Running head: MICRO-TRANSACTIONS AND PLAYER SATISFACTION

Effects of Micro-transactions on the Satisfaction of Players in Online Games

D.W.J. Laurijsen

Tilburg University

ANR. 250876

Tilburg University, the Netherlands

Individual Research Proposal Master's Thesis Economical Psychology

Under the supervision of dr. ing. Niels van de Ven

2nd assessor: MSc Ellen R.K. Evers

Fall Semester 2013

Abstract

Micro-transactions are more frequently used as payment model in online games as compared to other payment models like monthly subscriptions. Although there are some non-empirical thoughts and statements about the consequences of the use of micro-transactions for the satisfaction of users with them, this has not been empirically tested. In three studies using players in different social competitive online games, we found no direct support for the hypothesis that micro-transactions could also be detrimental for the satisfaction of players. More specifically, after players imagined a certain combat scenario in these games, their satisfaction was only influenced by the outcome of the game (loss vs. win), but not by the way the outcome was materialized (bought vs. skill). Thus, in contrast with our predictions, this means that when (other) players had bought an advantage using real money, they did not become less satisfied with the game. As a result, game developers seem to make the right call when they state that the use of micro-transactions will not be detrimental for the satisfaction of their users. This study further discusses the theoretical background, alternative explanations and practical implications of these findings.

Effects of Micro-transactions on the Satisfaction of Players in Online Games

"Satisfaction lies in the effort, not in the attainment, full effort is full victory."

Mahatma Gandhi

In online games, one can see the growing tendency that game developers embrace the opportunity to build in some form of in-game payments. These in-game payments, called micro-transactions, are normally defined as small in-game transactions of selling and buying in-game assets for less than $15 (Oh & Ryu, 2007). The main mechanism behind this model is that it lures players in by making their games 'free-to-play'. This encourages players that are normally less inclined to periodically spend a substantial amount of money on a game, to later pay for virtual items (Kwong, 2011). Therefore, the use of micro-transactions in games has the potential to reach more customers and to generate more profit. However, next to these advantages, we think that the use of this model could also have some serious disadvantages. More specifically, we think that the existence of micro-transactions could also make players become less satisfied with the game.

Therefore, in our current research, we will investigate the satisfaction of players who play these kinds of games, that is, games in which micro-transactions are possible. To do this, we first provide a review of the literature on the effects of micro-transactions, after which we discuss the current explosive growth of micro-transactions, their revenues and how they are applied to online games in general. Next, we will cover both the possible positive consequences as the possible negative consequences for the users itself. With regard to the negative consequences, we end with taking a psychological perspective in which we provide possible explanations for why micro-transactions could be detrimental for player satisfaction. Finally, we present our current study, which tries to provide an empirical answer to the

question whether micro-transactions could also be detrimental for the satisfaction of players. But first, we start with an overview of literature on the effects of micro-transactions.

Explosive Growth of the Use of Micro-transactions

In (online) games, one can see the explosive growth of games that use some form of micro-transactions. To give an illustration, of the top ten games in the app store of Apple (iOS) in 2011, nine out of ten games used micro-transactions (Gutterman, 2011). Furthermore, with regard to MMO (Massively Multiplayer Online) games, whereas the more traditional subscription based models even decline in numbers, micro-transactions are only expected to grow even more in the coming years (Harding-Rolls, 2011). This is in line with comments made by Peter Moore, COO at Electronic Arts (a large game publisher), who even thinks that micro-transactions will be in every game within five or ten years from now (Makuch, 2012).

Furthermore, the same explosive growth is true for the revenues of micro-transactions. When we look to revenues of games that embrace micro-transactions, we can see that the sale of virtual goods is booming business. For example, the overall market for virtual goods in the US alone headed up towards $2.9 billion in 2012, that's up from $2.2 billion in 2011 and $1.6 billion in 2010 (Eldon, 2011). In Asia, currently the biggest market for virtual goods (although their market share is declining), it was even around eighteen billion in 2010 (Joffe, 2009; Joffe, 2011). More importantly, the total virtual goods revenues are expected to double by 2014 (Hameed, 2011). Therefore, it is quite thinkable that more and more game developers embrace micro-transactions. However, the question is how these micro-transactions are generally used in these games.

Application of Micro-transactions

Micro-transactions are introduced to all sorts of online games. For example, they are applied in massively multiplayer online games (e.g. Diablo III, Lord of the Rings Online,

Guild Wars 2), online games that are played in social virtual worlds (e.g. Second Life, Habbo Hotel), social networks (e.g. Facebook, MySpace), games that are downloadable and/or instantly playable via casual web browsers (e.g. World of Tanks, Farm Ville) and games for mobile devices (e.g. Angry Birds, Where's My Water?).

Micro-transactions are typically sold by introducing some type of virtual currency in the game that players can only acquire with investing real money. After this, players can exchange this in-game currency for some virtual goods (although there are games in which consumers can directly buy their virtual goods). Therefore, the sustainability of the virtual world becomes important for the purchased virtual goods to have certain value. These bought virtual goods can be almost anything. They can range from weapons and armor in online games, to clothes in virtual worlds and simple two-dimensional graphical badges in social networking sites (Hamari & Lehdonvirta, 2010). In sum, there are many different types of online games that use micro-transactions, in which players can acquire many different sorts of virtual goods. Next, we will discuss some positive consequences of using micro-transactions, which indicates why it has become so popular to use these days.

Positive Consequences of Micro-transactions For Players

As mentioned before, the potential to reach more customers and to generate more profit are the two most important reasons for game developers to increasingly adopt the use of micro-transactions. But how do their users experience this model? What's in it for them? The answer to this is that users have other reasons to accept this model. More specifically, Larsen (2011) identified several advantages that can explain why users might be willing to accept micro-transactions as payment model:

- It is seemingly free for its users, because the core service is free. Just like in a regular store, where it is free to walk into the store, look at the products and enjoy the music that is playing in the background, players can enjoy the game for free.

And just like customers who have to pay for the things they want to have from the regular store (e.g. acquire some jeans), players have to pay for the things they want to have that go beyond the free content of the game (e.g. acquire a certain armor).

- Users might be treated with more covetable game content, which could enhance their gaming experience. The reason for this is that game developers would be more inclined to provide covetable content for their users, because they want to realize that even the average player would be willing to pay for this extra content (e.g. extra options, items, areas or services). Additionally, because players are more likely to spend if it could enhance their gaming experience, game developers will have to deliver this game enhancing content in order to reach that players will actually spend some money on their games (Olsson & Sidenblom, 2010).
- Users pay for value instead of paying for the whole package. This means that users only have to pay for the features they value. In other words, players only pay for what they want, which gives them more opportunities for personalized content.
- Micro-transactions would be more convenient for its users. Not only will players not have to own a physical copy to play, it will also reduce the transaction fees that they have to pay at once. In addition to this, consumers can try out games before they invest (Larsen, 2011).

In sum, micro-transactions can have several positive consequences for game developers as well as their users. Game developers mainly use them to reach more users and to make more profit, whereas players mainly use them to only pay for what they want, to enhance their gaming experience and to make this experience more convenient. However, not everything is rosy around micro-transactions. Despite the possibility of these positive consequences, there might be some negative consequences as well.

Negative Consequences of Micro-transactions For Players

But what about the possible negative consequences for its users? Game developers seem to provide the answer to this question. In general, game developers do not think that the introduction of micro-transactions will be detrimental for their players. For example, Oskar Berman, General Manager at Easy Studios (which developed games like Battlefield Heroes and Battlefield Play4Free), stated that "If you don't have so much time you can spend money to buy stuff. Time-rich players versus cash-rich players, that's something that's happening in the free-to-play games and it really works" (Tucker, 2011). Thus, with regard to their users, game developers seem to see no harm in using micro-transactions. Importantly, the question is whether the general belief of game developers is true. We think that despite the possible positive consequences of micro-transactions, it might also be that they could negatively influence the satisfaction of players in those games.

Satisfaction of Players

Although game developers proclaim that the use of micro-transactions in (online) games have a lot of advantages for their users, it is still unclear what it really does with the satisfaction of players who play these kinds of games. Of course, game developers want that players like their game, buy their game, play their game and talk about their game (in positive ways). However, adding micro-transactions possibly lowers player satisfaction. For example, Nojima (2007) found that the playing period of players became more intense (higher immersion), but also that this playing period became shorter when micro-transactions were introduced (Nojima, 2007). Thus, although Nojima's first finding (higher immersion) is in line with the general notion of game developers, the latter (shorter playing period) might be a sign that players who play these kinds of games could also become less satisfied with the game. From a psychological point of view, there would be several explanations for the reason why players might become less satisfied with the game. Therefore, in the next section, we will

provide an overview of relevant psychological factors that might lower the satisfaction of players when micro-transactions are involved.

Psychological Factors

In this section, we will discuss a few psychological factors that might influence the satisfaction of players. First, we will discuss fairness, followed by pride and achievement.

Fairness. In general, people strongly care about fairness. More specifically, prior psychological literature about fairness has indicated that people prefer equal outcome distributions the most (Fehr & Schmidt, 1999) and that they tend to react very negatively to unfair distributions, especially when they are in the other person's advantage (Eek & Gärlling, 2008). Furthermore, fairness also consists out of a more subjective component, because it matters for people whether they feel they have been treated fairly or not, even when the objective outcome is the same (Van den Bos & Lind, 2002). However, to fully understand why fairness could be so important for the satisfaction of players when micro-transactions are involved, we will make a distinction between perceptions of unequal outcome distributions and perceptions of unequal outcome procedures.

Unfair distributions. It is quite possible that players become less satisfied with the game if they perceive the outcome distributions as unfair. Psychological literature that has to do with this stems mainly from equity theory. Equity theory states that we compare our outcome-input ratios with relevant others and respond to eliminate any inequalities (Konow, 2003) and that inequity results in dissatisfaction (Adams, 1965). Furthermore, literature on equity also states that people who put in more effort are more entitled to claim resources and that they would deserve them more (Burrows & Loomes, 1994; Rabin, 1998).

If we relate these findings to micro-transactions and the satisfaction of players, it might be that players could become less satisfied with the game if they have to put in more time and effort to acquire the same virtual goods than players who acquire them via micro-

transactions. For example, if a player has to put in twenty hours of play to earn a nice in-game item (e.g. a powerful sword), while another player did buy that same item instantly, they could become less satisfied with the game because they might think that, based on their own input, the other person is not entitled to receive the same outcome distribution as them.

Next to this, following the same reasoning that people prefer fair outcome distributions the most, players might also become less satisfied with their own bought in-game achievements as well. For example, a player who instantly buys a nice in-game item might find it, based on their own input, unfair that other players have to put in many hours of play to earn the same acquirements as them. As a result, they might become relatively less satisfied with their bought acquirements. Thus, both ways, whether players become less satisfied with their own acquirements and/or with the acquirements of other players, make it possible to decrease the satisfaction with the game. In other words, money-rich players can take a short-cut to achieve the same or even better outcome distributions within the game, which could be detrimental for the satisfaction of players who buy their advantage as well as players who are not able or willing to do this.

Unfair procedures. Fair outcome procedures might also be important for the satisfaction of players. This notion stems from organizational literature about procedural justice, which is the perceived fairness of the processes that are used to determine the distribution of rewards (Cohen-Charash & Spector, 2001). Importantly, it was found that reactions to unfair procedures were usually directed at the whole organization, whereas reactions to unfair outcome distributions were often limited to reactions directed at the task or outcome in question (Cohen-Charash & Spector, 2001). If we translate this to the satisfaction of players in online games, it is quite possible that players might become less satisfied with the game as a whole if they perceive the procedures as unfair, even when the outcome distributions are fair.

An illustration of this reasoning can be found during situations when you play by the rules but it still feels as if this is not deserved. For example, it might be fair when a company promotes the longest serving employee if they follow company rules by doings so, but this does not automatically mean that this employee is also the most deserving employee; other employees might be more suitable for the job. Therefore, players that follow the rules of the game (e.g. use micro-transactions to gain an advantage) might still be judged to gain an unfair advantage by other players. When this happens, it could be detrimental for the satisfaction of players. Moreover, a possible side effect of this could be that micro-transactions will split the player community into spending vs. non-spending players. As a result, it might be that players who find themselves on the non-spending side of the rope feel as if they are put behind, which may also result in less player satisfaction.

Pride and Achievement. A second psychological factor that could be important for the satisfaction of players is pride and achievement. According to Yee (2006), a sense of achievement is one of the three main components of motivation to play in online games (Yee, 2006). In addition to this, user motivation is also linked to virtual purchasing behavior (Shelton, 2010). Therefore, the sense of achievement of players is important for game developers who introduce micro-transactions. However, the arrival of micro-transactions could make havoc of players' sense of achievement. More specifically, it might be the case that players could become less proud about their in-game achievements if they buy their advantage instead of when they earn it with investing time and effort.

This reasoning is in line with a well-known quote from Mahatma Gandhi (a famous former Indian politician): "Satisfaction lies in the effort, not in the attainment, full effort is full victory" (Gandhi & Dalton, 1996, p. 41). Basically, what Gandhi is saying is that people will be happier with something if they put in more "effort" and that this is more important than someone's "success". However, the use of micro-transactions could result in exactly the

opposite of this if players buy their advantage. Therefore, players who buy their advantage could become less proud about their in-game achievements, which in turn, could lower their satisfaction.

The reasoning above is also based on psychological literature about pride, in which pride is usually defined as a positive, self-conscious emotion arising from achievements that can be attributed to one's abilities or efforts (Lea & Webley, 1997). However, players who buy their advantage, often put in less ability and/or effort to acquire the same things as their time-investing counterparts. As a result, they might attribute their in-game achievements less to themselves. Therefore, someone's sense of achievement might not add up as quickly or could be deemed lower for players who buy their advantage. In turn, players who feel less proud about their accomplishments could become less satisfied with the game, especially when other players not acknowledge one's accomplishments as well (Webster, Duvall, Gaines, & Smith, 2003).

Summary of Psychological Factors. Players might become less satisfied with the game if other players could also buy their advantage: they might think that the outcome distributions of these players are not deserved or they might become less satisfied with their own accomplishments as well. In addition to this, perceptions of unfair outcome procedures might also result in negative reactions directed at the whole game itself, even when the objective outcome distributions are deserved. Furthermore, because someone's pride stems from achievements that can be attributed to one's abilities and/or efforts, the experienced pride and achievement might be deemed lower for players who buy their advantage. In turn, this could lower their satisfaction as well.

Current Study

The summary of psychological factors as described above show that the satisfaction of players might be influenced when micro-transactions are involved. Although there are some

non-empirical statements and thoughts about the introduction of micro-transactions and the satisfaction of players who play these kinds of games, there are, so far as we know, no empirical studies that have tested this idea yet. This is important, because as we noted before, more and more (online) games use micro-transactions.

Research focus. The research focus of this study is limited to social competitive (online) games, which are games in which people can compete with and/or against each other. The reason for this is that all of the psychological factors that are described above (e.g. fairness, pride and achievement) are at hand in these kinds of games. However, we do not claim that the satisfaction of players will not be influenced if they play other types of games; we just think that the effects will be less pronounced for games that are not social and competitive by nature (e.g. more individually focused games like Angry Birds, etc.).

Next to this, we will also limit our focus to micro-transactions that allow the buying of functional benefits. The reason for this is that previous research has shown that only functional benefits (that provide a competitive advantage) elicited stronger feelings, whereas this was not the case for ornamental benefits (Oh & Ryu, 2007; Weeda, 2012). Therefore, we expect that the satisfaction of players will be more profoundly influenced when micro-transactions exist out of buying a competitive advantage (functional benefit).

Finally, we focus on the application of micro-transactions despite the core of the business model that is being used, as long as the opportunity to perform micro-transactions is present. In sum, we will focus on social competitive (online) games in which players can buy themselves a competitive advantage.

Hypotheses. When we look to the psychological factors that could influence the satisfaction of players, one may have noticed that the satisfaction of players might be lowered when other players buy their advantage as well as when they buy an advantage themselves. If

we combine this notion with previous findings and the research focus of this study, it will lead to the following hypotheses about (online) games:

H1a:	Players will be less satisfied when they have won with a bought advantage than when they have won with an advantage which they acquired via investing time and effort.

H1b:	Players will be less satisfied when they have lost from another player who had bought their advantage than when they have lost from another player who acquired an advantage via investing time and effort.

We also stated that people care about fairness and that they especially dislike it when unfair distributions are not in their advantage (Fehr & Schmidt, 1999; Eek & Gärling, 2008). In line with this, we expect that players especially dislike it when other players have bought their advantage but less so when they have bought an advantage themselves. This reasoning stems from literature about the self-serving bias, which is the tendency for individuals to attribute their own successes to internal factors and to put the blame for failures on external factors (Campbell & Sedikides, 1999). This way, individuals will have the tendency to judge things in favor of themselves (Babcock & Loewenstein, 1997). Moreover, a subset of research on the self-serving bias has shown that judgments of people tend to be biased in the direction of their own self-interests (Messick & Sentis, 1979). Therefore, we think that the satisfaction of players will be especially influenced if other players have bought their advantage, but less so when they have bought an advantage themselves.

In addition to this, according to the negativity bias, negative information influences evaluations more strongly than comparable positive information (Ito, Larsen, Smith & Cacioppo, 1998). Therefore, we also think that the satisfaction of players will be greater

influenced when players experience a negative event (e.g. when they have lost) than when they experience a positive event (e.g. when they have won).

In sum, we think that the satisfaction of players will be especially influenced if other players have bought their advantage, but less so when they have bought an advantage themselves. Furthermore, we also think that the satisfaction of players will be greater influenced when they experience a negative event (e.g. when they have lost) than when they experience a positive event (e.g. when they have won). This leads to the addition of the following hypothesis:

H2:	The effects due to micro-transactions on the satisfaction of players will be more pronounced for players who have lost than for players who have won.

We tested our hypotheses in three social competitive (online) games. For our first study we used the MMO game World of Tanks (Study 1), for our second study we used the MMO game Wizard101 (Study 2) and for our final study we used the MMORPG Runes of Magic (Study 3). Because these kinds of games are competitive by nature, we expected that a bought competitive advantage through micro-transactions would be especially salient and thus, would have a pronounced influence on the satisfaction of players who play these kinds of games.

Study 1: World of Tanks

World of Tanks (WoT) is a free-to-play strategy and action oriented MMO (Massively Multiplayer Online) game featuring team battles with historical tanks. In this game, two teams of up to fifteen players fight to capture each other's flag or to destroy all enemy tanks. Players begin very weak but can level up by unlocking better and more powerful tanks, customize tank features, and improve the operating crew. Furthermore, players must be thirteen years of age or older to play the game, although the community is mainly made up of adolescents and

more adult “casual” gamers (around the age of thirty and above). The game has more than twenty million registered users and is generating "double digit" million dollar revenues a month.

A big reason for why such revenues are possible stems from the option to perform micro-transactions. The reason for this is that although the core of the game is free-to-play, a substantial amount of users spent real money on the game through micro-transactions. More specifically, the amount of paying players is around 25-30 percent, making them among the highest in the industry (Martin, 2012). Despite the big profit, Wargaming CEO Victor Kisyli has said that the game doesn't really push players into using their credit cards and PayPal accounts because the game is free-to-play. However, at the same time, he also stated that if players want to be competitive (e.g. really win or achieve something in the game) they should have to start spending (Martin, 2012). In sum, although World of Tanks is free-to-play, players have the option to buy in-game items with real money through micro-transactions. As a result, the game is generating substantial profits. However, the question remains where these micro-transactions come into play?

An answer to this question has to do with the various ways someone can advance their position within the game. Players can choose the slow and effortful path of gathering experience points for upgrades or they can choose to buy gold with real money immediately. With buying gold, players can acquire a premium account which doubles the obtained credits and experience points. This way, players will have an indirect advantage because they reach higher levels faster. Nevertheless, they still have to play to get ahead. Next to this, players can also use gold to buy beneficial consumables (e.g. more powerful ammo, extra game credits, etc.). This way, players can gain a direct competitive advantage if they buy things with real money. However, although the strength of the tank is the most important factor for the

chances on the battlefield, it is not the only factor to win. The skill level of the players and their tactics are important as well.

Thus, although players can buy themselves a competitive advantage through micro-transactions, it does not have to mean that they will be victorious on the battlefield. Nevertheless, it is still unknown whether micro-transactions could also influence the satisfaction of players. An objective of the present research is to test whether micro-transactions could also be detrimental for the satisfaction of players. More specifically, we have focused on the possible consequences for the satisfaction of players when they have the option to buy more powerful ammunition (gold ammo).

We choose gold ammo for this study because gold ammo (aka gold rounds or premium rounds) is stronger than regular ammo. Gold ammo is stronger because it has a bonus to armor penetration; the chance to hit the other tank. Therefore, players who use gold ammo will not run the risk that their shots bounce off the target like regular ammo does. Thus, using gold ammo makes it easier to (critical) hit an opponent. The characteristics of gold ammo as mentioned above make gold ammo a good example of acquiring a competitive advantage (in this study also termed as a functional benefit).

As a result, we hypothesized that the opportunity that (other) players acquired their advantage buying gold ammo (a functional benefit) through micro-transactions could also lower players' satisfaction with the game. To measure this, we conducted two studies (Study 1a and Study 1b). For Study 1a, we used a scenario study in which we manipulated both the outcome and the way the outcome was materialized. In Study 1b, we explored whether participants had spent money on World of Tanks and whatever motivated them to do so.

Study 1a: Scenario Study

In Study 1a, we conducted a scenario study in which we examined the satisfaction of players when they imagined losing from someone who had bought their advantage (e.g. a tank

that used gold ammo) or by someone who had earned their advantage by investing time and effort and thus, only used their skill (e.g. a tank that used regular ammo). Furthermore, we also examined the satisfaction of players when they imagined winning using a bought advantage (e.g. when they used gold ammo themselves) or winning when they had earned their advantage by investing time and effort (e.g. when they used regular ammo). This setting is important, because it can differentiate between the satisfaction of players when they have bought their advantage as compared to when they have acquired their advantage using time and effort. Doing this, we shed some more light on the possible consequences for the satisfaction of players when micro-transactions can take place.

Method

Participants and Design. We gathered our participants by distributing an online survey about World of Tanks on Twitter, Facebook and various game forums about World of Tanks. The forums and Facebook pages we have used for this study can be found in Appendix A. It was communicated that the survey was on behalf of Tilburg University and that it is done to better comprehend the appeal of World of Tanks, MMO games in general and the experiences of its users. The survey consisted out of two parts (Study 1a and Study 1b), from which the second part was optional. This was done to make sure that we would gather enough participants for Study 1a (which contained the most important questions). All participants participated voluntarily in this between-subjects study. Initially, a total of four-hundred and seventy-five participants entered Study 1a. However, after deleting all participants who did not complete the survey or did not provide a probable age (e.g. beyond one-hundred), we ended up with a total of two-hundred and ninety-five (288 males, $Mage = 30.46$, $SD = 12.42$) participants. They were randomly assigned to a 2 (outcome: win vs. loss) × 2 (advantage: skill vs. bought) between-subjects design.

Procedure. Study 1a consisted out of a scenario participants were asked to imagine, subsequent questions related to this and questions about the game in general. It consisted out of three question blocks with a total of twenty-one questions. Participants were randomly assigned to either one of four scenarios, which differed in whether they had won or lost (loss vs. win condition). After this, participants were further assigned to either a regular or gold ammo condition (skill vs. bought condition). In the regular ammo condition, players read that they had won using regular ammo. In the gold ammo condition, players read that they had won using gold ammo (which is a competitive advantage that can only be bought with real money). Thus, players had won using a bought advantage in the gold ammo condition, whereas this was not the case in the regular ammo condition, in which players had to rely more on their tactics and skills. More specifically, the following scenario was used for the win conditions:

> Imagine yourself that, after a fierce battle, you are the only one left of your team. Because this is also the case in your opponent's team, you and your opponent are the only two tanks left on the battlefield. The enemy tank is low on health but so are you. However, you don't know how good the armor of the enemy tank is, so there is a chance that a regular shell will bounce. It takes a while to move into position, but after maneuvering through the woods, you finally get your enemy into sight. Next, you load up with a *regular/gold* round to take the final shot… You manage to shoot him first! You win!

In the loss scenario the last two sentences were replaced with "*Unfortunately, you already got hit with a regular/gold round from your opponent! You lose!*" Thus, in this scenario, players had lost due to a bought advantage in the gold ammo condition, whereas this was not the case in the regular ammo condition.

After participants had read the scenario, they had to answer some questions about the game they had just imagined (see Appendix B for a complete overview of the questions). First, we assessed their affect by asking them to report how they would feel looking back at this game on an answer scale ranging from -3 = very negative to +3 = very positive. Next, we asked them to report how satisfied they would be with that game (on a scale from 1 = not at

all to 7 = very much so). From that point on, we kept using this answer scale and subsequently asked how likely it was that they would start a new game right now, how proud they would feel with their accomplishments in that game, whether they would think that this was a good accomplishment and whether this game was fair and deserved.

After this, we asked a block of questions that assessed how participants would think that other players in that game would have perceived their accomplishments and that of their opponent. First, we asked whether they would think that other players in that game would think that they had high status and/or skill. Next, we asked whether they would think that other players in that game would think that their opponent (not themselves) had high status and/or skill.

The next part consisted out of several questions that assessed the appeal of the game in general (thus, these questions were not designed around the specific game situation they imagined). To do this, we measured their perceived enjoyment with the game in general by adapting two existing perceived enjoyment scales to World of Tanks. The first scale we adapted was derived from Davis, Bagozzi, and Warshaw (1992) and Venkatesh (2000) which measured how fun, enjoyable and entertaining it is to play World of Tanks. The second scale we adapted from Chang and Cheung (2001) and Van der Heijden (2004) which asked on seven-point items whether they felt playing World of Tanks was enjoyable-disgusting, exciting-dull, pleasant-unpleasant, and interesting-boring.

Finally, we asked for age, gender and whether they had any comments or suggestions. We ended the survey by thanking them for their time and input and asked them whether they would also help us with the optional, second survey on World of Tanks. If so, they could start with Study 1b as well. If not, they could stop and close their browser.

Results

Table 1 contains the means for all conditions on the various dependent variables.

Table 1

Means for All Conditions on the Various Dependent Variables in Study 1a

	Outcome			
	Loss		Win	
	Bought (n = 75) M (SD)	Skill (n = 72) M (SD)	Bought (n = 64) M (SD)	Skill (n = 84) M (SD)
Satisfaction	4.05 (1.79)[a]	3.89 (1.75)[a]	5.54 (1.47)[b]	6.10 (1.09)[b]
Affect	0.11 (1.61)[a]	0.12 (1.67)[a]	2.04 (1.31)[b]	2.42 (0.74)[b]
Fairness	4.70 (2.11)[a]	5.37 (1.89)[a]	5.30 (2.02)[a]	6.19 (1.07)[b]
Pride	4.25 (1.72)[a]	4.20 (1.78)[a]	5.21 (1.76)[b]	5.35 (1.57)[b]
Status				
Themselves	3.25 (1.63)[a]	3.19 (1.72)[a]	3.92 (1.58)[a]	3.72 (1.74)[a]
Opponent	4.33 (1.73)[a]	4.32 (1.71)[a]	3.21 (1.44)[b]	3.10 (1.66)[b]
Skill				
Themselves	3.28 (1.47)[a]	3.23 (1.58)[ab]	4.01 (1.67)[b]	4.08 (1.69)[b]
Opponent	4.18 (1.82)[a]	4.50 (1.59)[a]	3.30 (1.36)[b]	3.12 (1.63)[b]
Perceived Enjoyment				
Scale 1	5.66 (1.42)[a]	5.41 (1.52)[a]	5.10 (1.28)[a]	5.35 (1.37)[a]
Scale 2	5.69 (1.15)[a]	5.47 (1.27)[a]	5.24 (1.23)[a]	5.54 (1.27)[a]
Start Again	5.43 (1.94)[a]	5.29 (1.78)[a]	4.70 (1.99)[a]	5.02 (2.14)[a]

Note. N = 295. All variables are on 7-point scales, from 1 = not at all to 7 = very much so, except for Affect, this variable was on a 7-point scale from -3 = very negative to 3 = very positive. Means in the same row that do not share superscripts differ at p <.05 according to Tukey post hoc analysis.

Satisfaction. A two-way between-subjects analysis of variance (ANOVA) showed that players who had won (M = 5.86, SD = 1.29) were more satisfied with the outcome of the game than players who had lost (M = 3.98, SD = 1.77), $F(1, 291) = 105.05$, $p < .001$, η^2_p = .27. We found no effect of the way the outcome was materialized (bought vs. skill), meaning that players who had bought their advantage (M = 4.74, SD = 1.80) were equally satisfied as compared to players who had only used their skill (M = 5.08, SD = 1.80), $F(1, 291) = 1.23$, p = .268, $\eta^2_p < .01$). Interestingly, we did found a significant interaction effect of outcome (loss vs. win) and the way this outcome was materialized (bought vs. skill), $F(1, 291) = 3.97$, p = .047, η^2_p = .01. Further examination revealed that players who had lost due to skill felt

relatively less satisfied (M = 3.89, SD = 1.75) than players who had lost due to a bought advantage (M = 4.05, SD = 1.79), while this pattern was reversed for players who had won due to skill, as they were relatively more satisfied (M = 6.10, SD = 1.09) than players who had won due to a bought advantage (M = 5.54, SD = 1.46).

Affect. Players who had won (M = 2.26, SD = 1.04) displayed more positive affect than players who had lost (M = 0.12, SD = 1.63), $F(1, 291) = 175.50$, $p < .001$, $\eta^2_p = .38$. We found no effect of the way the outcome was materialized (bought vs. skill), nor an interaction of that manipulation with game outcome, $F's(1, 291) \leq 1.52$, $p \geq .218$, $\eta^2_p < .01$.

Fairness. Players who had won (M = 5.81, SD = 1.61) perceived the outcome as fairer than players who had lost (M = 5.03, SD = 2.03), $F(1, 291) = 11.50$, $p = .001$, $\eta^2_p = .04$. Furthermore, players who had won or lost through a bought advantage (M = 4.98, SD = 2.09) perceived the outcome as relatively less fair than players who had won or lost through skill (M = 5.81, SD = 1.55), $F(1, 291) = 13.84$, $p < .001$, $\eta^2_p = .05$. However, we found no effect of that manipulation with game outcome, $F(1, 291) = 0.25$, $p = .616$, $\eta^2_p < .01$.

Pride and Achievement. Players who had won (M = 5.29, SD = 1.65) felt more proud about their achievements than players who had lost (M = 4.23, SD = 1.75), $F(1, 291) = 28.26$, $p < .001$, $\eta^2_p = .09$. We found no effect of the way the outcome was materialized (bought vs. skill), nor an interaction of that manipulation with game outcome, $F's(1, 291) \leq 0.25$, $p \geq .617$, $\eta^2_p < .01$.

Status, Skill, Enjoyment and Likelihood to Start Again. Finally, we also measured some other variables as well to gather more information about the effect of our manipulations on the experiences of players with the game. Subsequently, we conducted a two-way between-groups ANOVA on status, perceived skill, perceived enjoyment with the game in general and likelihood that players would start a new game right again.

For status, we measured how players thought that other players in that game would have assessed their status and that of their opponent. The results show that players who had won ($M = 3.81$, $SD = 1.67$) would be thought to have more status in the eyes of other players than players who had lost ($M = 3.22$, $SD = 1.67$), $F(1, 291) = 9.63$, $p = .002$, $\eta^2_p = .03$. Furthermore, players who had won ($M = 3.15$, $SD = 1.56$) also thought that other players in that game would think that their opponent had less status than players who had lost ($M = 4.32$, $SD = 1.71$), $F(1, 291) = 36.78$, $p < .001$, $\eta^2_p = .11$. In both cases, we found no effect of the way the outcome was materialized (bought vs. skill), nor an interaction of that manipulation with game outcome, *F's*$(1, 291) \leq 0.45$, $p \geq .504$, $\eta^2_p < .01$.

For perceived skill, we measured how players thought that other players in that game would have assessed their skill and that of their opponent. The results show that players who had won ($M = 4.05$, $SD = 1.67$) would be thought to have more skill in the eyes of other players than players who had lost ($M = 3.25$, $SD = 1.53$), $F(1, 291) = 17.85$, $p < .001$, $\eta^2_p = .06$. Furthermore, players who had won ($M = 3.15$, $SD = 1.56$) also thought that other players in that game would think that their opponent had less skill than players who had lost ($M = 4.32$, $SD = 1.71$), $F(1, 291) = 35.74$, $p < .001$, $\eta^2_p = .11$. In both cases, we found no effect of the way the outcome was materialized (bought vs. skill), nor an interaction of that manipulation with game outcome, *F's*$(1, 291) \leq 1.79$, $p \geq .182$, $\eta^2_p < .01$.

For perceived enjoyment with the game in general, we found no effects at all, meaning that the outcome of a particular game (loss vs. win) and the way the outcome was materialized (bought vs. skill) did not matter for players' perceived enjoyment with the game in general, nor there was an interaction between those manipulations, *F's*$(1, 291) \leq 3.54$, $p \geq .061$, $\eta^2_p \leq .01$.

For likelihood that players would start a new game right again, we found that players who had won ($M = 4.88$, $SD = 2.08$) were less likely to start a new game right again than

players who had lost (M = 5.36, SD = 1.86), $F(1, 291) = 4.64$, $p = .032$, $\eta^2_p = .02$. We found no effect of the way the outcome was materialized (bought vs. skill), nor an interaction of that manipulation with game outcome, $F's(1, 291) \leq 0.95$, $p \geq .332$, $\eta^2_p < .01$.

Discussion

Satisfaction. In Study 1a, after manipulating both the outcome of the imagined scenario (loss vs. win) and the way the outcome was materialized (regular ammo vs. gold ammo), we found no direct support for our hypotheses. Although we predicted that players who had won or lost due to a bought advantage would be less satisfied with the game than players who had won or lost due to skill, we only found that their satisfaction was influenced by the outcome of the game (loss vs. win) and thus, not by the way the outcome was materialized (bought vs. skill). Therefore, hypotheses 1a and 1b were not supported. Nevertheless, we did found a significant interaction between those manipulations. However, this revealed that players who had bought their advantage were relatively less satisfied when they had won but not when they had lost. Therefore, we also found no support for hypothesis 2; losses seemed not to influence the satisfaction of players more. A possible explanation for these results is further explored in Study 1b.

Fairness. Interestingly, we did found that the perceived fairness of players was influenced by the way the outcome was materialized (bought vs. skill). As a matter of fact, this was the only time when that manipulation reached significance. More specifically, we found that players who had bought their advantage perceived the outcome as relatively less fair than players who had won or lost through skill. If we link these findings to the previously stated psychological literature about fairness as explanation for the satisfaction of players, it seemed to be that players who had bought their advantage became less satisfied with their own in-game achievements and thus, not because players who didn't bought an advantage

resented other players who did bought their advantage. However, more research is needed to identify the exact explanation of these findings.

Pride and Achievement. Findings on pride and achievement (the other main psychological factor we discussed before), showed that this was not influenced by the way the outcome was materialized (bought vs. skill). Despite our predictions, it seemed that neither the ascribed pride and achievement of players was deemed lower for players who had bought their advantage nor did players who had bought their advantage attributed their achievements less to their own abilities and/or efforts themselves.

Noteworthy Other Findings. Noteworthy other findings were that perceived enjoyment with the game in general was not influenced by either of the manipulations at all, meaning that players still enjoyed the game just as much however the outcome of the game (loss vs. win) or the way the outcome was materialized (bought vs. skill). Thus, micro-transactions seemed neither detrimental nor beneficial for the perceived enjoyment with the game in general. Furthermore, with regard to likelihood to start a new game again, it was remarkable that players who had lost were even more likely to start a new game right again than players who had won. Although this finding could be interesting to explore in the future, it goes beyond the scope of this study.

Study 1b: On What Do Players Spend Their Money

In Study 1b, the optional second part of the survey, we explored whether participants had spent money on World of Tanks themselves and whatever motivated them to do so. This was done to gather a more in-depth understanding of the various reasons that players had to perform micro-transactions and to better understand the findings of Study 1a. Therefore, these questions were more directly related to micro-transactions. Originally, we did want to analyze the spending behavior of the winning vs. losing players and the satisfaction of players who

did not bought their advantage. However, because an overwhelming majority of players had spent money on World of Tanks, we were not able to do this.

Method

Participants. Initially, of the participants who participated in Study 1a, a total of one-hundred and sixty-eight participants entered Study 1b. However, after deleting all participants who did not complete the survey, we ended up with a total of one-hundred and sixty-one (157 males, *Mage* = 31.28, *SD* = 12.43) participants.

Procedure. First, we asked them whether they had ever bought something with real money in World of Tanks. If not, we asked them why they did not. If so, we asked them what they had bought, what they found the most important, why they had bought something, how satisfying this was and how much money they had spent in total. Finally, we asked them whether they had any questions, comments or suggestions about this survey. See Appendix C for a complete overview of all the questions we asked in the survey.

Results

Table 2

Means of Spending in Study 1b

Participants	*n*	Spending Average (US$)
Total	*160*	268.55
Spenders	*133*	328.70
Non-spenders	*27*	0

Spending in World of Tanks. As is shown in table 2, of the one-hundred and sixty participants that participated in this study, a total of one-hundred and thirty-three participants (83.13 percent) indicated that they had ever bought something in World of Tanks. Thus, the overwhelming majority of players had ever spent money on World of Tanks. Furthermore, including players that did not spent anything in World of Tanks, a total of one-hundred and fifty-two participants did spent 268.55 USD on average. This was without eight players who

did not provide their answer in numerical terms. For example, they stated that they did spend "Too much" or "A lot" but failed to mention how much this was.

Satisfaction of Spending. Around 66.7 % of the players who did spent money on World of Tanks were satisfied with their purchases, while only 20% of them were dissatisfied with their purchases. The rest of the players were undecided or didn't provide an answer.

Table 3

Type, Rank Order and Motivations of Spending Behavior in Study 1b

Type	*n*	Percentage	Rank of Importance	Class	Motivation(s)
Garage slots	122	91.7	3	Tanks	Game Experience, Ornamental
Accounts	116	87.2	1	Premium Account	All
Tanks	113	85	2	Tanks	Game Experience
Demounts	113	85	4	Tanks	Game Experience
Camouflage	92	69.2	7	Tanks	Ornamental
Crew training	87	65.4	5	Performance	Advantage
Barracks	84	63.2	8	Tanks	Game Experience
Experience	83	62.4	6	Tanks	Game Experience
Ammo	67	50.4	7	Performance	Advantage
Credits	42	31.6	10	Tanks	Game Experience
Consumables	35	26.3	9	Performance	Advantage
Clans	14	10.5	9	Tanks	Game Experience, Ornamental

Note. $N = 133$. Rank of importance is based on top three items players considered important. Motivation(s) of players were derived from the categorization of answers on the open-ended question why they had spent money on World of Tanks.

Motivations of Spending Behavior. Table 3 shows on what items players had spent their money. These items could be roughly classified into three classes, which shows that players had spent their money on (a) premium accounts (subscription that gives 50% more

credits and 50% more experience per battle, a clean garage, and the ability to start tank companies), (b) tank upgrades, and (c) better performance during battle.

Furthermore, a closer look to the individual motivations of players revealed that they were motivated to spent money on micro-transactions out of several main reasons. More specifically, their motivations consisted out of (a) enhancing their in-game experience (making progress, skip boring content, accumulate or speed up income, extra content or options, more diversity, more storage), (b) getting an advantage during battle (get ahead of competition), or (c) ornamental reasons (personalization, looks, collecting). In addition to this, some players also indicated a few extra reasons that went beyond the items that they had bought. More specifically, some players (n = 11) indicated that they had spent money just to keep up with other players (e.g. parity, give in to pressure, feeling forced by the game, simply to keep up with their competition), while others indicated that they had spent money because they wanted to support the developers (n = 9).

Discussion

The main goal of Study 1b was to find a possible explanation for the most important results in Study 1a (i.e. player satisfaction was only influenced by game outcome and not by the way the outcome was materialized) and to shed some more light on the question on what and why players had spent real money in World of Tanks.

Disproportional Amount of Spending Players. An important finding was that an overwhelming majority of the players (83.13 percent) had spent money on World of Tanks, which might explain why the satisfaction of players was only influenced by the outcome of the game (loss vs. win) and not by the way the outcome was materialized (bought vs. skill). More specifically, if it is such a normal thing for players to spent real money on World of Tanks, it is thinkable that their satisfaction is not influenced by whether they (or other players) had bought their advantage or not. Nevertheless, this result was surprising, because

the developers of the game indicated that only 20-30 percent of their players spent money on World of Tanks. An explanation for this might be that we gathered our participants via online game communities (forums, Facebook, Twitter). Therefore, it might be that only the most active group of players participated in this study, which may not be that representative for the normal player population in World of Tanks. Thus, it is thinkable that the participants in this study (which mainly existed out of forum posters), represented only a small but passionately engaged subset of users.

Substantial Amount of Money Spent. Another important finding was that players had spent a substantial amount of money on average (268.55 USD). Even though these numbers might be colored by the type of users that mainly participated in this study as well (forum posters), they do indicate that players spent even more than they would have for 2.5 years of subscription (cheapest type is 96 USD each year). This is important, because MMO games reach their breakeven point when they can reach a large group of users and are also able to create longtime engagement among them (Bourcier, 2012). More specifically, players who had spent even less than what they would have spent if they had bought a subscription were compensated by those who did spent a lot more. This indicates that micro-transactions were lucrative as seen from a business perspective, but, in contrast with our predictions, were not detrimental for the satisfaction of players.

Player Motivations. A closer look to the individual motivations of players revealed that although 20-65% of the players spent money on getting a competitive advantage once in a while, it was not very important for them to do so. More specifically, this could explain why the satisfaction of players was not influenced by whether they (or other players) had bought an advantage or not: if it is not such an important thing for players to do so, it is thinkable that they will not be bothered by it as well.

If we consider the results of Study 1a and Study 1b altogether, we can conclude that we found no direct support for our hypothesis that micro-transactions could be detrimental for the satisfaction of players. The results show that the satisfaction of players was only influenced by the outcome of the game (loss vs. win), but not by the way this outcome was materialized (bought vs. skill). Because we had predicted that players who had won or lost due to a bought advantage would be less satisfied than players who had won or lost due to skill, hypotheses 1a and 1b were not confirmed. Furthermore, we also found no support for hypothesis 2; losses seemed not to influence the satisfaction of players more. Therefore, one may conclude that the use of micro-transactions is not detrimental for the satisfaction of players at all. Moreover, at the same time, considering the fact players had spent a substantial amount on average, they even seem to be beneficial for game developers. However, the results may be distorted because a lot of players seem to find it normal to spent real money in World of Tanks. Therefore, to further explore the results of Study 1, we tested our predictions in two other online games (Study 2 and Study 3).

Study 2: Wizard101

The goal of this study was to test our hypotheses in another online game and to explore whether the results of Study 1 could be distorted due to the fact that a disproportional amount of participants had spent real money on that game. Therefore, just like in Study 1, we chose to test our assumptions in another free-to-play, social competitive MMO game namely Wizard101.

Wizard101 is set in the magical fantasy game world of ‘The Spiral’, in which players take on the role of students of Wizardry to eventually save the Spiral. It features a combination of questing, card based combat, mini-games and a diverse selection of worlds to explore. More specifically, players set off on several quests to save Wizard City from evil forces and to collect magic cards to duel their enemies. Because of this card based combat

system, the emphasis is on strategy over speed. Furthermore, Wizard101 is immensely popular, with over 25 million registered players based off of the US launch alone (Gaudiosi, 2012). Although the game is suitable for players of all ages, it is primarily directed at kids and teenagers. Nevertheless, it is still advised that players are at least 10 years of age or older.

The in-game economy of Wizard101 is built around Gold, Crowns and Arena tickets. The first and main type of currency is Gold. Gold is used to buy items and treasure cards from shops or vendors. Gold is usually attained by completing quests, selling equipment to in-game shops, defeating monsters, playing mini-games (successfully), or finding treasure chests. The second type of currency is called Crowns. Crowns are purchased with real money through the Wizard101.com website and spent in the game. Crowns are the currency in the Wizard101 micro-transaction or 'cash shop' system. They are used to purchase items such as weapons, treasure cards and clothing in-game and can also be used by non-members to purchase access to premium zones. Next to this, players can also pay for several subscription types to get access to extra game content. The third type of currency is called Arena Tickets. Arena Tickets are earned by participating in Ranked Player vs. Player combat and Ranked Derby, which can only be spent at certain shopkeepers (KingsIsle Entertainment, 2008).

In sum, the in-game economy of Wizard101 is built around three types of currencies: Gold, Crowns and Arena tickets. Micro-transactions come into play with Crowns, which are used to buy several functional advantages and game zones with real money. On top of this, players can also buy certain subscriptions to get full access to the game, which is limited for players who only make use of the free-to-play content. Thus, in contrast with World of Tanks (Study 1), the free-to-play content is only a limited part of the full game.

Again, just like in Study 1, we have focused on the possible consequences for the satisfaction of players when an option exists for players to buy a competitive advantage

(functional benefit). This time, the competitive advantage was not built around more powerful ammo (as in Study 1), but around bought Crown items instead.

While most Crown items that are purchased through real money by micro-transactions can either be purchased for gold or drop from creatures as well, there are some Crown items that are exclusively available for Crowns. In other words, although it is often about spending Crowns vs. spending time, there are some situations in which players can acquire a direct advantage with real money. Thus, buying items with Crowns (and thus, real money) can give players either a direct or indirect competitive advantage: players can acquire an indirect competitive advantage if they buy Crowns to acquire things faster (e.g. acquire a certain powerful wand much sooner) or they could acquire a direct competitive when they buy Crown items that could not be acquired by non-spending players (especially when these items are better). As a result, we hypothesized that the opportunity that (other) players acquired their advantage with bought items (i.e. Crown items) through micro-transactions could also lower players' satisfaction with the game. Just like in Study 1, we conducted two studies (Study 2a and Study 2b) to do this. For Study 2a, we used a scenario study in which we manipulated the way a loss outcome was materialized. In Study 2b, we explored whether participants had spent money on Wizard101 and whatever motivated them to do so.

Study 2a: Scenario Study

In Study 2a, we conducted a scenario study in which we examined the satisfaction of players when they imagined losing from someone who had bought their advantage (i.e. a player that used Crown items) or by someone who had earned their advantage by investing time and effort and thus, only used their skill instead (i.e. a player that used regular items). This setting is important, because it can differentiate between the satisfaction of players when they imagined losing from someone who bought a competitive advantage as compared to when they imagined losing from someone who only used their skill instead. Doing this, we

tried to shed some more light on the possible consequences for the satisfaction of players when micro-transactions can take place.

Method

Participants and design. We gathered our participants by distributing an online survey about Wizard101 on Twitter, Facebook and various game forums about Wizard101. The forums and Facebook pages we have used for this study can be found in Appendix D. It was communicated that the survey was on behalf of Tilburg University and that it is done to better comprehend the appeal of Wizard101, MMO games in general and the experiences of its users. The survey consisted out of two parts (Study 2a and Study 2b), from which the second part was optional. This was done to make sure that we would gather enough participants for Study 2a (which contained the most important questions). All participants participated voluntarily in this between-subjects study. Initially, a total of eighty-seven participants entered Study 2a. However, after deleting all participants who did not complete the survey, we ended up with a total of forty-nine (30 males, $Mage = 25.55$, $SD = 15.82$) participants. They were randomly assigned to a 2 factor between-subjects design: a powerful item that another player owned was earned through gameplay (Skill condition) or bought using micro-transactions (Bought condition). In contrast with Study 1, we did not manipulate game outcome (loss vs. win), participants only read a scenario in which they imagined losing a battle to another player. Although we originally intended to do add conditions in which the participant would have won, we didn't gather enough participants for this.

Procedure. Study 2a consisted out of a scenario participants were asked to imagine, subsequent questions related to this and questions about the game in general. It consisted out of three question blocks with a total of twenty-one questions. Participants were randomly assigned to either one of two loss scenarios, which differed in the way their outcome was materialized (bought vs. skill condition). In the skill condition, players read that they had lost

due to regular items, whereas in the bought condition, players read that they had lost due to Crown items (that can only be bought with real money). Thus, players had lost due to a bought advantage in the Crown items condition, whereas this was not the case in the regular items condition, in which players had to rely more on their tactics and skill. More specifically, the following loss scenarios were used:

> Imagine yourself that you are participating in a 2vs2 duel. After a fierce battle, you are the only one left of your team. Because this is also the case in your opponent's team, you and your opponent are the only two Wizards left in the battle arena. The enemy Wizard is low on health but so are you. However, you don't know how good the spell deck of the enemy Wizard is. The only thing that you do know is that your opponent is using *regular/Crown* items to battle you. Unfortunately, your opponent defeats you! Your team lost!

After participants had read the scenario, they answered some questions about the game they had just imagined. From here, the procedure paralleled that of Study 1 (see Appendix E for a complete overview of the questions).

Results

Table 4 contains the means for the two loss conditions on the various dependent variables. As is shown in table 4, all one-way between-subjects analyses of variance (ANOVAs) showed no effect of the way the outcome was materialized (bought vs. skill), except for fairness. More specifically, players who had lost through a bought advantage perceived the outcome as relatively less fair than players who had lost through skill.

For the other dependent variables it means that players who had lost due to a bought advantage were relatively equally satisfied as compared to players who had lost due to skill, displayed relatively the same affect as players who had lost due to skill, displayed relatively the same pride as players who had lost due to skill, would be thought to have relatively the same status in the eyes of other players as compared to players who had lost due to skill, thought that other players in that game would think that their opponent had relatively the same status as compared to players who had lost due to skill, would be thought to have relatively the same skill in the eyes of other players as compared to players who had lost due to skill,

thought that other players in that game would think that their opponent had relatively the same skill as compared to players who had lost due to skill, enjoyed the game in general just as much as compared to players who had lost due to skill, and were relatively just as inclined to start a new game right again than players who had lost due to skill.

Table 4

Means for the Two Loss Scenarios on the Various Dependent Variables in Study 2a

	Advantage Other was				Statistics		
	Bought (n = 25)		Skill (n = 24)				
Dependent variables	*M*	*SD*	*M*	*SD*	$F(1,47)$	p	η^2_p
Satisfaction	4.82	(1.79)	5.43	(1.75)	1.93	.171	.04
Affect	0.60	(1.61)	0.91	(1.67)	0.66	.422	.01
Fairness	4.18	(2.01)	5.36	(1.39)	5.67	.021	.11
Pride	5.04	(1.63)	4.81	(1.90)	0.21	.648	< .01
Status By Others							
Themselves	4.12	(1.95)	3.86	(1.69)	0.25	.619	< .01
Opponent	5.08	(1.41)	5.35	(1.45)	0.41	.525	< .01
Skill By Others							
Themselves	4.40	(2.02)	3.94	(1.83)	0.69	.410	.01
Opponent	5.17	(1.65)	5.51	(1.51)	0.57	.455	.01
Perceived Enjoyment							
Scale 1	6.28	(1.37)	6.04	(1.37)	0.37	.546	.01
Scale 2	6.31	(1.19)	5.96	(1.62)	0.76	.389	.02
Start Again	5.32	(1.62)	5.35	(1.60)	< 0.01	.941	< .01

Note. N = 49. All variables are on 7-point scales, from 1 = not at all to 7 = very much so, except for Affect, this variable was on a 7-point scale from -3 = very negative to 3 = very positive.

Discussion

In Study 2a, after manipulating the way the outcome was materialized (bought vs. skill), we found no support for our hypothesis yet again. Although we predicted that players who had lost due to a bought advantage would be less satisfied with the game than players who had lost due to skill, we only found that perceived fairness (and thus, not satisfaction) was influenced by the way the outcome was materialized (bought vs. skill). Furthermore, perceived enjoyment with the game in general and likelihood to start a new game right again were not influenced at all, meaning that players still enjoyed the game just as much and were

just as likely to start a new game right again however the way the outcome was materialized (bought vs. skill). Therefore, we found no real support for hypothesis 1b. However, due to a limited sample size, this result must be interpreted cautiously. Other explanations are further explored in Study 2b.

Study 2b: On What Do Players Spend Their Money

In Study 2b, the optional second part of the survey, we explored whether participants themselves had spent money on Wizard101 and whatever motivated them to do so. This was done to gather a more in-depth understanding of the various reasons that players had to perform micro-transactions and to better understand the findings of Study 2a. Therefore, these questions were more directly related to micro-transactions. Originally, we did want to analyze the satisfaction of the spending players vs. non-spending players. However, because an overwhelming majority of players had spent money on Wizard101, we were not able to do this.

Method

Participants. Initially, of the participants who participated in Study 2a, a total of twenty-nine participants entered Study 2b. However, after deleting all participants who did not complete the survey or had indicated an implausible amount of money (e.g. $50.000 by a 13 year old), we ended up with a total of twenty-seven (16 males, *Mage* = 30.48, *SD* = 16.48) participants.

Procedure. First, we asked them whether they had ever bought something with real money in Wizard101. If not, we asked them why they did not. If so, we asked them what they had bought, what they found the most important, why they had bought something, how satisfying this was and how much money they had spent in total. Finally, we asked them whether they had any questions, comments or suggestions about this survey. See appendix F for a complete overview of all the questions we asked in the survey.

Results

Spending in Wizard101. As is shown in table 5, of the twenty-seven participants that participated in this study, a total of twenty-four participants (88.9 percent) indicated that they had ever bought something in Wizard101. Thus, just like in Study 1, the overwhelming majority of players had ever spent money on Wizard101. Furthermore, including players that didn't spent any real money on Wizard101, they had spent 370.52 USD on average.

Table 5

Means of Spending in Study 2b

Participants	*n*	Spending Average (US$)
Total	*27*	370.52
Spenders	*24*	416.83
Non-spenders	*3*	0

Satisfaction of Spending. Around 50% of the players who did spent money on World of Tanks were satisfied with their purchases, 14.3% of them were not satisfied and the rest of them were undecided or didn't provide an answer at all.

Motivations of Spending Behavior. Table 6 shows on what items players had spent their money. These items could be roughly classified into three main classes, which show that players spent their money on (a) items that enhance their game experience, (b) items that are fun/ornamental and (c) items that improved their performance during battle. Gold was the only type of item that could not be classified, because with gold, players could decide for themselves on what things they spend their money. Table 6 also shows the main motivations of players to spend money on Wizard101. A closer look to their individual motivations revealed almost the same motivations as there were classes. Roughly, they had spent their money to (a) enhance their game experience (e.g. mounts for increased movement speed, henchman to play difficult parts solo), (b) gain an advantage during battle (e.g. better cloths, weapons, pets and cards/spells, temporary boosts due to elixirs, etc.), or (c) for ornamental reasons (e.g. different looks, to buy/decorate their house, grow plants in their garden).

Table 6

Type, Rank Order, Class and Motivations of Spending Behavior in Study 2b

Type	*n*	Percentage	Rank of Importance	Class	Motivation(s)
Mounts	20	83.3	3	Game Experience	Game Experience, Ornamental
Clothing	16	66.7	1	Performance	Performance, Ornamental
Weapons	15	62.5	2	Performance	Performance, Ornamental
Cards	14	58.3	5	Performance	Performance
Housing	14	58.3	8	Ornamental	Ornamental
Henchman	14	58.3	4	Game Experience	Game Experience
Pets	13	54.2	6	Performance	Performance
Gardening	10	41.7	7	Ornamental	Ornamental
Elixirs	8	33.3	8	Performance	Performance
Transformations	6	25.0	9	Ornamental	Ornamental
Gold	4	16.7	8	All	All

Note. $N = 24$. Rank of importance is based on top three items players considered important. Motivation(s) of players were derived from the categorization of answers on the open-ended question why they had spent money on Wizard101.

Discussion

The main goal of Study 2b was to find a possible explanation for the most important findings in Study 2a (i.e. the satisfaction of players was not influenced by the way the loss outcome was materialized) and to shed some more light on the question on what and why players had spent real money in Wizard101. The results closely resembled the results of Study 1, meaning that an overwhelming majority of the participants had spent real money on the game (88.9%). Furthermore, again we found that participants had spent a substantial amount of real money on micro-transactions on average (370.52 USD), which indicates that they had

spent even more than they would have for 4.6 years of subscription in this game (cheapest type is 79.95 USD each year). These findings might explain why the satisfaction of players was not influenced by the by the way the outcome was materialized (bought vs. skill). Like we reasoned in Study 1, it is quite thinkable that the satisfaction of players is not influenced by whether they (or other players) had bought their advantage or not if it is such a normal thing for them to spent real money on a game.

Next to this, most players indicated that they were satisfied with their purchases (50%). Furthermore, the exploration of their spending motivations revealed that game experience and performance enhancing items were considered the most important. This was in contrast with Study 1, in which performance enhancing items were not considered as important. Still, it did not influence the satisfaction of players. Therefore, we were not able to reveal any new explanations for the insignificant results in Study 1 and Study 2a.

Finally, several limitations of this study could be identified. Like mentioned before, the results could be distorted because a disproportional amount of participants had spent real money on Wizard101. Second, due to a limited sample size, the power of this study was rather low. Therefore, we must consider the fact that we didn't found any more significant effects as result of having such low power. In other words, we might found some false negatives instead of some true negatives in this study. Third, because of this limited sample size, we were also not able to manipulate game outcome (loss vs. win). As a result, we were not able to test hypotheses 1a and 2.

If we consider the results of Study 2a and Study 2b altogether, we can conclude that we found no real support for the hypothesis that micro-transactions could be detrimental for the satisfaction of players. Yet again, just like in Study 1, the results show that the satisfaction of players was not influenced by the way a loss outcome was materialized (bought vs. skill). Because we had predicted that players who had lost due to a bought advantage would be less

satisfied than players who had lost due to skill, hypothesis 1b was not confirmed. Again, one may conclude that micro-transactions are not detrimental for the satisfaction of players. However, we identified two reasons for why this conclusion must be interpreted cautiously. First of all, just like in Study 1, the results could be distorted because a disproportional amount of participants had spent real money on Wizard101. Second, due to a limited sample size, the power of this study was rather low. Therefore, to further explore the results of Study 1 and Study 2, we tested our predictions in a third online game.

Study 3: Runes of Magic

For Study 3, we used a different subtype of online game, namely a multiplayer massively online roleplaying game (MMORPG). MMORPGs take place in large persistent virtual worlds in which players interact with each other and with their virtual environment, usually by controlling a virtual character (avatar) and his/her actions (Suznjevic, Dobrijevic, & Matijasevic, 2008). In line with this, Zackariasson, Wa□hlin, and Wilson (2010) note that four things characterize MMORPGs in relation to other video games: having a persistent online virtual world, massive participation, focus on the gamer's digital avatar, and a nearly carte blanche ability to select individual activities (Zackariasson, Wa□hlin, & Wilson, 2010). In these worlds, player behavior is often defined by actions like trading, questing, dungeon crawling, raiding, player versus player (PvP) combat, and communication (voice and text) within a session (Suznjevic, Dobrijevic, & Matijasevic, 2009). Usually, players perform these actions to level up their virtual character, become stronger and/or make progress in the game. Furthermore, MMORPG players belong to the most fanatic group of players. For example, on average, they typically spend more than twenty hours per week in those virtual environments (Yee, 2006). Therefore, we expect that the effect of micro-transactions will be quite visible among players who play these kinds of games.

The MMORPG we used for this study was Runes of Magic (RoM), which is free-to-play. It has over five million users worldwide and can be played from thirteen years of age or older. At the beginning of this game, you pick a character from three races (Human, Elf or Dwarf) and ten classes (e.g. Warrior, Scout, etc.), which looks you can customize to your own preference. After this, your character starts at a low level but develops further as you make progress in the game when you gather experience and equipment doing quests, defeating enemies and battling other players. In order to keep the game interesting, the developers try to provide new content regularly (e.g. skills, areas, enemies, level caps, items, etc.).

RoM is free-to-play which means that players don't have to pay for monthly subscriptions or whatsoever. The service is funded by real money transactions (RMT) from the Runes of Magic Item Shop. The in-game economy of RoM is built around Gold, Diamonds, Rubies and Tokens. The first and main type of currency in RoM is Gold, which is owned by a character and can only be gained in game and spent in game. It is used for most trade between players and the game and other players. The second type of currency is Diamonds, which are purchased outside of the game with real money through micro-transactions. They allow players to buy some very useful or exotic items that can only be bought with Diamonds in the Item Shop. Although they are occasionally sold and bought in game from one player to another, it is particularly expensive to do so. The third type of currency is Rubies, which are somewhat similar to Diamonds, except that they cannot be bought and can only be used to buy items from the Ruby Shop section of the Item Shop. Players can acquire rubies from buying items from the item shop. Therefore, Rubies can be thought of as fidelity coupons for those who regularly spend money. Finally, players can get Tokens, which are acquired from doing Daily Quests. They can be used to buy items from certain NPC's (non-player characters) in game or from the Token Shop section of the Item Shop or to enter certain minigames (Andrux51, 2013).

In sum, the in-game economy of Runes of Magic is built around four types of currencies: Gold, Diamonds, Rubies and Tokens. Micro-transactions only come into play with Diamonds and Rubies, which are used to buy several very useful and exotic items. Thus, just like in World of Tanks (Study 1) and Wizard101 (Study 2), players have the option to buy items with micro-transactions.

Tony Tang (one of the two founders of RoM) stated that they have over five million users from which the proportion of paying players is around 11-12%. Importantly, he also stated that as long as they have enough paying players they won't have to try and squeeze what they can out of their other players (Horst, 2011). The result of this is that although the game never forces players to buy anything, they are often exposed and seduced to do so. Another important aspect of the interview with Tony Tang is that he also claims that they will not sell anything that would give players a direct influence on the power of the player (Horst, 2011). Nevertheless, there seems to be some disagreement about this statement in its community (Barbeau-Roberge, 2012). Thus, the developers of the game claim that they will never force players into buying anything and that it is not possible for players to buy themselves a direct competitive advantage. However, players do get stimulated to spent money on the game in order to keep the company healthy. Furthermore, in contrast with what the game developers claim, their player community does tell that players can buy themselves a direct competitive advantage.

In RoM, just like in most other MMORPGs, there is the option to battle with other players (player versus player aka PvP) next to fighting monsters and other creeps (player versus environment aka PvE). The reason why micro-transactions in this game might have a pronounced effect is situated in its PvP system. In RoM, advanced players can engage into PvP battles. Winning in PvP dueling has certain advantages, as the winner earns 'Honor Points', which is a type of currency for player ranking and the acquirement of special

PvP/Honor Gear. More importantly, the winning player also runs the chance to gain some items from the losing player if this player has a substantial reputation (+30 or -30). Therefore, this game is perfectly suitable to test our hypotheses about micro-transactions and the satisfaction of players when they (or others) have the option to buy a competitive advantage.

In this study, the competitive advantage was not built around gold ammo (Study 1) or Crown items (Study 2), but around bought Diamond items instead. Again, we hypothesized that the opportunity that (other) players acquired their advantage buying a competitive advantage (Diamond items) through micro-transactions could also lower players' satisfaction with the game. To measure this properly, we conducted two studies (Study 3a and Study 3b). For Study 3a, we used a scenario study in which we manipulated the way a loss outcome was materialized. In Study 3b, we explored whether participants had spent money on Runes of Magic and whatever motivated them to do so.

Study 3a: Scenario Study

In Study 3a, we conducted a scenario study in which we examined the satisfaction of players when they imagined losing from someone who had bought their advantage (e.g. a player that used Diamond items) or by someone who had earned their advantage by investing time and effort and thus, only used their skill instead (e.g. a player that used regular items). This setting is important, because it can differentiate between the satisfaction of players when they imagined losing from someone who bought a competitive advantage as compared to when they imagined losing from someone who only used their skill instead. Doing this, we tried to shed some more light on the possible consequences for the satisfaction of players when micro-transactions can take place.

Method

Participants and design. We gathered our participants by distributing an online survey about Runes of Magic on Twitter and various game forums about Runes of Magic. The

forums we have used for this study can be found in Appendix G. It was communicated that the survey was on behalf of Tilburg University and that it is done to better comprehend the appeal of Runes of Magic, MMO games in general and the experiences of its users. The survey consisted out of two parts (Study 3a and Study 3b), from which the second part was optional. This was done to make sure that we would gather enough participants for Study 3a (which contained the most important questions). All participants participated voluntarily in this between-subjects study. Initially, a total of one hundred and forty-one participants entered Study 3a. However, after deleting all participants who did not complete the survey, we ended up with a total of forty-seven (39 males, $Mage = 27.83$, $SD = 9.65$) participants. They were randomly assigned to a 2 factor between-subjects design: a powerful item that another player owned was earned through gameplay (Skill condition) or bought using micro-transactions (Bought condition). In contrast with Study 1 and just like in Study 2, we did not manipulate game outcome (loss vs. win), participants only read a scenario in which they imagined losing a battle to another player. Although we originally intended to do add conditions in which the participant would have won, we didn't gather enough participants for this.

Procedure. Study 3a consisted out of a scenario participants were asked to imagine, subsequent questions related to this and questions about the game in general. It consisted out of three question blocks with a total of twenty-one questions. Participants were randomly assigned to either one of two loss scenarios, which differed in the way their outcome was materialized (bought vs. skill condition). In the skill condition, players read that they had lost due to regular items, whereas in the bought condition, players read that they had lost due to Diamond items (that can only be bought with real money). Thus, players had lost due to a bought advantage in the Diamond items condition, whereas this was not the case in the regular items condition, in which players had to rely more on their tactics and skill. More specifically, the following loss scenarios were used:

Imagine yourself that you are a level 55+ character who is playing on a PvP server. Playing on this server, you wind up in a PvP battle with another player. Importantly, because you have a high reputation (high or low), you might drop some gear. Furthermore, you don't know much about your opponent. However, you do know that your opponent is using items that *are/are not* bought with Diamonds (real money). Unfortunately, your opponent is able to defeat you! You lose!

After participants had read the scenario, they answered some questions about the game they had just imagined. From here, the procedure parallels that of Study 1 and Study 2 (see Appendix H for a complete overview of the questions).

Results

Table 7 contains the means for the two loss conditions on the various dependent variables.

Table 7

Means for the Two Loss Scenarios on the Various Dependent Variables in Study 3a

	Advantage Other was				Statistics		
	Bought (n = 24)		Skill (n = 23)				
Dependent variables	*M*	*SD*	*M*	*SD*	$F(1,47)$	p	η^2_p
Satisfaction	3.17	(1.87)	3.54	(1.74)	0.50	.483	.01
Affect	-0.80	(1.75)	0.15	(1.96)	3.07	.087	.06
Fairness	3.78	(2.21)	3.92	(2.21)	0.05	.831	< .01
Pride	4.05	(2.02)	4.31	(2.04)	0.19	.664	< .01
Status By Others							
Themselves	2.98	(1.89)	3.51	(1.97)	0.90	.349	.02
Opponent	4.07	(1.70)	3.64	(1.74)	0.73	.399	.02
Skill By Others							
Themselves	3.68	(2.00)	3.57	(2.09)	0.03	.866	< .01
Opponent	3.87	(1.73)	3.81	(2.16)	0.01	.920	< .01
Perceived Enjoyment							
Scale 1	4.63	(1.90)	4.33	(1.71)	0.32	.576	< .01
Scale 2	4.92	(1.60)	4.45	(1.66)	1.03	.317	.02
Start Again	3.90	(2.33)	3.14	(1.60)	1.69	.200	.04

Note. N = 47. All variables are on 7-point scales, from 1 = not at all to 7 = very much so, except for Affect, this variable was on a 7-point scale from -3 = very negative to 3 = very positive.

As is shown in table 7, all one-way between-subjects analyses of variance (ANOVAs) showed no effect of the way the outcome was materialized (bought vs. skill), which means that players who had lost due to a bought advantage were relatively equally satisfied as

compared to players who had lost due to skill, displayed relatively the same affect as players who had lost due to skill, perceived the outcome as relatively equally fair than players who had lost through skill, displayed relatively the same pride as players who had lost due to skill, would be thought to have relatively the same status in the eyes of other players as compared to players who had lost due to skill, thought that other players in that game would think that their opponent had relatively the same status as compared to players who had lost due to skill, would be thought to have relatively the same skill in the eyes of other players as compared to players who had lost due to skill, thought that other players in that game would think that their opponent had relatively the same skill as compared to players who had lost due to skill, enjoyed the game in general just as much as compared to players who had lost due to skill, and were relatively just as inclined to start a new game right again than players who had lost due to skill.

Discussion

In Study 3a, after manipulating the way the outcome was materialized (bought vs. skill), we found no support for our hypotheses yet again (just like in Study 1 and Study 2). Although we predicted that players who had lost due to a bought advantage would be less satisfied with the game than players who had lost due to skill, we didn't found any support for this. Furthermore, perceived enjoyment with the game in general and likelihood to start a new game right again were not influenced at all, meaning that players still enjoyed the game just as much and were just as likely to start a new game right again however the loss outcome was materialized (bought vs. skill). Thus, micro-transactions seemed not detrimental for the satisfaction of players. Therefore, we found no support for hypothesis 1b. However, due to a limited sample size, this result must be interpreted cautiously. Other explanations are further explored in Study 3b.

Study 3b: On What Do Players Spend Their Money

In Study 3b, the optional second part of the survey, we explored whether participants themselves had spent money on Runes of Magic and whatever motivated them to do so. This was done to gather a more in-depth understanding of the various reasons that players had to perform micro-transactions and to better understand the findings of Study 3a. Therefore, these questions were more directly related to micro-transactions. Originally, we did want to analyze the satisfaction of the spending players vs. non-spending players. However, because an overwhelming majority of players had spent money on Runes of Magic, we were not able to do this.

Method

Participants. Initially, of the participants who participated in Study 3a, a total of thirty-three participants entered Study 3b. However, after deleting all participants who did not complete the survey or indicated that they had never bought something but still indicated that they had spent money, we ended up with a total of twenty-eight (25 males, *Mage* = 31.18, *SD* = 9.25) participants.

Procedure. First, we asked them whether they had ever bought something with real money in Runes of Magic. If not, we asked them why they did not. If so, we asked them what they had bought, what they found the most important, why they had bought something, how satisfying this was and how much money they had spent in total. Finally, we asked them whether they had any questions, comments or suggestions about this survey. See appendix I for a complete overview of all the questions we asked in the survey.

Results

Spending in Runes of Magic. As is shown in table 8, of the thirty participants that participated in this study, a total of eighteen (64.3 percent) indicated that they had ever bought something in Runes of Magic. Thus, just like in Study 1 and Study 2, the majority of players

had spent real money on Runes of Magic. Furthermore, including players that didn't spent anything, they had spent 221.07 USD on average.

Table 8

Means of Spending in Study 3b

Participants	*n*	Spending Average (US$)
Total	28	221.07
Spenders	18	364.12
Non-spenders	10	0

Satisfaction of Spending. Only 16.7 % of the players who did spent money on Runes of Magic were satisfied with their purchases, while as much as 66.7% of them were dissatisfied. The rest of the players were undecided or didn't provide an answer.

Table 9

Type, Rank Order, Class and Motivations of Spending Behavior in Study 3b

Type	*n*	Percentage	Rank of Importance	Class	Motivation(s)
Special Offers	17	94.4	2	All	All, Save Money
Mounts	17	94.4	3	Game Experience	Game Experience, Ornamental
Upgrading	15	83.3	1	Performance	Performance
Costumes	12	66.7	5	Ornamental	Ornamental
Consumables	10	55.6	5	Performance	Performance
Packages	10	55.6	4	All	All
Housing	10	55.6	4	All	All
Crafting	4	22.2	6	Performance	Performance
Encyclopedias	2	11.1	6	Performance	Performance

Note. $N = 18$. Rank of importance is based on top three items players considered important. Motivation(s) of players were derived from the categorization of answers on the open-ended question why they had spent money on Runes of Magic.

Motivations of Spending Behavior. Table 9 shows on what items players had spent their money. These items could be roughly classified into three main classes, which shows that players could spent their money on (a) items that enhance their game experience, (b) items that are fun/ornamental and (c) items that improve their performance during battle. Special offers, Packages and Housing could not be classified; the first two because the content of them changes, the latter because it can be used for all purposes.

Table 9 also shows the main motivations of players to spend money on Runes of Magic. A closer look to their individual motivations revealed almost the same motivations as there were classes. Roughly, they had spent their money to (a) enhance their game experience (e.g. mounts for increased movement speed, to play endgame content, skip boring content), (b) gain an advantage during battle (e.g. better gear, runes, jewelry, etc. to keep up with other players or endgame content), or (c) for ornamental reasons (e.g. different looks, to extend/decorate their house). Furthermore, they had also spent money on special offers to save real money.

Discussion

The main goal of Study 3b was to find a possible explanation for the main result in Study 3a (i.e. the satisfaction of players was not influenced by the way the loss outcome was materialized) and to shed some more light on the question on what and why players had spent real money in Runes of Magic. Again, just like in Study 1 and Study 2, the most important finding was that a majority of the players (64.3 percent) had spent money on Runes of Magic, which might explain why the satisfaction of players was not influenced by the way the outcome was materialized (bought vs. skill). In Study 1 and Study 2 we reasoned that if it is such a normal thing for players to spent real money it is thinkable that their satisfaction is not influenced by whether they (or other players) had bought their advantage or not. Again, it might be the case that the participants in this study (which mainly existed out of forum

posters), represented only a small but passionately engaged subset of users. Furthermore, yet again, players had spent a substantial amount of money on average (221.07 USD). However, these numbers could be colored by the subset of users as well.

Interestingly, in contrast with Study 1 and Study 2, most players claimed to be dissatisfied with their purchases (66.7%). Nevertheless, we still found no significant difference between the satisfaction of players who bought their advantage and those who did not. Furthermore, an exploration of their spending motivations revealed that, just like in Study 2, game experience and performance enhancing items were considered the most important. Thus, this finding is in contrast with Study 1, in which performance enhancing items were not considered important. Still, it did not influence the satisfaction of players. Therefore, we were not able to reveal any new explanations for the insignificant results across our studies.

Finally, several limitations could be identified. Like mentioned before, the results of this study could be distorted because a disproportional amount of participants had spent real money on Runes of Magic. Second, due to a limited sample size, the power of this study was rather low. Therefore, we must consider the fact that we didn't found any more significant effects as result of having such low power. Third, because of this limited sample size, we were also not able to manipulate game outcome (loss vs. win). As a result, we were not able to test hypotheses 1a and 2.

If we consider the results of Study 3a and Study 3b altogether, we must conclude that we found no support for the hypothesis that micro-transactions could be detrimental for the satisfaction of players in this study. Again, the results show that the satisfaction of players was not influenced by the by the way the outcome was materialized (bought vs. skill). Because we had predicted that players who had lost due to a bought advantage would be less satisfied than players who had lost due to skill, hypothesis 1b was not confirmed. As a result, one might jump to the conclusion that micro-transactions are not detrimental for the

satisfaction of players. However, again, we identified two reasons why this conclusion must be interpreted cautiously. First of all, the results could be distorted because a disproportional amount of participants had spent real money on Runes of Magic. Second, due to a limited sample size, the power of this study was rather low. Therefore, in the next section, we will discuss the results across our three studies more extensively. Furthermore, we will provide some alternative explanations and practical implications as well.

General Discussion

In three studies, we examined whether the satisfaction of players could also be negatively influenced when micro-transactions can take place. More specifically, we examined whether the satisfaction of players could also be negatively influenced when (other) players had bought a competitive advantage through micro-transactions. We predicted that players would be less satisfied when they had won or lost through a bought advantage than when they had won or lost though investing time and effort, and thus only skill instead (hypotheses 1a and 1b). Furthermore, we also predicted that the effects due to micro-transactions would be more pronounced for players who had lost than for players who had won (hypothesis 2).

We tested our assumptions in three studies around social competitive (online) games. In Study 1 (World of Tanks), we manipulated both the outcome of the game (loss vs. win) and the way the outcome was materialized (bought vs. skill) through a scenario players had to imagine. In contrast with our predictions, we only found that game outcome (loss vs. win) influenced the satisfaction of players, and thus, not whether they (or other players) had bought an advantage through micro-transactions or not (bought vs. skill). In Study 2 (Wizard101) and Study 3 (Runes of Magic) we further explored these results by only manipulating the way a loss outcome was materialized (bought vs. skill). Again, we found no influence on the satisfaction of players on the way the outcome was materialized (bought vs. skill). Therefore,

across all studies, hypotheses 1a and 1b were not supported. Furthermore, we also found no support for hypothesis 2, meaning that the effects due to micro-transactions were not more pronounced for players who had lost; players didn't display a negativity bias or whatsoever.

In addition to these findings, we also explored a bunch of other variables to gather a more in-depth understanding for the current results. This revealed that the way how the outcome was materialized (bought vs. skill) did not influenced players' affect, pride, perceived status, perceived skill, perceived enjoyment and likelihood to start again. However, it did influence players' perceived fairness of the game. Importantly, further exploration of this finding revealed medium to large correlations between fairness and satisfaction across our studies (Study 1 = .422, Study 2 = .659, Study 3 = .607). Although these correlations were slightly less than we expected beforehand, they still indicate that fairness was related to player satisfaction. This finding is important, because we predicted that fairness would be a major component of player satisfaction. However, despite this relationship, we only found that perceived fairness was influenced by the way the outcome was materialized (bought vs. skill) but not satisfaction. In other words, despite our predictions, perceptions of (un)fairness did not seem to influence the satisfaction of players much. Nevertheless, this finding might still add some valuable insights into the influence of micro-transactions on the satisfaction of players in online games. Future research could explore this relationship further.

Now that we established that micro-transactions did not seem to influence the satisfaction of players much, the question remains what might account for these findings. Therefore, in the next sections, we provide a few explanations for the non-significant results across our studies.

Disproportional Amount of Players Spent Money

First of all, the results could be distorted because an overwhelming majority of players across all our studies had spent money on micro-transactions (65-90%). Like mentioned

before, an explanation for this might be that participants mainly existed out of forum posters, possibly a small but passionately engaged group of users. This could explain why we found no influence on the satisfaction of players across our studies and why they were spending a lot of money on average (220-370 USD). More specifically, if it is such a normal thing for them to spent real money on micro-transactions, it is quite thinkable that they won't be bothered or influenced by it. Thus, although the results seem to show that micro-transactions are not detrimental for the satisfaction of players and that they are even profitable for game developers as well, they still must be interpreted cautiously. Future research could point out whether these results still stand if a more equal mix of spending vs. non-spending players is gathered. This is important, because in those games, the amount of spending players is usually only around 20-30%.

Dissimilarity Between Statements and Behavior

Another explanation that has to do with this is that player statements were not always in line with their actual in-game behavior. Although we did found that most players claimed to be satisfied with their purchases in Study 1 (66.7%) and Study 2 (50%), only a minority was satisfied with their purchases in Study 3 (33.3%). Nevertheless, although the majority claimed to be dissatisfied with their purchases in Study 3, we still found no significant influence on the in-game satisfaction of players that had bought their advantage in that study. Again, the explanation for this result could be derived from the subset of users in this study (forum posters). For example, when micro-transactions were introduced to a former only free-to-play game called Battlefield Heroes, it caused a huge uproar online amongst their player community, especially amongst their forum posters. More specifically, forum posters criticized micro-transactions, claimed that it would ruin the in-game economy and even threatened to quit the game. However, these forum messages were not very indicative of their actual in-game behavior, because a substantial amount of those forum posters kept playing or

even became paying players instead (Cousins, 2011). In other words, the actual in-game behavior of forum posters does not always have to correspond with what they say or claim to do. This can explain why their statements around satisfaction were not in line with their actual responses on the satisfaction scale we used. Furthermore, this could also explain why they might claim to be dissatisfied with their purchases on the one hand, but on the other hand still keep spending a substantial amount of real money on the game through micro-transactions.

Rationalization

A whole other explanation for the reason why the satisfaction of players was only influenced by the outcome of the game (loss vs. win) and not by the way the outcome was materialized (bought vs. skill) could have something to do with the interaction we found between our two manipulations in Study 1. As discussed in Study 1, this interaction revealed that players who had bought their advantage were relatively less satisfied when they had won, but in contrast with hypothesis 2, not when they had lost. Despite the fact that Study 1 didn't reveal a more clear-cut explanation for this, it might be that players who had lost due to a bought advantage have rationalized their losses.

This explanation dates back to Leon Festinger's (1957) Cognitive Dissonance Theory (CDT), which proposes that people seek consistency among their cognitions (i.e. beliefs, opinions) and that they usually try to alter, add or reduce the importance of any dissonant elements when there is inconsistency among them (Festinger, 1957). Therefore, CDT could explain that players who had lost due to a bought advantage might have altered their cognitions in such a way that they relieved themselves from any discomfort they would have experienced as result of losing the battle (i.e. they were not as good as the other player in that battle). For example, players could have rationalized their loss as something that was beyond their control (after all, they could never compete with someone who had bought their

advantage) and by doing so, they might free themselves from their responsibility (and dissonant thoughts) over that negative outcome.

Insignificant Player Motivations

The motivations of players were usually designed around three item categories, namely to enhance their game experience, to improve their performance during battle or for fun/ornamental reasons. Of these item categories, game experience and performance enhancing items were considered as the most important. Nevertheless, this didn't reveal any new explanations for the insignificant results across our studies. More importantly, after exploring the individual motivations of players, we did found some motivations that were in line with our predictions. What follows are samples of participants' responses:

- "You have no other choice than using either the item shop, or playing excessive amounts of time."
- "It became pay 2 win and I lost all interest in the game, it ruined a good game and I am sour for that."
- "Upgrading components are necessary which diminishes the fun of items such as costumes."
- "I find it more fun to have to work my way up into higher 'tiers'."
- "I want to earn things in game through skill and determination not with the use of money."
- "Pressure by the economic system in the game was sufficient to overcome both moral reservations (pay-to-win concerns, bad incentive for developers), and the EXTREMELY high cost for such content."
- "Parity."
- "Feels dirty."
- "It's not something I feel good about after, more of a guilty pleasure."

- “A part of me dies inside because I feel like micro-transactions, while the most profitable business model of today's video game market, feel cheap and undeserved.”

However, despite statements like these, we still found no detrimental effects of micro-transactions on the satisfaction of players. An explanation for this might be that these statements were given too sparingly or that they were simply not influential enough to influence the satisfaction of players much. Nevertheless, these statements seem to show that there is some kind of agreement among players that pay-to-win games (i.e. games in which players can buy themselves an actual competitive advantage) are not done. Future research could explore whether this is the case and if so, which payment models work best for players.

Different Spending Norms

It is tenable that the results could differ across other online games if they are built on different spending norms. For example, game communities could induce different types of spending behavior when they impose different subjective norms regarding spending. In addition to this, it is quite thinkable that the possibility to perform micro-transactions cultivates such spending norms. This is important, because spending norms can exert a powerful influence on purchasing behavior. For example, Shin (2008), who examined the purchase behavior of players in virtual environments involving an in-world currency, found that subjective norms and perceived risk had the strongest influence on the transaction intention. Therefore, the spending behavior of players could be influenced by the current prevailing spending norms. Although we did found some pretty consistent results across our studies, it doesn’t mean that this could not be an important point to consider in the future.

Practical implications

The results of the current study are important, because more and more game developers embrace micro-transactions these days. More specifically, if there is a downside to

the use of micro-transactions and the satisfaction of their users, they must be applied with more precaution in the future. After all, the existence of a company could be threatened if they are not able to generate a substantial amount of satisfied customers. Nonetheless, because we did not found any real direct support for the notion that micro-transaction could also result into a lower player satisfaction, we were not able to identify a downside to the use of micro-transactions yet. Therefore, at least with regard to the satisfaction of their users, it seems that we can conclude that micro-transactions are not detrimental for players. In addition to this, they even seem to be beneficial, at least for the game developers instead. However, because we did found that players perceived the outcome as less fair, we have to be careful in making such statements. Nevertheless, at least what this study does show is that there might be a link between micro-transactions and the way players play the game and build the community. As a result, micro-transactions could have an indirect influence on the satisfaction of players. Although this went beyond the scope of this study, it could be interesting to explore this in the future.

Limitations of the Current Study

Several limitations could be identified in this study. Like mentioned before, the results could be distorted because a disproportional amount of participants had spent real money across our studies. Second, due to a limited sample size in Study 2 and Study 3, we must consider the fact that we didn't found any more significant effects as result of having such low power in those studies. Third, because of these limited sample sizes, we were also not able to manipulate the outcome of the game (loss vs. win) in Study 2 and Study 3. As a result, we were not able to test hypotheses 1a and 2. Fourth, we are well aware of the fact that self-report measures often have been criticized because they can be biased by impression management and social desirability tendencies. Finally, we also acknowledge that it is possible that the outcomes for the imagined scenarios in this study vary in some or more ways

from real in-game situations. Therefore, it could be interesting for future research to conduct this study in a more realistic game setting.

Conclusion

The current research demonstrates that the satisfaction of players is not influenced when micro-transactions take place. Across three studies around social competitive online games we found no support for the hypothesis that micro-transactions could be detrimental for the satisfaction of players. The results show that the satisfaction of players was only influenced by the outcome of the game (loss vs. win), but not by the way this outcome was materialized (bought vs. skill). Because we had predicted that players who had won or lost due to a bought advantage would be less satisfied than players who had won or lost due to skill our hypotheses were not confirmed. Furthermore, we also found no support for hypothesis 2; losses seemed not to influence the satisfaction of players relatively more than wins. These findings are important, because more and more game developers embrace micro-transactions these days. For now, because we were not able to identify a dark side of micro-transactions as well, one can conclude that the use of that the use of micro-transactions is not detrimental for the satisfaction of players. However, we are still cognizant that the results across our studies may be distorted because a disproportional amount of players had spent real money on micro-transactions. Therefore, this conclusion must be interpreted with care. Despite the fact that we did not found any real results, we must still be aware of the enormous current growth and size of micro-transactions. Therefore, it would be wise to conduct more research about micro-transactions and the satisfaction of players in the future.

References

Adams, J.S. (1965). Inequity in Social Exchange. In: Berkowitz, L. (Ed.), *Advances in Experimental Social Psychology, Vol. II* (pp. 267-299). New York: Academic Press.

Andrux51 (2013, February 18), Item Shop. *Gamepedia*. Retrieved April 2, 2013, from http://runesofmagic.gamepedia.com/Item_Shop

Babcock, L., & Loewenstein, G. (1997). Explaining Bargaining Impasse: The Role of Self-Serving Biases. *Journal of Economic Perspectives, 11,* 1, 109-126. doi:10.1257/jep.11.1.109

Barbeau-Roberge, G. (2012). Runes of Magic Review. MMOHut. Retrieved from http://mmohuts.com/review/runes-of-magic-2?postTabs=1

Bourcier, L. (2012, April 4). *Game In Progress New Business Models for the Videogame Industry* [PowerPoint slides]. Retrieved from http://www.slideshare.net/LucBourcier1/game-in-progress-new-business-models-for-the-videogame-industry-12278071

Burrows, P., & Loomes, G. (1994). The Impact of Fairness on Bargaining Behaviour. *Empirical Economics, 19,* 2, 201. doi:10.1007/BF01175872

Campbell, W. K., & Sedikides, C. (1999). Self-threat magnifies the self-serving bias: A meta-analytic integration. *Review of General Psychology, 3,* 1, 23-43. doi:10.1037/1089-2680.3.1.23

Chang, M. K., & Cheung, W. (2001). Determinants of the intention to use Internet/WWW at work: a confirmatory study. *Information & Management, 39,* 1, 1-14. doi:10.1016/S0378-7206(01)00075-1

Cohen-Charash, Y., & Spector, P. (2001). The Role of Justice in Organizations: A Meta-Analysis. *Organizational Behavior and Human Decision Processes, 86,* 2, 278-321. doi:10.1006/obhd.2001.2958

Cousins, B. (2011, March 14). *Paying To Win? Battlefield Heroes, Virtual Goods and Selling Gameplay Advantages* [PowerPoint slides]. Retrieved from http://www.slideshare.net/bcousins/paying-to-win

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology, 22,* 14, 1111-1132. Doi:10.1111/j.1559-1816.1992.tb00945.x

Eek, D., Gärling, T. (2008). A New Look at the Theory of Social Value Orientations: Prosocials Neither Maximize Joint Outcome nor Minimize Outcome Differences but Prefer Equal Outcomes. In Biel, A., Eek, D., Ga□rling, T., & Gustafsson, M. (Eds.), *New Issues and Paradigms in Research on Social Dilemmas* (pp. 10-26). Boston, MA: Springer US. doi:10.1007/978-0-387-72596-3_2

Eldon, E. (2011, December 7). US Virtual Goods Market To Hit $2.9 Billion In 2012, With Facebook Games Maturing, Mobile Booming. *TechCrunch*. Retrieved from http://techcrunch.com/2011/12/07/us-virtual-goods-market-to-hit-2-9-billion-in-2012-with-facebook-games-maturing-mobile-booming/

Fehr, E., & Schmidt, K. (1999). A Theory Of Fairness, Competition, And Cooperation. *The Quarterly Journal of Economics, 114,* 3, 817-868. doi:10.1162/003355399556151

Festinger, L. (1957). A theory of cognitive dissonance. Stanford, California: Stanford University Press.

Gaudiosi, J. (2012). KingsIsle Entertainment Marketing Exec Fred Howard Details Who Is Playing Wizard101. *Forbes.* Retrieved from http://www.forbes.com/sites/johngaudiosi/2012/07/23/kingsisle-entertainment-marketing-exec-fred-howard-details-who-is-playing-wizard101/2/

Gandhi, M. K., & Dalton, D. (1996). Non-violence. In D. Dalton (Ed.), *Selected political writings* (p. 41). Indianapolis, Ind: Hackett.

Gutterman, A. (2011, September 30). *Microtransactions: A Love Story* [PowerPoint slides]. Retrieved from http://www.slideshare.net/sfadam/microtransactons-a-love-story

Hamari, J., & Lehdonvirta, V. (2010). Game design as marketing: How game mechanics create demand for virtual goods. *International Journal of Business Science and Applied Management, 5,* 1, 14-29. Retrieved from http://www.hiit.fi/u/hamari/2010-game_design_as_marketing.pdf

Hameed, B. (2011, January 28). Report: Asia/Pacific Accounted For Two-Third Of Global Virtual Goods Revenues In 2010. *SocialTimes.* Retrieved from http://socialtimes.com/report-asiapacific-accounted-for-two-third-of-global-virtual-goods-revenues-in-2010_b36405

Harding-Rolls, P. (2011, September 14). PC Multiplayer Online Games: Subscription Revenue Declines as Microtransactions Take Hold. *IHS iSuppli*. Retrieved January 4, 2012, from http://www.isuppli.com/Media-Research/News/Pages/PC-Multiplayer-Online-Games-Subscription-Revenue-Declines-as-Microtransactions-Take-Hold.aspx

Horst, S. (2011). Tony Tang von Runes of Magic: "Wir wollen unsere Spieler nicht ausrauben". *GamersGlobal*. Retrieved from http://www.gamersglobal.de/interview/wir-wollen-unsere-spieler-nicht-ausrauben

Ito, T. A., Larsen, J. T., Smith, N. K., & Cacioppo, J. T. (1998). Negative information weighs more heavily on the brain: The negativity bias in evaluative categorizations. *Journal of Personality and Social Psychology, 75,* 4, 887-900. doi:10.1037/0022-3514.75.4.887

Joffe, B. (2009, October 30). *Virtual Goods in Asia the US Gold Rush Begins* [PowerPoint slides]. Retrieved from http://www.slideshare.net/plus8star/virtual-goods-in-asia

Joffe, B. (2011, May 26). *Digital Goods in Asia "Not all Asians are Virtual"* [PowerPoint

slides]. Retrieved from http://www.slideshare.net/plus8star/digital-goods-in-asia

KingsIsle Entertainment. (2008). Trade & Shopping. *KingsIsle Entertainment, Inc*. Retrieved from https://www.wizard101.com/w101playersguide/currency

Konow, J. (2003). Which is the Fairest One of All? A Positive Analysis of Justice Theories. *Journal of Economic Literature, 41,* 4, 1188. doi:10.1257/002205103771800013

Kwong, J. A. (2011). Getting the Goods on Virtual Items: A Fresh Look at Transactions in Multi-User Online Environments. *William Mitchell Law Review, 37,* 4, 1805-1838. Retrieved from http://www.wmitchell.edu/lawreview/Volume37/documents/Kwong.pdf

Larsen, C. (2011). *Financial Aspects of the Online Gaming Service Industry* (Master's thesis). Norwegian University of Science and Technology/Department of Telematics. Retrieved from http://ntnu.diva-portal.org/smash/get/diva2:439582/FULLTEXT01

Lea, S. E. G., & Webley, P. (1997). Pride in economic psychology. *Journal of Economic Psychology, 18,* 323-340. doi:10.1016/S0167-4870(97)00011-1

Makuch, E. (2012, June 20). Microtransactions will be in every game, says EA exec. *GameSpot*. Retrieved from http://www.gamespot.com/news/microtransactions-will-be-in-every-game-says-ea-exec-6383445

Martin, M. (2012, March 19). World of Tanks monthly revs hitting "double digit" millions. *GamesIndustry International*. Retrieved from http://www.gamesindustry.biz/articles/2012-03-19-world-of-tanks-monthly-profits-hitting-double-digit-millions

Messick, D. M., & Sentis, K. P. (1979). Fairness and preference. *Journal of Experimental Social Psychology, 15,* 4, 418-434. doi:10.1016/0022-1031(79)90047-7

Nojima, M. (2007). Pricing models and motivations for MMO play. *Proceedings of DiGRA 2007*, 672-681. Retrieved from http://www.digra.org/dl/db/07311.40164.pdf

Oh, G., & Ryu, T. (2007). Game design on item-selling based payment model in Korean online games. *Proceedings of DiGRA 2007*, 650-657. Retrieved from http://www.digra.org/dl/db/07312.20080.pdf

Olsson, B., & Sidenblom, L. (2010). *Business Models for Video Games* (Master's thesis). Lunds universitet/Institutionen för informatik. Retrieved from http://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=1672034&fileOId=1672035

Rabin, M. (1998). Psychology and Economics. *Journal of Economic Literature, 36,* 1, 11. Retrieved from http://neuroeconomics-summerschool.stanford.edu/pdf/Rabin1998JELpsychecon.pdf

Shelton, A. K. (2010). Defining the lines between virtual and real world purchases: Second Life sells, but who's buying?. *Computers in Human Behavior, 26,* 6, 1223-1227. doi:10.1016/j.chb.2010.03.019

Shin, D. H. (2008). Understanding purchasing behaviors in a virtual economy: Consumer behavior involving virtual currency in Web 2.0 communities. *Interacting with Computers, 20,* 433-446. doi:10.1016/j.intcom.2008.04.001

Suznjevic, M., Dobrijevic, O., & Matijasevic, M. (2009). Hack, slash, and chat: A study of players' behavior and communication in MMORPGs. *Proceedings of the 8th ACM SIGCOMM Workshop on Network and System Support for Games,* 1-6. doi:10.1109/NETGAMES.2009.5446235

Suznjevic, M., Dobrijevic, O., & Matijasevic, M. (2008). Action specific Massive Multiplayer Online Role Playing Games traffic analysis: Case study of World of Warcraft. *Proceedings of the 7th ACM SIGCOMM Workshop on Network and System Support for Games*, 106–107. doi:10.1145/1517494.1517519

Tucker, H. (2011). Gaming Online. *Itnow, 53,* 5, 12-14. doi:10.1093/itnow/bwr036

Van den Bos, K. , & Lind, E. A. (2002). Uncertainty management by means of fairness judgments. *Advances in Experimental Social Psychology, 34,* 1-60. doi:1874/74589

Van der Heijden, H. (2004). User Acceptance of Hedonic Information Systems. *Mis Quarterly, 28,* 4, 695-704. Retrieved from misq.org/misq/downloads/download/article/296/

Venkatesh, V. (2000). Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model. *Information Systems Research, 11,* 4, 342-365. doi:10.1287/isre.11.4.342.11872

Webster, J. M., Duvall, J., Gaines, L. M., & Smith, R. H. (2003). The roles of praise and social comparison information in the experience of pride. *The Journal of Social Psychology, 143,* 2, 209-32. doi:10.1080/00224540309598441

Weeda, D. (2012). *The Hidden Costs of Micro-Transactions: Psychosocial Consequences of Buying Advantages with Micro-Transactions in Online Games* (Unpublished master's thesis). Tilburg University/School of Social and Behavioral Sciences, Tilburg, The Netherlands.

Yee, N. (2006). Motivations for Play in Online Games. *Cyberpsychology and Behavior, 9,* 6, 772-775. doi:10.1089/cpb.2006.9.772

Zackariasson, P., Wa□hlin, N., & Wilson, T. (2010). Virtual Identities and Market Segmentation in Marketing in and Through Massively Multiplayer Online Games (MMOGs). *Services Marketing Quarterly, 31,* 3, 275-295. doi:10.1080/15332969.2010.486689

Appendix A

Forums of Study 1: World of Tanks

http://gathering.tweakers.net/forum/list_messages/1529741/last

http://forums.goharu.com/forumdisplay.php?f=4

http://www.theoldergamers.com/forum/world-tanks/

http://www.gamespot.com/world-of-tanks/forum/

http://forum.mmosite.com/board/2-234.html

http://www.giantbomb.com/world-of-tanks/61-30567/forums/

http://www.tacticalgamer.com/world-tanks/

http://www.gameogre.com/forums/world-tanks/

http://www.9lives.be/forum/rpg-mmorpg/730831-world-tanks-ww2-3d-227.html

http://www.mmorpg.com/discussion2.cfm/forum/1070/General-Discussion.html

http://www.neoseeker.com/forums/55511/

http://forum.worldoftanks.com/

http://www.pu.nl/community/discussions/question/

http://www.insidegamer.nl/forum/viewtopic.php?f=15&t=44462&p=4535048#p4535048

http://www.pcgamer.com/forum/showthread.php?p=262672#post262672

http://www.ign.com/boards/forums/pc.7203/

http://www.gamefaqs.com/boards/989519-world-of-tanks/

http://steamcommunity.com/groups/World-of-Tanks-News?l=dutch

http://steamcommunity.com/discussions/forum/12/

http://www.mmo-champion.com/threads/1244717-Megathread-World-of-Tanks?highlight=worldoftanks

Facebook pages of Study 1: World of Tanks

http://www.facebook.com/WorldOfTanks?ref=ts&fref=ts

http://www.facebook.com/WorldOfTanksGermany

http://www.facebook.com/pages/World-of-Tanks/137895389612673

http://www.facebook.com/WOTTurkiye

http://www.facebook.com/WorldOfTanksPL

http://www.facebook.com/worldoftanksaccount

http://www.facebook.com/WoTCZSK

http://www.facebook.com/pages/World-of-Tanks-Humor-WTH/424779197583648

http://www.facebook.com/wotitalia

http://www.facebook.com/WoTHQ

http://www.facebook.com/wot.go.vn

Appendix B

Survey items of Study 1a: Scenario in World of Tanks

How would you feel looking back at this game?

Very negative	-3	-2	-1	0	1	2	3	Very positive

How satisfied would you be with this game?

Not at all	1	2	3	4	5	6	7	Very much so

How likely would it be that you start a game right now?

Not at all	1	2	3	4	5	6	7	Very much so

How proud would you feel with your accomplishments in this game?

Not at all	1	2	3	4	5	6	7	Very much so

Would you feel that you had a good accomplishment in this battle?

Not at all	1	2	3	4	5	6	7	Very much so

Do you think the outcome of this game was fair?

Not at all	1	2	3	4	5	6	7	Very much so

Do you think that the outcome of this game was deserved?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that you have high status?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that you have much skill?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that your opponent has high status?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that your opponent has much skill?

Not at all	1	2	3	4	5	6	7	Very much so

How fun is it to play World of Tanks?

Not at all	1	2	3	4	5	6	7	Very much so

How enjoyable is it to play World of Tanks?

Not at all	1	2	3	4	5	6	7	Very much so

How entertaining is it to play World of Tanks?

Not at all	1	2	3	4	5	6	7	Very much so

Playing World of Tanks feels…

Enjoyable	1	2	3	4	5	6	7	Disgusting
Exciting	1	2	3	4	5	6	7	Dull
Pleasant	1	2	3	4	5	6	7	Unpleasant
Interesting	1	2	3	4	5	6	7	Boring

What is your age?

What is your gender?

Do you have any questions, comments or suggestions about this survey?

Appendix C

Survey items of Study 1b: World of Tanks

Did you ever buy something with real money in World of Tanks? (micro-transactions)

- ❑ Yes
- ❑ No

Why didn't you bought something? (if 'No' is selected)

Which of the following things have you bought? (multiple answers possible)

❑ Premium Account	❑ Demount Equipment	❑ Crew Training
❑ Premium Ammo	❑ Camouflage Pattern	❑ Extra Garage Slots
❑ Premium Tanks	❑ Game Credits	❑ Enlarging Barracks
❑ Premium Consumables	❑ Experience	❑ Clan Creation

Which of them do you find the most important? (select at least 1, maximum of 3)

❑ Premium Account	❑ Demount Equipment	❑ Crew Training
❑ Premium Ammo	❑ Camouflage Pattern	❑ Extra Garage Slots
❑ Premium Tanks	❑ Game Credits	❑ Enlarging Barracks
❑ Premium Consumables	❑ Experience	❑ Clan Creation

Why did you buy these things?

How satisfying is it to buy these things?

In total, how much money do you think you have spent in World of Tanks?

What is your age?

What is your gender?

Do you have any questions, comments or suggestions about this survey?

Appendix D

Forums of Study 2: Wizard101

http://www.neoseeker.com/forums/43451/

http://www.fanfiction.net/forums/game/Wizard101/

http://www.mmorpg.com/gamelist.cfm/game/362/view/forums/forum/889/General-Discussion.html

http://www.fanpop.com/clubs/wizard-101/forum

http://www.gamefaqs.com/boards/946524-wizard101

http://www.codeweavers.com/compatibility/browse/name/?app_id=4685;forum=1;

http://wizard101fanwiki.wetpaint.com/forum/General+Discussion

http://mywizard101site.webs.com/apps/forums/

http://wiz101central.webs.com/apps/forums/show/5567766-general-discussion

http://boardreader.com/fp/All_Forums_Forums_at_MMORPG_co_82339603/Wizard_101_General_Discussion_51674369.html

http://ninthcolumn.webs.com/apps/forums/topics/show/8811596-short-survey-about-wizard101

http://www.kingsisleuniverse.com/apps/forums/show/7050529-off-topic

http://boards.straightdope.com/sdmb/forumdisplay.php?f=17

http://www.pcgamer.com/forum/forumdisplay.php?f=6

http://www.ign.com/boards/forums/pc.7203/

http://steamcommunity.com/groups/wiz101/discussions

Facebook pages of Study 2: Wizard101

http://www.facebook.com/wizard101?ref=ts&fref=ts

http://www.facebook.com/wizard101central?ref=ts&fref=ts

Appendix E

Survey items of Study 2a: Scenario in Wizard101

How would you feel looking back at this game?

Very negative	-3	-2	-1	0	1	2	3	Very positive

How satisfied would you be with this game?

Not at all	1	2	3	4	5	6	7	Very much so

How likely would it be that you start a game right now?

Not at all	1	2	3	4	5	6	7	Very much so

How proud would you feel with your accomplishments in this game?

Not at all	1	2	3	4	5	6	7	Very much so

Would you feel that you had a good accomplishment in this battle?

Not at all	1	2	3	4	5	6	7	Very much so

Do you think the outcome of this game was fair?

Not at all	1	2	3	4	5	6	7	Very much so

Do you think that the outcome of this game was deserved?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that you have high status?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that you have much skill?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that your opponent has high status?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that your opponent has much skill?

Not at all	1	2	3	4	5	6	7	Very much so

How fun is it to play Wizard101?

Not at all	1	2	3	4	5	6	7	Very much so

How enjoyable is it to play Wizard101?

Not at all	1	2	3	4	5	6	7	Very much so

How entertaining is it to play Wizard101?

Not at all	1	2	3	4	5	6	7	Very much so

Playing Wizard101 feels…

Enjoyable	1	2	3	4	5	6	7	Disgusting
Exciting	1	2	3	4	5	6	7	Dull
Pleasant	1	2	3	4	5	6	7	Unpleasant
Interesting	1	2	3	4	5	6	7	Boring

What is your age?

What is your gender?

Do you have any questions, comments or suggestions about this survey?

Appendix F

Survey items of Study 2b: Wizard101

Did you ever buy Crowns? (micro-transactions / 'cash shop')

- ❑ Yes
- ❑ No

Why didn't you bought something? (if 'No' is selected)

Which of the following things have you bought? (multiple answers possible)

- ❑ Gold
- ❑ Mounts
- ❑ Pets
- ❑ Cards
- ❑ Housing
- ❑ Gardening
- ❑ Clothing
- ❑ Weapons
- ❑ Elixirs
- ❑ Transformations
- ❑ Henchman

Which of them do you find the most important? (select at least 1, maximum of 3)

- ❑ Gold
- ❑ Mounts
- ❑ Pets
- ❑ Cards
- ❑ Housing
- ❑ Gardening
- ❑ Clothing
- ❑ Weapons
- ❑ Elixirs
- ❑ Transformations
- ❑ Henchman

Why did you buy these things?

How satisfying is it to buy these things?

In total, how much money do you think you have spent in Wizard101?

What is your age?

What is your gender?

Do you have any questions, comments or suggestions about this survey?

Appendix G

Forums of Study 3: Runes of Magic

https://forum.runesofmagic.com/forumdisplay.php?f=41

http://www.neoseeker.com/forums/42216/

http://forum.mmosite.com/board/2-132.html

http://www.gameogre.com/forums/free-mmorpg/?daysprune=-1

http://www.giantbomb.com/runes-of-magic/3030-22239/forums/

http://www.tacticalgamer.com/mass-multiplayer-general-discussion/

http://www.gamespot.com/runes-of-magic/forum/

http://www.mmorpg.com/gamelist.cfm/game/351/view/forums/forum/879/General-Discussion.html

http://www.ign.com/boards/forums/pc.7203/

http://www.pcgamer.com/forum/forumdisplay.php?f=6

http://www.gamefaqs.com/boards/664762-runes-of-magic-chapter-v-fires-of-shadowforge/65866999

http://www.gamefaqs.com/boards/946792-runes-of-magic

http://www.mmo-champion.com/forums/293-Video-Games-Discussion

http://steamcommunity.com/groups/Runes_of_Magic

Appendix H

Survey items of Study 3a: Scenario in Runes of Magic

How would you feel looking back at this game?

Very negative	-3	-2	-1	0	1	2	3	Very positive

How satisfied would you be with this game?

Not at all	1	2	3	4	5	6	7	Very much so

How likely would it be that you start a game right now?

Not at all	1	2	3	4	5	6	7	Very much so

How proud would you feel with your accomplishments in this game?

Not at all	1	2	3	4	5	6	7	Very much so

Would you feel that you had a good accomplishment in this battle?

Not at all	1	2	3	4	5	6	7	Very much so

Do you think the outcome of this game was fair?

Not at all	1	2	3	4	5	6	7	Very much so

Do you think that the outcome of this game was deserved?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that you have high status?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that you have much skill?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that your opponent has high status?

Not at all	1	2	3	4	5	6	7	Very much so

Would the other players in this battle think that your opponent has much skill?

Not at all	1	2	3	4	5	6	7	Very much so

How fun is it to play Runes of Magic?

Not at all	1	2	3	4	5	6	7	Very much so

How enjoyable is it to play Runes of Magic?

Not at all	1	2	3	4	5	6	7	Very much so

How entertaining is it to play Runes of Magic?

Not at all	1	2	3	4	5	6	7	Very much so

Playing Runes of Magic feels…

Enjoyable	1	2	3	4	5	6	7	Disgusting
Exciting	1	2	3	4	5	6	7	Dull
Pleasant	1	2	3	4	5	6	7	Unpleasant
Interesting	1	2	3	4	5	6	7	Boring

What is your age?

What is your gender?

Do you have any questions, comments or suggestions about this survey?

Appendix I

Survey items of Study 3b: Runes of Magic

Did you ever buy Diamonds? (micro-transactions / real money in 'Item shop')

- ❑ Yes
- ❑ No

Why didn't you bought something? (if 'No' is selected)

Which of the following things have you bought? (multiple answers possible)

❑ Consumables	❑ Costumes	❑ Encyclopedias
❑ Mounts	❑ Housing	❑ Packages
❑ Upgrading	❑ Crafting	❑ Special Offers

Which of them do you find the most important? (select at least 1, maximum of 3)

❑ Consumables	❑ Costumes	❑ Encyclopedias
❑ Mounts	❑ Housing	❑ Packages
❑ Upgrading	❑ Crafting	❑ Special Offers

Why did you buy these things?

How satisfying is it to buy these things?

In total, how much money do you think you have spent in Runes of Magic?

What is your age?

What is your gender?

Do you have any questions, comments or suggestions about this survey?