# RISK AVERSION AS A FACTOR OF PLAYER TYPOLOGY

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ABSTRACT

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The goal of this study was to determine the relationship between participants' willingness to accept risks in real world situations, as well as within games. Participants in the study responded to a survey regarding their attitudes towards risky behaviors, their willingness to engage in those behaviors, and their preferences and motivations for playing video games. The study found that, while teamwork was not a significant factor for risk-seeking gamers, relationship building was. Further, positive risk-attitude was not related to self-reported skill, but was related to the amount of time participants spent playing games. Risk-seeking players also valued competition and role-playing, alongside the development of strong social relationships.

These results could affect the way in which developers advertise their products, as well as how they design their games. This research offers valuable insights into the habits of gamers, and serves as a counterexample to the "lone gamer" stereotype. Limitations include how well participants understand their own online behaviors, as well as how they view themselves. For example, participants that expressed antisocial behaviors online may have chosen to express more prosocial behaviors to alter the way they appeared in the survey. Future studies may examine the relationship between gender identity and gameplay preferences, as well as the potential relationship between age and gameplay risk-attitudes. Research is also being considered on "trolling" behavior and its relationship to real world behaviors.

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TABLE OF CONTENTS

LIST OF TABLES

# INTRODUCTION

Games, whether they be physical or electronic, are important to the global culture of humanity. They are widely played, and contribute a significant amount to the U.S. economy. As an example, the Entertainment Software Association (2017) reported that the video game industry contributed $11.7 billion to domestic product. Despite the significant depth of research into how to make games better, or even what kinds of effects they may have, very little research exists on why, or more importantly how, people play games.

Those who play multiplayer games understand that "team-based" games often place participants into various roles. Some are leaders, and others are there to support the team as a whole. Some choose to distract enemies, while others are there to simply give everybody else a hard time. These roles have been enumerated by a handful of game researchers, but as little research exists on these types of roles, even less exists on their relationship to risk. Some players enjoy the risk that comes with "rogue-like" games that only offer players one life. These games have become increasingly popular over the last decade, and as such have a clear audience.

This study seeks to identify a potential relationship between risk-averse, or risk-seeking, attitudes, and various player motivations. These include Socializing, Relationships, Teamwork, and Mechanics for risk-aversion, and Advancement, Competition, and Discovery for risk-seeking. A relationship between these factors could help to identify player motivations that would allow developers to create better games that suit their target audience.

## DEFINITIONS

The term "risk-aversion" is defined in relation to people who "are disinclined to pursue actions that have a non-negligible chance of resulting in a loss or whose benefits are not guaranteed," according to H. Orri Stefánsson and Richard Bradley (2017). In games such as *Overwatch*, some players dive headfirst into an active battlefield, while others try to keep their distance from their opponents. Some players gravitate towards "healer" characters designed to keep their team alive, while others play characters designed to attract attention to themselves. Players may very well prefer certain roles based on their perceptions towards risk. Understanding what separates these two specific types of players may yield insight into better design choices for developers. If "risk-perception," herein defined as how one views risks and behaves accordingly, has an effect on player choice, then developers may be able to establish a new target audience, and improve the designs of new and existing games. This information may help designers create better systems that appeal to specific audiences, or even help teams create better sales predictions based on consumer behavior.

Survey questions used in this study are mostly in reference to online games, as such games have massive, pre-established communities with a wealth of knowledge about strategies, best practices, and statistics within each game. Players of online games will likely have developed opinions about what roles they prefer when playing. Further, discussions on social interactions between players is an important aspect of understanding risk, as it pertains to social risks among peers. With that in mind, it is important to establish a clear definition on "player types" and how the proposed study enumerates players, as well as how they are measured in terms of risk-perception.

### *Bartle's Types*

Player typology has been discussed for quite some time in the games industry. Although discussions of such typology have likely been on the table since the days of the industry's infancy, the concept was truly pioneered a little over two decades ago. Richard Bartle (1996), one of the preeminent designers of multi-user dungeons, or MUDs, developed a typology of players following a discussion about what people wanted from their MUDs. The study suggested that players fall under one of four possible types, including achievers, explorers, socializers, and killers. Achievers are defined as those players that seek to gain the most points, or attain the most levels. Explorers choose to learn and understand the underlying mechanics that facilitate the game world, and often choose to exploit those mechanics to their advantage. Socializers want to expand on the interpersonal relationships they develop with other users; the game world is merely a backdrop for their conversations. Finally, killers simply want to make the world uninhabitable for others. They enjoy imposing themselves on other players.

### *Risk*

Outlook and perception towards risk can be classified as either risk-seeking, or risk-averse. Risk-seeking players are ones that either enjoy the thrill presented by placing themselves in danger, albeit simulated danger. These players may also choose to engage in risky situations because they enjoy overcoming great challenges. Some players may even actively seek challenges if they believe it may be to their benefit. An achievement-oriented player could theoretically choose to accept risks if they believe the payoff will be worth such risk. However, this presents a question in which the context of a risk applies to the definition. Is the potential benefit of accepting a risk a factor in defining said risk? Weber et al. (2002) makes note of the

risk-return framework, and how risk is measured as a factor of expected risk and perceived benefit. This framework suggests that potential benefit is indeed a factor when defining risk.

Risk-averse players choose to avoid risk, and many factors apply to why players are so avoidant. Under the risk-return framework, it would stand to reason that the potential "loss" may also be a factor in decision making. If a social player is perfectly fine playing without putting themselves in danger, what reason would they have to accept any risks? Achievers follow the same rules, as they may not need to face difficult opponents if they can opt to level grind instead until they feel prepared to face an enemy. By choosing only to fight opponents beneath their level, in terms of skill, strategy, or mechanical limitations, achievers can minimize risks when playing. Explorers necessarily have to accept risk in order to achieve their goals, as understanding the mechanics of failure is a necessary step in their quest to understand the game in its entirety. Killers need the game world to have a cost for dying, otherwise they would not be able to elicit the response from their prey that they want. As such, killers are either risk-seeking, or at the very least, risk-promoting.

If either such player exists, the distinction can only be made if placed in a leveled field, where the costs and benefits of given actions are very clear. However, global decisions, like character choice in a game like *Overwatch*, may also be strong factors in understanding risk-perception. A risk-seeking player would necessarily be defined as one that makes a protracted effort to find risks. Risk-averse, or risk-avoidant players are ones that either attempt to avoid risk when possible, or at least make a protracted effort to minimize risk. Lastly, risk-neutral players would include those that do not make consistent decisions when assessing and acting upon risks, or ones that merely accept risk as a necessity for advancement in a game. A player choosing to accept a risk because they are forced to by the game in order to advance are not truly accepting

risk. This is similar to those who accept the risks of driving in order to get to work on time; it is unlikely that they think about the risks in said context because they have no choice if they want to accomplish their goals.

## TYPOLOGIES

Bartle (1996) suggested that "in times of falling player numbers the current composition could be compared against some earlier ideal, and remedial action taken to redress the imbalance." Knowing what kinds of players exist in a given online community, and knowing which combination of player types promotes a strong game, allows developers to proactively balance the game to improve the overall experience. As an aside, it is worth mentioning that this principle may also apply to risk in games. If certain types of players are shown to have a strong affinity to risk the internal game mechanics could be tweaked, or new mechanics could be introduced in order to appeal to this audience. Conversely, if such mechanics are shown to dissuade the target audience, they can be balanced more effectively with this knowledge.[1]

[1] Stewart (2011) proposes some concepts in this discussion as well, even going as far as suggesting his own player typology. He mentions Roger Caillois' modes of play, and the logic behind why players "grind," a term that describes tedious gameplay for the purpose of advancement. The suggestion is that this behavior stems from a deep-seated belief that reward should be proportional to effort, especially effort put into following agreed upon rules. This behavior, according to Stewart, is most closely associated with Bartle's "achiever" type. Further, he also discusses Caillois' concept of "alea," as randomness and chance in a game. Stewart views this concept as an equalizing factor for socializers who prefer games to be reliant on equivalent degrees of chance. The modes of play are all important concepts as they apply to risk-aversion, as they suggest that achievers and socializers are the "risk-averse" players in online games. Achievers appear to work harder to improve their skills and experience levels in order to circumvent risks, while socializers have a preference for games in which all players are constantly on even footing. This would make sense, as Bartle (1996) posits that socializers play games because of the community, and not the game itself. As such, it would not matter to them whether or not they can improve in the game, so long as they avoid unpleasant experiences, such as having their characters killed.

A modification of Bartle's types was used as a reference to define player typologies as they relate to risk. These types do not offer the robust descriptions offered by Yee's factor analytic approach, but they do make clear, reasoned explanations behind why players of given types may avoid or accept risk. Bartle's motivations for playing correlate to those in Yee's more detailed scale, and said motivations offer meaningful explanations for player behavior. As such, players fit into risk-averse, or risk-seeking groups based on their behaviors and motivations. Yee's (2006) motivations include "Achievement," "Social," and "Immersion." These are, along with Bartle's types, used as a framework for defining the player types used in this study.

Bartle (1996) discusses the effects of player counts and interactions in his types, and how the presence of some player types may influence the presence of other player types. Socializers would choose to keep their distance from killers, because they have a desire to ensure the longevity of their characters. In this sense, they choose to avoid taking on missions or quests that could present them with the possibility of failure. This is comparable to people who, outside of the context of multiplayer online games, prefer to watch videos of games being played, rather than play these games themselves. Further, some players cite lack of experience as a reason for not attempting to advance. Naturally, the only way to develop experience is to make attempts to play, but many simply choose not to. It may be worth exploring in the future, the possibility that some players choose not to make efforts towards advancement because of their aversion to risk, and their unwillingness to fail.

In addition to socializers, Bartle identifies achievers as being risk-averse as well. Although achievers are more willing to make attempts at playing, and they would need to in order for them or their characters to improve, they often avoid risk. More specifically, achievers avoid blown out fights with killers on the off-chance such an occurrence arises (1996). Achievers

are more prone to “level grinding,” and potentially use this to improve their chances of success in all manner of interaction in-game. As mentioned earlier, this idea of expanding upon talent and power, practicing and improving over time, may very well be a psychological mechanism being implemented by players to ensure they do not meet with failure. This of course is merely speculation, and will require further research to validate. However, this concept goes beyond the requirements for this study.

Bartle’s (1996) explorers could be described as risk-seeking as they partially learn many mechanics through failure. They are willing to die in-game if it brings them closer to understanding the game world. Moreover, Bartle’s explorers are willing to take the fight to bothersome killers if the need becomes dire, and prove themselves to be fairly capable in spite of their lack of raw power. Explorers are willing to accept risks, and are possibly able to do so because they are not quite as attached to their characters as they are the game world itself. The idea of “dying” is not a significant matter to them because they understand that such death is not truly permanent. This excludes games that utilize permanent death in their systems, although such systems are a significant part of the discussion on risk in games. Perhaps so-called explorers may not be as willing to risk their characters if said characters may truly, permanently die. This presents one of the limits of the Bartle types, as the context is clearly important in this situation.

Lastly, Bartle’s (1996) killers simply do not care about dying in-game because they are more focused on making other player’s gaming experience more difficult. Killers do not care enough about meeting other players, or even accomplishing predefined goals in games. They simply want to compete with others, and impose themselves on others. Both killers and achievers are interested in status, an idea that is echoed by Yee (2006). In this possible sense, the distinction between achievers and killers can be that achievers are comfortable competing so

long as there is nothing at stake, whereas killers are motivated by the uncertainty of a difficult battle, or the knowledge that they have slighted another player.[2]

According to Yee (2006), socializers are most closely related to the Social Component of Yee's motivations. These motivations include "Socializing," "Relationships," and "Teamwork." Bartle (1996) suggests that socializers are risk-averse, as they are more interested in forming interpersonal relationships or chatting over playing. Yee's scale offers a more robust view of these players by distinguishing between those who want to socialize, and those who want to make lasting relationships. Both of these traits are in line with Bartle's socializers, but it is worth noting that Yee also includes teamwork as a motivation. It goes without saying that gamers who tend to play in teams are likely more risk-averse than those who play alone. This is in observation of the "safety in numbers" mentality. As such, players who score high in these motivations are likely risk-averse.

Yee (2006) views achievers and killers as both belonging to the same player type, a notion that Bateman et al. (2011) concurs with. For the purposes of this study, however, it is necessary to make a distinction between "killers" and "achievers." Furthermore, Yee's scale does not inquire about motivations for killing other players. His questions merely ask if players enjoy doing so, but a true killer is motivated by the frustration and distress they cause others, where a true achiever revels in the sheer sport of fighting other players. Killers and achievers fall under Yee's Achievement Component, which includes the "Advancement," "Mechanics," and "Competition" motivations. For this context, Bartle's achievers will be identified with correlations to the mechanics and advancement motivations. Yee references optimization and

[2] Heeter (2008) posited a fifth player type, the "Impression Manager," a player who enjoys easy challenges that allow them to feel competent, but do not put them at risk of failing. Designing for such a player requires a careful balance that both includes them, and does not simultaneously exclude other player types.

analysis as aspects of mechanics, which would make sense for an achiever, as they make painstaking efforts to ensure future successes. Thus, achievers, and the mechanics motivations should correlate with risk-aversion.

Explorers correlate with Yee's (2006) "Mechanics," and "Discovery" motivations, and are seen as a separation of the two components highlighted in Bartle's explorer type. Mechanics are more or less shared with achievers, except that explorers would use mechanics as an extension of their efforts to manipulate the game's systems. An achiever utilizes these to minimize risk. Explorers would fall under the discovery motivation as well, naturally, as they make it a point to pioneer new knowledge in their respective game worlds. Explorers would most likely correlate with risk-seeking behavior as they often explore unknown territory, and risk their characters in the name of discovery. They tinker with mechanics, not knowing fully what the end result may be, so long as it contributes to their understanding. By comparison, Bartle's achievers would only use this information to improve the survivability and power of their characters.

A true Bartle's (1996) killer would only derive enjoyment from killing a player if it causes them distress. In this sense, risk must be present in the game world, or else such distress could not be generated. If player death is a minor inconvenience, then there would be no purpose in playing as a killer. Something must be at stake in order for a killer's work to have meaning. Thus, it stands to reason that a killer is either risk-seeking, or at least has a preference for games that present a meaningful degree of risk.

Achievers assess risks actively when playing in order to play at peak performance levels. Explorers dive headfirst into risky situations, as they only desire to gain as much knowledge about the systems as possible. Socializers are not interested in taking risks unless they are a factor of the social aspect of their play. Killers must necessarily be risk-seeking, as Bartle (1996)

posits that such players choose to attack weaker players who can be agitated by loss, but will fight to the death if faced with an adversary of equal strength. This behavior suggests that their general outlook on risk is determined by context, but they must accept risk in order to derive enjoyment from the game, based on their motivations.

### *Limitations and Criticisms*

Considering the need for balance, it is also important to recognize that Bartle's typologies are not without critics. One such critic, Nick Yee, (2006) cites three primary limitations. The first is that the proposed components of the Bartle's Types are not necessarily related. As an example, Bartle's types group role-playing and socialization together, though players who enjoy socializing may not necessarily enjoy role-playing.

The second limitation is that some types overlap, despite the model necessarily separating them into discrete groups. Yee uses "raid-oriented guilds" as an example, stating that members of such guilds could be considered Achievers and Socializers simultaneously (2006). Members may fit into multiple types, even ones that Bartle suggests are diametrically opposed. As such, it is possible to have players that would fit into both of these types, but also not enjoy role-playing.

Thirdly, the model offers no opportunity for players to determine what type they belong to. There is no scale for Bartle's Player Types, and further, attempts to assess players using the Player Type model would only function to create discrete types, rather than measure for existing ones. For the purpose of this study, Yee's (2006) factor analytic approach will be used when classifying players into different categories.

It is worth noting that, while Yee offers a more qualitative approach for measuring player "types," risk is more readily defined using the Bartle's Types, as Killers exhibit behaviors that should be expected in risk-seeking players, while Socializer players exhibit risk-averse

behaviors. Fortunately, Bateman et al. (2011) determined that Yee's "motivations" line up well with Bartle's Types. Data gathered using Yee's scale can be sorted based on behaviors that align with Bartle's Types. In this sense, players who have motivations that correlate with Bartle's Types, namely Killers and Socializers, can be coded as risk-seeking and risk-averse respectively.

### *Benefits*

In continuation of the discussion on the need for player typology, such information may also help developers build more enjoyable experiences from the ground up. The increasingly popular genre of rogue-like games appeals to players that enjoy the tension that arises from a game where players only have one life in the game. On the other hand, the casual gaming market appeals to audiences that prefer to enjoy the game for reasons that do not involve achievement or progress.

Finding the right balance of difficulty in either type of game can be a challenge in and of itself. Fine-tuning and balancing issues come up in discussion fairly often; a cursory glance at forums for relevant games will suggest as much. Casual games that are too easy will not attract a stable following, and overly difficult games will prove to be frustrating to the vast majority of gamers. Moreover, games offer different manners of play to different audiences, and such audiences would surely feel slighted if they felt the designers balanced their systems to focus on a different type of player. By establishing a system for identifying risk-seeking and risk-averse players, developers can more easily hone in on a target audience, or even update online games to comply with player preferences to create better games that better serve their player base.

## RESEARCH QUESTIONS AND RESEARCH OVERVIEW

### *Questions*

The primary goal of this research is to understand whether risk-aversion, and by extension risk-seeking, can be used as a determinant for consumer behavior in regards to video games. Can risk-perception be a factor in identifying a target audience? If so, can this attribute be reliably identified in consumer behavior? Lastly, can developers use this information to produce better games and mechanics with this information? Other aspects of this question, such as the lasting effects of playing games on risk-aversion, may be examined in future studies. This study seeks not only to answer this question, but serve as a foundation for other potential research questions.

### *Overview*

The research sample was made up of self-identifying gamers. Yee's factor analytic scale was included in this study, and participants were sorted into two categories based on their responses to the survey: risk-averse, or risk-seeking. In order to further validate the survey data, participants were also asked to respond to Weber's risk-analysis scale. Weber's scale helps to identify which participants are risk-seeking, and which are risk-averse. This data suggests that certain player motivations are indicative of a player's willingness to accept risks. This may help to identify target audiences in market analyses, and may establish a metric for identifying player engagement. Further, this information could be used to identify which mechanics or games test positively with such players, and may allow developers to improve the focus of their target audience.

In theory, participants that score highly on the "Advancement," "Competition," and "Discovery" motivations should also exhibit a correlation with risk-seeking behavior on Weber

et al's (2002) measure of risk-aversion. However, it is also possible that the Advancement motivation will correlate to risk-neutral players. Such players may accept risk as a necessary aspect of progression, though they may also prefer a game that allows for the mitigation of said risks. Players that exhibit behaviors similar to Bartle's (1996) killer type will likely have correlations with risk-seeking behavior. In general, these players enjoy the challenge presented by risks, especially risks of significant loss.

In contrast to the above, the "Socializing," "Relationship," "Teamwork," and "Mechanics" motivations should exhibit correlations with risk-averse behavior on the aforementioned Weber et al. (2002) scale. These players do not play games for the challenge alone, or at the very least, they play strategically and make every effort to play under the best possible circumstances. As an exception, many risk-seeking players should also express an affinity for the Mechanics motivation, as their curiosity will likely lead them into risky situations in their pursuit of knowledge. In general, risk-averse players will either choose to focus on non-challenge related tasks such as socializing, or will work in teams to limit risks. Some characters may adopt "level grinding" or "character optimizing" behavior to reduce the chances of failure as well. With this in mind, this study posits the following questions:

1. Is there a relationship between the "Socializing," "Relationship," "Teamwork," and "Mechanics" gaming motivations and risk-aversion, such that people who score high on these motivations will be more risk averse?
2. Is there a relationship between the "Advancement," "Competition," and "Discovery" gaming motivations and risk-seeking, such that people who score high on these motivations will be more risk-seeking?

## METHODS

### *Participants*

A total of 225 participants were drawn from a pool of participants using Amazon's Mechanical Turk (MTurk) system. 35 of the participants were discarded due to incomplete data for a total of 190 participants in the following analysis. Two-thirds of the sample identified as male (n = 126) and one-third of the sample identified as female (n – 63). One participant did not indicate their gender identity. The average age of the sample was 32.08 years (SD = 7.95; range from 19 to 59 years). Participants indicated they had been playing video games for an average of 18.41 years (SD = 9.39; range 1 to 40 years). Participants generally indicated a high level of skill as a gamer on a 1 (beginner) to 7 (expert) scale (M = 4.91; SD = 1.47).

### *Survey*

The survey was administered using Qualtrics. Qualtrics is an online survey program. Participants were recruited using a subject pool drawn from Amazon's survey data software (MTurk). Participants are self-identified gamers. There were three parts to the survey. The first part of the survey measured participants' video game play and video game preferences. The scale used is Brandon Boggs' (2007) gameplay preference scale, located in Appendix B of his study on video games and their correlation to helping behavior.

The second part of the survey is Yee's Factor Analytic Scale. This survey asks students to report their motivations for playing games. The questions are designed to ask players why they engage in certain behaviors, or to what extent they engage in certain behaviors, if at all. This includes questions involving general interest in game mechanics, questions regarding their goals in playing a game, and their motivations for engaging in social, or antisocial behaviors.

The third part of the survey is Weber et al's (2002) measure of risk-aversion. This scale illustrates a series of risky situations to participants, and asks them to rate on a 1-5 point scale how risky they deem the situation in question to be, then presents similar situations and asks whether the participants would be willing to engage in such behaviors themselves. Note, that Weber et al. use three different assessments in their 2002 study. The current study uses Weber's second and third assessments, located in Appendices B and C, respectively, of the aforementioned paper.

### *Procedures*

The survey was hosted on a web-based survey site called MTurk. The three surveys are relatively short, and typically do not take longer than an hour to complete. Participants were informed that they could withdraw from the study at any time, at which point their data would be void, and excluded from the study.

### *Measures*

**Gameplay Preferences and Demographics:** The initial survey gathered demographic information, including gender, age, and gameplay experience, as well as general lifestyle habits involving games. The survey also included questions regarding gameplay preferences, and was designed to help categorize respondents based on their gameplay experience. This would help to eliminate player experience as a factor in the study. The survey appears in its entirety, with minor edits for clarity. This scale was also used to sort survey-takers, so the data could distinguish between casual video game players, and invested video game enthusiasts, also known as hardcore gamers.

Three questions in this scale are particularly noteworthy. The first is "How would you rate your overall skill level as a gamer ($M = 4.91$; $SD = 1.47$)?" Self-identified "hardcore"

gamers will likely report themselves as having a high skill level. Typically, as hobbyists continually practice, their skill level improves, so these results are within expectations. The second question is "How often did you play video games during the past six months (M = 6.22; SD = 1.05)?" Gamers who play often, as suggested by the remarks under the previous item, likely consider themselves serious, or hardcore gamers. The third and final question is "How many hours, in total, did you play video games last week (M = 3.65; SD = 1.09)?" This question follows the same line of reasoning as the previous question. The remaining items for this scale can be found in Appendix B.

**Yee's Factor Analytic Inventory:** The second survey measures participants' reasons for playing games, including interests in understanding mechanics, fostering friendships, or even simply achieving advancement within the game world. This survey codifies participants into any of the given motivations as described above. Alongside the above survey, Yee's inventory categorizes participants by different motivations, which correlate to varying degrees of risk-acceptance or risk-aversion. This serves as the initial frame of analysis for player risk-attitude, and was compared alongside self-reported risk-attitudes in the Weber Scale. The information gathered from this survey was compared with data retrieved from the other two surveys to identify potential relationships. The survey appears in its entirety, with minor edits for clarity.

The first motivation subscale is Advancement. An example item from this subscale is "Leveling up your character as fast as possible." The reliability for this scale was acceptable (Alpha = .79; M = 3.18; SD = .84). Advancement refers to a desire to improve one's avatar within a game in a way that provides an advantage to the player. The second motivation subscale is Mechanics. An example item from this subscale is "Knowing as much about the game mechanics and rules as possible." The reliability for this scale was acceptable (Alpha = .72; M =

3.36; SD = .80). Mechanics refers to a player's understanding of the underlying mechanisms that make up the game. Understanding how the mechanics function allows players to minimize risks.

The third motivation subscale is Competition. An example item from this subscale is "Competing with other players." The reliability for this scale was acceptable (Alpha = .76; M = 2.60; SD = .92). Competition refers to a player's desire to compete with other players. The fourth motivation subscale is Socializing. An example item from this subscale is "Getting to know other players." The reliability for this scale was acceptable (Alpha = .83; M = 3.01; SD = .91). Socializing refers to a player's desire to socialize with other players. The fifth motivation subscale is Relationship. An example item from this subscale is "How often do you have meaningful conversations with other players." The reliability for this scale was acceptable (Alpha = .87; M = 2.52; SD = 1.00). Relationship refers to the player's desire to form meaningful, lasting relationships with other players.

The sixth motivation subscale is Teamwork. An example item from this subscale is "Having a self-sufficient character. The reliability for this scale was not found to be acceptable (Alpha = .53). As such, this scale will not be included in the results for this study. For reference, Teamwork refers to a player's willingness and desire to work with other players towards a common goal. The seventh motivation subscale is Discovery. An example item from this subscale is "Exploring every map or zone in the world." The reliability for this scale was initially found not to be acceptable (Alpha = .69). However, by deleting the third item in this subscale, "How much do you enjoy collecting distinctive objects or clothing that have no functional value in the game?" the reliability was found to be within acceptable parameters (Alpha = .74; M = 3.71; SD = .84). Discovery refers to the goal of finding things within a game that were otherwise undiscovered. The eighth motivation subscale is Role-Playing. An example item from this scale

is “Being immersed in a fantasy world.” The reliability for this scale was acceptable (Alpha = .74; M = 2.86; SD = .87). Role-Playing refers to the player’s desire to act out the role of their avatar, and to effectively play act as that avatar.

The ninth motivation subscale is Customization. An example item from this scale is “How much time do you spend customizing your character during character creation?” The reliability for this scale was acceptable (Alpha = .79; M = 3.27; SD = 1.00). Customization refer to the process of making elements within a game unique to the player, typically in a manner that does not directly affect game mechanics. The tenth motivation subscale is Escapism. An example item from this subscale is “Escaping from the real world.” The reliability for this subscale was not found to be acceptable (Alpha = .59). As such, this scale will not be included in this study. For reference, Escapism refers to the desire to put aside the stressors of daily life by engaging in a hobby, specifically video games in this context.

**Weber’s Risk-Attitude Scale:** The last survey measures participants’ attitudes towards risk in both social and recreational contexts. Health and financial risks, while included in the original scale, were removed here as such risks go beyond the scope of this study and what it seeks to understand. Participant responses work in tandem with the other scales to illustrate each participants’ attitudes towards accepting risks. The survey asks participants how they view the riskiness of a handful of different situations. Participants are then asked how willing they would be to engage in comparable risky behaviors.

The first attitude subscale is Social Risk. An example item from this subscale is “Admitting that your tastes are different from those of your friends.” The reliability for this scale was acceptable (Alpha = .84; M = 2.74; SD = .71). This subscale refers to a survey-taker’s attitudes towards social risks. The second attitude subscale is Recreational Risk. An example

item from this subscale is “Exploring an unknown city or section of town.” The reliability for this scale was acceptable (Alpha = .72; M = 3.51; SD = .58). This subscale refers to a survey-taker’s attitudes towards recreational risks.

The third attitude subscale is Social Behaviors. An example item from this subscale is “Arguing with a friend about an issue on which he or she has a very different opinion.” The reliability for this scale was acceptable (Alpha = .78; M = 3.35; SD = .72). This subscale refers to a survey-taker’s willingness to engage in a given risky social behavior themselves. The fourth attitude subscale is Recreational Behaviors. An example item from this subscale is “Piloting your own plane, if you could.” The reliability for this scale was acceptable (Alpha = .89; M = 2.13; SD = .98). This subscale refers to a survey-taker’s willingness to engage in a given risky recreational behavior themselves.

## RESULTS

Prior to answering the research questions, the eight player motivations, the two measures of risk attitudes, and the two measures of risk behavior were correlated (see Table 1). Hierarchical regression was used to answer the research questions.

The first step included standard demographic variables including gender identity, age, and education status. The second step included measures of how many hours of video games participants had played within the last week, the last 6 months, how many years they had been playing video games, and their rated expertise as a gamer. This step was included to control for any differences in video game experience on risk attitudes or risk behaviors. The final step included the eight motivations for game play that were reliable (Advancement, Mechanics, Competition, Socializing, Relationship, Discovery, Role-Play, and Customization).

The first regression involved the participants' attitudes toward social risks. The first step of the regression analysis was significant, $\Delta R^2 = .06$, $F(3, 162) = 3.35$, $p < .05$. Specifically, education level was a significant predictor of participants' attitudes toward social risks, $\beta = .25$, $t = 3.11$, $p < .005$. Gender and age were not significant predictors of attitudes toward social risks. There was a significant increase in the fit in the second step, $\Delta R^2 = .09$, $F(4, 158) = 3.93$, $p < .001$. There were 3 predictors of participants' attitudes toward social risks that were statistically significant in this step. How often video games were played in the past month ($\beta = -.195$, $t = -2.04$, $p < .05$) and the number of years video games had been played ($\beta = -.20$, $t = -2.25$, $p < .05$) were negative predictors of participants' attitudes toward social risk. However, rated skill was a positive predictor of attitudes toward social risk, $\beta = .24$, $t = 2.44$, $p < .05$. There was also a significant increase in the fit in the third step, $\Delta R^2 = .09$, $F(8, 150) = 3.12$, $p < .001$. Both

competition (β = .21, $t$ = 2.09, $p$ < .05) and roleplaying (β = .27, $t$ = 2.72, $p$ < .01) were positive predictors of attitudes toward risk.

The second regression analysis involved participants' attitudes toward recreational risks. Unfortunately, there were no significant predictors of participants' attitudes toward recreational risks (Step 1, $F$(3, 162) = .99, $p$ > .30; Step 2, $F$(4, 158) = 1.57, $p$ > .15; Step 3, $F$(8, 150) = 1.19, $p$ > .30).

The third regression analysis involved participants' willingness to engage in risky social behaviors. The first and second steps were not significant predictors of willingness to engage in risky social behaviors (Step 1, $F$(3, 163) = .61, $p$ > .60; Step 2, $F$(4, 159) = .52, $p$ > .75). The third step was significant, $\Delta R^2$ = .19, $F$(8, 151) = 3.78, $p$ < .01. Rated skill level (β = -.22, $t$ = -2.16, $p$ < .05), was a negative predictor of participants' willingness to engage in risky social behaviors. Mechanics (β = .20, $t$ = 2.00, $p$ < .05), competition (β = .28, $t$ = 2.76, $p$ < .01), and discovery (β = .22, $t$ = 2.36, $p$ < .05) were positive predictors of willingness to engage in risky social behaviors.

The fourth and final regression analysis involved participants' willingness to engage in risky recreational behaviors. The first step of the analysis was significant, $\Delta R^2$ = .08, $F$(3, 161) = 4.74, $p$ < .005. Gender identity (β = -.21, $t$ = 2.71, $p$ < .01) was a negative predictor of participants' willingness to engage in risky recreational behaviors, while education (β = .23, $t$ = 2.88, $p$ < .01) was a positive predictor of willingness to engage in risky recreational behaviors. Age was not a significant predictor for this step. There was a significant increase in the fit for the second step, $\Delta R^2$ = .21, $F$(4, 157) = 6.50, $p$ < .001. The number of years participants have played games (β = -.42, $t$ = -4.90, $p$ < .001) was a negative predictor of their willingness to engage in risky recreational behaviors. How often participants' played games in the last week, how often

they played games in the last six months, and how participants rated their skill as gamers were not statistically significant factors. The third step of the analysis was significant $\Delta R^2 = .46$, $F(8, 149) = 8.51$, $p < .001$. Competition ($\beta = .32$, $t = 3.83$, $p < .001$), relationships ($\beta = .19$, $t = 2.23$, $p < .05$), and role-play ($\beta = .22$, $t = 2.60$, $p < .015$) were all positive predictors of participants' willingness to engage in risky recreational behaviors.

The data suggests a modest relationship between participants' attitudes toward social risks and the degree to which they are motivated by competition (.29), role-playing (.29), and customization (.21), with a minor relationship between such attitudes and motivations to attain advancement (.17) and form relationships (.17). As such, it would appear that participants who are more accepting of social risks modestly, but observably motivated by a desire to play competitively, or to express themselves through role-playing or customization of their avatar. Although the correlation is small, participants with positive attitudes toward social risks were motivated by advancement and relationship building. A possible explanation is that many players may have positive attitudes toward social risk, accepting such risks as a necessity within the communication process. Participants' attitudes toward recreational risks shared a modest, positive correlation with the degree to which said participants were motivated by discovery (.25).

Participants' willingness to engage in risky social behaviors was modestly, positively correlated with the degree to which they were motivated by understanding of game mechanics (.20), forming relationships (.21), and discovery (.27), with minor correlations from competition (.18), and role-playing (.17). With this in mind, it appears that attitudes toward social risk have a stronger effect on motivations for competition and role-playing, while willingness to engage in such behaviors has a stronger effect on desire to discover. It would seem then, that participants become less interested in forming relationships and understanding game mechanics when they

are willing to engage in risky social behaviors, though the degree to which participants are less willing is small.

Participants' willingness to engage in risky recreational behaviors had a pronounced effect on gameplay motivations. A small relationship to understanding of game mechanics (.26) was noted. A moderate relationship was noted between willingness to engage in risky recreational behaviors and the participants' degree of motivation by advancement (.30), socializing (.30), role-playing (.38), and customization (.32). Participants who are deeply invested in role-playing may be more willing to take on recreational risks because of their dedication to assuming the role of a character they've developed. Consider James Paul Gee's musings on the way players become attached to their avatars, and how they may behave differently because they feel that is how the avatar, and not the person controlling the avatar, should behave (Gee, 2007, p. 49-53, 64).

A strong relationship was noted between the recreational behavior variable, and motivations to form relationships (.47) and to find compete (.52). This appears to disagree with an aspect of the assertions put forth by the hypothesis, namely that desire to form relationships and desire to compete are opposed. It would seem that these variables increase as participants become more willing to engage in risky recreational behaviors. However, it may be that players identify the formation of relationships within the game world as being a risk, or they may choose to form friendships as a means of finding more competition. It would seem though that willingness to engage in recreationally risky behaviors has a sizable relationship with participant motivation to compete. In other words, gamers that are interested in playing competitively are also likely to be recreational risk-takers. It is not clear if this correlation is causative.

# APPENDICES

# APPENDIX A

## Tables

| | Adv. | Mec. | Com. | Soc. | Rel. | Dis. | RP | Cus. | R-S | R-R | B-S | B-R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adv. | --- | .57** | .50** | .33** | .37** | .18* | .22** | .40** | .17* | .11 | .11 | .30** |
| Mec. | | --- | .49** | .42** | .39** | .19* | .25** | .35** | .09 | .13 | .20** | .26** |
| Com. | | | --- | .37** | .46** | -.02 | .28** | .31** | .29** | .04 | .18* | .52** |
| Soc. | | | | --- | .61** | .25** | .48** | .36** | .11 | .00 | .14 | .30** |
| Rel. | | | | | --- | .15* | .49* | .36* | .17* | -.02 | .21** | .47** |
| Dis. | | | | | | --- | .44** | .29** | .01 | .25** | .27** | .02 |
| RP | | | | | | | --- | .44** | .29** | .09 | .17* | .38** |
| Cus. | | | | | | | | --- | .21** | .07 | .13 | .32** |
| R-S | | | | | | | | | --- | .39** | .03 | .44** |
| R-R | | | | | | | | | | --- | .27** | -.09 |
| B-S | | | | | | | | | | | --- | .24** |
| B-R | | | | | | | | | | | | --- |

Table 1: Variable Correlations

Adv: Advancement Mec: Mechanics Com: Competition Soc: Socializing Rel: Relationship

Dis: Discovery RP: Role-Play Cus: Customization R-S: Risk-Social

R-R: Risk-Recreational B-S: Behavior-Social B-R: Behavior-Recreational

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

APPENDIX B

Gameplay Preferences and Demographics Scale

**Sex**

Male

Female

Non-Binary

Other

**Age**

**Year in College, if applicable**

**How long have you been playing video games (in years)?**

**Rate your overall skill level as a gamer**

Rookie – 1

2

3

Veteran – 4

5

6

Expert – 7

**How many hours per week do you play each of the following type of game?**

**Additionally, please rank your preference for each type, from 1 being your least favorite, to 10 being your most favorite:**

Fighting (e.g. Street Fighter, Tekken, Mortal Kombat):

Racing (e.g. Forza, Mario Kart, Gran Turismo):

Sports (e.g. Madden 2018, NBA 2k18, Rocket League):

Simulation (e.g. The Sims, Stardew Valley, Harvest Moon):

Role-Playing (e.g. Final Fantasy, Diablo, Fallout):

Shooters (e.g. Halo, Call of Duty, Bioshock):

Action/Adventure (e.g. The Legend of Zelda, God of War, Banjo Kazooie):

Platformer (e.g. Super Mario World, Super Meat Boy, Celeste):

Puzzle (e.g. The Witness, Tetris, The Room):

Other (Please specify):

**On which platforms do you play video games? (Check all that apply)**

Nintendo Switch

Nintendo Wii U

Nintendo 3DS or 2DS

Playstation 4

Playstation 3

Xbox One

Xbox 360

PC or Gaming Computer

Smartphone

Other (Please specify)

**For the following questions, unless expressly stated otherwise, please rate the extent to which the given situations apply to you on a scale from 1 to 7, with 1 representing "Never," 4 representing "Sometimes," and 7 representing "Always."**

**1.) What are the reasons you play video games?**

They are challenging:

To spend free/leisure time:

To hang out with friends:

To relieve stress:

For competition:

To do something I cannot do in the "real world":

To help others:

To keep up with current trends:

For gambling purposes:

**2.) I play video games…**

Alone (not including online w/ others):

Alone (but while others watch):

With others (in person):

With others (online):

**3.) When I play video games, I prefer to play… [Rate from 1 to 7, with 1 being "Least Preferred," and 7 being "Most Preferred."]**

Alone (not including online w/ others):

Alone (but while others watch):

With others (in person):

With others (online):

**4.) My preference indicated in the previous question is due to…**

The type of games I like to play:

The type of games my friends like to play:

The type of games that are popular:

The availability of others to play with:

**For the following questions, we are looking for information about what it is like to watch others play video games, but not physically playing with them. Consider instances in which someone else is playing a video game while you watch.**

**5.) When I am not playing video games, the people I watch play are…**

Friends from school/work:

Neighbors:

Siblings:

Parents:

Other relatives:

**6.) Watching others play video games…**

Is more fun/enjoyable than playing alone:

Is a better experience than playing alone:

Is more interactive than playing alone:

Allows me to spend time with my friends:

Improves my playing skill more than does playing alone:

Provides opportunities to gamble:

**7.) When I'm watching others play video games, I help others…**

By verbally offering suggestions to improve their play:

By telling them which buttons to push to accomplish a game task:

By telling them about tricks/special moves to use:

By pointing out things that they may not see:

**8.) When I'm watching others play video games, I am likely to offer help if…**

They have done poorly on the game before:

They have never played the game before:

They have been helped before:

They have been/will be on a team with me:

They ask for help:

They have expressed frustration due to the game:

They cannot see something in the game that they need to see:

**9.) When I'm watching others play video games, the reason I help others is…**

To build/maintain friendships:

To teach a skill:

For the benefit of my team:

To make the game more competitive/challenging:

So they will help me:

To make the game more enjoyable/fun:

So they will play with me in the future:

**For the following questions, we are looking for information about what it is like to play video games while others watch you, but not physically play with you. Consider instances in which you are playing while someone else watches you play.**

**10.) The people who watch me play, but do not play with me are…**

Friends from school/work:

Neighbors:

Siblings:

Parents:

Others relatives:

**11.) Playing video games with others watching me play…**

Is more fun/enjoyable than playing alone:

Is more competitive/challenging than playing alone:

Is a better experience than playing alone:

Is more interactive than playing alone:

Allows me to spend time with my friends:

Improves my playing skill more than does playing alone:

Provides opportunities to gamble:

**12.) When I'm playing and others are watching but not playing, I help others…**

By verbally offering suggestions to improve their play:

By telling them which buttons to push to accomplish a game task:

By telling them about tricks/special moves to use:

By pointing out things that they may not see:

**13.) When I'm playing and others are watching but not playing, I am likely to offer help if…**

They have done poorly on the game before:

They have never played the game before:

They have been helped before:

They have been/will be on a team with me:

They ask for help:

They have expressed frustration due to the game:

They cannot see something in the game that they need to see:

**14.) When I'm playing and others are watching but not playing, the reason I help others is…**

To build/maintain friendships:

To teach a skill:

For the benefit of my team:

To make the game more competitive/challenging:

So they will help me:

To make the game more enjoyable/fun:

So they will play with me in the future:

**The following questions still focus on what it is like to play video games with others watching, but no playing with you. However, now consider instances in which you seek help from others in these situations.**

**15.) When I'm playing and others are watching but not playing, I seek help from others:**

**16.) When I'm playing and others are watching but not playing, I am most likely to ask for help from others if…**

I am doing poorly:

I have never played the game before:

I have helped them before:

I am on a team with them:

I am becoming frustrated/upset:

I cannot see something in the game that I need to see:

**17.) When I'm playing and others are watching but not playing, I am most likely to receive help from others if…**

I am doing poorly:

I have never played the game before:

I have helped them before:

I am on a team with them:

I am becoming frustrated/upset:

I cannot see something in the game that I need to see:

**18.) When others help me while I am playing a video game I feel…**

Relieved:

Pleased:

Happy:

Annoyed:

Embarrassed:

Frustrated:

Indifferent/No Emotion:

Other (Please specify):

**For the following questions, we are looking for information about what it is like to play video games while others play with you. Think of instances in which you are playing a video game and someone else is also playing with you.**

**19.) With whom do you usually play video games?**

Friends from school/work:

Neighbors:

Relatives:

Friends, who I have met in person, while online:

Friends, who I have not met in person, while online:

Others online:

**20.) When playing video games with other people, I play…**

Competitively (Playing against someone else; trying to defeat someone.):

Cooperatively (Playing with someone to accomplish a shared goal.):

Cooperatively Competitive (Playing with someone else to defeat others.):

**21.) When playing video games with others, I prefer…**

Competitive games:

Cooperative games:

Cooperatively competitive games:

**22.) My preference indicated in the previous question is due to…**

The type of games I like to play:

The type of games my friends like to play:

The type of game that are popular:

The availability of others to play with:

**23.) Playing video games with others…**

Is more fun/enjoyable than playing alone:

Is more competitive/challenging than playing alone:

Is a better experience than playing alone:

Is more interactive than playing alone:

Allows me to spend time with my friends:

Improves my playing skill more than does playing alone:

Provides opportunities to gamble:

**24.) While playing video games, I help others…**

By verbally offering suggestions to improve their play:

By telling them which buttons to push to accomplish a game task:

By using their controllers to help them accomplish a game task:

By assisting them with my character in the game:

By going easy on them during the game:

By telling them about tricks/special moves to use:

By pointing out things that they may not see:

**25.) While playing video games with others, I am likely to help another person if…**

They are doing poorly:

They have never played the game before:

They have helped me before:

They have are on a team with me:

They ask for help:

They have become frustrated/upset:

They cannot see something in the game that they need to see:

**26.) While playing video games with others, the reason I help others is…**

To build/maintain friendships:

To teach a skill:

For the benefit of my team:

To make the game more competitive/challenging:

So they will help me:

To make the game more enjoyable/fun:

So they will play with me in the future:

**27.) While playing video games, I seek help from others:**

**The following questions still focus on what it is like to play video games with others playing too. However, now consider instances in which you seek help from others in this situation.**

**28.) While playing video games, I am most likely to ask for help from others if…**

I am doing poorly:

I have never played the game before:

I have helped them before:

I am on a team with them:

I am becoming frustrated/upset:

I cannot see something in the game that I need to see:

**29.) While playing video games, I am most likely to receive help from others if…**

I am doing poorly:

I have never played the game before:

I have helped them before:

I am on a team with them:

I am becoming frustrated/upset:

I cannot see something in the game that I need to see:

**30.) When others help me while I am playing a video game I feel…**

Relieved:

Pleased:

Happy:

Annoyed:

Embarrassed:

Frustrated:

Indifferent/No Emotion:

Other (Please specify):

**Sometimes, people who enjoy playing video games talk about these games, even when they are not playing. These instances could occur in person, online, through message boards, etc. For the following questions, we are looking for information about situations in which you would be talking about video games, but not playing them. Consider instances in which you and others are talking about video games, but are not actually playing.**

**31.) When we are not playing video games, others and I spend time talking about video games:**

**32.) When others and I are talking about video games I…**

Give tips about games to others:

Share cheat codes or other hidden features with others:

Discuss game strategies with others:

Tell others about websites that feature cheats/tips/strategies:

**33.) When others and I talk about video games, I am likely to help others as indicated in the previous question if…**

They have been doing poorly:

They are new to playing the game:

They have offered me help before:

They have been/will be on my team:

**34.) When others and I talk about video games, the reason I help others is…**

To build/maintain friendships:

To teach a skill:

For the benefit of my team:

To make future games more competitive/challenging:

So they will help me:

To make the game more enjoyable/fun:

So they will play with me in the future:

APPENDIX C

Yee's Factor Analytic Inventory

**1.) How interested are you in the precise numbers and percentage underlying the game mechanics? (i.e, chance of dodging an attack, the math comparing dual-wield to two-handed weapons, etc.)**

Not Interested At All

Slightly Interested

Somewhat Interested

Very Interested

Extremely Interested

**2.) How important is it to you that your character is as optimized as possible for their profession / role?**

Not Important At All

Slightly Important

Somewhat Important

Very Important

Extremely Important

**3.) How often do you use a character builder or a template to plan out your character's advancement at an early level?**

Never

Seldom

Sometimes

Often

Always

**4.) Would you rather be grouped or soloing?**

Much Rather Group

Rather Group

In-Between

Rather Solo

Much Rather Solo

**5.) How important is it to you that your character can solo well?**

Not Important At All

Slightly Important

Somewhat Important

Very Important

Extremely Important

**6.) How much do you enjoy working with others in a group?**

Not At All

A Little

Some

A Lot

A Great Deal

**7.) How much do you enjoy leading a group?**

Not At All

A Little

Some

A Lot

A Great Deal

**8.) How often do you take charge of things when grouped?**

Never

Seldom

Sometimes

Often

Always

**9.) How important is it to you to be well-known in the game?**

Not Important At All

Slightly Important

Somewhat Important

Very Important

Extremely Important

**10.) How much time do you spend customizing your character during character creation?**

None At All

A Little

Some

A Lot

A Great Deal

**11.) How important is it to you that your character's armor / outfit matches in color and style?**

Not Important At All

Slightly Important

Somewhat Important

Very Important

Extremely Important

**12.) How important is it to you that your character looks different from other characters?**

Not Important At All

Slightly Important

Somewhat Important

Very Important

Extremely Important

**13.) How much do you enjoy experiencing the world just for the sake of exploring it?**

Not At All

A Little

Some

A Lot

A Great Deal

**14.) How much do you enjoy finding quests, NPCs or locations that most people do not know about?**

Not At All

A Little

Some

A Lot

A Great Deal

**15.) How much do you enjoy collecting distinctive objects or clothing that have no functional value in the game?**

Not At All

A Little

Some

A Lot

A Great Deal

**How important are the following things to you in the game?**

**1.) Leveling up your character as fast as possible.**

Not Important At All

Slightly Important

Moderately Important

Very Important

Tremendously Important

**2.) Acquiring rare items that most players will never have.**

Not Important At All

Slightly Important

Moderately Important

Very Important

Tremendously Important

**3.) Becoming powerful.**

Not Important At All

Slightly Important

Moderately Important

Very Important

Tremendously Important

**4.) Accumulating resources, items or money.**

Not Important At All

Slightly Important

Moderately Important

Very Important

Tremendously Important

**5.) Knowing as much about the game mechanics and rules as possible.**

Not Important At All

Slightly Important

Moderately Important

Very Important

Tremendously Important

**6.) Having a self-sufficient character.**

Not Important At All

Slightly Important

Moderately Important

Very Important

Tremendously Important

**7.) Being immersed in a fantasy world.**

Not Important At All

Slightly Important

Moderately Important

Very Important

Tremendously Important

**8.) Escaping from the real world.**

Not Important At All

Slightly Important

Moderately Important

Very Important

Tremendously Important

**How enjoyable are the following things to you in the game?**

**1.) Helping other players.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**2.) Getting to know other players.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**3.) Chatting with other players.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**4.) Competing with other players.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**5.) Dominating/killing other players.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**6.) Exploring every map or zone in the world.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**7.) Being part of a friendly, casual guild.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**8.) Being part of a serious, raid/loot-oriented guild.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**9.) Trying out new roles and personalities with your characters.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**10.) Doing things that annoy other players.**

Not Enjoyable At All

Slightly Enjoyable

Moderately Enjoyable

Very Enjoyable

Tremendously Enjoyable

**How often do you do the following things in the game?**

**1.) How often do you find yourself having meaningful conversations with other players?**

Never

Seldom

Sometimes

Often

Always

**2.) How often do you talk to your online friends about your personal issues?**

Never

Seldom

Sometimes

Often

Always

**3.) How often have your online friends offered you support when you had a real life problem?**

Never

Seldom

Sometimes

Often

Always

**4.) How often do you make up stories and histories for your characters?**

Never

Seldom

Sometimes

Often

Always

**5.) How often do you role-play your character?**

Never

Seldom

Sometimes

Often

Always

**6.) How often do you play so you can avoid thinking about some of your real-life problems or worries?**

Never

Seldom

Sometimes

Often

Always

**7.) How often do you play to relax from the day's work?**

Never

Seldom

Sometimes

Often

Always

**8.) How often do you purposefully try to provoke or irritate other players?**

Never

Seldom

Sometimes

Often

Always

**Scale Source:** (Yee, 2006)

APPENDIX D

Weber's Risk-Attitude Scale

**For each of the following statements, please indicate the likelihood of engaging in each activity. Provide a rating from 1 to 5, with 1 representing "Extremely Unlikely," 3 representing "Not Sure," and 5 representing "Extremely Likely."**

1.) Admitting that your tastes are different from those of your friends. (S)

2.) Arguing with a friend who has a very different opinion on an issue. (S)

3.) Asking your boss for a raise. (S)

4.) Chasing a tornado by car to take photos that you can sell to the press. (R)

5.) Dating someone that you are working with. (S)

6.) Deciding to share an apartment with someone you don't know well. (S)

7.) Disagreeing with your parent or guardian on a major issue. (S)

8.) Exploring an unknown city or section of town. (R)

9.) Going camping in the wild. (R)

10.) Going down a ski run that is too hard or closed. (R)

11.) Going on a safari in Kenya. (R)

12.) Going on a two-week vacation in a foreign country without booking accommodations ahead. (R)

13.) Going whitewater rafting at high water in the spring. (R)

14.) Traveling on a commercial airplane. (R)

15.) Moving to a new city. (S)

16.) Openly disagreeing with your boss in front of your coworkers. (S)

17.) Periodically engaging in a dangerous sport (e.g. mountain climbing or sky diving). (R)

18.) Speaking your mind about an unpopular issue at a social occasion. (S)

19.) Trying bungee jumping. (R)

20.) Wearing unconventional clothes. (S)

**For each of the following statements, please indicate your likelihood of engaging in each activity or behavior. Provide a rating from 1 to 5, with 1 representing "Extremely Unlikely," 3 representing "Not Sure," and 5 representing "Extremely Likely."**

1.) Admitting that your tastes are different from those of your friends. (S)

2.) Going camping in the wilderness, beyond the civilization of a campground. (R)

3.) Chasing a tornado or hurricane by car to take dramatic photos. (R)

4.) Disagreeing with your parent or guardian on a major issue. (S)

5.) Going on a vacation in a third-world country without prearranged travel and hotel accommodations. (R)

6.) Arguing with a friend about an issue on which he or she has a very different opinion. (S)

7.) Going down a ski run that is beyond your ability or closed. (R)

8.) Approaching your boss to ask for a raise. (S)

9.) Going whitewater rafting during rapid water flows in the spring. (R)

10.) Telling a friend if his or her significant other has made a pass at you. (S)

11.) Wearing unconventional clothes on occasion. (S)

12.) Periodically engaging in a dangerous sport (e.g. mountain climbing or sky diving). (R)

13.) Taking a job that you enjoy over one that is prestigious but less enjoyable. (S)

14.) Defending an unpopular issue that you believe in at a social occasion. (S)

15.) Trying out bungee jumping at least once. (R)

16.) Piloting your own small plane, if you could. (R)

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