

THE PSYCHOLOGICAL ASPECTS OF CHAMPION ROLE CHOICE IN MOBA
GAMES

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THE PSYCHOLOGICAL ASPECTS OF CHAMPION ROLE CHOICE IN MOBA GAMES

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ABSTRACT

THE PSYCHOLOGICAL ASPECTS OF CHAMPION ROLE CHOICE IN MOBA GAMES

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Multiplayer features of video games increased lately due to increasing quantity of social gamers. Playing together for a common goal and having different roles in a team play is one of the favorite multiplayer properties. In MOBA games, players can take part in various roles rather than simply fighting with the enemies. This thesis investigated the probable effects of player personality to the role selection in this type of games. For this work, fairly experienced MOBA players are subjected to personality measures and exploratory tests. Whether character selections of participants are affected or not is determined via questionnaires. Results showed that there are several significant associations between personality and roles.

Keywords: personality, MOBA, role, online, games

ÖZ

ÇEVİRİMİÇİ ÇOK OYUNCULU SAVAŞ ARENASI OYUNLARINDA KAHRAMAN ROLÜ SEÇİMLERİNİN PSİKOLOJİK YÖNÜ

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Son zamanlarda sayısı artan sosyal oyuncuların da etkisiyle video oyunlarının çoklu oyuncu özelliklerinde artış oldu. Ortak bir amaç için birlikte oynamak ve takım içerisinde farklı görevlere sahip olmak bu favori özelliklerden. Çevrimiçi çok oyunculu savaş arenası oyunlarında, oyuncular basitçe düşmanlarla savaşmanın dışında çok çeşitli roller üstlenebiliyorlar. Bu tez, bu tarz oyunlarda oyuncu kişiliğinin rol seçimine olan olası etkisini araştırmıştır. Bu iş için, bu tarz oyunlarda kısmen tecrübeli oyuncular kişilik ölçümlerine ve keşif amaçlı testlere tabi tutulmuştur. Katılımcıların kahraman rolü seçimlerinin etkilenip etkilenmediği anketler yoluyla belirlenmiş ve sonuçlar karşılaştırılmıştır. Sonuçlar kişilik ile roller arasında önemli ilintiler olduğunu göstermiştir.

Anahtar Sözcükler: kişilik, oyunlar, rol, karakter, seçim

*To the people who do not let others discourage them about
studying games*

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LIST OF ABBREVIATIONS

MOBA	Multiplayer Online Battle Arena
MMO	Massively Multiplayer Online Game
WoW	World of Warcraft
RPG	Role Play Game
RTS	Real Time Strategy
MMORPG	Massively Multiplayer Online Role Play Game
PvP	Player vs Player
PvE	Player vs Environment
eSport	Electronic Sport
US	United States
UK	United Kingdom
NPC	Non-Player Character
DOTA	Defense of The Ancients
VW	Virtual World
SDT	Self Determination Theory
BFI	Big Five Inventory
PENS	Player Experience of Need Satisfaction
ANOVA	Analysis of Variance
HEXACO	Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness and Openness to Experience
MTurk	Amazon Mechanical Turk

CHAPTER 1

INTRODUCTION

Video games have gained significant pace by becoming more online in recent years. Every day, many people from every age start to play an online game with friends. Over 150 million Americans are regular video game players and most regular players spend 6.5 hours per week on online games with others (Entertainment Software Association, 2016). Online game industry has gotten bigger with millions of players worldwide and it is continuing to grow. Since there are many players who are interacting with each other through these games, many psychological research questions about player behavior can be answered with using this player base. There are many issues which have been researched with using this human resource. When the gaming sector was new and started to grow, main studies were about how playing video games affect the players (especially children) due to aggressive game mechanics in action games. Studies with this approach are still being carried out due to fact that game sector constantly gives birth to new types of games with new mechanics. To get better sense of what has affected the researchers and why there is insufficient research on every aspect of games; changes in the gaming should be considered. In the beginning, video games were mostly single player due to lack of internet access. After internet became available to masses, firstly, video games became multiplayer and then massively multiplayer online games have emerged. MMOs (Massively Multiplayer Online Games) are types of games in which large number of people can play in the same world. Arising number of MMOs, easily accessible mobile games (with the help of rising usage of smartphones) started to become addictive for the players which also created another research area for psychologists (internet, game, mobile phone addictions). Professional gamers and tournaments of multiplayer games created their own community and fan bases which lead to birth of eSports. MOBA (Multiplayer Online Battle Arena) games started to become widespread in last couple of years and their player and spectator bases also grow expeditiously. Factors that affect choices of players about these games and their in-game behaviors is started to be researched lately. Measuring personalities of players is a way to understand motivations and choices of players about online video games. In this research, main focus is that finding associations between personalities of

players and their in-game character role selections, especially in MOBA games. However, before going further, MOBA genre should be clarified.

1.1. What is a MOBA?

Multi-player online battle arena games which are abbreviated as MOBAs are one of the game genres which involve strategic team fights online. MOBA evolved as a different game genre which involves certain characteristics of RTS (Real Time Strategy), RPG (Role Playing Game) and tower defense game genres (Walbridge, 2008). It started with modes (Aeon of Strife) in StarCraft and (Defense of The Ancients) Warcraft 3 then became widespread (Dean, 2014). Indisputably largest MOBA game, League of Legends, had reached 27 million daily users in the early 2014 (Riot Games, 2014). In this game type, players choose a champion and defend their base against other players in generally 5 vs 5 battles.

In the Figure 1, general look of a MOBA map is given. There are also sub-paths between lanes through the jungle, in addition to main lanes. Aim of a team is that defeating the enemy team by destroying their base. At the start of a usual game, champions choose a lane and fight with enemy champions, defensive structures and not player controlled units (NPC) in order to gain gold and experience by killing them. After heroes become stronger, all heroes start to act together and team vs team fights begin at some point. Players try to catch their enemies off guard and kill them by using their skills, while they also try to defend their towers and base.

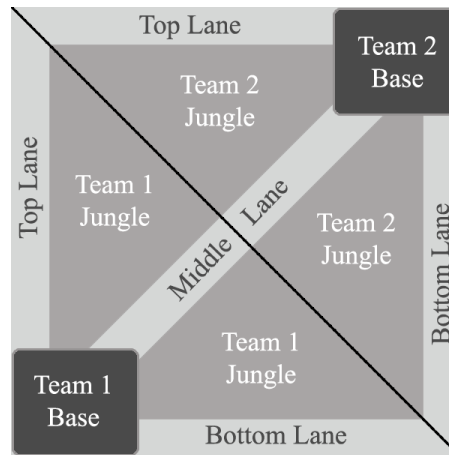


Figure 1 – General MOBA map

A multiplayer online game which is played by many people gradually becomes an eSport if there is a willing audience and there is sufficient fun in watching two parties battle at the game. There are organizations in which spectators gather online or physically to watch that two professional player team show their skills and try to win against each other in these games. Even US counts the professional players as athletes (Blake, 2013). Most played eSports are MOBA games (“Top Games of 2016,” 2016) and this attracts researchers who are interested in studying sports (Riout et al., 2014) in addition to researchers who works on game related studies. However; there is little research on finding out the relations between selected champion roles and personalities of players and this study will try to explore the MOBA game field in this direction more. In the next part, why role selection is important in MOBA games will be explained.

1.2. Roles

There are champions with a wide variety of skills, themes and visuals in MOBA games. For example, over 100 champions are available for the players to choose in Dota2 and League of Legends. Although there are many champions to choose and play with in MOBA games, there are roles of these champions which define the way of playing with these champions. Moreover, although there may be more than one different champion with the same role, because of the fact that their skills and styles are different, game experience will not be same for these champions. After some time, players tend to stick with certain roles and champions, because being experienced in playing certain role and champion brings success (Kim, Keegan, Park, & Oh, 2015).

Champion roles in MOBA games are generally well defined and balanced. All roles stand for covering a specific task in the gameplay. Although there is a role defined for each champion, sometimes people play with a champion in a manner which is unsuitable to defined role of that champion. This behavior can end up in failure, because role distribution is crucial for the success (Pobiedina et al., 2013). Players act as a group or solo depending on the fight situations. Especially when players work towards a goal, team members depend on the each other and a trust relationship forms. Team members expect players to behave in the defined role for their champion. Therefore, choosing the role suitable for the game, the team and the player is crucial and experienced players take this matter seriously.

Before moving on to what the personality traits and research questions are, it is necessary to understand the champion roles. The champion roles which are mutual in almost all MOBAs are selected for this study. Brief explanations of six common champion roles are given:

Assassin: Assassins are high damage dealers with quick movement capabilities. They are heroes who try to ambush their enemy by closing up fast and perform consecutive successful attacks. They will run away if they are not successful due to their poor protection. They can sneak in and kill an enemy from close; however, they should be sure about timing and positioning because of the long cooldowns and low defense skills.

Marksman: Marksmen are ranged continuous high damage dealers with low defense. Therefore, they try to kill enemies from distance without letting them get too close. Although they are dependent to items, slow at start and need assistance from Support or Tank players; they are strongest in the late game and they get the most kills.

Tank: Tanks are highly defensive close-combat warriors with low damage. They are heroes who try to put themselves in front of enemies to make room for killers in their team. They can stun, push or harass enemies in order to start team fights and sometimes they sacrifice themselves to protect their team members which are mostly Marksmen.

Fighter: Fighters are heroes who try to overpower their enemies by being patient and vigilant. They are close-combat medium damage dealers and medium defenders but they excel in neither of them. They have balanced skills and they can adapt to situations of the game well.

Support: Supports are heroes who try to help their teammates rather than killing enemies. They have skills such as healing, shielding friends or stunning, disabling enemies. Their damage and defense are low but they can ambush enemy heroes with using traps and pulls. They can also protect their teammates against being killed with map revealing items (wards).

Jungler: Junglers are close combat fighters who are responsible for killing the non-player (NPC) enemies in the forest to get gold rather than fighting with other players. They are heroes who try to get strong as quick as possible by killing the forest enemies and go to help their teammates when they are having difficulties such as not being able to kill an enemy. They also have another mission which is hunting the enemies alone in the jungle and they are not dependent to their teammates (Haag, 2013; "Different Roles in MOBA," 2015; "Roles," 2012; "What do heroes do?," 2016; "Roles," 2016; "Role - Dota 2 Wiki," 2016).

Roles are emerged from early role playing concepts of games. First three roles were Damage Dealer, Healer and Tank. After some time Damage Dealer class split into more than one part such as Assassin, Marksman and Fighter. There are no found academic research on separating and defining these roles. There are only games which are implementing these basic roles differently.

1.3. Personality Traits and Their Effects on Virtual World

It has been settled that personality traits have an effect on preferences of people regarding various situations. There are studies which show that personality has direct influence on job performance (Barrick & Mount, 1991), everyday behaviors (Funder & Sneed, 1993). There are also studies which have researched the behaviors and personalities of individuals in virtual worlds and compared them to real world versions. A research by Bessiere et al. (2007) found that sample of World of Warcraft (WoW) players (especially depressed ones) think that in-game characters they created are better than themselves. According to another study by Amichai-Hamburger et al. (2002) which is conducted on chat users, neurotic and introverted people claim that they are able to express themselves better at the internet while extroverts think that they are better at sharing in real world. Virtual world users also prefer their younger, leaner versions while creating their avatar, according to the study by Ducheneaut et al. (2009). These studies show that people may not try to be exactly like themselves in virtual world because of the reasons such as anonymity or ability to become ideal version of self.

On the other hand, there are empirical studies in which people have shown behaviors on the virtual world like they are in the real world. A research on virtual world users showed that they can be persuaded with the real-world tactics of

compliance. Also in that study, success of compliance of VW(Virtual World) users were significantly affected by the race of avatar of the people who try to convince them (Eastwick & Gardner; 2009). This shows that our biases may become active in virtual world. Video games can also be considered as virtual worlds when basic mechanics are taken into account. Consequently, mostly online video games and their association with real world attributes of players are also researched. A research on MMORPG (Massively Multiplayer Online Role Playing Game) players is carried out by Guegan et al. (2015) and it is claimed that being a member of virtual group such as an in-game guild is no different than real world groups in terms of social identification. Another study on WoW players shows that virtual behaviors of players are affected by personality of players within the limits of virtual space. In that study, personality scale is given to WoW players and after participants played WoW; they filled a personality survey for their character. Agreeableness of players are found to be predicting in-game agreeableness-related behaviors and agreeableness aspect of personality of created character (McCreery, Kathleen Krach, Schrader, & Boone, 2012).

Important work of Worth and Book (2014) which is carried on WoW players and includes self-report surveys, shows that personalities of players affect in-game behaviors related with PvP(Player vs Player), PvE(Player vs Environment), helping, working, immersion. Similar to that work, another study is also conducted with including new aspects of in-game behaviors by same authors. In that study, it is stated that in-game aggressing, helping, winning and creating behaviors of players are correlated with the aspects of players' personality which are expected to predict associated behavior (Worth & Book, 2015). Study by Yee et al. (2011) which is conducted on WoW players shows that many in-game behaviors can be associated with the personality traits of the players. Therefore, in the light of studies above; there is a possibility that virtual world and video game behaviors can be affected by personality of the users.

In addition to in-game behaviors, personalities of players have been shown to affect the preferences of players about games (DeGraft-Johnson, Wang, Sutherland, & Norman, 2013). A study shows that online game players who play the same type of game (MMORPG) can have different in-game goals and motivations such as socializing with people or impersonating a character (Yee, 2006). Personality also emerges as an influencer for those motivations of people to play games. For example; study by Graham & Gosling (2013) reveals that gaming motivations such as socializing or achieving can be affected by the personalities of players and in this case they were WoW players. Another work by Park et al. (2011) also shows that personalities can determine gaming motivations such as relaxation or escapism.

One of the in-game behaviors of players is selecting the character they want to play with. There are various studies about character selection on video games. A study shows that gender has some effects on character selection of MOBA players (Ratan, Kennedy, & Williams, 2012). In this study, female players are found to be more likely to choose heroes which are in same gender with them comparing to male players. Moreover, male players who defined themselves as shy tend to

choose female heroes. It can be inferred from this behavior that personality can have effects on character selection. Another study focuses on weekly changing free heroes on League of Legends and it has shown that presenting players with new heroes and new skins has an effect on the hero selection (Lee & Ramler, 2015). There is also a work about MOBA games and leadership development through them (Nuangjumnonga & Mitomo, 2012). In that work, three roles are assumed to be common roles for MOBA; carry (equivalent of marksman), ganker (equivalent of assassin) and support. As a result in that study, carry roles are correlated with authoritarian leadership while ganker and support roles are correlated with democratic leadership. In a research carried on mostly teenagers, it is found that there is no substantial proof for effect of personality on role selection, but familiarity and similarity of players and heroic roles affect character selection (Hsu, Kao, & Wu, 2007). There was no significant finding about personality and character class association in a study which is conducted on World of Warcraft players (Bean & Groth-Marnat, 2014). In brief, there are researches which have different results about the association between character selection and personality. This may be due to customization option of characters in MMORPG games. Regardless of the class of character, players may become content when they are able to make their avatars look like themselves or whichever they want. Customization option is very limited in MOBA games; therefore, this game genre may have different results regarding this issue.

The literature about this subject shows that it is sensible to think that personality traits can be associated with choices regarding MOBA games as well. Understanding selection of champion roles and exploring how this concept is related with player personalities is the main aim of this study. Before going further, an explanation is required for defining the personalities of people with scientific method.

1.4. The Big Five Personality Traits

Research on defining personality traits of humans goes way back and still continues. At the beginning, all adjectives which define human traits are gathered from dictionary and researchers have tried to put relevant ones together under certain titles to form a structure (Allport & Odbert, 1936). Firstly, they were summarized under 16 titles (Cattell, 1957), and then correlated ones among these titles are also gathered under lesser number of titles by different researchers. At some point five broad factors are defined for these traits as a more simple and effective model and it is named as Big Five (Goldberg, 1981). Big-Five model is accepted among researchers who work on personality and became widespread. After that success, several different versions of Big-Five model are emerged with certain differences. Some of them are specialized, changed or shortened due to specific needs of certain studies.

These models which define characteristics of people are used to form surveys to determine the personality traits of people. There are many scales which psychologists use in order to assess the personality of people. Subjects fill these

surveys by stating how much they define themselves with given adjectives. Many different versions of the Big-Five scale are emerged since it is first defined and all of them implemented and tested on different studies. Big Five Inventory (BFI) is one of the most used personality scales and it is used for these matters because of its validity (John, Donahue, & Kentle, 1991; John et al, 2008; Benet-Martinez & John, 1998). There are five aspects of personality traits which are measured by this scale. They are extroversion, openness to experience, neuroticism, conscientiousness and agreeableness. Although there are other versions of BFI with five factors and there are other personality scales which have same trait names, they are essentially built on same principles. After a participant fills a BFI scale, a score for the each personal aspect of that participant is obtained.

Before moving on to research questions and Big Five further, one aspect of this research also needs to be explained. This study is based on the self-report surveys due to lack of in-game behavior data from MOBA games. Therefore, there is a need for a measurement tool for defining players' approach towards the champion roles and it should be in a self-report survey format. There is no a validated MOBA game related scale for this purpose, so it was necessary to form a new one based on the accepted models.

There are various self-report surveys to measure the game experience of players. The one with strongest background of those is PENS (Player Experience of Need Satisfaction) which is based on Self-Determination Theory (SDT) (Ryan, Rigby, & Przybylski, 2006). SDT is a psychological theory about intrinsic motivation of individuals and it consists of three innate needs of people. Theory suggests that people search for activities in which they feel that these needs will be fulfilled and in the activities which lack these fulfillments, they tend to be unhappy. Being intrinsically motivated is defined as doing an activity just for its own sake because it is interesting and not for a reward which would be counted as extrinsic motivation. It is theorized that if all of these three needs of people are satisfied, people will be intrinsically motivated and healthy growth will occur. It is a widely accepted theory which was in development since 70s and emerged as SDT in 80s. These innate psychological needs of SDT are autonomy, competence and relatedness. Autonomy is the need for ability to choose and having freedom to take the actions which the person wants. Competence is the need for challenge and self-development while relatedness is the need for connecting to others (Deci & Ryan, 2000; Deci & Ryan, 1985). After SDT become widely known, basic psychological needs scales are emerged to measure the need satisfaction of people about certain domains of life such as work and relationships between people (Deci et al., 2001; Guardia, Ryan, Couchman, & Deci, 2000). These scales focused on the specific domain and consist of questions regarding the satisfaction of three needs. Afterwards, with a study by Ryan et al. (2006) which introduces PENS as a tool to measure experience of players, it is understood that satisfaction of these psychological needs also predicts enjoyment and immersion in games. PENS is used in many studies with different setups and with other experience surveys to check for validity and it has been accepted as a validated tool for measuring experience (McEwan, Johnson, Wyeth, & Blackler, 2012; Johnson, Nacke, &

Wyeth, 2015; Johnson & Gardner, 2010; Birk & Mandryk, 2013). Slightly altered version of PENS will be used for measuring the need satisfaction and enjoyment of players towards roles in this study, there will be more details regarding the used measures in the next chapter.

Aspects of BFI and related research questions are explained below:

1.4.1. Extroversion

Extroversion is defined as being talkative, social, energetic and outgoing person, while the opposite, introversion, is defined as being quiet, reserved and shy (John & Srivastava, 1999). Extrovert people have a way of getting along with people so that talking to strangers, leading and organizing projects and having more than one friends and lovers are standard for them while introverts mostly have poor relationship with their parents and peers (John & Naumann, 2007). People high in extroversion seem to choose occupations such as managers and sales (Barrick & Mount, 1991). It shows that extrovert people choose their work according to their personality, because those occupations require being sociable, active and assertive.

According to a study, extrovert people prefer learning practices which include interactive activities and being in a group, while introverts needs their privacy (Lawrence, 1993). Similarly, another study reveals that extrovert people prefer to play multiplayer games due to sociality in these games while introverts favor playing solo (Xiaowen Fang, Miaoqi Zhu, & Susy Chan, 2006).

On the study conducted by Yee et al. (2011), it is found that players with high extroversion prefer activities which involve collaboration with other group of players, while introvert players go for solo activities like cooking or fishing. Another research suggests that extrovert players are motivated by teamwork (Jeng & Teng, 2008). There is also a study which shows that extroversion is related with helping behavior in games (Worth & Book, 2014). Furthermore, study by Carlo et al. (2005) states that extravert people show more voluntary and prosocial behavior which might indicate that extroversion may especially be related with Tank and Support roles due to selflessness acts in the gameplay of these two roles. Support, Tank and Marksman roles in MOBA games can be associated with extroversion, because these roles are played side by side with another player through the whole game unlike the other roles. Also introversion may be positively related with Jungler role because Jungler role is more isolated than the other roles. Most of the time of a Jungler passes by killing non player units in order to gain power. It can be assumed that players who prefer Jungler role might base their preferences on the need for being virtually away from others. With the light of this information, it is acceptable to hypothesize:

H1a: People high in extroversion will be more likely to choose Support, Tank and Marksman roles in MOBA games.

H1b: People high in extroversion will be more likely to have higher enjoyment regarding Support, Tank and Marksman roles in MOBA games.

H1c: People high in extroversion will be more likely to have higher need satisfaction regarding Support, Tank and Marksman roles in MOBA games.

H2a: People high in introversion will be more likely to choose Jungler role in MOBA games.

H2b: People high in introversion will be more likely to have higher enjoyment regarding Jungler role in MOBA games.

H2c: People high in introversion will be more likely to have higher need satisfaction regarding Jungler role in MOBA games.

1.4.2. Openness to Experience

Openness to experience is the trait of imaginative, curious and intelligent people who have wide interests (John, Naumann, & Soto, 2008). People with this trait have fun just by learning so that they enjoy watching documentaries, educational television and they look for activities which do not fit their routine. In addition, while people high in openness have higher creativity and more artistic successes, people who are low in openness tend to have conservative attitudes (John & Naumann, 2007).

People with high openness to experience are curious and they tend to enjoy exploring (Bakker, Van der Zee, Lewig, & Dollard, 2006; Berlyne, 1950) and they also tend to be decisive about learning and training (Barrick & Mount, 1991). WoW players who have high openness to experience, spend their time exploring the world and trying to play in more than one realm (Yee et al., 2011). In another study, openness to experience is found to drive discovery motivations among online game players (Jeng & Teng, 2008). Although all champion roles will benefit from exploring the map due to opportunities of finding weak opponents and learning the weaknesses of their enemies, this behavior is exactly what is expected from Jungler role. Moreover, WoW players who have high openness are found to be motivated by being independent (Graham & Gosling, 2013) which is suitable for Jungler gameplay because they rarely need the help of their teammates except the team fights. Therefore; these hypotheses can be inferred:

H3a: People high in openness to experience will be more likely to choose Jungler role in MOBA games.

H3b: People high in openness to experience will be more likely to have higher enjoyment regarding Jungler role in MOBA games.

H3c: People high in openness to experience will be more likely to have higher need satisfaction regarding Jungler role in MOBA games.

1.4.3. Agreeableness

Agreeableness trait of people is conceptually defined as having a prosocial position towards people and includes characteristics such as humility, selflessness (John & Srivastava, 1999). Agreeable people can be defined as sympathetic, kind, affectionate and warm (John et al., 2008). Agreeableness comes with the behavior examples such as comforting a friend who feels unwell, seeing the good qualities of others and letting other people to use their stuff for helping (John & Naumann, 2007).

Agreeableness attribute of Big Five has close connection to helping behavior of people (Barrick & Mount, 1991). People with high agreeableness seem to be more prone to participate in prosocial acts and voluntary behavior (Carlo, Okun, Knight, & de Guzman, 2005). A study conducted on Lithuanian adolescents show that students with high agreeableness participate more to prosocial activities in schools (Žukauskienė & Malinauskienė, 2009). In another study, although Hilbig et al. (2014) claims that honesty-humility aspect of HEXACO scale predicts prosocial behaviors better, their study also shows that agreeableness still has effect on this kind of behaviors. According to previously mentioned study of Yee et al (2011), WoW players who are high on agreeableness choose to spend time on non-combat activities like fishing. In two other studies, helping behavior such as giving gold to other players or healing them is found to be the expected behavior for the people high in agreeableness (Worth & Book, 2014; Worth & Book, 2015). Because the main activity of Support champions is helping other heroes (such as healing them) rather than attacking the enemies directly, it is reasonable to expect that this role might be associated with agreeableness. These findings support forming these hypotheses:

H4a: People high in agreeableness will be more likely to choose Support role in MOBA games.

H4b: People high in agreeableness will be more likely to have higher enjoyment regarding Support role in MOBA games.

H4c: People high in agreeableness will be more likely to have higher need satisfaction regarding Support role in MOBA games.

1.4.4. Neuroticism

Neuroticism trait of people is defined by being moody, nervous, shy, sad and tense (John & Srivastava, 1999). Neuroticism can also be named as nervousness, negative emotionality while this trait can also be addressed with the opposite of it which is emotional stability. People with high neuroticism are expected to have

weaker coping with sicknesses. They tend to become upset easier when confronted and it is more difficult for them to take it easy and chill (John & Naumann, 2007).

Neuroticism aspect of BFI is more difficult to research than the other aspects due to fact that measurements which are related with Big Five are all self-report surveys. It is perfectly reasonable that neurotic people may not fill these surveys as the other people would do because they might feel like they are being judged. For example, WoW players with high neuroticism prefer player vs player (PvP) related activities instead of player vs environment (PvE) and have higher achievement in PvP score according to the study of Yee et al. (2011). In another more recent study by Bean and Groth-Marnat (2014), WoW players high in neuroticism are found to be mainly playing the game for role playing purposes rather than PvP. While the study of Yee et al. (2011) is based on the data gathered from WoW Armory, study of Bean and Groth-Mamat (2014) is based on the self-report surveys of players about their playing preferences.

According to a study by Detrick and Chibnall (2006) which is carried on entry level police officers, best performers are found to significantly have lower neuroticism score than the others. In the study by Jeng and Teng (2008), players high in neuroticism are found to be not motivated by teamwork which might make them not very suitable for online games. It can be inferred from these studies that dependability and teamwork are not attributes which people who are high in neuroticism are expected to have. Furthermore, according to the study of Graham and Gosling (2013), neurotic people are not motivated to play WoW for leadership as well as other motivations such as immersion or independence. In MOBA games, players can see and track other players' killing, dying and assisting score to see how they are playing as well as themselves. Moreover, the team who got the most kills has a clear advantage for winning despite exceptions. Due to these reasons, performance of the champions who is responsible for killing other enemies is more important and they are under more stress. Assassin, Marksman and Fighter roles need more leadership, dependability and responsibility due to that they are the roles that get the most kills. These performance and leadership requirements for these roles have a probable causation to repel people with high neuroticism. Therefore; with considering the attributes of neuroticism such as being tense and moody, these hypotheses can be inferred:

H5a: People high in neuroticism will be less likely to choose Assassin, Marksman and Fighter roles.

H5b: People high in neuroticism will be more likely to have lower enjoyment regarding Assassin, Marksman and Fighter roles.

H5c: People high in neuroticism will be more likely to have lower need satisfaction regarding Assassin, Marksman and Fighter roles.

1.4.5. *Conscientiousness*

Conscientiousness is a trait which is described as ability to control impulses, follow rules, prioritize tasks and think before action. It includes being competent, organized, dutiful and self-disciplined (John & Srivastava, 1999). People seem to be high performers at their jobs and schools, less prone to addictions, punctual and careful about their health, when they are conscientious. Doing the dishes immediately, double-checking their work and studying harder to be the top of the class are the behaviors which are expected from the people with this trait (John & Naumann, 2007).

According to the study of Barrick et al. (1993), conscientious salesmen are better performers due to being goal oriented. Also highly well performing policemen who are at entry level are found to be high in conscientiousness (Detrick & Chibnall, 2006). Working like behaviors in WoW such as gathering resources, selling items are found to be correlated with conscientiousness according to the research by Worth and Book (2014). Jeng and Teng (2008) state in their study that conscientious people play online video games with escaping motivation which means they play it just for passing time as a distraction. With the study of Yee et al. (2011), it is revealed that WoW players high in conscientiousness seem to prefer activities which require time and work, while players with low conscientiousness are found to be more likely to die due to carelessness. Another study on WoW players shows that conscientiousness has positive correlation with leadership motivation among players (Graham & Gosling, 2013). These studies show that when work or game performance is considered, conscientiousness is an important and positive predictor while neuroticism is a negative one. It is mentioned that Assassin, Marksman and Fighter roles have more important responsibilities than the other roles because of their ability to kill. As a result, these roles require players to have leadership and dependability attributes about in-game behaviors. Findings support that conscientious players will not fear leading their team so that these can be hypothesized:

H6a: People high in conscientiousness will be more likely to choose Assassin, Marksman and Fighter roles.

H6b: People high in conscientiousness will be more likely to have higher enjoyment regarding Assassin, Marksman and Fighter roles.

H6b: People high in conscientiousness will be more likely to have higher need satisfaction regarding Assassin, Marksman and Fighter roles.

CHAPTER 2

METHOD

2.1. Participants

In order to conduct the study, a survey in the Amazon Mechanical Turk is published and in the description of the survey, participation of regular MOBA players is asked. Participants were restricted to countries which are US, UK and Australia in order to make sure that participants are native English speaker. Survey is created at the Qualtrics website and MTurk users are forwarded to that website. 235 users filled the survey and 33 of them are eliminated due to reasons such as failing in attention checks, not being a MOBA player or ending the survey too quickly compared to average finishing time. Attention of participants is checked with questions which are asked twice with reverse wording. People who answered the survey were payed 75 cents for their participation in this study. According to reliability analyses, all Cronbach Alpha values are higher than the acceptable 0.70 value; therefore, it is safe to say that results are reliable and internally consistent.

141 of the 202 (70.9%) people stated their gender as male while 58 people checked theirs as female and the other 3 people did not state their gender. Mean of the age of the participants is 30.32 (SD = 7.72). 100 of 202 players were League of Legends players, 27 of them were DOTA2 players while others are from other MOBA games such as Heroes of the Storm (16) or Smite (18).

202 people with reliable data firstly filled a questionnaire about their MOBA experience and their approach towards roles. Roles are presented to participants in random order. After MOBA part, BFI and other exploratory surveys are given to participants to get personality information of them.

2.2. Measures

2.2.1. MOBA Players Questionnaire

After demographic data of participants are gathered, this survey is presented to them. Main MOBA game is asked to make sure that they are playing some sort of

a MOBA game. For example a participant is filled that part as Clash of Clans and her data is not included in the data. Participants' experience level, how long they have been playing and weekly playing hours regarding the main MOBA game they play is asked. Experience of participants is asked with a 7-point Likert scale from "Very Inexperienced" to "Very Experienced". Duration question was open-ended and answers are converted to number of months. Weekly playing question was also open ended and answers are in hours.

In the Roles part of the survey, for each role, there are explanations in the beginning. This is for making sure that participants understand the expected behavior of the defined roles and their in-game actions. These explanations are worked to be as common as possible to all MOBA games.

In MOBA games, in hero selection phase, if teams are not already well-established and the roles are not decided before entering the game, people in the same team discuss that which player should play with which role. In result of that, people sometimes choose the hero which is demanded by the other team members. In order to check this variable among players, two different versions of the same questions are added to this part of the survey. One of them is "How frequently do you want to play as an Assassin?" while the other one is "Sometimes players choose the role which is needed for the team. How frequently do you play as an Assassin?". Participants answer these questions in 7-point Likert scale from "Never" to "Always". Possible discrepancies among the answers of these two questions are aimed to be explored. When the correlations between the answers of these two questions are examined, answers of all of these two questions are correlated highly. So it is safe to say that there is no significant discrepancy found between answers of playing and wanting to play. Therefore; it looks like players are mostly able to play as the role they want, despite the discussions towards hero selection before game starts. A selection score is calculated by taking the mean of these two questions and hypotheses regarding selection are examined with this score.

2.2.2. PENS

Player experience of need satisfaction (Ryan, Rigby, & Przybylski, 2006) is used for understanding the attitude of users towards the specific roles and questions are adapted to each champion role. After the information about whether the participant played with the defined role is gathered; if that role is played, PENS questions regarding the role are given.

First 3 questions are enjoyment questions such as "I enjoy playing as a Marksman very much" or "I find playing as a Support boring" as a reverse item. Reliability analyses are carried out and Cronbach Alpha values of enjoyment questions are 0.80 for Assassin, 0.85 for Marksman, 0.88 for Support, 0.88 for Tank, 0.88 for Jungler and 0.89 for Fighter role. Afterwards, questions regarding the basic need satisfaction are asked as 2 autonomy questions (e.g. "I experience a lot of freedom while playing as a Jungler"), 2 competence questions (e.g. "I feel very capable and

effective when playing as an Assassin”) and 2 relatedness questions (e.g. “I feel close and connected to my teammates while playing as a Marksman”). Participants answer these questions in 7-point Likert scale from “Strongly Disagree” to “Strongly Agree”. Need satisfactions scores are obtained by calculating the means of scores of autonomy, relatedness and competence related answers. Cronbach Alpha values for six questions of need satisfaction are 0.89 for Assassin, 0.87 for Marksman, 0.89 for Support, 0.86 for Tank, 0.87 for Jungler and 0.90 for Fighter role.

2.2.3. Big Five Inventory (BFI)

BFI is a self-report 44-Item personality survey (John, Donahue, & Kentle, 1991) which is used for determining characteristics of people under the five components (Extroversion, Openness to Experience, Agreeableness, Conscientiousness, Neuroticism). Participants reads statements starting with “I see myself as someone who” and ends in 44 different ways such as “is talkative”. After reading each statement they fill a 7-point Likert scale to remark their agreement level by choosing an option from “Strongly Disagree” to “Strongly Agree”. 8 items for extroversion, 10 items for openness to experience, 9 items for agreeableness, 9 items for conscientiousness and 8 items for neuroticism is used for scoring each aspect. When reliability analyses are conducted, Cronbach Alpha values for the BFI traits are 0.91 for extroversion, 0.83 for agreeableness, 0.87 for conscientiousness, 0.83 for openness to experience and 0.88 for neuroticism.

CHAPTER 3

RESULTS AND DISCUSSION

Scores are calculated about whether the players play as the specified role (Selection Score), whether they have fun with it (Enjoyment Score) and whether they feel that their satisfaction needs are fulfilled (Need Satisfaction Score). After that, Big Five personality trait scores of participants are calculated. Analyses are carried out in three phases. Firstly, multiple regression analyses are conducted to see which personality traits are the strongest predictors of the outcome variables in each role. There analyses are done to determine whether hypotheses are supported. Afterwards, the correlations between personality traits and MOBA scores are calculated and checked. As an exploratory analysis, repeated measures ANOVA is also conducted using selection, enjoyment, and need satisfaction as dependent variables to explore the mean differences between different MOBA roles.

Before starting to examine primary results of analyses, analyses regarding demographics and certain exploratory aspects are investigated. Firstly, based on the question “Have you tried this role?” with Yes or No option, a score is calculated for number of played roles. Possible correlation between this score and outcome variables of roles are investigated. In addition, personality traits and their probable effect on the tried role count is explored with multiple regression analysis. Only significant finding regarding this exploratory aspect was that extraversion is found to be significant negative predictor for tried role count ($B = -.232, p = .008$). Secondly, multiple regression analyses are carried out to find whether which demographics (age, experience, weekly playing hours and how many months passed since started playing scores) are strong predictors for certain roles. Experience is found to be a significant predictor for selection of Assassin ($B = .230, p < 0.05$), Support ($B = .189, p < 0.05$) and Jungler ($B = .258, p = 0.005$). Experience is also found to be significant predictor for need satisfaction of Assassin ($B = .217, p < 0.05$), Support ($B = .303, p = 0.002$), Jungler ($B = .292, p < 0.05$) and Fighter ($B = .236, p < 0.05$) roles. Age is found to be significant predictor for need satisfaction of Support ($B = .217, p = 0.004$) and Fighter ($B = .165, p < 0.05$). Experience is a significant positive predictor for enjoyment of Jungler role ($B = .276, p < 0.05$) while it is a significant negative predictor for Tank role ($B = -.273, p < 0.05$). Interestingly, weekly playing hours and time since

started playing have negative associations with need satisfactions. Months passed since started to play the game are negative predictors for need satisfaction of Assassin ($B = -.223, p < 0.05$), Support ($B = -.180, p < 0.05$) and Fighter ($B = -.225, p < 0.05$). Weekly playing hours are negative predictors for the need satisfaction of Support ($B = -.266, p = 0.002$) and Marksman ($B = -.223, p < 0.05$). Lastly, correlation analyses are also carried out for experience. Experience is significantly correlated with selection of Support ($r = .210, n = 202, p = .003$) and Jungler ($r = .179, n = 202, p = .011$), while it is negatively correlated with enjoyment of Tank role ($r = -.172, n = 146, p < .05$).

Descriptive analysis regarding the demographics and personality traits are given in the Table 1.

Table 1 : *Descriptive analysis regarding demographics and personality traits*

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age	202	18	71	30.32	7.72
Experience	202	1	7	4.50	1.52
Playing Hours In Week	202	0.5	42	8.70	8.02
How Many Months Since Started Playing	202	1	149	25.11	22.39
Extraversion	202	1.00	7.00	4.19	1.38
Openness to Experience	202	2.70	7.00	5.02	0.91
Agreeableness	202	2.33	7.00	5.04	0.97
Conscientiousness	202	1.33	7.00	5.21	1.02
Neuroticism	202	1.00	6.88	3.40	1.24

3.1. Regression Results

In order to determine which personality traits are unique predictors of the selection, enjoyment and need satisfaction of the MOBA roles, multiple regression analyses are conducted. There are significant findings among results which answer the research questions by rejecting or supporting.

Hypothesis 1 was about the positive association between extroversion and Support, Marksman and Tank roles. There are no significant predictions which support this

hypothesis. On top of it, there is a result that supports the exact opposite of this hypothesis, especially sub-hypothesis H1a.

H1a addresses extroversion and its association with the selection of Support, Marksman and Fighter roles. Second sub-hypothesis of hypothesis 1 (H1b) foresees positive association between extroversion and enjoyment of Marksman, Support and Tank roles while H1c is about extroversion and its' positive association with need satisfaction of these roles. Analyses presented that there are no positive prediction results regarding these. Regression results show that extroversion is negative predictor of selection of Support (see Table 4). Because of these results, H1a, H1b and H1c are rejected.

Extroversion was expected to be negatively associated with outcome variables of Jungler role according to the H2; however, there are no significant findings related to introversion-Jungler role association. If regression data is examined, it can be seen that extroversion has no significant prediction on selection, need satisfaction and enjoyment of Jungler role (see Table 6). So, none of the sub-hypotheses of H2 (H2a, H2b, H2c) are found supported.

Hypothesis 3 which anticipated the Jungler-openness to experience association also seems to be not supported by the results. H3a anticipated association between openness and Jungler selection. H3b was about association between openness and enjoyment of Jungler, while H3c addressed association between openness and need satisfaction of this role. There are no significant results that give the idea of that selection, need satisfaction or enjoyment of Jungler is positively related to openness to experience. Therefore, H3a, H3b and H3c sub-hypotheses which sequentially claimed that selection, enjoyment and need satisfaction of Jungler can be associated with openness are rejected. Furthermore, openness to experience is found to be negative predictor of selection of Jungler which supports rejection of H3a (see Table 6).

Sub-hypotheses of H4 were about the positive relation between agreeableness and outcome variables of Support role. These outcome variables were selection (H4a), enjoyment (H4b) and need satisfaction (H4c). Regression analyses show that agreeableness significantly is the unique predictor for enjoyment and need satisfaction of Support role which supports H4b and H4c (See Table 4). These sub-hypotheses stand for positive agreeableness-enjoyment and positive agreeableness-need satisfaction association. Therefore, the sub-hypotheses H4b (agreeableness-Support enjoyment) and H4c (agreeableness-Support need satisfaction) are supported. The regression result regarding association between agreeableness and selection of Support is insignificant, which means that H4a, which anticipated this association, is rejected.

The hypothesis which addresses the correlation between conscientiousness and outcome variables of Marksman, Assassin and Fighter is hypothesis 5. Regression results show that conscientiousness is only significant predictor for need satisfaction of Fighter (See Table 2, 3, 7). This result only partially supports the

H5c which anticipated positive association between conscientiousness and need satisfaction of Marksman, Fighter and Assassin roles.

Hypothesis 6 anticipated negative association between neuroticism and Marksman, Assassin and Fighter roles. There are no significant regression results about three sub-hypotheses which were about selection (H6a), enjoyment (H6b) and need satisfaction (H6c) of these roles (See Table 2, 3, 7).

Besides the given predictions, there are no significant results in multiple regression analyses which are directly related with hypotheses. However, there are results that seem to be worth mentioning. Firstly, regarding Assassin role, extroversion is found to be the unique predictor for need satisfaction (see Table 2), while there is no significant predictor related to selection and enjoyment of Assassin. Strangely, agreeableness is a significant negative and unique predictor for selecting Tank role which can be seen in Table 5. Regarding the Fighter role (see Table 7), openness to experience stands out as a personal trait since it is a significant predictor for all three aspects. For the selection of this role, extroversion ($B = .186$, $p < 0.05$), openness to experience ($B = .202$, $p < 0.01$) and conscientiousness ($B = .183$, $p < 0.05$) are significant predictors. Extroversion is also significant predictor for need satisfaction of Fighter role.

Table 2: Summary of Multiple Regression Analyses for Personal Traits Predicting Assassin Role Outcome Variables

Predictors	Standardized Regression Coefficients		
	Selection	Enjoyment	Need Satisfaction
Extroversion	.110	.047	.274**
Openness	.143	.082	.020
Agreeableness	-.014	.151	.134
Conscientiousness	.015	.113	.142
Neuroticism	-.103	.018	-.036
R^2	.072	.082	.214

Notes. * $p < .05$. ** $p < .01$. $N = 202$.

Table 3: *Summary of Multiple Regression Analyses for Personal Traits Predicting Marksman Role Outcome Variables*

Predictors	Standardized Regression Coefficients		
	Selection	Enjoyment	Need Satisfaction
Extroversion	.084	-.112	.091
Openness	-.093	.102	.042
Agreeableness	.051	.181	.180
Conscientiousness	-.122	-.001	.080
Neuroticism	-.160	-.162	-.113
R^2	.040	.086	.135

Notes. * $p < .05$. ** $p < .01$. $N = 202$.

Table 4: *Summary of Multiple Regression Analyses for Personal Traits Predicting Support Role Outcome Variables*

Predictors	Standardized Regression Coefficients		
	Selection	Enjoyment	Need Satisfaction
Extroversion	-.234**	-.125	-.029
Openness	.104	.096	.121
Agreeableness	.083	.232*	.192*
Conscientiousness	-.034	.014	-.066
Neuroticism	-.085	.113	-.082
R^2	.043	.067	.067

Notes. * $p < .05$. ** $p < .01$. $N = 202$.

Table 5: *Summary of Multiple Regression Analyses for Personal Traits Predicting Tank Role Outcome Variables*

Predictors	Standardized Regression Coefficients		
	Selection	Enjoyment	Need Satisfaction
Extroversion	.042	-.036	.031
Openness	.023	.070	.054
Agreeableness	-.167*	-.079	.075
Conscientiousness	-.009	.130	.069
Neuroticism	-.064	.007	-.036
R^2	.022	.019	.034

Notes. * $p < .05$. ** $p < .01$. $N = 202$.

Table 6: *Summary of Multiple Regression Analyses for Personal Traits Predicting Jungler Role Outcome Variables*

Predictors	Standardized Regression Coefficients		
	Selection	Enjoyment	Need Satisfaction
Extroversion	.011	-.085	.077
Openness	-.197*	-.007	-.139
Agreeableness	.112	.036	.096
Conscientiousness	.017	.118	.191
Neuroticism	-.066	.130	.141
R^2	.044	.021	.045

Notes. * $p < .05$. ** $p < .01$. $N = 202$.

Table 7: Summary of Multiple Regression Analyses for Personal Traits Predicting Fighter Role Outcome Variables

Predictors	Standardized Regression Coefficients		
	Selection	Enjoyment	Need Satisfaction
Extroversion	.186*	.055	.198*
Openness	.202**	.231**	.213**
Agreeableness	-.117	-.083	.068
Conscientiousness	.183*	.167	.158
Neuroticism	-.021	-.032	-.022
R^2	.155	.110	.223

Notes. * $p < .05$. ** $p < .01$. $N = 202$.

3.2. Correlation Results

Regression results are used for controlling hypotheses but correlation analyses are also carried out for further analysis. Correlation analyses are done between personality and outcome variables of MOBA roles which are selection, enjoyment and need satisfaction. Results of these analyses can be seen in Table 8, 9 and 10. Although there are no significant regression results about some of the research questions, there are some correlation results which seem to show promise about these rejected hypotheses.

According to correlation results, extroversion is significantly correlated with need satisfaction of Marksman ($r = .237$, $n = 143$, $p = 0.004$) which slightly supports the sub-hypothesis claiming this association (H1c). It is not counted as exact support because of that H1c was expecting that extroversion would be associated with need satisfaction of Support and Tank roles in addition to Marksman role. Moreover, extroversion is also correlated with need satisfaction of other roles which are Fighter ($r = .362$, $n = 172$, $p < .001$) and Assassin ($r = .398$, $n = 165$, $p < .001$). Therefore, it seems that H1 hypothesis is not supported by correlation results except for the slight support to the sub-hypothesis, H1c. There are also no significant results which supports other sub-hypotheses of H1.

There are no significant findings which support H2 and H3. In other words, there was no positive correlation between introversion and Jungler role. Also, there was

no positive correlation between openness to experience and Jungler role according to the correlation analyses (See Table 8, 9, 10).

There are also findings which sync with the regression results of H4b and H4c. In other words, there are findings which support that agreeable people are more inclined to enjoy playing the Support role in MOBA games. When data is analyzed, it is discovered that agreeableness is significantly correlated with enjoyment ($r = .179, n = 161, p < 0.05$) and need satisfaction ($r = .226, n = 161, p = 0.004$) of Support role.

Although big part of H5 is rejected by regression results, it is mostly supported with the correlation data. There are findings that show conscientiousness may have some effects on these outcome variables which are character role selection, need satisfaction and enjoyment. When correlation analyses are done, conscientiousness is found to be significantly correlated with selection of Assassin ($r = .147, p < 0.05$) and selection of Fighter ($r = .273, p < 0.001$). First sub-hypothesis of H5 (H5a) was about the association between conscientiousness and selection of Marksman, Fighter and Assassin. Therefore, H5a seems to be supported except that there is no correlation between selection of Marksman role and conscientiousness according to the data.

H5b claimed that there will be association between conscientiousness and enjoyment of Assassin, Marksman and Fighter roles. According to analyses, conscientiousness has significant correlations with enjoyment of Assassin ($r = .224, n = 165, p = 0.004$) and Fighter ($r = .238, n = 172, p = 0.002$) which can be seen in Table 9. On the other hand, enjoyment of Marksman is not found correlated with conscientiousness. As a result, sub-hypothesis H5b is found partially supported by correlation data. It is also discovered that conscientiousness is significantly correlated with need satisfaction of Marksman ($r = .272, n = 143, p = 0.001$), Fighter ($r = .323, n = 172, p < 0.001$) and Assassin ($r = .342, n = 165, p < 0.001$). Therefore, H5c is found supported by the correlation results.

Regression analyses have no significant results regarding hypothesis 6 which was about neuroticism; however, there are some significant results in correlation analyses. H6a was specifically about negative relation between neuroticism and selection of these roles. Correlation results supported this sub-hypothesis, because neuroticism is negatively and significantly correlated with selection of Marksman ($r = -.142, p < 0.05$), selection of Assassin ($r = -.189, p < 0.01$) and selection of Fighter ($r = -.203, p = 0.004$).

Regarding the H6b, neuroticism has only one significant negative correlation with enjoyment of Marksman ($r = -.198, n = 143, p < 0.05$). Consequently, H6b is not fully supported by correlation data; because, in the definition of this sub-hypothesis, it is stated that neuroticism can be negatively associated not only with enjoyment of Marksman but also enjoyment of Fighter and Assassin roles.

Claiming that negative association will be found between neuroticism and need satisfaction of Marksman, Assassin and Fighter roles, H6c is also supported by the

correlation data. Neuroticism is negatively correlated with need satisfaction of Marksman ($r = -.280, n = 143, p = 0.001$), Fighter ($r = -.262, n = 172, p = 0.001$) and Assassin ($r = -.301, n = 165, p < 0.001$).

Other findings regarding correlation analyses are generally in line with the regression results. The general correlation results can be seen in Table 8, 9 and 10.

Table 8: *Pearson Correlations between Big Five and Champion Role Selection*

	Extrover sion	Opennes s	Agreeab leness	Conscie ntiousne ss	Neurotic ism	Marksman	Assassin	Support	Tank	Jungler	Fighter
Extroversion	-										
Openness	.356**	-									
Agreeableness	.356**	.341**	-								
Conscientiousness	.391**	.271**	.414**	-							
Neuroticism	-.516**	-.190**	-.438**	-.543**	-						
Marksman	.104	-.049	.069	-.006	-.142*	-					
Assassin	.215**	.201**	.125	.147*	-.189**	.180*	-				
Support	-.137	.056	.058	-.017	-.002	.076	-.036	-			
Tank	.021	-.009	-.119	-.020	-.013	.051	.005	.076	-		
Jungler	.022	-.137	.085	.050	-.093	.253**	.265**	.097	.230**	-	
Fighter	.299**	.282**	.103	.273**	-.203**	.105	.121	-.163*	.180*	.124	-

Notes. 2-tailed. * $p < .05$. ** $p < .01$. $N = 202$.

Table 9: *Pearson Correlations between Big Five and Champion Role Enjoyment*

	Extrover sion	Opennes s	Agreeab leness	Conscie ntiousne ss	Neurotic ism	Marksm an	Assassin	Support	Tank	Jungler	Fighter
Extroversion	-										
Openness	.356**	-									
Agreeableness	.356**	.341**	-								
Conscientiousness	.391**	.271**	.414**	-							
Neuroticism	-.516**	-.190**	-.438**	-.543**	-						
Marksman	.043	.137	.249**	.146	-.198*	-					
Assassin	.164*	.186*	.240**	.224**	-.144	.201*	-				
Support	-.072	.108	.179*	.025	.054	.028	-.149	-			
Tank	.004	.063	-.023	.100	-.026	.046	.009	-.038	-		
Jungler	-.087	-.005	.019	.025	.080	.027	-.004	.068	.173	-	
Fighter	.180*	.275**	.086	.238**	-.144	.144	.130	-.026	.264**	.154	-

Notes. 2-tailed. * $p < .05$. ** $p < .01$. $N = 202$.

Table 10: *Pearson Correlations between Big Five and Champion Role Need Satisfaction*

	Extroversion	Openness	Agreeableness	Conscientiousness	Neuroticism	Marksman	Assassin	Support	Tank	Jungler	Fighter
Extroversion	-										
Openness	.356**	-									
Agreeableness	.356**	.341**	-								
Conscientiousness	.391**	.271**	.414**	-							
Neuroticism	-.516**	-.190**	-.438**	-.543**	-						
Marksman	.237**	.163	.295**	.272**	-.280**	-					
Assassin	.398**	.226**	.312**	.342**	-.301**	.203*	-				
Support	.087	.164*	.226**	.075	-.132	.069	.076	-			
Tank	.112	.109	.142	.140	-.126	-.099	.310**	.061	-		
Jungler	.067	-.044	.107	.144	-.028	.156	.176	.075	.170	-	
Fighter	.362**	.353**	.274**	.323**	-.262**	.299**	.335**	.157	.251**	.267**	-

Notes. 2-tailed. * $p < .05$. ** $p < .01$. $N = 202$.

3.3. Repeated Measures ANOVA

Repeated measures ANOVA is carried out in order to further explore the roles and examine their mean differences in the outcome variables. Means of selection, enjoyment and need satisfaction scores are examined by pairwise comparisons. In addition, autonomy, competence and relatedness needs of participants are compared between roles.

Selection of roles is found to be differentiating significantly among roles according to the data, Wilks' Lambda = .637, $F(5, 197) = 22$, $p < .001$. Mean of selection score of Fighter ($M = 4.094$, $SE = .099$) is significantly higher than the means of Assassin ($M = 3.787$, $SE = .117$), Tank ($M = 3.413$, $SE = .120$) and Jungler ($M = 2.750$, $SE = .119$). Notably, mean of Jungler selection is significantly lower than the selection mean of all of the other roles.

According to analysis, enjoyment is affected significantly by the roles, Wilks' Lambda = .781, $F(5, 71) = 3$, $p = .003$. Marksman ($M = 5.557$, $SE = .138$), Assassin ($M = 5.482$, $SE = .153$) and Fighter ($M = 5.230$, $SE = .145$) roles are found to have significantly higher mean value of enjoyment than the Support ($M = 5.018$, $SE = .187$), Jungler ($M = 4.776$, $SE = .189$) and Tank ($M = 4.669$, $SE = .185$) roles. Data has presented that Tank role is significantly lower than Assassin, Marksman and Fighter roles in terms of enjoyment.

Need satisfaction variable seems to be not affected by roles according to data, Wilks' Lambda = .905, $F(5, 71) = 1$, $p = .202$. On the other hand, individual needs of satisfaction seem to have significant findings. There is a significant effect of role on autonomy according to the data, Wilks' Lambda = .674, $F(5, 71) = 6$, $p < .001$. Starting with the Assassin role, it can be said that this role satisfy the need for autonomy most among roles. Pairwise comparisons with autonomy of Marksman ($M = 4.980$, $SE = .149$), Support ($M = 4.632$, $SE = .181$), Tank ($M = 4.362$, $SE = .157$) and Fighter ($M = 5.013$, $SE = .129$) show that autonomy of Assassin is found to have significantly higher mean value ($M = 5.480$, $SE = .162$) than the other roles except Jungler ($M = 5.184$, $SE = .181$). This data also shows that Tank role has significantly less autonomy satisfaction than the other roles. Support role follows the Tank as the role with second lowest autonomy satisfaction.

Relatedness of roles is also found to be affected significantly by role according to data, Wilks' Lambda = .657 $F(5, 71) = 7$, $p < .001$. Data has shown that Support role satisfies the need for relatedness most among roles. Mean relatedness of Support role ($M = 5.191$, $SE = .189$) is significantly higher than the relatedness of Assassin ($M = 4.059$, $SE = .175$), Tank ($M = 4.770$, $SE = .163$), Jungler ($M = 4.112$, $SE = .180$) and Fighter ($M = 4.678$, $SE = .150$). Relatedness of Marksman has relatively close mean value ($M = 4.776$, $SE = .151$) to Support role. According to the data, Assassin and Jungler roles have significantly lower relatedness than the other four roles. Therefore it can be said that these roles provide lowest relatedness satisfaction among roles.

Champion role of participants also found to be significant factor for competence, Wilks' Lambda = .851 $F(5, 71) = 2, p = .04$. According to data, competence mean value of Marksman ($M = 5.257, SE = .152$) is found significantly higher than the competence mean of Tank ($M = 4.776, SE = .154$) and Jungler ($M = 4.526, SE = .193$) roles. Fighter role ($M = 5.092, SE = .147$) have also significantly more competence satisfaction than Jungler role.

In summary, when the means are considered, Fighter, Support and Assassin are the most selected roles while Marksman, Assassin and Fighter are the most enjoyed ones. Marksman, Fighter and Support roles also found to be more satisfactory for competence than the other roles. Assassin and Jungler are the most autonomous roles while Support and Marksman are the roles which satisfy need of relatedness most. Jungler role is found to be common for low mean for selection, enjoyment, competence and relatedness compared to other roles, while being relatively high in autonomy. Similarly, Tank role is enjoyed less, have lower competence and autonomy satisfaction than the other roles, according to the data.

This analysis had also the aim of clarifying the reasons behind the primary results of this study. For example, Support role gives significantly higher relatedness to players according to this analysis and this can be reason for why the players with high agreeableness enjoy this role. Means and detailed information regarding the repeated measures ANOVA are given in the Table 11.

Table 11: *Repeated measures ANOVA analysis and pairwise comparisons of means of outcome variables*

MEANS	Assassin	Marksman	Support	Tank	Jungler	Fighter
Selection	3.79abc	3.82abcf	3.95abcf	3.41d	2.75e	4.09acf
Enjoyment	5.48abc	5.56ab	5.02acd	4.67cde	4.78cde	5.23abce
Need Satisfaction	4.80abc	5.00ab	4.96abc	4.64abc	4.61ac	4.93abc
Autonomy	5.48ae	4.98bcef	4.63bcdf	4.36cd	5.18abef	5.01bcef
Relatedness	4.06a	4.78bcde	5.19bc	4.77bde	4.11a	4.68bde
Competence	4.87abcd	5.26ad	5.07abcd	4.78bcd	4.53bc	5.09abd

3.4. Implications and Discussion

Results show that, although not all hypotheses are supported, there are several associations between personalities and champion role selection in MOBA games.

It is found that people high in introversion are more prone to preferring to play as a Support than the people high in extroversion. Also agreeableness is found to be associated with enjoyment and need satisfaction of the Support role. Therefore, it is understood that prosocial tendencies in real life also affect in-game experience which is in line with helping behavior. Findings supports the results of the recent study by Habashi et al. (2016) which states that agreeableness is the most relevant Big Five trait for determining tendency to prosocial behavior. As it is found in the work of Yee et al. (2011), people with high agreeableness are found to enjoy activities which do not involve direct combat in virtual world as the Support role provides.

Moreover, it seems that in MOBA games, need for competence brings out the assertive, dominant and excitement-seeking facets of extroversion (John, Naumann, & Soto, 2008) in extrovert players rather than gregariousness. Reason for this may be that Assassin, Fighter and Marksman roles tend to be remembered and seen as stars after a successful game due to fact that they get the most kills when compared to Support and Tank roles. In addition, after certain time is passed in a standard MOBA match, players tend to start fighting alongside with all their team members including 5 vs 5 fights. Although in the big part of the game Marksman-Tank or Marksman-Support roles act together, team play and acting as a group is required for all roles in the end. Therefore, it can be understood that extrovert people can fulfill their need for teamwork without specifically selecting these roles.

Gathered data has presented that there are no substantial results that show selecting Jungler role is associated with introversion. This result may show that players who prefer selecting Junglers do not necessarily feel isolated from their team. Regarding the unsupported hypothesis which anticipates Jungler-openness to experience association, it can be understood that playing as a Jungler does not raise the exploratory feelings in the players. This finding may also imply that constant and unchanging maps of MOBA games may not be providing new experiences to players. Moreover, Jungler role is sometimes seen as more complex than the other roles and more difficult to play due to its more than one responsibility such as killing neutral monsters, helping teammates and keeping the track of the jungle for enemy heroes. This expected behavior pattern and divided responsibilities may make excelling at playing as a Jungler harder than the other roles. It may take longer time to be really good at handling Jungler role so that players may not try this role if they are not experienced enough. Demographics related results support this idea. Since it is important for players to be proficient about the role they choose for success (Kim, Keegan, Park, & Oh, 2015), it may be understandable that why introversion or any other personality trait is not significantly correlated with the Jungler role.

Although the H5 and H6 are rejected by regression results, correlation results have statistically significant results about the possible associations. With further research, these association probabilities can be investigated. It can be inferred from the correlation results that the roles which get the most kills in the game may be avoided by neurotic people while conscientious people enjoy them. These

two personality traits seem to have opposite effects on the matter. It would be understandable that conscientious players go for these roles, because conscientiousness trait has competence, achievement-striving and self-discipline in its definition, while neuroticism has vulnerability and not being self-confident (John, Naumann, & Soto, 2008).

In addition to findings related with hypotheses, results regarding the demographics show several things. Firstly, it looks like number of roles tried by players does not have association with selection, enjoyment and need satisfaction of character roles. In other words, there are no specific roles which are favored or disliked after some trying out. Our results regarding the hypotheses show that extroversion is found related with competence orientation in MOBA games. Sticking with same roles increases the proficiency of that role so that significant finding which is related with extroversion and its negative prediction of tried role number is rational. Also it is found that experience positively and significantly predicts selection, need satisfaction and enjoyment of Jungler. This shows that players get into Jungler role after they gain experience and start to enjoy it after some time. Negative association of time spent on game (weekly hours and months since started playing) and need satisfaction of some roles may mean that when players give more time to the MOBA game, they tend to be less satisfied.

3.4.1. Implications for Game Design

In MOBA games due to having large number of players, making the people as happy as possible with the game is the main concern for all MOBA game developers and designers. With the help of the concepts which are brought into light with this study, there may be several developments to the current design of the games.

One of these developments is personalized game experience. If the game itself can get the information about the personality of player, it can change the functionalities according to needs of the player. For example, if a player is an extrovert and motivated by being in a group or connecting with friends in the game; then the game can increase the emphasis on these matters only for that player. If players with high agreeableness need to see whether they are successful, presenting them with the information how they helped the other heroes and how they made contributions to team may be given. For example, data regarding how much healing is done or how many times a teammate is rescued can be given to agreeable people. In the hero selection phase, roles which match the personality of players may be suggested to players. Personality information of players can be gathered in the loading screens to not annoy players by asking only one question each time until personality data is gathered. If that is too much, personality information of players can be gathered based on their in-game activities and how they interact with other players. In addition if players join the game by using their social media profiles, information regarding their personality can be gathered from these platforms to give players a personalized experience.

With the correlations between personality traits and champion roles, game designers can see and feel what their end user think and they can anticipate behavior of the players. Also providing variety for role selections can be an aim for developers. If people with certain characteristics go for same role only, designer may need to understand the personalities of players who select this specific role. Reasons behind the phenomenon of sticking with the hero may be explored with the help of personality information of the players. By using these reasons, new and exciting heroes may be added to game and those can be heroes which will have audience in more than one aspect of Big Five scale. In addition, designers may want to diversify the roles in order to make them likeable by players with different personalities. For example, Jungler role is found to be less preferred by the players; therefore, new ways to make this role more preferable may be implemented.

According to autonomy related part of the repeated measures ANOVA results, Assassin role gives more freedom to the players than the other roles, while Support and Tank players think that they have less choice regarding gameplay. In addition, Jungler role is found to be least played and least enjoyed by the participants and reason for this can be that Jungler role is found to be relatively low on satisfaction of competence and relatedness needs. Therefore, there might be design improvements regarding these aspects of these roles. For example, more alternative ways of play can be designed for new Tank and Support champions or existing ones.

Also knowing the expected persona of the game might also create opportunities to have better marketing strategies towards the probable customers of the game. If a new hero is going to be public first time, the personality related with its role can define the marketing strategy. For example if a new Support hero is available, in the promotion, people with high agreeableness can be considered. Due to prosocial tendencies of agreeable people, helping and saving capabilities of a new Support hero can be emphasized in the ads rather than its appearance.

3.5. Limitations

First of all, in the data, there are participants who are played only with one or two roles while there are participants who played all the roles. Therefore, there is no same amount of data for all roles: Assassin (165), Marksman (143), Support (161), Tank (146), Jungler (104) and Fighter (172). Future studies can provide more participants with more evenly distributed data among the champion roles in order to get more healthy and balanced data about the roles.

Secondly, there is a current debate on which games fall in to category of MOBA, because of the fact that MOBA term is a little vague. Although participants are asked to be regular MOBA player, some of the games filled by the participants have very different mechanics from the common MOBA games. Therefore, although explanations for all roles are included at the start of role sections of survey, people might have not read that part and fill the section with their version

of that role. It could have been better with regular players of certain game such as Dota2 or League of Legends, but at the beginning of the study it is considered as unnecessary narrowing down.

Correlational research does not stand as strong as the experimental research about causality when psychological studies are considered. Because the main instruments used for this study are self-report surveys, this study can be considered as a correlational research. There are several reasons which limit the dependability of correlational research. In this research, there is no full control over participants and how they fill the surveys. Also there is no controlled experiment with manipulation factor to clearly see the causality between personality traits and MOBA roles. Even if there was available game experience data from MOBA games which was gathered without counting on self-report, still, it does not seem possible to form a perfect experimental study for these matters. However; in a future research, gathering the information about champion role selection and experience from the game itself would make the study more reliable.

Moreover, there is a study which suggests that MOBA game genre creates less autonomy and relatedness feelings on players than the other game genres except for the competence (Johnson, Nacke, & Wyeth, 2015). Also in that study, six MOBA players were interviewed and their motivations are found to be teamwork, competence and mastery (Johnson et al., 2015). Therefore; this tendency to be motivated by competence can be forcing players to only play with heroes they are able to play well and get used to, rather than choosing their intrinsically motivated role. If this competence orientation in MOBA games can be lessened with certain design decisions and changes, it might create an environment for the players to play with the role they want rather than an enforced one. For example, when a player opens a MOBA game, game might ask the player a question such as “Which role do you want to play with today?”. Afterwards, game can find a match only related with this preference. The root of this competence orientation may be researched with future studies. For example, a study might be conducted on MOBA players by presenting them with different versions of the same MOBA game.

3.6. Summary

Association of personality with champion role selection in MOBA games is researched in this study. Findings show promise on that there are certain effects of personality on role selection and enjoyment. This research and upcoming research on this issue may bring light into defined roles in the MOBA games and how players with different personalities perceive them. If the roles and their associated player personalities are known, many rooms for improving the MOBA games might open for MOBA game designers.

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APPENDICES

APPENDIX A

MIDDLE EAST TECHNICAL UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH

PROJECT TITLE: The Psychological Aspects of Champion Role Choice in MOBA Games

You are invited to participate in a research project conducted by Aydın Atay, Middle East Technical University, the Department of Game Technologies. This form describes the project and what you may expect if you decide to participate.

People keep playing Multiplayer Online Battle Arena (MOBA) games for various reasons. This research project aims to investigate personalities and choices of MOBA game players. The study involves completing an online questionnaire.

A total of 200 people, 18 years of age or older will be asked to participate in this project. Please complete this survey on your own time, when you are not rushed, in a quiet place. It will take at most 20 minutes to complete.

Upon completion the survey, you will receive 75 cents reward which will be credited in your Amazon Mechanical Turk account automatically.

RISKS AND BENEFITS

There are no anticipated risks related directly to this study. You may feel minimal discomfort in answering some of the questions. Though there are no direct benefits to participating, your participation will help the investigators better understand the effects of personality on game worlds.

VOLUNTARY PARTICIPATION

Your participation in this project is entirely voluntary. You may refuse to participate or withdraw at any time (for whatever reason) without any penalty. Non-participation will

in no way affect your class standing. Further, please feel free to omit or decline any questions that you would prefer not to answer.

ALTERNATIVES

Participation in this project is voluntary, and the only alternative to this project is non-participation.

CONFIDENTIALITY

Your participation in this project is anonymous. Please do not provide any identifying information in any of the responses to be submitted to the investigators. In addition, any data you provide will be stored in a secure computer for a minimum of 5 years, per guidelines by the American Psychological Association. Only the investigators of this study and other members of our research team will have access to this data.

PUBLICATION STATEMENT

The results of this study may be published in professional and/or scientific journals. It may also be used for educational purposes or for professional presentations. However, no individual participant will be identified.

CONTACT PERSONS

The investigators will answer any questions or concerns you have. If you have additional questions or concerns at any time, you may contact the researchers, by electronic mail at aydin.atay@metu.edu.tr.

ANY QUESTIONS REGARDING YOUR RIGHTS AS A RESEARCH SUBJECT MAY BE ADDRESSED TO THE MIDDLE EAST TECHNICAL UNIVERSITY HUMAN SUBJECTS ETHICS COMMITTEE (0090 312 210-7348.).

I have read the information provided above and voluntarily agree to participate in this study.

I AGREE

I DO NOT AGREE

(Only selecting “I AGREE” will send the participant to the survey)

APPENDIX B

MOBA PLAYERS QUESTIONNAIRE

1. What year were you born?

2. What is your ethnicity?
 - a. White/Caucasian
 - b. African American
 - c. Hispanic
 - d. Asian
 - e. Native American
 - f. Pacific Islander
 - g. Other
3. What is your gender?
 - a. Male
 - b. Female
4. Are you a native English speaker?
 - a. Yes
 - b. No
5. Please enter the main MOBA game you play:

6. How experienced #Answer of Q5# player are you?
 - a. Very Inexperienced
 - b. Inexperienced
 - c. Somewhat Inexperienced
 - d. Average

- e. Somewhat Experienced
- f. Experienced
- g. Very Experienced

7. Approximately how long have you been playing #Answer of Q5#?

a. Year

b. Months

8. Approximately how many hours do you play #Answer of Q5# in a week?

9. In the next couple of pages, firstly, you will see the descriptions of champion roles from various games then you will answer the questions regarding described champion role. Although there are different roles which are used in MOBAs, for the sake of simplicity, 6 most common roles are presented below.

ASSASSIN

Assassins are agile champions that close in and take out unsuspecting targets in the blink of an eye. However, they must pick their opportunities carefully since a high-octane offense comes at the cost of low defense and long waits between takedown attempts. They thrive on the battlefield through hit-and-run tactics, carefully timed attacks, and by capitalizing on the perfect moment to engage or flee.

1. Answer the questions below according to the Assassin role.

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always

1.1. How frequently do you want to play as an Assassin?

1.2. Sometimes players choose the role which is needed for the team. How frequently do you play as an Assassin?

2. Have you ever played as an Assassin?

- a. Yes
- b. No

3. Answer the questions below regarding your experiences as an Assassin.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

3.1. I enjoy playing as an Assassin very much

3.2. Playing as an Assassin is fun

3.3. I find playing as an Assassin boring

3.4. Playing as an Assassin provides me with interesting options and choices

3.5. I experience a lot of freedom while I play as an Assassin

3.6. I feel very capable and effective when playing as an Assassin

3.7. My ability to play as an Assassin is well matched with the role's challenges

3.8. I feel close and connected to my teammates while playing as an Assassin

3.9. When I play as an Assassin, my teammates are friendly towards me

3.10. When I play as an Assassin, I feel as if I am actually in the game's world

4. Which gender do you prefer for your Assassin?

- a. Male
- b. Female
- c. Nothing particular

MARKSMAN-CARRY

These champions deal large amounts of consistent, rapid-fire damage to enemies from a safe distance. They often employ the help of Supports to stay alive, as they are fragile and require time to build up their attack strength over the course of a game. Carries generally start off weak, but as they accumulate gold and items, their damage output and effectiveness scales exponentially, enough to "carry" the team to a victory. Carries tend to have high base movement speed.

1. Answer the questions below according to the Marksman-Carry role.

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always

1.1. How frequently do you want to play as a Marksman?

1.2. Sometimes players choose the role which is needed for the team. How frequently do you play as a Marksman?

2. Have you ever played as a Marksman-Carry?

- a. Yes
- b. No

3. Answer the questions below regarding your experiences as a Marksman-Carry.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

3.1. I enjoy playing as a Marksman very much

3.2. Playing as a Marksman is fun

3.3. I find playing as a Marksman boring

3.4. Playing as a Marksman provides me with interesting options and choices

3.5. I experience a lot of freedom while playing as a Marksman

- 3.6. I feel very capable and effective when playing as a Marksman
- 3.7. My ability to play as a Marksman is well matched with the role's challenges
- 3.8. I feel close and connected to my teammates while playing as a Marksman
- 3.9. When I play as a Marksman, my teammates are friendly towards me
- 3.10. When I play as a Marksman, I feel as if I am actually in the game's world

- 4. Which gender do you prefer for your Marksman-Carry?
 - a. Male
 - b. Female
 - c. Nothing particular

SUPPORT

These champions provide lots of utility and set up teams to succeed with practical skills, such as heals, shields, stuns, and more. They often set the stage to lay traps and avoid ambushes, and depend on teammates to deal the majority of the damage. Some supports are designed for buffing and protecting their allies, while others are effective at harassing the opposing lane and disabling enemies. Supports should always try to forfeit kills to any teammate who is more reliant on items than they are, only performing a kill if none of their allies is able to do it.

1. Answer the questions below according to the Support role.

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always

1.1. How frequently do you want to play as a Support?

1.2. Sometimes players choose the role which is needed for the team. How frequently do you play as a Support?

2. Have you ever played as a Support?

- a. Yes
- b. No

3. Answer the questions below regarding your experiences as a Support.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

3.1. I enjoy playing as a Support very much

3.2. Playing as a Support is fun

3.3. I find playing as a Support boring

3.4. Playing as a Support provides me with interesting options and choices

3.5. I experience a lot of freedom while playing as a Support

- 3.6. I feel very capable and effective when playing as a Support
 - 3.7. My ability to play as a Support is well matched with the role's challenges
 - 3.8. I feel close and connected to my teammates while playing as a Support
 - 3.9. When I play as a Support, my teammates are friendly towards me
 - 3.10. When I play as a Support, I feel as if I am actually in the game's world
4. Which gender do you prefer for your Support?
- a. Male
 - b. Female
 - c. Nothing particular

TANK

Tanks are robust champions that can withstand the front lines of conflict, but often don't do much damage themselves. They focus on starting fights, taking hits, and drawing attention away from the fragile damage-dealers on the team, who can finish off the preoccupied enemies. Their damage output tends to be low, but they usually have high crowd control and are capable of withstanding more damage than other classes, allowing them to protect their more vulnerable allies or setting up combinations and creating favorable opportunities for them.

1. Answer the questions below according to the Tank role.

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always

1.1. How frequently do you want to play as a Tank?

1.2. Sometimes players choose the role which is needed for the team. How frequently do you play as a Tank?

2. Have you ever played as a Tank?

- a. Yes
- b. No

3. Answer the questions below regarding your experiences as a Tank

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

3.1. I enjoy playing as a Tank very much

3.2. Playing as a Tank is fun

3.3. I find playing as a Tank boring

3.4. Playing as a Tank provides me with interesting options and choices

3.5. I experience a lot of freedom while playing as a Tank

- 3.6. I feel very capable and effective when playing as a Tank
- 3.7. My ability to play as a Tank is well matched with the role's challenges
- 3.8. I feel close and connected to my teammates while playing as a Tank
- 3.9. When I play as a Tank, my teammates are friendly towards me
- 3.10. When I play as a Tank, I feel as if I am actually in the game's world

4. Which gender do you prefer for your Tank?

- a. Male
- b. Female
- c. Nothing particular

JUNGLER

Junglers rely on killing neutral monsters in the jungle to keep up with their laning teammates in terms of gold and experience. Their ability to freely traverse the map without being tied to a lane also allows them to support lanes when in the area, such as warding key locations without forcing someone else to abandon their lane and coming to an ally's aid when they come under duress. Although having two solo lanes and a Jungler produces a significant gold and experience advantage, it increases exposure to enemy ganks and can make side lanes weaker.

1. Answer the questions below according to the Jungler role.

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always

1.1. How frequently do you want to play as a Jungler?

1.2. Sometimes players choose the role which is needed for the team. How frequently do you play as a Jungler?

2. Have you ever played as a Jungler?

- a. Yes
- b. No

3. Answer the questions below regarding your experiences as a Jungler.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

3.1. I enjoy playing as a Jungler very much

3.2. Playing as a Jungler is fun

3.3. I find playing as a Jungler boring

3.4. Playing as a Jungler provides me with interesting options and choices

3.5. I experience a lot of freedom while playing as a Jungler

3.6.I feel very capable and effective when playing as a Jungler

3.7.My ability to play as a Jungler is well matched with the role's challenges

3.8.I feel close and connected to my teammates while playing as a Jungler

3.9.When I play as a Jungler, my teammates are friendly towards me

3.10. When I play as a Jungler, I feel as if I am actually in the game's world

4. Which gender do you prefer for your Jungler?

a. Male

b. Female

c. Nothing particular

FIGHTER - WARRIOR

Fighters are versatile champions that can take on the role of damage dealer or defender of more fragile teammates. They occupy a happy medium between the massive damage of a Marksman and the prolonged survivability of a Tank that lets them adapt to various situations. They are jacks of all trades, who are capable of both dealing and sustaining a fair amount of damage without necessarily excelling at either.

1. Answer the questions below according to the Fighter role.

1	2	3	4	5	6	7
Never	Rarely	Occasionally	Sometimes	Frequently	Usually	Always

1.1. How frequently do you want to play as a Fighter?

1.2. Sometimes players choose the role which is needed for the team. How frequently do you play as a Fighter?

2. Have you ever played as a Fighter?

- a. Yes
- b. No

3. Answer the questions below regarding your experiences as a Fighter.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

3.1. I enjoy playing as a Fighter very much

3.2. Playing as a Fighter is fun

3.3. I find playing as a Fighter boring

3.4. Playing as a Fighter provides me with interesting options and choices

3.5. I experience a lot of freedom while playing as a Fighter

- 3.6. I feel very capable and effective when playing as a Fighter
 - 3.7. My ability to play as a Fighter is well matched with the role's challenges
 - 3.8. I feel close and connected to my teammates while playing as a Fighter
 - 3.9. When I play as a Fighter, my teammates are friendly towards me
 - 3.10. When I play as a Fighter, I feel as if I am actually in the game's world
4. Which gender do you prefer for your Fighter?
- a. Male
 - b. Female
 - c. Nothing particular

APPENDIX C

BIG FIVE INVENTORY

In the next couple of pages, there will be questions regarding your personality.

	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree

I see myself as someone who...

1. is talkative
2. tends to find fault with others
3. does a thorough job
4. is depressed, blue
5. is original, comes up with new ideas
6. is reserved
7. is helpful and unselfish with others
8. can be somewhat careless
9. is relaxed, handles stress well
10. is curious about many different things
11. is full of energy
12. starts quarrels with others
13. is a reliable worker

14. can be tense
15. is ingenious, a deep thinker
16. generates a lot of enthusiasm
17. has a forgiving nature
18. tends to be disorganized
19. worries a lot
20. has an active imagination
21. tends to be quiet
22. is generally trusting
23. tends to be lazy
24. is emotionally stable, not easily upset
25. is inventive
26. has an assertive personality
27. can be cold and aloof
28. perseveres until the task is finished
29. can be moody
30. values artistic, aesthetic experiences
31. is sometimes shy, inhibited
32. is considerate and kind to almost everyone
33. does things efficiently
34. remains calm in tense situations
35. prefers work that is routine
36. is outgoing, sociable
37. is sometimes rude to others
38. makes plans and follows through with them

- 39. gets nervous easily
- 40. likes to reflect, play with ideas
- 41. has few artistic interests
- 42. likes to cooperate with others
- 43. is easily distracted
- 44. is sophisticated in art, music, or literature