

Microtransactions and Game Enjoyment in Free-To-Play Versus Paid Computer Games

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March 2021

Abstract

Millions of people play games on a daily basis, the game industry is an enormous market and as such, a tremendous sum of money is earned by game developers. One of the ways of earning money in games and one of the most frowned upon method is making a profit through microtransactions. Since their appearance in the early 2000s, they have grown in importance and appear in lots of free-to-play or world renowned titles. Many players however, are against microtransactions in games and claim that they ruin their enjoyment of the game. To test their claims, the present research surveyed Call of Duty: Modern Warfare and Warzone players (N = 317). Through a self-made questionnaire, it aimed to find out whether there is a connection between game enjoyment and in-game spending, and if there is a difference in microtransaction purchases between players that play for free and those that bought the full version of the game. The findings showed that there is a connection between game enjoyment and microtransaction spending, as players that spent more money in-game had a more complete and enjoyable experience. Additionally, players that played for free spent significantly more on microtransactions than players who bought the game. Furthermore, opinions on the developers were found to be strongly connected with the opinions on the microtransaction system in-game, but were not connected with the game experience levels that players report. The findings of this study provide insights on how the financial mechanisms implemented in the game impact its players.

Keywords: games, microtransactions, game enjoyment, game experience, prospect theory, attitudes, impulse buying

Game Enjoyment Moderated By Microtransactions In A Free-to-Play vs Paid Game

The video game industry is now estimated to be worth close to \$160 billion in 2020, with forecasts showing that the industry will grow to almost \$200 billion in 2023 (Gough, 2020). These lone numbers do not encompass the sheer size of this industry though. There are around 2.7 billion gamers around the world, indulging in games ranging from mobile, free-to-play games to fully fledged singleplayer role playing games or grand multiplayer games like Call of Duty. This means, that almost every third person on the planet plays some form of games, be it on their phone or their computer. The gaming industry also releases a gigantic amount of games, with thousands of new products being released during a calendar year.

With the enormity of the market outlined, corporations and developers search for different methods to capitalize on their products. Some companies sell their product only once and for a fixed, single price, some sell their games on a subscription-based system and others provide the game for free with microtransactions embedded in the game itself. Developers of course do not only have these three options, as they can implement multiple different ways to monetize their products. Larger companies, like EA, have noticed that instead of making one-time profits from a single game, they can also include systems embedded in-game to further their profits (Ball & Fordham, 2018). Games like *Battlefront 2* were sold first as a game and then one could buy different skins or characters in game, increasing the total money spent on the game significantly. However, at the same time, players often express their negative attitudes towards microtransactions. A majority of users are of the opinion that microtransactions have no place in full-price titles, as players should not be expected to pay more additionally, on top of what they already had paid (Švelch, 2017). Hence, many players think, that in-game microtransactions can influence the overall experience of the game (Švelch, 2017).

Consequently, this poses several compelling questions: As most players tend to be quite hostile towards microtransactions, the question arises whether in-game purchasing mechanisms can diminish the game enjoyment of players. Similarly, attitudes towards microtransactions may translate into players' perceptions of game developers. Finally, people that play for free may be more engaged (spend more hours in-game) than those that bought the full version, and more importantly, free players could actually experience more game enjoyment than players that own the full version of the same game.

The aim of the present study is to investigate whether and how microtransactions impact on players' subjective enjoyment of games and whether the impact of in-game purchases depends on whether a person plays for free or had purchased the game previously. For this purpose, the current study focuses on the game "Call of Duty: Modern Warfare", with its mode "Warzone" added as the free-to-play version.

Microtransactions

Microtransactions systems started emerging in games in the early 2000s. They were mainly defined as in-game purchases that can unlock content for the game and can have prices ranging from small amounts like 0.50 cents to hundreds of dollars (Ball & Fordham, 2018). With time, microtransactions started appearing in more and more games, slowly becoming the mainstream in the industry. Microtransactions can be implemented in either singleplayer or multiplayer games.

Generally speaking, microtransactions enable players to buy additional content for their game. This can include cosmetic changes (visual enhancements that do not influence the gameplay itself), content that is not available in the full version of the game, speeding up one's progress in-game, buying time or accessing certain locked game modes by subscription (Tomić, 2019). Microtransactions can also be implemented by adding an in-game economy,

which coins a player can gain by either playing the game and progressing or by simply paying for the coins with - their own - actual money. A good example of such an in-game economy is the very successful game „Counter Strike: Global Offensive”. Cosmetic microtransactions are one of the few types of microtransactions that are actually somewhat accepted in the gaming community, whereas purchases that can give advantage to the player’s performance (like improvements or bonuses) are the most unpopular in the community (Tomić, 2017). Thus, microtransactions can affect the game being played not only by changing its physical and artistical appearance but can also significantly impact one’s experience of the game itself. This is quite a common phenomenon, as purchases that can significantly improve one’s abilities in game, often called “pay2win” systems, are majorly frowned upon in the gaming community and have caused many controversies over time (Zendle et al, 2020). Systems like these can severely impair the balance of the game and gamers may feel like they face an unfair disadvantage, just because someone else made an additional payment. Players that spend money on improvements were actually considered as less skilled and were respected less by the gaming community, not only by their enemies but also by their allies (Evers et al., 2015). The next section addresses how microtransactions work from a psychological and behavioral point of view. Most importantly however, the following section will provide some explanation as to why a system that is experienced negatively to such an extent can still thrive and is still applied by developers around the world.

Prospect Theory And The Sunk Cost Fallacy

Prospect Theory was first introduced by Kahneman and Tversky as an alternative to the highly influential Expected Utility Theory. Prospect Theory suggests that people tend to be loss averse, so they dislike losses more than they appreciate equivalent gains (Kahneman & Tversky, 1979). Importantly, Prospect Theory states that people show more risk seeking behavior when faced with potential losses compared to potential gains. The sunk cost fallacy

or “the Concorde” fallacy is a commonly known psychological bias that can be explained by Prospect Theory. It is focused on continuing an effort as a result of previously invested resources like money, time or energy (Arkes & Blumer, 1985). One example of a sunk cost fallacy often cited in the literature is the UK and French governments Concorde project. Despite the quite obvious losses and failures of the aircraft indicated by its miserable records, the governments were still investing resources into it to avoid facing harsh reality of potentially wasting billions of taxpayer money. As a result, they invested more and more into an already failing project and lost more and more money, all in a vain attempt to avoid the loss included with the closing of the project. In microtransactions or in gaming, the sunk cost fallacy can manifest itself in different ways. One instance in the games economy is introduced by microtransactions. In-game economies are often created in a way that leads to unavoidable losses. After buying a certain amount of in-game coins and spending them on in-game content the game’s economy makes sure that a remainder of the coins still belongs to the player’s account. However, the player does not have the possibility of converting the currency back into real-world money and is thus stopping to play the respective game means realizing a loss. Therefore, in accordance with Prospect Theory, the player is then likely to spend more money on in-game currency and as such, is more likely to buy more in-game currency to avoid the sense of loss (Hart, 2017).

Impulse Buying

The convenience of quick payments, popularized by banks and shops has also entered the gaming industry. Years ago, if one wanted to buy a game, they had to drive to a shop and buy it there, so a considerable amount of effort and time was needed just for a single purchase. Nowadays however, purchases can be made quick and easy with the use of credit and debit cards. Players can complete microtransactions in seconds, without having to move from the chair or even close the game they are playing. This system enables the opportunity

for impulse buying, as defined by a strong urge felt by the consumer to buy a certain product immediately (Iyer et al, 2019). This phenomenon is very common and is addressed in many marketing related actions (Verplanken & Sato, 2011). The simple fact that product stands with chocolate bars and chewing gum next to the cashier stand is supposed to trigger impulse buying in customers. Similarly, the convenience of quick internet transactions for in-game purchases can trigger impulse buying behavior. Developers cleverly design their games to enhance the possibility of in-game purchases. A good tactic to trigger impulse buying is not only making the purchase available and easy to do, but also to place it after some kind of activity. As people drain their resources, they become more viable towards impulse purchases, as they may not have the energy to maintain self-control (Gray, 2016). Additionally, most of the times, microtransactions involve very little amounts of money and people may not really feel the weight of their investment. Together with the fact that in-game purchases are often coupled with potential satisfaction of emotional or social needs, this can create a powerful incentive to spontaneously purchase a certain skin or add-on (Hart, 2017).

Additional Factors

There are of course more minor factors determine whether in-game products are purchased. For instance, people are tempted to use microtransactions when they are confronted with players that utilize microtransactions (Evers et al, 2015), higher skill level in game was found to be a predictor of higher microtransaction spending and perceived social norms indicated by peer behavior are also at play, as if a player's friend spends money on microtransactions then that player is more keen to buy in-game purchases as well (King et al, 2020). With these factors briefly outlined it seems understandable why microtransactions work so well. However, in-game purchases were not very pleasantly received by the gaming community. Implementations of microtransactions in different games were faced often with boycotts and major backlashes (Svelch, 2017) and a large proportion of gamers have a

negative attitude towards in-game purchases (Tomić, 2019). Many gamers felt that microtransactions enabled people to have an unfair advantage just because they paid more (Milner, 2013).

The Game

In this study, players of two games were investigated, namely: “Call of Duty: Modern Warfare” and its free-to-play spinoff “Call of Duty: Warzone” created by Activision. The games were released in October 2019 and March 2020 respectively. The first game released, “Modern Warfare”, sold at 60€ for PC and consoles with a standard version and 80€ for a “Battle Pass” version. The game has three modes players can choose from: Singleplayer Campaign, Cooperative modes and Multiplayer. The game was a huge success on the market. In the first three days after the release, Activision earned \$600 million through game sales, and during the first month, the company earned \$78 million through in-game purchases (Talbot, 2020). These figures showcase the enormity of the success of the game and the importance of in-game purchases for developers to keep supporting the product. “Warzone” was released as a standalone game that’s free to play for everyone with the game mode called “Battle Royale”. It’s a multiplayer mode utilized in many other successful games like “Fortnite” or “Apex Legends”. “Warzone” was also available for everyone that had the original copy of “Modern Warfare”, as it was downloaded additionally and was playable from the menu of the original game. Both games are pretty much the same, as “Call of Duty: Warzone” is quite literally just an additional game mode that’s playable for free to everyone. Apart from the same game mechanics and graphics, these two titles share one important factor that is imperative to this study. Both of these games have the same in-game purchasing system. Microtransaction system implemented by Activision has proven to be immensely successful, as both games have earned close to \$500 million in three months, thanks to in-game purchases (Gibson, 2020; Dastoor, 2020).

Microtransaction System In The Game

The microtransaction system used in both games have been largely changed since players have shown open dissatisfaction in the previous games released by Activision (McCarthy, 2019). Both games had an internal economy, with CoD Points (CP) as a currency and progress in multiplayer was available through a “Battle Pass”. The “Battle Pass” is a 100-tier system, where with each tier the player unlocks new skins, operators (characters in game) or weapons. The tiers can be obtained by earning experience points (XP) in game, by playing various game modes. Coins could be bought with real money, where a bundle cost 1800 CP and the player could buy 2400 CP for \$20. The “Battle Pass” cost 1000CP (around \$10) or the player could buy the “Battle Pass Bundle” for 2400CP (20\$) and skip the first 20 tiers (McCarthy, 2019). The game was divided into seasons, and each season included new, free content available for everyone. The seasons lasted around 2 months and after each season, the “Battle Pass” was reset and filled with new unlockable content. It is important to mention, that weapons could be unlocked in the game with or without buying the “Battle Pass” so only the skins, operators or other cosmetic changes were reserved exclusively for those players that bought the “Battle Pass”. After the end of the season, the player has the option of either buying the “Battle Pass” through CP, or if they completed all 100 tiers of the “Battle Pass”, the players had just enough (1000CP) to buy the “Battle Pass” without spending real money. In essence, if you play the game for long enough, the initial investment for the “Battle Pass” does not have to be repeated, as one will have enough CP to buy the “Pass” for next season. However, to complete the whole “Battle Pass”, so to grind those 100 tiers, the players would have to spend approximately 200 hours every season (Croft, 2019). This could mean that players would have to spend at least some money every season to continue earning “Battle Pass” rewards if they cannot spend so much time in the game.

Game Enjoyment

With these aforementioned factors in mind, an essential question arises. How do microtransactions impact game enjoyment? Developers tend to say that microtransactions implemented in their games add value and depth to their creation, thus enriching the product and possibly making it more fun for the player. However, the relationship between microtransactions and game enjoyment is still quite unclear. Initial findings have revealed, that after adding microtransactions to a game, the time players spent on the respective game decreased (Nojima, 2007). This might be an indication that players' enjoyment decreases due to in-game purchase mechanisms. This may be caused by different factors, like for – instance - perceived unfairness of people being able to gain an advantage through purchases, destabilization of game mechanics due to easier progression or the diminished sense of achievement due to easier progress. Game enjoyment can be measured in a number of ways. One possibility to assess game enjoyment is the Game Experience Questionnaire (Ijsselstein, 2013), which measures game enjoyment in multiple different aspects, like positive or negative affect, engagement, flow etc. It takes into account different states players may experience during and before the game, and is appropriately set to measure both in-game and post-game experience.

Aim Of The Current Study

Based on the previously discussed literature and factors, the following research questions will be investigated in this research study. It is probable that microtransaction system influences players game enjoyment. Additionally, there may be notable differences in game time spent playing the game and spending behavior between players that bought the game and those that play for free. Finally, the attitudes towards developers and microtransactions will be explored and how they changed.

The concrete main hypotheses are the following:

- (1) People that spend money on in-game purchases are going to be players spending more time in game
- (2) People that bought the full version of the game, in comparison to players that play for free, will be (a) more likely to pay for microtransactions and will (b) spend more time in-game.
- (3) The more a player spends on microtransactions, the more game enjoyment they will experience.

Methods

Participants

A target sample size of 350 was calculated based on 80% power, $\alpha = .05$, to detect a small or medium effect ($r = 0.15$). 441 participants took part in the study, however, after excluding incomplete questionnaires 317 participants were left in the final sample (31 women, 280 men, 6 other/prefer not to say). The mean age of the participants ranged from 15 to 60 ($M=29.3$, $SD=8.9$). The participants recruited were mostly active players of the following games: Call of Duty: Modern Warfare and Call of Duty: Warzone, with only 16 participants having not played either of the games during the last 7 days before taking the survey. The subjects were recruited by making a post in two facebook groups: “Call Of Duty: Modern Warfare/warzone” and “COD: WarZone Community Recruitment”, which had approx. 33,500 and 45,000 members respectively. No incentives were provided to participants for completing the study. The study was approved by the Ethics Review Board of Tilburg University as part of the blanket ethics approval of the Department of Social Psychology.

Procedure & Materials

Participants had to open the survey through a link, that was posted on two aforementioned facebook groups. After clicking the link, participants had to give informed consent. The questionnaire took approximately 10 to 15 minutes to complete. The study utilized a questionnaire that contains 18 questions. The questionnaire can be found in the appendix.

The first group of questions explored the players gaming and spending behaviors. The first two questions assessed whether or not the participant have bought the full version of the game or whether they were playing the free to play version only. The next question asked the participant which game they spent more time on: Modern Warfare or Warzone. If a participant thought they spent the same amount of time on both games, they answer they played both games for around the same amount of time. The fourth questions assessed the participants willingness to spend money on games and game-related peripherals by asking for the approximate value of one's gaming setup. Fifth question measured engagement by asking how much time they had spent playing the game. To measure how engaged they were during the last couple of days the sixth question assessed the amount of time spent playing during the last 7-days, presenting four answer options (from "I didn't play during the last 7-days" to "15 hours or more"). In case the participant had not played during the last 7-day period, they are asked to answer another question asking them to specify when was the last time they had played the game, with possible answers being: "Two weeks ago", "two weeks to a month ago", "one month to three months ago" and "more than three months ago". This question would enable the possibility to measure how long ago one had played the game and whether this was in a time frame of a seasonal change, possibly pointing out that during a season change and a "Battle Pass" change, the player lost their willingness to further engage with the game. The next questions assessed in-game money spending (dichotomous choice; yes/no). In

case of in-game spending, the participants were asked to specify what they spent their money on (e.g., “bundles”, “cosmetics”, “battlepass” or simply on CoD Points, the in-game currency). The tenth and eleventh questions explore whether or not the player can afford the next season’s Battle Pass without having to invest real life money and then ask about the approximate amount of money the participant had spent on in-game purchases.

Next, the participants answered 4 questions based on the Game Experience Questionnaire (Ijsselstein, 2013) to assess their game experience. The following subscales were used: Competence subscale (5 items, $\alpha = .89$, e.g. “I felt skillful”), Positive Affect subscale (5 items, $\alpha = .88$, e.g. “I enjoyed it”), Negative Affect subscale (4 items, $\alpha = .67$, e.g. “I felt bored”) and Tension and Annoyance subscale (3 items, $\alpha = .92$, e.g. “I felt annoyed”). Then the Competence and Positive affect subscale were converted into the Positive Experience subscale (10 items, $\alpha = .89$) and the Negative Experience subscale (7 items, $\alpha = .85$) to reflect players game enjoyment. The questionnaire asked to indicate on a scale of 0 (not at all) to 4 (extremely) how one had felt while playing the game with items like “I felt skillful”, “I felt content”, “I felt bored” or “I felt frustrated”. No items had to be reverse coded. No items had to be reverse coded.

Following the questionnaire, the participants answered three questions, all on a 5-point scale. The first question measured their opinion on Activision (1 = “I hate them” to 5 = “I love them”). Next question explored whether their opinion on Activision changed during the last year (since the release of the investigated game; on a continuous scale 5-point scale (1 = “No, for the worse” to 5 = “Yes, for the better”). The last question asked about the participants opinion regarding the microtransaction system in both games, Modern Warfare and Warzone (1 = “A bad system” to 5 = “A great system”).

The last three questions in the questionnaire will measured participants basic demographic data of age, gender and their nationality. The questionnaire was programmed with the online survey tool Qualtrics.

Results

Before addressing the test section of the core assumptions, some basic information on the sample and its spending behaviour are provided. 14% of respondents did not own a copy of Call of Duty: Modern Warfare, 30% of participants have reported that they do not spend money in-game, the average value of a PC / console setup was \$1090, on average people spent \$87 on in-game purchases and their average time spent in-game amounted to 451 hours. Most players expressed slightly negative attitudes towards microtransactions ($M = 2.8$, $SD = 0.94$) and slightly positive attitudes towards Activision ($M = 3.2$, $SD = 0.96$).

Next, Table 1 presents an overview of the relation between the key variables of the study including time spent playing the game, money spent in-game and game experience measures.

Table 1*Bivariate correlation between time in game, money spent and game experience measures*

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Time played TOTAL	286	451.6	769	—				
2. Time played 7 DAYS	317	2.86	0.882	.079	—			
3. Money spent in-game	266	87.9	139.1	.129*	.173**	—		
4. Positive Game Experience	317	37.3	6.7	.103	.153**	.075	—	
5. Negative Game Experience	317	15.6	5.9	.132*	.065	.091	-.220**	—

* $p < .05$. ** $p < .01$. (2-tailed)

To test the first hypothesis, bivariate correlations between money spent in-game and total time spent playing the game were taken into account. Money spent in-game is significantly positively correlated with total time spent playing the game ($r(239) = .129$, $p = .047$). This means that the first hypothesis is confirmed.

To check whether the second hypothesis is confirmed, an independent samples t-test and a linear regression were conducted between the versions of the game (paid vs free), money spent in-game and time played in the last 7-days. The t-test for independent samples indicates a significant difference between players that had bought the full version of the game ($M = \$96.5$, $SD = \$144.7$) and players that played for free ($M = \$20.8$, $SD = \$45.9$) in terms of their in-game spending behaviour ($t(123.97) = 6.00$, $p < .001$). The samples in the t-test however were very unequal, as there were 236 participants that indicated that they own the game and only 30 participants that did not own the game. A linear regression analysis with the dependent variable version of the game (full vs free) and the independent variable in-game spending and time spent playing during the last 7 days indicates that playing Warzone for free

is related to more in-game spending behaviour, $\beta = -.15$, $t(205) = -2.21$, $p = .028$ and that owning the paid copy of the game negatively predicts time played during the last 7-days, $\beta = -.14$, $t(316) = -2.44$, $p = .015$. Therefore, the second hypothesis was not confirmed.

Lastly, the assumption that in-game purchases are positively correlated with game enjoyment was not confirmed. Money spent in-game was not significantly related to both Positive ($r(266) = .075$, $p = .226$) nor Negative ($r(266) = .091$, $p = .137$) Game Experience measures. However, when players that stated they did not spend money in-game were excluded from the analysis, a positive correlation between money spent in-game and positive ($r(206) = .127$, $p = .035$) and negative ($r(206) = .123$, $p = .039$) game experience measures was observed.

Exploratory Analyses

To assess people's attitudes towards microtransactions, developers that include them in their games and their experiences of the game itself, some exploratory analyses were conducted. There is a significant positive correlation between the opinion on Activision, the game's developer and players opinion on microtransactions ($r(317) = .313$, $p < .001$). Interestingly, only the opinion on the developer significantly predicted the players opinion on microtransactions, $\beta = .277$, $t(265) = 4.46$, $p < .001$ and neither amount of money spent in-game, nor either of the game experience measures yielded significant results. A linear regression has shown, that the opinion on microtransactions successfully predicts the change in opinion on Activision as well, $\beta = .216$, $t(285) = 3.68$, $p < .001$. An independent T-test has also shown significant gender differences in Negative Game Experience ($t(37.61) = 2.23$, $p = 0.032$) where women ($M = 13.4$, $SD = 5.6$) had significantly lower scores than men ($M = 15.7$, $SD = 5.9$) in Negative Game Experience. The samples however were very unequal, as there were only 31 women and almost 280 men in the analysis. Interestingly, age was significantly

negatively correlated with both Positive ($r(314) = -.156, p = .006$) and Negative ($r(314) = -.169, p = .003$) Game Experience measures.

Discussion

In summary, there are several findings reported in this study. Money spent in-game is significantly correlated with time spent playing the game and when only people that claim they do spend money are taken into account, there is a positive correlation between money spent in-game and both Positive and Negative Game Experience. Furthermore, there are significant differences in microtransaction spending behavior between people that bought the full version of the game and those that played for free. These differences, however, have to be taken into account with some caution, as the groups were very unequal in size. Opinions on the developer and microtransactions are closely tied with each other and interestingly, the experience of the game itself is not significantly impacting the opinion on the developer. There are significant differences in Negative Game Experience between genders, as women score lower on the Negative Game Experience scale and as such, experience negativity less. Finally, age was found to be negatively correlated with both Positive and Negative Game Experience measures.

Key to this study is that no pattern emerged in terms of spending money in-game and game enjoyment measures. What is interesting, is that this result is very different when participants that stated they do not spend money in-game were excluded from the analysis. Slight positive correlations were found after that analysis, hinting that spending money in-game indeed has an effect on game experience, both positive and negative. This finding can be explained in a number of ways. For instance, spending money on microtransactions allows the player to unlock the games full potential. In the case of Modern Warfare and Warzone it is mostly artistic with skins and customization options, but also enable you to progress further in

game levels and crucially unlock more content. Microtransactions enable the player to progress further in game, unlock more content and essentially, have more fun. This means that players that spend more money in-game have also a richer experience, in both positive and negative aspects. This confirms what Švelch (2017) had found, where players thought that microtransactions can influence the overall experience of the game. This cannot be taken at face value though, as microtransactions did not predict either positive or negative game experience measures. Furthermore, in contrary to findings by King et al (2020), this study showcases that there is indeed a relationship between financial expenditure (measured as money spent on in-game products) and time spent playing the game, as the results had indicated that these two variables are positively correlated. The slightly negative tendency towards microtransactions is in line with Tomić (2019) paper.

The results obtained in this paper offer several interpretations and provide valuable information regarding microtransactions and game enjoyment. This study provides evidence that there is plausibility for the sunk cost fallacy in microtransactions in terms of time spent in-game, as players that spend more time in-game also tend to spend more money in-game. This is strengthened by the fact that with time spent playing the game in total, players negative game experience rises significantly. The sunk cost fallacy, however, cannot be applied in the context of game ownership as data shows that people that play for free are more keen on spending money in-game. Exploratory analyses have shown that, quite unsurprisingly, opinions on microtransactions and developers are closely related. What is noteworthy however, is that only the opinion on microtransaction predicted the change in opinion on Activision, not players game experience or time spent playing the game. This is quite surprising, as one would assume that players would form their opinions of the developer based on the experience they had with the game, not only on the in-game microtransaction mechanic implemented. This result is better explained when we take Activisions game history

into account. Their previous game, before CoD: Modern Warfare was CoD: Black Ops 4. The game was heavily criticized for its microtransactions mechanics and the developers faced backlash from the gaming community (Yin-Poole, 2019). This could potentially explain the finding here, as players may have been especially inclined to judge Activision based on the microtransaction system they implement in their newest CoD franchise installment. This paper also shows that with age the overall game enjoyment drops, as with age, both positive and negative game experience measures drop significantly. This can be easily explained by the nature of the game, which is very fast paced and requires a lot of attention to be successful. In terms of gender, the differences reported here show that men have more negative game experiences. This result however can be easily contested, due to the large differences in participant numbers between both genders.

Limitations And Future Research

This paper is not without its limitations. One of the limitations that immediately comes to mind is the gender distribution within the sample, where only 10% of participants were women. One could argue that it is not surprising, as gaming communities still can be quite dominated by men as shown by Yee (2017). This however does not mitigate the fact, that such a homogenous sample may skew the results and is a limitation to be addressed in future research. Another limitation of this study is the fact that the answers were collected from Facebook and there is a chance of “troll” answers in the questionnaire. Although, the amount of responses and participants should minimize the extent of such effect taking place, it is nevertheless possible that some of the data may be skewed, even after cleaning it and looking for obvious outliers. A potential limitation of this study that could alter the results is the fact that most of the sample were active players. This means that there is a large pool of former players that are not surveyed here and this could mean that negative game experience measures scored much lower than they do in reality. After all, if one is not an active player

anymore, then something made the player change his mind and abandon the game he previously enjoyed. It is a very valid area for further research, trying to explore how the results would differ with a sample of former players included in the dataset. Furthermore, a majority of the players surveyed here owned a copy of the game, meaning that the comparisons between the two groups (paid vs free) is limited in its extent and it is possible that selection bias appeared in this study. Future research could profit from pooling a higher number of free players. A limitation that has to be underlined as well is the fact that this research is focused on a specific game and a specific microtransaction system. It is a first person shooter game, which is highly competitive and possibly stressful, which may exaggerate some results due to strong emotional reactions players can have. Furthermore, the microtransaction system in the game is quite limited in the extent to which it operates, as it does not alter the game too much. The games worked on here are very similar to each other and have the same microtransactions mechanics. This means that results found here may not be generalizable to other games and microtransaction systems. Future research could profit from further development into different games and microtransactions mechanics, to explore the interaction of in-game purchasing systems with players game enjoyment. Potential future research could also see how the experiences change over time. This study has shown only responses from players that are playing now, but we do not know how they felt before or after the study. This means that a longitudinal study could enrich our understanding of microtransactions by providing us with more data throughout time.

Implications

This research provides several implications. One of the implication is for the game developers. It becomes quite apparent that microtransactions can impact game enjoyment of players and can impact the opinion the public has on the developers. This opens a doorway for game producers to design microtransaction systems that are both profitable for themselves

and still provide game enjoyment of the same levels for both purchasing and non-purchasing players. On the other hand, this paper may be used by players to further try and boycott game developers for implementing microtransactional mechanics, as it becomes evident here, they can still enhance ones experience just because the player was ready to pay a bit more.

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Appendix A, Questionnaire used in the study:

1. Have you bought the full version of Modern Warfare?
 - a. Yes, I bought the full version of the game
 - b. No, I did not buy the full version of the game
2. Do you actively play Call of Duty Warzone?
 - a. Yes, I am playing Warzone
 - b. No, I don't play Warzone
3. Approximately, which game do you spend more time on?
 - a. Call of Duty: Modern Warfare
 - b. Call of Duty Warzone
 - c. I play both games for around the same amount of time
4. If you are comfortable with telling us, what's the value of your PC setup? (in € or \$ please indicate which currency you're using; you can skip this question if you don't want to answer)
 - a. [Amount to specify by the participant]
5. Approximately how many hours have you spent playing the game
 - a. [Amount to specify by the participant]
6. Approximately how many hours have you played during the last 7-days
 - a. I didn't play the game during the last 7-days
 - b. Up to 10 hours
 - c. 10 to 20 hours
 - d. 20 hours or more
 - i. If answer (A), then [when was the last time you played the game?]
 1. Two weeks ago
 2. Two weeks to a month ago

3. One month to three months ago
 4. More than three months ago
7. Do you spend money in-game?
- a. Yes
 - b. No
 - i. If yes, what do you buy?
 1. Battlepass
 2. Cosmetics (skins, charms, stickers, finishing moves, blueprints etc.)
 3. Bundles
 4. Call of Duty Points
8. Can you usually afford the newest season's Battle Pass just by CoD points earned through your previous Battle Pass? This refers to whether you play enough to afford the next season's Battle Pass without spending additional money.
- a. Yes, I play enough to afford the next season's Battle Pass without spending additional money,
 - b. No, I don't play enough to afford the next season's Battle Pass
9. Approximately, how much money (in € or \$, please indicate which currency you're using) have you spent for in-game purchases?
- a. [Amount to specify by the participant]
10. Measure of game experience (based on Game Experience Questionnaire; Competence, Positive and Negative affect; Tension and Annoyance)

Please indicate how you felt while playing the game for each of the items, on the following scale

0 – Not at all; 1 – Slightly; 2 – Moderately; 3 – Fairly; 4 - Extremely

- a. Competence
 - i. I felt skillful
 - ii. I felt competent
 - iii. I was good at it
 - iv. I felt successful
 - v. I was fast at reaching the games target
- b. Positive affect
 - i. I felt content
 - ii. I thought it was fun
 - iii. I felt happy
 - iv. I felt good
 - v. I enjoyed it
- c. Negative affect
 - i. It gave me a bad mood
 - ii. I thought about other things
 - iii. I found it tiresome
 - iv. I felt bored
- d. Tension and Annoyance
 - i. I felt annoyed
 - ii. I felt irritable
 - iii. I felt frustrated

11. Opinion on Activision (5-point scale) [On a scale of 1 to 5, indicate your opinion of

Activision with 1 being “I hate them” and 5 being “I love them”, 3 is neutral]

12. Have your opinion on Activision changed during the last year?

- a. [continuous scale; Yes, for the better or No, for the worse]

13. What's your opinion on microtransactions in modern warfare/warzone. (5-point scale)

[On a scale of 1 to 5, please indicate your opinion on the micro-transaction system in Modern Warfare/Warzone, with 1 being “A bad system’ and 5 being “A great system”, 3 is neutral]

14. Please state your age

a. [Amount to specify by the participant]

15. Please state your gender

a. [Amount to specify by the participant]

16. What is your country of residence?

a. [To specify by the participant]

Appendix B

Table 1

Bivariate correlation between time in game, money spent and game experience measures

Variable	<i>n</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Time played TOTAL	286	451.6	769	—				
2. Time played 7 DAYS	317	2.86	0.882	.079	—			
3. Money spent in-game	266	87.9	139.1	.129*	.173**	—		
4. Positive Game Experience	317	37.3	6.7	.103	.153**	.075	—	
5. Negative Game Experience	317	15.6	5.9	.132*	.065	.091	-.220**	—

* $p < .05$. ** $p < .01$. (2-tailed)