.07
Goblin	45	25.11	32.10	32.53	21.38	37.70
Draenei	83	23.42	34.04	30.38	22.98	37.50
Blood Elf	185	24.32	33.92	32.25	22.42	38.06
Dwarf	46	26.13	34.09	30.18	20.93	37.03
Orc	86	23.16	31.87	30.87	24.49	35.21
Gnome	40	21.40	32.12	30.82	23.10	37.78
Tauren	85	24.99	32.14	30.01	21.32	37.37
Human	222	26.14	32.92	31.45	21.86	37.91
Troll	78	23.84	33.22	30.84	21.76	35.13
Night Elf	103	25.70	33.82	31.84	21.51	39.12
Forsaken	99	23.42	32.08	29.96	21.88	38.60
Pandarian	83	23.77	32.62	30.52	21.45	38.55

Note. N = Number of Participants; M = Mean; PvP = Player vs. Player; PvE = Player vs. Environment; RP = Role-playing; E = Extraversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism; O = Openness to experience.
[a,b] Statistically Significant From Each Other.

provide some insight into the intersection of character races, classes, specialization, and personality domains of the WoW gamer (see Table 4). Generally looking at the Specialization scores there does not appear to be any major differences. However, when Character Classes and Races mean scores are examined across the personality domains moderate differences in the mean scores were observed. The high and low scores in the five domains of the BFI for this sample are at least two points apart in each of the personality traits for Character Class and Race. Although they did not reach statistical significance, the mean scores within this sample were dissimilar enough to warrant mentioning. The differences observed across Character Class and Race are suggestive of a need to conduct further research personality and elements of characters played by gamers.

The individual scores are important for the different play styles, but it is also necessary to compare WoW personality scores with the BFI norms (see Table 5). The extraversion scores were similar to the BFI norm, suggesting that persons who were gamers had the same level of extraversion as the general population. They enjoy the company of others, at times can be withdrawn, but enjoy the interpersonal interactions they have with friends and family (Atkinson et al., 2000; McCrae et al., 2011). In addition, the agreeableness scores were average when compared with the BFI norm across all three playing styles, suggesting an average level of sympathy for others, selfless acts, and a deeper concern for other's well-being. This also suggests they like social harmony and working through interpersonal problems (Atkinson et al., 2000; McCrae et al., 2011). The conscientiousness

scores were also average when compared with the BFI norm, suggesting WoW players are disciplined, plan their behavior, can be concerned with others well-being, perseverant, and greatly value achievement (Atkinson et al., 2000; McCrae et al., 2011). The neuroticism scores were lower than the BFI norm, which suggests a tendency to be more emotionally stable, and have a higher tolerance for stressful situations in comparison with the general public (Atkinson et al., 2000; McCrae et al., 2011). Whether this happens inside the game needs to be investigated to further understand the impact this could ensue. Openness scores were also average when compared with the BFI norm, suggesting an average appreciation for the arts, adventure, imagination, creative experiences, and an average level of intellectual curiosity (Atkinson et al., 2000; McCrae et al., 2011).

An important limitation of the study is the low number of RP participants that responded to the questionnaires. As a result, it was difficult to properly evaluate the relation between RP type gamers and their personalities. The BFI is also a general measure of personality that does not have subscales for each of the five domains of personality such as those that are included on the NEO-PI-R. Thus, it was not possible to develop a highly nuanced understanding of personality and its relationship to gaming styles. Furthermore, this study was specific to the WoW population, which does not constitute the entire realm of video games and thus the findings should not be generalized to other categories of MMORPGs without caution. The above limitations suggest future studies should focus on more specific aspects of personality along with varying genres of video games.

In summary, play styles, at least for gamers on WoW, appear to be highly related to personality. While Specialization, Character Class, and Character Race did not return statistical significant results, differences among the mean scores were observed. This suggests some virtual worlds allow players to experience different endings and ways of expressing themselves that interact with their personality and can be expressed in a safe environment. Additionally, WoW players were average on being agreeable, conscientiousness, but less neurotic than the normal population, suggesting insufficient evidence to support claims of greater antisocial or aggressive personality traits as suggested by some authors in previous research (Markey & Markey, 2010) to be required for aggressive tendencies postgame play (Anderson &

Table 5
Comparison of Mean Scores of the BFI to World of Warcraft Players

Personality scales	BFI *M* (*SD*)	WoW *M* (*SD*)
Extraversion	25.06 (7.20)	24.53 (7.01)
Agreeableness	34.38 (6.12)	32.93 (6.06)
Conscientiousness	33.57 (6.39)	31.95 (5.84)
Neuroticism	25.04 (6.88)	21.57 (6.55)
Openness	39.00 (6.90)	37.64 (5.73)

Note. BFI = Big Five Inventory; WoW = World of Warcraft; *M* = Mean; *SD* = Standard Deviation. *Source*: Srivastava, S., John, O.P., Gosling, S.D., & Potter, J. (2003). Development of personality in early and middle adulthood: Set like plaster or persistent change? *Journal of Personality and Social Psychology, 84,* 1041–1053.

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