

I Don't Care as Long as It's Good: Player Preferences for Real-Time and Turn-Based Combat Systems in Computer RPGs

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ABSTRACT

Combat systems are a fundamental part of computer role-playing games (RPGs). Popular media articles and online discussions suggest that players have very strong opinions on combat styles, in particular, whether they like RPGs with real-time or turn-based combat systems. However, there is little scientific research into this question. With our research we aim to systematically explore combat style preferences and determine the underlying reasons for preferring certain types over others. To this end, we analyzed a set of online discussions (546 posts) with regard to three broad combat system categories: Real-Time (RT), Turn-Based (TB), and Real-Time with Pause (RTwP). Our results suggest that while most players indeed do have a preference for one combat style, most players are still largely or completely open to other styles of combat. We furthermore identify common positive and negative traits of different combat styles and discuss implications for combat design.

CCS CONCEPTS

• **Applied computing** → **Computer games**; • **Software and its engineering** → **Interactive games**.

KEYWORDS

Computer role-playing games, player preferences, combat systems, video games, game design, games user research

ACM Reference Format:

Ville Mäkelä and Albrecht Schmidt. 2020. I Don't Care as Long as It's Good: Player Preferences for Real-Time and Turn-Based Combat Systems in Computer RPGs. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '20)*, November 2–4, 2020, Virtual Event, Canada. ACM, New York, NY, USA, 10 pages. <https://doi.org/10.1145/3410404.3414248>

1 INTRODUCTION

A key part of almost any computer role-playing game (RPG) is its **combat system**; the mechanisms, features and interfaces through which the players do battle against their adversaries, in order to progress in the game and gain rewards. Players typically spend a great deal of their play time engaged in battles or getting prepared for one [6, 35].

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CHI PLAY '20, November 2–4, 2020, Virtual Event, Canada

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ACM ISBN 978-1-4503-8074-4/20/11...\$15.00
<https://doi.org/10.1145/3410404.3414248>

Combat systems in RPGs tend to be complex and consist of a myriad features [35]. Perhaps the clearest characteristic of any combat system is whether it plays in real-time or whether it employs a turn-based system, or something in between. In **turn-based** system, combatants take turns performing actions. In **real-time** combat systems, all combatants act simultaneously according to their abilities. There are also some hybrid combat systems, for example, those that are real-time by default but contain a paused tactical mode for issuing commands.

Combat systems in RPGs are a constant center of attention in developer and gaming communities. For example, in indie game communities, questions about players' preferences regarding RPG combat systems pop up frequently. In gaming communities, players discuss and analyze the combat mechanics of recent and upcoming RPGs extensively. A quick internet search reveals a plethora of articles, polls and discussions surrounding this topic.

In games media, combat systems are often handled in dramatic fashion. For example, the highly anticipated *Baldur's Gate III* made headlines when the developers announced that the game would employ a fully turn-based combat system – a deviation from the franchise's earlier installments which employed a real-time system with a pause option. Online articles and discussions provided passionate arguments both for and against this change [15, 24, 32]. On a similar note, another high-profile game, *Final Fantasy VII Remake*, is discussed actively because it offers two different combat modes, a new real-time system, and a "classic" turn-based mode seemingly to please the fans of the original *Final Fantasy VII* [21, 27].

All in all, based on online articles and discussions, one might be quick to assume that players of computer RPGs are clearly divided between those who prefer turn-based combat systems, and those who prefer real-time. However, **we lack a systematic investigation into the combat system preferences of players as well as into the fundamental reasons behind these preferences**.

To this end, we conducted an analysis of online discussions (546 posts) to understand player preferences regarding combat systems in computer RPGs. Our main research questions were:

- **RQ1:** How strongly are gamers divided in their preferences for real-time and turn-based combat systems in RPGs?
- **RQ2:** What are the perceived strengths and weaknesses of different combat systems?

Our pre-analysis showed that while many online discussions are content with grouping RPG combat systems into **Real-Time (RT)** and **Turn-Based (TB)**, many players also distinguish a separate option that plays real-time by default but can be paused to enter a more tactical mode for issuing commands. We call this mode **Real-Time with Pause (RTwP)**. Our subsequent analyses were then conducted accounting for these three primary combat styles.

Our results suggest that **players often have a primary preference for one combat style, but they are still largely open to other combat styles**. In our data, 58.1% expressed openness to all combat styles, regardless of whether they had a preference. Players commonly stated that different combat styles cater to different needs, and therefore they potentially enjoy all kinds of combat styles. We then identified strengths and weaknesses in different combat styles as perceived by players.

RT systems were perceived as more fitting for single-character RPGs and for games that emphasize action and fluidity. They were appreciated for their intensity, offering adrenaline rushes and excitement. Managing party members and relying on AI companions were seen as problematic. In contrast, TB and RTwP were perceived as well suited for party-based RPGs and were appreciated for their tactical depth. TB was uniquely appreciated for its relaxed gameplay, and RTwP was appreciated for its balance of action and strategy.

Our paper provides valuable insight into player preferences and expectations towards three broadly defined styles of combat (RT, TB, and RTwP). Our results firstly suggest that we should dismiss the notion that most players are heavily preferring one combat style over others. Second, we provide an overview of the perceived strengths and weaknesses of each combat style, and provides implications for design. Third, we provide pointers for computer RPGs that players highly value for their combat systems. We especially see that this work is valuable to indie and solo developers who want to learn more about their target audience while designing combat systems for computer RPGs.

2 BACKGROUND

In this section, we provide a brief outlook on the definitions and nature of computer RPGs, after which we present an overview of existing research regarding preferences and motivating factors of video game players.

2.1 On the Definition of Computer RPGs

Video game genres are difficult to define clearly. They are constantly evolving, new subgenres are emerging, and genres overlap with each other [1, 2, 16, 23, 43]. Computer role-playing games are, perhaps, particularly tricky in this respect. Role-playing games in general take various forms and fully digital computer RPGs are just one of them, and the definitions of RPGs may vary across formats [22, 40]. Different formats, such as pen-and-paper RPGs and CRPGs, may also have different strengths and weaknesses [40].

Hitchens and Drachen [22] note that although there is no widely accepted definition for an RPG, players still perceive that they know when something is an RPG. In contrast, Drachen et al. [17] state that although RPGs vary across and within formats, RPGs still *"share a focus on providing the player with a character that grows and develops through play experience"*. In the context of CRPGs, Stenström and Björk [35] put emphasis on *combat* mechanics and *character development*, such as improving the attributes and abilities of the player character(s) as they progress in the game.

In summary, clearly defining what counts as a computer RPG is difficult. In this paper however, we seek to understand how **players** perceive and discuss combat systems in RPGs, and how strong their preferences are. Our analysis of online discussions lends itself

well to this perspective, since we do not interfere with the players' ideas of what constitutes an RPG.

Following the player perspective, **we focus on broad categories of combat systems**. We argue that this is necessary to allow reasonable comparisons and categorizations within data collected from multiple websites and threads. Moreover, we argue that players likely perceive combat systems in CRPGs more simply than what researchers may be interested in when analyzing various types of RPGs and combat systems (e.g., [35]).

We take **turn-based (TB)** and **real-time (RT)** systems as our starting point, since they appear most commonly in games media and online discussions as a way to describe different types of computer RPGs, and the clashes between these two combat styles among gaming communities [15, 20, 21, 24, 27, 29, 32] are an important motivation for this research. In addition, as we describe in the next chapter, we conduct a pre-analysis of our data, based on which we add a third combat system category to our analysis: **real-time with pause (RTwP)**.

2.2 Player Types, Preferences, and Motivations

Prior games research has attempted to gain an understanding of different types of players and their preferences and motivations. In his seminal work, Richard Bartle distinguished between four types of players [3]: *killers*, *achievers*, *socialisers*, and *explorers*. This work has since been expanded to cover more players in broader contexts [4, 5], and many other researchers have also presented player types [7, 8, 28, 42, 44] or categorized the motivating factors of players [41, 45, 46] or their preferences [39].

Player types, playing styles, preferences and motivations have been further linked to many factors, such as personality traits [18, 26, 28, 30, 36], age [9, 39, 46, 47], and gender [9, 31, 39, 46, 49]. Still, an important point for our research is that players do not belong solely to one single category. Rather, current player models acknowledge that players exhibit qualities from several or all categories – some are simply more dominant than others [4, 36, 39, 46, 48, 50].

In the context of computer RPGs, prior research has studied the different motivations that drive players [41, 46]. Tondello et al. [39] investigated the relationship between different groups of game elements and different playing styles. Their work suggests that real-time and turn-based combat appeal to different playing styles. At the same time, other work suggests that different kinds of RPGs and related genres (MMORPGs, RPGs, action RPGs, turn-based strategy, and real-time strategy) still appeal to players who share similar personality traits [30].

Based on existing research, it is difficult to say how the players' preferences on combat systems will be divided, as some studies suggest stronger divisions than others. At the same time, games research tends to operate on a higher level, focusing on personality traits and player archetypes, and does not necessarily reach the intricacies of various combat systems in RPGs.

We also highlight that we aim to look *beyond* the preferences of players, and analyze the strength of their preferences and whether there is openness to combat systems that are not within these preferences. We aim to offer a practical outlook on combat systems in RPGs that game designers can use to make informed decisions.

3 ONLINE META ANALYSIS

To address our research questions, we conducted a meta-analysis of online discussions about combat systems in RPGs.

3.1 Data Collection and Filtering

We searched for online discussions that dealt with preferences between real-time and other (e.g., turn-based) combat mechanics in CRPGs. We followed a multi-step approach where we **1)** located relevant forums, **2)** within those forums identified threads that discussed the topic, and **3)** collected and filtered posts from the threads:

Step 1: Forum identification. In this step we used a Google search (February, 2020) with the keywords “RPG”, “turn based”, “real time”, “combat” and “preference” in various combinations (3, 4, and all 5 words). We chose these keywords as the clashes between these two combat styles were the starting point for our work. Out of result sets (typically the first 50 results) we manually identified links that represented forums.

Step 2: Thread identification. Within the identified forums, we searched for suitable discussion threads using the same keywords and combinations. We set requirements that suitable threads must 1) include some of the search keywords, 2) discuss *preferences between combat systems* instead of discussing a specific combat system/style, and 3) not be about a specific game or series.

This way, **we discovered 17 discussion threads from eight different websites** (Table 1). Out of these 17 threads, 12 threads were concerned with computer RPGs overall, without including limitations in the discussion. Four threads were in the context of JRPGs, and one in the context of “rule-intense RPGs” (RPGs that utilize rule systems such as Dungeons & Dragons).

Many of the included discussions contained polls. We did not account for them because they forced respondents to choose from limited options, and in any case we were not interested merely in the popularity of different combat styles. Instead, we focused on the posts for richer insights.

Step 3: Filtering. From the identified discussion threads, we copied the posts in an Excel sheet. We filtered out posts that clearly did not contribute to the topic (e.g., off-topic and rude posts). This process resulted in a total collection of **546 posts**.

3.2 Pre-Analysis: Primary Combat Styles

To begin our work, we analyzed the threads to identify which combat styles were commonly discussed or perceived by players. In all of the analyzed threads, discussion starters provided options for respondents (shown in Table 1). In all cases, some forms of **Real-Time combat (RT)** and **Turn-Based combat (TB)** were present.

Another option was **Real-Time with Pause (RTwP)**. RTwP refers to combat systems where the action is real-time by default but can be paused to issue commands and analyze the situation (e.g., *Baldur’s Gate*, *Dragon Age: Origins*). In other words, pausing the action is a designed and fundamental mechanic of combat (being able to pause the game for a break or for saving, loading, etc. does not make it RTwP)

RTwP was a separate starting option in five threads. In the 546 collected posts, RTwP appeared 110 times (addressed as “RTwP”, “real-time with pause” or “real time with pause”). Since its strong

presence in the discussions despite not usually being a starting option, we included RTwP as part of our analysis.

Active Time Battle (ATB) appeared as an option in three threads. ATB refers to a style where combatants get a turn whenever their turn progress bar is full (e.g., *Final Fantasy VII* [33]). The bars fill over time, according to various factors. In the discussions, ATB (addressed as “ATB” or “active time battle”) appeared 32 times, which was insufficient to be included in the analysis as a separate combat style. Most players perceived ATB as a turn-based system without the need to separate the two. One more option that appeared in the starting posts was “time-based turns”. However, this only appeared as a starting option in one thread and was not commonly distinguished in the subsequent posts, so this option was excluded.

Therefore, we identified **three primary combat styles: Real-Time (RT), Real-Time with Pause (RTwP), and Turn-Based (TB)**. In the following, we briefly describe these combat styles based on our overall understanding gained through analyzing the posts. We do not seek to define these categories comprehensively, but to provide a *general overview* of each combat style. However, it is worth noting that there are varying perceptions of these combat styles among players, and that some combat systems fit a specific category more clearly than others.

3.2.1 Real-Time (RT). The key characteristic of RT systems is that all, or almost all, of the gameplay takes place in real-time. A good example of a real-time combat system is *Dark Souls* [19], where the player controls their character at all times, and is directly responsible for every action, such as walking, running, dodging, blocking, parrying, and attacking. Players must often think on their feet and remain vigilant (e.g., be ready to dodge an incoming attack from a surprising direction).

It is worth noting that in many RT systems, combat can still be paused to access menus and perform certain actions such as change equipment or use items. Hence, the line between RT systems and RTwP systems may occasionally be blurry, and as we discuss in this paper, not all players acknowledged RTwP as a separate combat style. However, generally it would seem that pausing mechanics in RT systems are more specialized and not necessarily a part of the core combat gameplay loop, and pausing might be more out of necessity than anything else (e.g., the action is paused as the player is scrolling through their inventory).

While many RT systems only include a single character, it is fairly common for RT systems to have party members. Party members are often controlled by an AI, although players can usually assign explicit commands to party members or adjust the AI’s behavior. Many such systems also allow changing the “lead” character, i.e., players can decide which character to assume full control of.

3.2.2 Real-Time with Pause (RTwP). In RTwP systems, combat has two main modes: real-time mode, where the battle progresses and combatants perform actions, and paused tactical mode, where players assign commands to their characters, evaluate the battle conditions, and plan their next moves. In contrast to the paused functions seen in some RT systems, a paused mode in a RTwP system is generally a more pervasive part of gameplay and more comprehensive in its functions. RTwP therefore relies less on reactive gameplay and more on tactical prowess. The paused mode can often be accessed freely, and commands can be assigned to any or all party members.

Website	URL	Included Posts	Combat Styles Provided by Original Poster	Context
Beamdog	https://forums.beamdog.com/discussion/60303/turn-based-real-time-with-pause	45	RT, RTwP, TB	Rules-intense RPGs
Facebook	Indie Game Developers group	16	RT, TB, ATB	All RPGs
Gamefaqs	https://gamefaqs.gamespot.com/boards/691087-playstation-4/78434659	39	RT, TB	JRPGs
Gamefaqs	https://gamefaqs.gamespot.com/boards/691087-playstation-4/78426882	33	RT, TB	JRPGs
Gamefaqs	https://gamefaqs.gamespot.com/boards/691087-playstation-4/77893878	48	TB, RT	JRPGs
Gamefaqs	https://gamefaqs.gamespot.com/boards/189706-nintendo-switch/78519741	31	RT, TB	All RPGs
Gamefaqs	https://gamefaqs.gamespot.com/boards/189706-nintendo-switch/77515989	25	RT, TB, ATB	JRPGs
Gamefaqs	https://gamefaqs.gamespot.com/boards/691087-playstation-4/73005725	35	RT, TB	All RPGs
Gamefaqs	https://gamefaqs.gamespot.com/boards/691087-playstation-4/72943440	7	RT, TB	All RPGs
Gamefaqs	https://gamefaqs.gamespot.com/boards/691087-playstation-4/75200560	53	RT, TB	All RPGs
Quora	https://www.quora.com/Do-you-prefer-RPG-s-to-have-action-combat-or-turn-based-Why	12	RT, TB	All RPGs
Reddit	https://www.reddit.com/r/gamedesign/comments/7zcv73/turn_based_vs_real_time/	12	RT, TB	All RPGs
Reddit	https://www.reddit.com/r/rpg_gamers/comments/b4urq9/in_rpgs_do_you_prefer_turnbased_realtime_with/	90	RT, RTwP, TB	All RPGs
Reddit	https://www.reddit.com/r/rpg_gamers/comments/50hehe/what_type_of_combat_do_you_prefer_real_time/	24	RT, RTwP, TB	All RPGs
RPGnet	https://forum.rpg.net/index.php?threads/rpgs-turn-based-or-real-time.858926/	36	RT, RTwP, TB	All RPGs
RPGWatch	https://www.rpgwatch.com/forums/showthread.php?t=44657	29	RT, RTwP, TB, Time-based turns	All RPGs
Unity	https://forum.unity.com/threads/rpg-battle-systems.55075/	11	RT, TB, ATB	All RPGs
		546		

Table 1: An overview of the 17 discussion threads included in the analysis. Threads last accessed on April 21, 2020.

Most, if not all, RTwP games are party-based, i.e., the player controls several characters. However, the exact ways of controlling these characters vary between games. For example, in *Baldur's Gate* [11], the action is observed from a top-down view, and character abilities are chosen from a command bar. In contrast, *Dragon Age: Inquisition* [10] can be played much like a party-based RT system when the paused mode is not on, as the player can assume direct control of one party member.

It is worth noting that accessing the paused tactical mode is not always necessary. In both of the above examples [10, 11], easier fights may be handled completely in real-time, while challenging fights might require active utilization of the tactical mode.

3.2.3 Turn-Based (TB). In turn-based systems, combatants act in turns, usually one at a time. Other combatants are typically unable to move or perform actions outside of their own turn. Thus, the pace of turn-based systems is more controlled, and the focus is on tactical choices and party management. This focus is similar to RTwP but the turn-based mechanics make the two clearly distinct.

Turn order and number of turns may be defined by various factors, such as the combatants' attributes and overall conditions of the combat situation. In some TB systems, certain combatants may get more turns than others. For example, it is common that particularly challenging foes get more turns than usual. Many TB systems add tactical depth through mechanics that allow manipulating turns, such as actions that delay an enemy combatant's turn or prevent it altogether (e.g., [25, 33]).

The content of a turn varies between systems, but the general idea behind TB systems is that each character has an array of actions to choose from but can only perform a limited number of them per turn, and hence players must make smart decisions regarding what each of their characters do in combat. For example, in many JRPGs such as *Final Fantasy VII* [33], a combatant's turn consists of only one action. Another typical case is that combatants have a number of *action points* to spend per turn, and certain actions require more points than others (e.g., *Divinity: Original Sin* [25]).

Preference	Categories	Explanation
Neutral	1	Equal preference to all styles or no preference at all.
Strong preference for one style	3	Preference for one combat style without any expressed openness towards, or positive remarks about other styles (or clearly stated dislike towards the other styles).
Preference for one style but open to all	3	Preference for one of the three combat styles but with expressed openness towards, or positive remarks for, other combat styles.
Preference for one style but open to another	6	Preference for one of the three combat styles but with expressed openness towards, or positive remarks for, another combat style but not the third style.
Strong preference for two styles	3	Equally strong preference for two combat styles, with no expressed openness towards the third style (or clearly stated dislike towards the third style).
Preference for two styles but open	3	Equal preference for two combat styles, but with expressed openness towards, or positive remarks for, the third style.

Table 2: An overview of the 19 preference categories.

3.3 Analysis 1: Combat Style Preferences

In the first round of analyses, we focused on collecting insights on the overall preferences of combat systems in computer RPGs. We used thematic analysis to group similar responses together, which were based on the three primary combat styles, the strength of the stated preference, and any expressed openness towards one or more of the remaining combat styles. Through this process we ended up with 19 preference categories (Table 2).

In this way, **we categorized 470 posts** (86% of the full data set), as not all posts provided a preference of their own (while they still might have provided insights that we used later in our analysis). Preferences were counted only once from each poster; the content on the same user’s subsequent posts were combined and so we utilized the content from all posts even though they only counted as one “opinion”.

An important note here, however, is that even though many players and discussion starters did make clear distinctions between RT and RTwP, in many discussions real-time combat was referred to as “action combat”. In some cases, it was unclear whether this referred to strictly real-time systems or if it also included RTwP systems. In these cases, we made judgment calls based on the exact wording in the post and the general tone of the discussion. Partly because of this, we refrain from making direct comparisons between the popularity of different combat styles. We discuss this limitation further towards the end of this paper.

3.4 Analysis 2: Perceptions of Combat Styles

In the second round of analysis, we used thematic analysis to identify commonly perceived strengths and weaknesses of different combat styles. From the original data set, we included posts that expressed any perceived qualities – positive or negative – of any of the combat styles. This comprised **240 posts**. We then separated individual points from each post and assigned them to the corresponding combat styles (RT, RTwP or TB), and separated negative and positive points. We then grouped thematically similar remarks together and identified the most commonly perceived qualities.

3.5 Analysis 3: Popular Combat Systems

In the final round, we looked into which computer RPGs were commonly mentioned as having a good combat system.

We note that it was not always clear whether players were referring to games in a positive manner specifically because of the combat system, or because they overall liked said games. Nonetheless, all discussions were in the context of combat systems, and therefore it is more likely than not that a game was mentioned at least partly because of its combat. Therefore, we took an inclusive approach and included all occurrences where games were mentioned in a positive light – unless it was specified that they liked a game for reasons other than combat. Mentions of games that were negative (e.g., disliking a game) or neutral (e.g., mentioning a game to demonstrate a gameplay feature) were not included. Using these criteria, we included a total of **380 occurrences from 148 posts**, which contained **178 unique games or games series**.

Posters sometimes referred to specific games and sometimes to games series overall. We analyzed these occurrences on a case-by-case basis. We also factored in the perceived differences between the installments in the series. For example, some posters wrote about the combat in *Divinity: Original Sin* and some in *Divinity: Original Sin II*. Since there are no major differences between the combat systems in the two installments, we grouped them together. The same applied for almost all cases. Similar procedures have been used in prior research to identify and group games [37, 38].

The only clear exception was the *Final Fantasy* franchise. The earlier installments have utilized turn-based systems, whereas the more recent installments have been real-time. This was evident in the posts as well; posters who referred to the series almost always specified whether they were referring to turn-based or real-time installments in the series (for better or worse). We therefore grouped this franchise separately to turn-based and real-time installments.

4 RESULTS

In this chapter, we first present the results on combat style preferences, after which we present the most commonly reported positive and negative aspects of different combat styles. Finally, we list CRPG series that were commonly perceived positively.

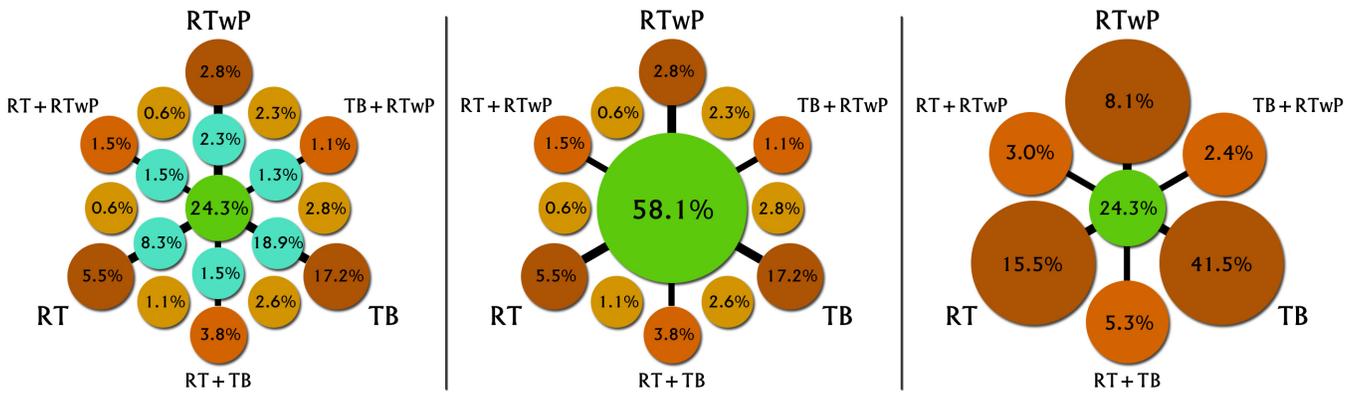


Figure 1: Combat style preference distribution in analyzed online discussions (470 posts). LEFT: Detailed distribution of preferences across the 19 preference categories. MIDDLE: The majority of players (58.1%) expressed being open to all styles of combat. RIGHT: A simplified figure showing the *primary* preferred combat style of players. Regardless of their openness to other styles, 65.1% of players expressed a primary preference. 10.6% expressed an equal preference between two combat styles. The remaining 24.3% did not have a preference.

4.1 Combat Style Preferences

The distribution of posts in all 19 categories is presented in Figure 1 (left). **The most popular category was the neutral option** (no preference at all, or equal preference for all combat styles), in which we assigned 24.3% of the posts.

Out of the strong preferences for one combat style, TB was the most popular option (17.2%), followed by RT (5.5%) and RTwP (2.8%). Of the strong preferences between two styles, the most popular was RT+TB (3.8%), followed by RT+RTwP (1.5%) and TB+RTwP (1.1%).

However, these results do not necessarily indicate that TB is more widely preferred than others, as it is likely affected by the demographics in the analyzed forums as well as partly by the options provided by the discussion starters. Our paper is not about comparing the *popularity* between combat styles.

A far more interesting result is the general trend that many respondents were open to other combat styles despite having a preference. Out of these categories, the most popular was TB but open to others (18.9%), RT but open to others (8.3%), RTwP but open to others (2.3%), RT+TB but open to RTwP (1.5%), RT+RTwP but open to TB (1.5%), and TB+RTwP but open to RT (1.1%).

Putting these categories together with the neutral responses, then, **58.1% of all posts expressed being open to other combat styles**, even though more than half of these posts did state an overall preference (Figure 1, middle).

The remaining six categories are those that had a preference for one style but expressed being open to another style, but not the third one. Out of these, the most popular was TB but open to RTwP (2.8%), followed by TB but open to RT (2.6%), RTwP but open to TB (2.3%), RT but open to TB (1.1%), RT but open to RTwP (0.6%), and RTwP but open to RT (0.6%).

Putting together all the categories besides the strong preferences for just one style, then, 74.5% of posts expressed at least *some* level of openness beyond just one combat style. At the same time, 65.1% of posts expressed a preference towards one combat style (Figure 1, right): TB (41.5%), RT (15.5%), and RTwP (8.1%).

REAL-TIME	
Strengths	Weaknesses
-Suitable for single-character systems	-Problems with party members (controlling is difficult or AI does not do a satisfactory job)
-Full and immediate control of character (can react at all times, dodge attacks, "real" playing instead of navigating menus)	- Button mashing
-Skill over strategy and time	- Simple (generic, boring, dull, mindless)
-Intensity (adrenaline, excitement, engagement, stay on your toes)	- Requires physical skill (quick reactions, dexterity, timing)
-Fast and fluid action	- Pressure and stress (no time to think, quick decisions required)
-Accessible	
Positively Perceived Series	
Dark Souls	
Tales (e.g., Tales of Symphonia)	
Ys	
Xenoblade	

Table 3: Real-Time combat systems: perceived strengths and weaknesses and positively perceived series.

4.2 Perceptions of Combat Styles

We identified commonly perceived strengths and weaknesses of different combat styles (Tables 3, 4, and 5).

4.2.1 Real-Time Combat Systems. For real-time combat systems (Table 3), the most commonly identified positive trait was their **suitability for controlling single characters**. Similarly, the most commonly perceived negative trait were problems with more than one combatant. On one hand, controlling several party members was perceived as tedious, and on the other hand, the performance of AI-controlled party members was perceived as lacking. Some players also noted that they simply did not trust that the AI would do a good enough job and hence felt the need to take over.

TURN-BASED	
Strengths	Weaknesses
-Party management (precise and full control of all characters) -Tactical depth -Diversity and options (more options to choose from, more skills and abilities, more customization) -Relaxed and unrushed (can take time to think about the next moves, can relax, can do something else simultaneously)	-Slow (overall slow battle speed, a lot of waiting between turns especially with many enemies, slow and unskippable animations) -Boring/tedious (lack of variety, too many trash fights, too much fighting overall, watching the same animations over and over) -Lack of challenge (battles do not require players to strategize and make full use of their abilities, battles are predictable)
Positively Perceived Series	
Divinity: Original Sin Final Fantasy (turn-based installments) XCOM Dragon Quest	

Table 4: Turn-Based combat systems: perceived strengths and weaknesses and positively perceived series.

Some players praised the responsive and dynamic control of their character provided by RT: they could react to events during combat, dodge attacks, and jump over obstacles. Similarly, players perceived that RT puts them more in the action, controlling the character directly, as opposed to, e.g., navigating through menus. This also meant that RT was perceived as more intense and exciting.

Besides problems with party members, RT systems were commonly criticised for being too simple or generic, where button mashing was enough to succeed in battle without much thinking. On a similar note, players also criticized that many RT combat systems were too simplistic to begin with, consisting of only a few different moves. Some players disliked the focus on physical skill, like quick reactions, dexterity, and timing, over tactical skill. Especially some older players noted that their speed is no longer what it used to be, and were thus more interested in relaxed gameplay. Finally, some players disliked the pressure and stress imposed by real time systems, who perceived that there was not enough time to think about their actions.

4.2.2 Turn-Based Combat Systems. In contrast to RT, turn-based combat systems (Table 4) were perceived as very suitable for party-based RPGs, where players could control each party member with precision. TB was also praised for its tactical depth, where thinking and planning is emphasized over reaction speed and dexterity.

TB was also commonly seen as more diverse and complex than RT systems, where players have more options in battle, and where characters tend to have more abilities to choose from and there are more customization options overall. This perceived diversity is likely linked to how players perceive TB systems as party-based systems, as opposed to RT (controlling several characters logically opens up possibilities).

REAL-TIME WITH PAUSE	
Strengths	Weaknesses
-Party management (precise and full control of all characters) -Control over the flow of battle -Balance between action and strategy (speed through easy fights vs. pause and strategize with difficult fights) -Suitable for games with a lot of fighting -Tactical depth	- Too much micromanagement (issuing commands is tedious, commands need to be issued often, pausing kills the flow) -Difficulty balancing action and management (difficulty is dependent on how often one pauses, pausing is required to be effective, combat is messy without pausing)
Positively Perceived Series	
Baldur's Gate Dragon Age Might & Magic	

Table 5: Real-Time with Pause combat systems: perceived strengths and weaknesses and positively perceived series.

Another positive aspect of TB was that the gameplay tends to be relaxed and unrushed. For players, this meant that they could think about their next move in peace. An interesting habitual remark was that some players noted that with turn-based systems, they can "chill" and do something else while they are playing, like browse the internet or chat with friends. Some also noted that they have children or other causes for interruptions, and that a TB system is easier to pause and get back into than other combat systems.

The most commonly perceived weaknesses with TB revolved around similar themes, as many players noted that TB system are—or can be—slow, boring, and tedious. Most commonly, TB systems tend to progress slowly, especially with many enemies, slow moving speeds, and long or unskippable animations. For many players, this led to boredom. Many players noted that there is often too much fighting overall. In particular, it was noted that so-called trash fights (where players fight common enemies with little challenge) get boring quickly, but they often still take a long time to get through.

Finally, some players noted that many turn-based RPGs lack challenge, which makes the fights predictable and do not require much thinking. In other words, it was occasionally perceived that TB systems can under-utilize their own mechanics, i.e., complex skills and tactics are available, but they are not required to succeed.

4.2.3 Real-Time with Pause Combat Systems. RTwP systems shared some similar qualities with TB systems (Table 5). Most clearly, RTwP was also seen as suitable for systems with several party members, as RTwP lends itself better for issuing exact commands for all members than RT systems. Another similarity was that RTwP was also appreciated for its tactical emphasis, where strategy and thinking is more important than physical skill.

In addition, RTwP was uniquely appreciated for its mix of action and strategy, and the ability to control the flow and pacing of battles. Most importantly, this meant that players could speed through easy fights quickly without having to pause, but could take their time with challenging battles. In contrast to TB, RTwP was therefore seen as suitable for games with a lot of fighting (or with a lot of "trash" fights).

At the same time, RTwP was criticised for involving too much micromanagement, which was sometimes tedious and affected the flow of the game. On a related note, some players complained that to be effective, they need to pause frequently, and that going without pausing is not necessarily a reasonable option at all.

4.3 Positively Perceived Combat Systems

Finally, we looked into which CRPGs were commonly mentioned in the discussions as examples of good combat systems (Tables 3, 4, 5, bottom). The most commonly mentioned RPG series with real-time combat were *Dark Souls*, *Tails*, *Ys*, and *Xenoblade*. For turn-based systems, the most common were *Divinity: Original Sin*, *Final Fantasy* (turn-based installments), *XCOM*, and *Dragon Quest*. For RTwP systems, the most common were *Baldur's Gate*, *Dragon Age*, and *Might & Magic*.

In this paper, we do not dive deeper into these RPG series because posters did not usually offer detailed explanations as to *why* they perceived the reported games or combat systems positively. Nevertheless, it might be worthwhile to study these CRPGs to gain more insight into the design of positively perceived combat systems.

5 DISCUSSION

In this chapter, we discuss the main takeaways and design implications derived from our results. Then, we discuss the limitations of our work and present directions for future work.

5.1 Most Players Are Open About Combat Styles in CRPGs

Our primary finding is that **most players are largely or completely open to all combat styles**. This set of players consists of those who are completely neutral about their preferences, and those who have a primary combat style preference but still remain open to other styles. Therefore, players with very strong preferences are a smaller group than anticipated.

Many players explained that different combat systems "scratch a different itch", that is, they cater to different needs. This perception is also supported by the perceived strengths and weaknesses in different combat styles. In particular, RT and TB systems had very different, almost opposite positive qualities. While RTwP shared some positive aspects with TB, they both still had unique positive and negative qualities.

While players can be open about their combat style preferences, the **preferences seem to be linked to a number of expectations and other qualities of the game**. The most popular factor was that RT was seen as more suitable for single-character games, whereas TB and RTwP were more clearly for party-based systems. RT systems were also perceived as more focused on physical skill (e.g., quick reactions, timing, dexterity) and quick thinking, whereas TB and RTwP were more focused on tactical depth.

We also argue that the number of players being open about combat styles could be even higher. Our data came from discussions where players were specifically asked to choose one over the others. This might have tipped some respondents to simply state their preference without expressing anything else. None of the discussions asked about the players' openness towards other combat styles at all, and yet, many respondents wanted to point this out.

In our primary result we might observe traces of the high-level trend, that while players often have a dominant player type and primary motivators, they still display other tendencies to various degrees [4, 36, 39, 46, 48, 50]. Even then, the level of openness towards different combat styles was stronger than anticipated.

Going back to our starting point, we might still wonder about why we find such opinionated pieces in games media and online discussions. While this could partly be attributed to a loud minority, it may also be that some of the strong opinions are generated not by a certain style of combat, but by *change*. Players feel strong emotions playing video games [12, 13] and build attachments to games and game characters [14]. It may be that fundamental changes to beloved video game series feel threatening. In our data, we also found comments where posters stated that even though they preferred a certain style of combat, they still would not want those series to change to it that are known for other styles.

5.2 Implications for Design

Based on the commonly reported pitfalls of different combat styles, we provide some high-level considerations for combat design.

5.2.1 Real-Time Combat Systems. Real-time systems were commonly criticized for their problems with more than one party member, where controlling several party members was tedious, or AI-controlled party members did not perform sufficiently. This does not necessarily mean that RT is not at all suitable for group-based systems; rather, it might mean that current systems do not perform very well in this regard. In the case of real-time party-based RPGs, special attention should be therefore paid to fluid control of party members and/or better AI control. A source of inspiration might be the *Gambit system* in *Final Fantasy XII* [34], which received praise from respondents. The Gambit system allows players to assign detailed behavioral rules to party members, according to which they act, but can still be controlled manually.

5.2.2 Turn-Based Combat Systems. Turn-based systems were criticized for being slow and boring, mostly because of the high frequency and length of battles and the amount of waiting during battles (both during and outside of player turns). One consideration, then, is that TB games should consider limiting the amount of fighting and introduce alternative ways to progress and be rewarded. For example, in *Baldur's Gate* [11] and *Divinity: Original Sin* [25], fighting can often be avoided using various skills and dialogue choices, which can lead to equal rewards. An additional consideration is to limit the number of "trash" fights or offer ways to skip or prevent them. For example, in some games, enemies that are considerably weaker no longer attack the player.

To minimize waiting times during battles, an easy consideration is that combatants (enemies as well as player-controlled characters) should move at a decent pace during their turn, and animations should be short yet descriptive.

5.2.3 Real-Time with Pause Combat Systems. RTwP systems were criticized by some for involving too much micromanagement, and for the need to pause frequently to issue commands. At the same time, fans of RTwP precisely liked the fact that they had full control over when to pause and when to let the fight unfold in real-time, and some also liked the high amount of micromanagement.

To allow less frequent pausing without hindering those who like to pause often, a good consideration is to allow chaining commands; that is, players can assign multiple commands to each character at once, and the characters execute them in the given order. Hence, pausing is required less often. Some RTwP games already allow this; however, it may be that the games do not highlight this well enough and some players are simply not aware of the possibility, or that chaining commands is simply not fluent enough.

5.3 Limitations and Generalizability

A limitation of our online meta analysis is that we lack background information on the posters, for example, their gaming preferences and habits at large as well as their personality traits. For further investigations, we would likely need to more directly enquire about players' preferences and their openness towards combat styles beyond their preferences.

Moreover, our results should not be taken as an indication of the *popularity* of different combat styles (and this was not our focus either). In our data, turn-based combat systems were preferred by players significantly more often than RT and RTwP. We believe that RT and RTwP systems may be more popular, and that players may be more open towards them than our data indicates.

The prevalence of TB systems were likely affected by the demographics in the analyzed forums, and the options and context provided by the discussion starters. For example, some threads focused on JRPGs, and one forum was primarily a forum for table-top RPGs, so the player base may have been more inclined towards TB. Cultural differences may also be a factor in the popularity, as many of the most popular JRPGs have traditionally been turn-based, such as prior installments in the *Final Fantasy* and *Dragon Quest* series.

Similarly, the popularity of RTwP systems was likely affected by the discussion starters, who did not always provide RTwP as an option. It was also sometimes unclear whether players were referring strictly to real-time systems or also RTwP systems. This might suggest, though, that some players do not distinguish between RT and RTwP systems, or that RTwP systems are generally more diverse. This is especially interesting because when considering the perceived strengths and weaknesses of different combat styles, RTwP seemed to be much closer to TB and RT. There were also some posts where posters grouped TB and RTwP systems together. Therefore, it would seem that players have mixed perceptions of RTwP, but nonetheless enough players distinguish it from other combat styles so that it should not be ignored.

5.4 Future Work

We recognize several areas for future work. In this paper, it was necessary to inspect broad combat style categories, each of which may still contain considerable variance between different combat systems. Hence, a more direct investigation into how players perceive and distinguish between different combat systems could be valuable. Another interesting direction could be to investigate how player traits and other characteristics might link to combat style preferences, and whether such preferences could be predicted. A third area of interest could be to investigate the effect of culture and other demographic properties on combat style preferences.

6 CONCLUSION

In this paper, we looked into how players prefer and perceive different combat systems in computer role-playing games (RPGs). We collected and analyzed a set of online discussions (546 posts) about combat system preferences.

We identified three primary combat system categories: **real-time** (RT), **turn-based** (TB), and **real-time with pause** (RTwP). Real-time and turn-based systems were largely identified in all discussions. Real-time with pause was somewhat less frequent but nonetheless important for a noticeable number of players. Our further analysis showed RTwP was perceived very differently from RT, highlighting the need to acknowledge it as a separate category even when operating with broad categories.

Our primary finding is that **while most players do have a preference for one type of combat, they are still largely open to others styles of combat**. In our data, 58.1% stated being largely or completely open to other styles, regardless of their primary preference. Another 16.4% had a preference for two combat styles or were at least open to two, but not the third style. The remaining 25.5% of players did not express any openness towards other styles beyond their primary preference. Considering our method and the context of the analyzed discussions, we believe that the number of players who are open to other combat styles may be even greater.

We furthermore gathered overall perceptions of the different combat styles. Real-time combat systems were perceived as suitable for single-character RPGs, and praised for their intensity and responsive controls. However, managing party members and relying on AI companions were seen as problematic, and RT systems were often criticized for being too simple. In contrast, TB and RTwP were seen as well suited for party-based RPGs and were appreciated for their tactical depth. TB was uniquely appreciated for its relaxed gameplay but criticized for being slow, and RTwP was appreciated for its balance of action and strategy but criticized for the amount of micromanagement.

Our work provides valuable insight for developers and researchers about player preferences for, and perceptions of, different styles of combat in computer RPGs. For future work, we suggest a deeper investigation into player preferences for combat systems and the players' perceptions of different combat styles. A deeper investigation is likely to reveal more detailed trends that could be linked to, e.g., various player types and player traits, as well as different demographic characteristics.

REFERENCES

- [1] Thomas H. Apperley. 2006. Genre and game studies: Toward a critical approach to video game genres. *Simulation & Gaming* 37, 1 (2006), 6–23. <https://doi.org/10.1177/1046878105282278> arXiv:<https://doi.org/10.1177/1046878105282278>
- [2] Dominic Arseneault. 2009. Video game genre, evolution and innovation. *Eludamos. Journal for computer game culture* 3, 2 (2009), 149–176.
- [3] Richard Bartle. 1996. Hearts, clubs, diamonds, spades: Players who suit MUDs. *Journal of MUD research* 1, 1 (1996), 19.
- [4] Richard Bartle. 2005. Virtual worlds: Why people play. *Massively multiplayer game development* 2, 1 (2005), 3–18.
- [5] Richard A Bartle. 2003. *Designing virtual worlds*. New Riders.
- [6] Matt Barton. 2008. *Dungeons and Desktops: The History of Computer Role-Playing Games*. A K Peters/CRC Press.
- [7] Chris Bateman and Richard Boon. 2005. *21st Century Game Design (Game Development Series)*. Charles River Media, Inc., USA.
- [8] Chris Bateman, Rebecca Lowenhaupt, Lennart E Nacke, et al. 2011. Player typology in theory and practice.. In *DiGRA Conference*.

- [9] Joël Billieux, Martial Van der Linden, Sophia Achab, Yasser Khazaal, Laura Paraskevopoulos, Daniele Zullino, and Gabriel Thorens. 2013. Why do you play World of Warcraft? An in-depth exploration of self-reported motivations to play online and in-game behaviours in the virtual world of Azeroth. *Computers in Human Behavior* 29, 1 (2013), 103–109. <https://doi.org/10.1016/j.chb.2012.07.021>
- [10] BioWare. 2014. *Dragon Age: Inquisition*. Game [Sony PlayStation 4]. BioWare, Edmonton, Alberta, Canada.
- [11] BioWare and Black Isle Studios. 1998. *Baldur's Gate*. Game [Windows]. Interplay Entertainment, Los Angeles, United States.
- [12] Julia Ayumi Bopp, Elisa D. Mekler, and Klaus Opwis. 2015. "It Was Sad But Still Good": Gratifications of Emotionally Moving Game Experiences. In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems* (Seoul, Republic of Korea) (*CHI EA '15*). Association for Computing Machinery, New York, NY, USA, 1193–1198. <https://doi.org/10.1145/2702613.2732852>
- [13] Julia Ayumi Bopp, Elisa D. Mekler, and Klaus Opwis. 2016. Negative Emotion, Positive Experience? Emotionally Moving Moments in Digital Games. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (San Jose, California, USA) (*CHI '16*). Association for Computing Machinery, New York, NY, USA, 2996–3006. <https://doi.org/10.1145/2858036.2858227>
- [14] Julia Ayumi Bopp, Livia J. Müller, Lena Fanya Aeschbach, Klaus Opwis, and Elisa D. Mekler. 2019. Exploring Emotional Attachment to Game Characters. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Barcelona, Spain) (*CHI PLAY '19*). Association for Computing Machinery, New York, NY, USA, 313–324. <https://doi.org/10.1145/3311350.3347169>
- [15] Fraser Brown. 2020. *It rules that Baldur's Gate 3 is turn-based*. Retrieved April 21, 2020 from <https://www.pcgamer.com/it-rules-that-baldurs-gate-3-is-turn-based/>
- [16] Rachel Ivy Clarke, Jin Ha Lee, and Neils Clark. 2017. Why Video Game Genres Fail: A Classificatory Analysis. *Games and Culture* 12, 5 (2017), 445–465. <https://doi.org/10.1177/1555412015591900> arXiv:<https://doi.org/10.1177/1555412015591900>
- [17] Anders Drachen, Marinka Copier, Michael Hitchens, Markus Montola, Mirjam P. Eladhari, and Jaakko Stenros. 2009. Role-Playing Games: The State of Knowledge. In *Proceedings of the 2009 DiGRA International Conference: Breaking New Ground: Innovation in Games Play Practice and Theory* (DiGRA '09).
- [18] Lauren S. Ferro, Steffen P. Walz, and Stefan Greuter. 2013. Towards Personalised, Gamified Systems: An Investigation into Game Design, Personality and Player Typologies. In *Proceedings of The 9th Australasian Conference on Interactive Entertainment: Matters of Life and Death* (Melbourne, Australia) (*IE '13*). Association for Computing Machinery, New York, NY, USA, Article 7, 6 pages. <https://doi.org/10.1145/2513002.2513024>
- [19] FromSoftware. 2011. *Dark Souls*. Game [Sony PlayStation 3]. FromSoftware, Tokyo, Japan.
- [20] Game Rant. 2010. *Square Enix: Americans Don't Like Turn Based Games*. Retrieved April 21, 2020 from <https://gamerant.com/square-enix-americans-turn-based-games/>
- [21] Duncan Heaney. 2019. *FINAL FANTASY VII REMAKE has a Classic Mode for players who prefer turn-based combat*. Retrieved April 21, 2020 from https://square-enix-games.com/en_GB/news/final-fantasy-vii-remake-classic-mode
- [22] Michael Hitchens, Anders Drachen, et al. 2009. The Many Faces of Role-Playing Games. *International journal of role-playing* 1, 1 (2009), 3–21.
- [23] Jesper Juul. 2014. *Genre in Video Games (and Why We don't Talk [more] about it)*. Retrieved April 21, 2020 from <https://www.jesperjuul.net/ludologist/2014/12/22/genre-in-video-games-and-why-we-dont-talk-about-it/>
- [24] Andy Kelly. 2020. *It sucks that Baldur's Gate 3 is turn-based*. Retrieved April 21, 2020 from <https://www.pcgamer.com/it-sucks-that-baldurs-gate-3-is-turn-based/>
- [25] Larian Studios. 2014. *Divinity: Original Sin*. Game [Windows]. Larian Studios, Ghent, Belgium.
- [26] Nicole McMahon, Peta Wyeth, and Daniel Johnson. 2012. Personality and Player Types in Fallout New Vegas. In *Proceedings of the 4th International Conference on Fun and Games* (Toulouse, France) (*FnG '12*). Association for Computing Machinery, New York, NY, USA, 113–116. <https://doi.org/10.1145/2367616.2367632>
- [27] Michael McWhertor. 2019. *Final Fantasy 7 Remake will have a turn-based 'Classic Mode' that plays like the original*. Retrieved April 21, 2020 from <https://www.polygon.com/2019/9/14/20865479/final-fantasy-7-remake-classic-mode-turn-based-option-tgs-2019>
- [28] Lennart E. Nacke, Chris Bateman, and Regan L. Mandryk. 2011. BrainHex: Preliminary Results from a Neurobiological Gamer Typology Survey. In *Proceedings of the 10th International Conference on Entertainment Computing* (Vancouver, Canada) (*ICEC '11*). Springer-Verlag, Berlin, Heidelberg, 288–293. https://doi.org/10.1007/978-3-642-24500-8_31
- [29] NeoGAF. 2006. *Why real-time RPG combat systems are rubbish*. Retrieved April 21, 2020 from <https://www.neogaf.com/threads/why-real-time-rpg-combat-systems-are-rubbish.133698/>
- [30] Nicole Peever, Daniel Johnson, and John Gardner. 2012. Personality Video Game Genre Preferences. In *Proceedings of The 8th Australasian Conference on Interactive Entertainment: Playing the System* (Auckland, New Zealand) (*IE '12*). Association for Computing Machinery, New York, NY, USA, Article 20, 3 pages. <https://doi.org/10.1145/2336727.2336747>
- [31] Karolien Poels, Nele De Cock, and Steven Malliet. 2012. The female player does not exist: Gender identity relates to differences in player motivations and play styles. *Cyberpsychology, Behavior, and Social Networking* 15, 11 (2012), 634–638.
- [32] Reddit. 2020. *Opinions on baldurs gate 3 potentially being turn based?* Retrieved April 21, 2020 from https://www.reddit.com/r/baldursgate/comments/e2tvh3/opinions_on_baldurs_gate_3_potentially_being_turn/
- [33] Square. 1997. *Final Fantasy VII*. Game [PlayStation]. Square, Tokyo, Japan.
- [34] Square Enix. 2006. *Final Fantasy XII*. Game [Sony PlayStation 2]. Square Enix, Tokyo, Japan.
- [35] Christopher Dristig Stenström and Staffan Björk. 2013. Understanding Computer Role-Playing Games: A Genre Analysis Based on Gameplay Features in Combat Systems. In *Second Workshop on Design Patterns in Games* (*FDG 2013*).
- [36] Gustavo F. Tondello, Karina Arrambide, Giovanni Ribeiro, Andrew Jian-lan Cen, and Lennart E. Nacke. 2019. "I Don't Fit into a Single Type": A Trait Model and Scale of Game Playing Preferences. In *Human-Computer Interaction – INTERACT 2019*, David Lamas, Fernando Loizides, Lennart Nacke, Helen Petrie, Marco Winckler, and Panayiotis Zaphiris (Eds.). Springer International Publishing, Cham, 375–395.
- [37] Gustavo F. Tondello and Lennart E. Nacke. 2019. Player Characteristics and Video Game Preferences. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Barcelona, Spain) (*CHI PLAY '19*). Association for Computing Machinery, New York, NY, USA, 365–378. <https://doi.org/10.1145/3311350.3347185>
- [38] Gustavo Fortes Tondello, Deltcho Valtchanov, Adrian Reetz, Rina R. Wehbe, Rita Orji, and Lennart E. Nacke. 2018. Towards a Trait Model of Video Game Preferences. *International Journal of Human-Computer Interaction* 34, 8 (2018), 732–748. <https://doi.org/10.1080/10447318.2018.1461765> arXiv:<https://doi.org/10.1080/10447318.2018.1461765>
- [39] Gustavo F. Tondello, Rina R. Wehbe, Rita Orji, Giovanni Ribeiro, and Lennart E. Nacke. 2017. A Framework and Taxonomy of Videogame Playing Preferences. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (Amsterdam, The Netherlands) (*CHI PLAY '17*). Association for Computing Machinery, New York, NY, USA, 329–340. <https://doi.org/10.1145/3116595.3116629>
- [40] Anders Tychsen. 2006. Role Playing Games: Comparative Analysis across Two Media Platforms. In *Proceedings of the 3rd Australasian Conference on Interactive Entertainment* (Perth, Australia) (*IE '06*). Murdoch University, Murdoch, AUS, 75–82.
- [41] Anders Tychsen, Michael Hitchens, and Thea Brolund. 2008. Motivations for Play in Computer Role-Playing Games. In *Proceedings of the 2008 Conference on Future Play: Research, Play, Share* (Toronto, Ontario, Canada) (*Future Play '08*). Association for Computing Machinery, New York, NY, USA, 57–64. <https://doi.org/10.1145/1496984.1496995>
- [42] Jukka Vahlo, Johanna K Kaakinen, Suvi K. Holm, and Aki Koponen. 2017. Digital Game Dynamics Preferences and Player Types. *J. Comp.-Med. Commun.* 22, 2 (March 2017), 88–103. <https://doi.org/10.1111/jcc4.12181>
- [43] Jukka Vahlo, Jouni Smed, and Aki Koponen. 2018. Validating gameplay activity inventory (GAIN) for modeling player profiles. *User Modeling and User-Adapted Interaction* 28, 4–5 (2018), 425–453.
- [44] René Weber and Patrick Shaw. 2009. Player Types and Quality Perceptions: A Social Cognitive Theory Based Model to Predict Video Game Playing. *International Journal of Gaming and Computer-Mediated Simulations* 1 (2009), 66–89.
- [45] Nicholas Yee. 2005. Motivations of play in MMORPGs. (2005).
- [46] Nick Yee. 2006. Motivations for play in online games. *CyberPsychology & behavior* 9, 6 (2006), 772–775.
- [47] Nick Yee. 2016. *As Gamers Age, The Appeal of Competition Drops The Most. Strategy is The Most Age-Stable Motivation*. Retrieved April 21, 2020 from <https://quantifcoundry.com/2016/02/10/gamer-generation/>
- [48] Nick Yee. 2016. The Gamer Motivation Profile: What We Learned From 250,000 Gamers. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play* (Austin, Texas, USA) (*CHI PLAY '16*). Association for Computing Machinery, New York, NY, USA, 2. <https://doi.org/10.1145/2967934.2967937>
- [49] Nick Yee. 2017. *Beyond 50/50: Breaking Down The Percentage of Female Gamers by Genre*. Retrieved April 21, 2020 from <https://quantifcoundry.com/2017/01/19/female-gamers-by-genre/>
- [50] Nick Yee, Nicolas Ducheneaut, and Les Nelson. 2012. Online Gaming Motivations Scale: Development and Validation. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (Austin, Texas, USA) (*CHI '12*). Association for Computing Machinery, New York, NY, USA, 2803–2806. <https://doi.org/10.1145/2207676.2208681>