Tailoring Gameplay: Exploring Player Perspectives of Digital Game Modification

by

Laura E. Paul
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We acknowledge and respect the Lək^{w}əŋən (Songhees and X^{w}sepsəm/Esquimalt) Peoples on whose territory the university stands, and the Lək^{w}əŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

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ABSTRACT

As long as there have been digital games, there have been players who seek to modify (i.e., alter or change) game elements. Modifications may involve using tools provided by the game developer (e.g., cheat codes, software tools, accessibility features) or can result from people exploiting loopholes or glitches, altering save files, or simply using online resources to affect play. Game modification is pervasive enough that several online game modding communities exist to support it as a practice. Despite their long history in games, research into digital game modification has been limited by the dichotomous implied values of players using modifications for cheating (generally viewed as negative) or accessibility (generally viewed as positive), making it difficult to understand gameplay modification as a phenomenon. Understanding how and why players modify games, how players are affected when they do modify, and how the ethics of modification are perceived is challenging when modifications are viewed either through one of these two main lenses. This study looks to address the limitations of prior work by examining the perspectives of players who use digital game modification both broadly and neutrally, including a range of possible modifications examined separately from implied values. Surveying 167 participants about their experiences with digital game modification, the results of a qualitative analysis indicate that that players have a variety of perspectives that can be distilled into six core themes: play, agency, connection, community norms, leet, and technology. Within this variety, the majority of players highlighted the importance of modifications to augment playful experiences and player agency, allowing them to personalize their play to their wants and needs and experience more positive emotions. Players also appeared to be widely concerned with being ethical when using modifications in play, disputing earlier perceptions of modification users as immoral or cheaters. Our findings contribute insights into the complex dynamics of modification use and inform researchers and industry about the perspectives of users of digital game modifications, and how they may support ethical modified play that caters to players while mitigating possible harm to others.

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Chapter 1

Introduction

The modification of digital games has existed almost as long as digital games themselves [1, 2], with players using a variety of techniques to alter their gameplay experience. Players may use methods like game settings, accessibility features, and edits to a game's source code to change any number of features of a game, including visuals, storyline elements, game mechanics, and the user interface [3–6].

Previous work in digital gameplay modification is limited in terms of the extensibility of their findings. Work either examines only one sub-type of modification, such as mods (which are source code alterations), or applies limited frameworks for specific scenarios. When studies have taken a broader approach, they have often applied the lens of either cheating (e.g., [1]) or accessibility (e.g., [7]). These angles, however, are embedded with social values that colour perceptions of modification. In the view of accessibility, modifications are tools used by participants to enable them to participate in and reap the benefits of play, supporting fun, skill development, creative expression, and social connection [7–9]. From the view of cheating, however, those same modifications are tools used by players who wish to break the rules of a game to get an unfair advantage over other players, causing harm to others [1].

These diametric positions and their values about the utility of modification create artificial boundaries within gameplay modification research that prevent the transferal of findings between domains. They also obfuscate the broader dynamics of benefits and harms in gameplay modification, which may make it difficult for digital game regulators to take effective action to support their players' wellbeing — for example, in trying to close off avenues for cheating in games with the goal of protecting players from harm, regulators may raise barriers for accessibility and other benefits, which also can cause their players harm. In an illustration of the benefits of cheating, work

by Passmore et al. [10] has shown that it might be a worthwhile endeavour to remove these barriers. In their investigation into the role of cheating in single-player games, they uncovered several benefits to players, such as allowing them to suit play to their needs to facilitate mood repair, stress relief, enjoyment of play, and an increased sense of agency [10].

In this thesis, we[1] aim to address these issues in the current field of gameplay modification by taking an agnostic view to digital game modification, in which we explore player perspectives of modification separate from the implied values of accessibility and cheating. Through a qualitative analysis of responses to an open-ended survey with 167 participants, we explore player perspectives around gameplay modification to answer the following research questions:

RQ1: How do players alter their gameplay?

RQ2: How are players affected by altering their gameplay? This involves assessing the cognitive, emotional, and social impacts on players.

RQ3: Why do players modify their gameplay? This includes assessing what costs and benefits may exist that would push players to use or not use modifications.

RQ4: What do players perceive as the ethics of modification?

From our analysis, we developed a two-pronged taxonomy of digital game modification and a framework of player perspectives with six core themes that organizes and synthesizes our knowledge of modification outside of the bounds of cheating, accessibility, or other prior frameworks.

We found that player experiences and perspectives of digital game modification varied widely, but clustered around the concepts of **play**ful enjoyment, **agency** to control their play experiences, social **connection**, **community norms** that set boundaries for play, perceptions of elite (**leet**) play, and navigating the **technology** that constitute digital games. Within these categories, the majority of participants emphasized the benefits of modifications to elicit positive emotions and personalize their play to their needs and wants. They also largely saw modification as ethical, except when it affected others without their consent. Alongside these common perspectives,

[1] Although all of the work for this thesis was completed by the student (Laura E. Paul), 'we' is used throughout to recognize the supervisory contributions of Regan L. Mandryk (the main supervisor of this project).

we also found that there were several effects, motivations, and ethical viewpoints that were held by only a few participants, such as participants who were motivated to use modification to restore games, enact a creative vision, or to get revenge on players who took away their agency. Our findings contribute to an understanding of player perspectives of gameplay modification, informing researchers and industry alike about the role of modifications in player experiences. These insights may support the design of future modification systems and regulations in games to effectively cater to players while mitigating harm.

The structure of this thesis is as follows:

Chapter 1 introduces this thesis, motivating its utility to the study of digital game modifications.

Chapter 2 describes related work in detail, giving a primer on digital game modification and an overview of previous work that examines player perspectives of gameplay modifications.

Chapter 3 presents the methodology of the study.

Chapter 4 details the results of the study, outlining our taxonomy of modification and our framework of player perspectives.

Chapter 5 summarizes the findings of the study, contextualizes them within prior work, and discusses implications, limitations, and future work.

Chapter 6 contains a restatement of the claims and results of the thesis.

Chapter 2

Related Work

In this section, we first situate our study of gameplay modifications by exploring historical approaches to defining gameplay modification, and some issues with those approaches. We then present previous work detailing our current understanding of the impacts, motives, and ethics of digital game modification.

2.1 A Primer on Digital Game Modification

At the most basic level, digital game modification is exactly what it sounds like: the modification — alteration or change — of some element of a digital game. Imagine using a different controller to play a game, or adding some code to the game that makes a character look different. While it can be easy to get an intuitive sense of what modification is, a conclusive definition is somewhat more difficult.

Historically, researchers have approached defining gameplay modification in three ways: by examining a specific sub-type of gameplay modifications, such as mods [3,5, 11,12], glitches [13,14], and accessibility adaptations [7,15–17]; by applying a specialized frame of reference, such as Yan and Randell's [18] classification of cheating from a computer security perspective; or by taking a more general view of modifications as a tool for cheating (e.g., [1,19,20]) or accessibility (e.g., [7,21,22]).

These definitions, however, have two main issues that make them difficult to apply for our purposes. First, definitions of modifications are often inconsistent and overlapping; for example, Consavlo [1] and Tang [23] both consider macros to be cheats, but Kimppaa and Bissett [19] explicitly find macros to not be cheats. Second, existing definitions are closely tied to the context in which they exist, making them

inextensible to other contexts or modifications. Yan and Randell's [18] computer security classification of cheating, while perhaps extensible to mods, would not be suitable for considering accessibility features such as aim assist, which may be a component of a game and therefore not a security failure.

In lieu of a suitable definition of digital game modification for this study, we opted to develop our own definition that we would then refine based on our participants' responses. To do so, we returned to the basic idea of gameplay modification as an alteration to some element of a digital game, and built from there.

To start, in this study we described gameplay modification as the alteration of the experience of playing the game from the base or 'intended' gameplay experience. This approach is similar to Passmore et al.'s [10] 'extraneous game advantages', which they defined as "play[ing] within the game mechanics but in ways unintended by the game designer, using, e.g., cheat codes, walkthroughs, game mods, loopholes/exploits", and Bainbridge and Bainbridge's [13] association of cheats and glitches through the abstraction that they both "violate the usual assumptions of novice players and often violate the intentions of the game designers as well."

The idea is that the base experience is the one a player has directly 'out of the box'; that is, getting a new, unaltered copy of the game, loading it into the console it was developed for, and playing, all without assistance from any other source except for the game itself. This definition then labels any additional supports — a particular controller, using a wiki, or altering the game code — as a modification, but at the same time it does not necessarily capture everything that could be considered modification, such as difficulty adjustment or certain accessibility features. Consider: does changing the difficulty of the game count as a modification if the option to alter the difficulty comes as a part of the unaltered game? While initially attractive, the straightforward boundaries of this idea can get blurry.

Approaching this problem from the angle of what the developers who built the game *intend* the experience to be may offer some more clarity, and allow for modifications that are built into the game. However, there are a few problems with this approach as well. First, it is not always clear what the developers had in mind when they built the game, as most do not publish their intentions openly. Second, one game may be experienced in infinitely many ways by different people. For example, FromSoftware have been open about their intention to create a set of extremely difficult games; president of the company and creator of the notoriously hard *Dark Souls* [G24] series of games Hidetaka Miyazaki has been quoted as saying that "hardship is what

gives meaning to the experience" [24] of playing their games, and they want players to experience hardship in play. However, a player experienced in the genre and/or previous *Dark Souls* games and skilled at combat-based games may find a FromSoftware game fairly easy, while a more novice player may find the same game impossible to beat. The developer's intentions may not translate to the gameplay experience a given player has, and, further, the base experience of a game is not necessarily a static concept, as different players of a game are likely to have different experiences depending on their background and context.

Keeping these limitations in mind, we opted to collate a set of prototypical modifications that would be fairly familiar to most people who modify their games to give additional context about what we view as an alteration to the base or intended play experience. These prototypical modifications included: difficulty adjustment, accessibility features, mods, walkthroughs, wikis/forums, 'passing the controller' to have someone else play certain parts of a game, save file editing, cheat codes, and using glitches. Below, we briefly describe each of these modifications.

Difficulty Adjustment With a long history able to be traced back to the 1950s arcade game *Bertie the Brain* [25], difficulty adjustment refers to the alteration of some parameters within a game to change how difficult the game is to play. Game parameters that can be changed include the intelligence of the computer adversary, like *Bertie the Brain*, a bot who played tic-tac-toe against a human player [25], or modulations of player and enemy damage amounts in a combat-based game. Adjustment may be in static levels, such as 'easy' and 'hard' modes offered by a game, or can be dynamic, where the difficulty adjusts in real-time according to a player's performance in the game [26]. Difficulty adjustment may be integrated into a game as a toggle-able setting, or as the result of another modification, such as mods.

Accessibility Features Referring to a wide range of possible changes, accessibility features generally allow for changes to a game with the intent of making the game more accessible for a player with a disability. These features are usually part of a control panel integrated into the base game that allow players to modify how components of the game work, although the set of modifications that can be used for accessibility is much broader than just the features available in a game's settings [27–31]. The game *The Last of Us Part II* [G43] is known for its extensive accessibility features, which include allowing alternate controllers (often used by people with motor disabilities),

assistance with navigating the game character through the game map (often used by people with vision or motor disabilities), and adding awareness indicators that use visual symbols in place of audio cues (often used by people who have hearing disabilities), to name a few. The number and intensity of accessibility options varies between games, but most modern games contain some [17]; in fact, one common accessibility feature is a difficulty adjustment tool, as changing the difficulty of a game may make it more accessible to players with an array of abilities and skill levels. This kind of overlap between different instances of gameplay modification is not uncommon, and contributes to the difficulty of making clear definitions around what is and is not gameplay modification.

Mods In an intuitive definition, 'mods' (an abbreviation of 'modifications') describe an alteration to the code of a game, with varying levels of complexity from simple graphics changes to 'total conversion' mods that significantly add to or change gameplay. One of the earliest credited mods is 'Castle Smurfenstein', a *Castle Wolfenstein* [G42] mod that replaced all the enemies in the game with Smurfs that was created by Silas Warner in 1983 [2]. Characterizing mods academically rather than intuitively, however, has been subject to much debate and little consensus between researchers, as the boundaries between what constitutes a mod versus a game (which may incorporate code from other games) are difficult to draw [6, 32–34]. Although many different modifications could be considered mods, not all the different modifications this study examines are. For this reason, we maintain a distinction between what we are referring to as 'gameplay modification', which comprises any alteration to the base or intended gameplay, and mods, which we consider as a specific type within the broader umbrella of gameplay modifications.

Save-File Editing Save file editing refers to alterations of data held in the save-file of a game, which is a data construct that stores a player's progress in a game. Altering this data can change a game in a variety of ways, including allowing the player to jump ahead in the game or give themselves access to specific game items and skills. Save file editing may or may not be considered a subset of modding (which includes changes to game code in general) depending on classification. Lee et al. [3], for example, include it, but most papers do not appear to consider it (e.g., [32]).

Walkthroughs, Wikis, and Forums Walkthroughs, wikis, and forums are all texts made by the players of a game that may inform other players about the game, with some distinctions between them [35–37]. Walkthroughs give step-by-step instructions on how to complete a given quest, achieve a certain goal, or even how to complete an entire game [35,36]. For an example, see IGN's walkthrough of the game *The Legend of Zelda: Tears of the Kingdom* [G46][1]. Wikis describe different aspects of a game, allowing players to learn about the game and strategize their play [37]. An example would the be the wiki for the farming simulation game *Stardew Valley* [G15][2], which lays out every detail of the game from characters and items to locations and gameplay mechanics, and is commonly used by players to plan what items to grow on their farm and what gifts to give to non-player character (NPCs) for the player's ideal outcome within the game. Forums offer spaces for players to gather and talk about the game, connect with other players of the same game, share tips, and develop a body of knowledge about the game. Forums can be on websites dedicated to one or more games — such as the Stardew Valley Forum[3] dedicated to *Stardew Valley* [G15] — or can be hosted on larger social platforms like Steam and Reddit. By using a walkthrough, wiki, or forum, a player could be considered to be deviating from the base gameplay experience by using external resources rather than going through the process of discovering and achieving that knowledge on their own [1,35,36,38], thereby modifying the base game experience. Some, however, argue that there are games — *Terraria* [G53], for example — for which the use of extra information is necessary to the experience [39], and are therefore not a modification.

Cheat Codes Starting as shortcuts for game developers to test their games in the 1970s and 1980s, cheat codes involve a player performing some series of actions, like a combination of buttons on the controller, that otherwise would not be involved in play to attain in-game advantages like unlimited lives [13]. Although cheat codes have lost popularity as a testing mechanism over the years, some game developers still include them as 'Easter eggs' for players of their games to find. Arguably cheat codes are built into the game and therefore could be considered as not modifications, but as they are not necessarily a part of the base or intended experience as we have defined it, we include them as a modification.

[1] `https://www.ign.com/wikis/the-legend-of-zelda-tears-of-the-kingdom/Walkthrough`
[2] `https://www.stardewvalleywiki.com/Stardew_Valley_Wiki`
[3] `https://forums.stardewvalley.net/`

Exploits and Glitches In the context of game modification, exploits and glitches are the use of game mechanics (exploits) or errors in code (glitches) in an unintended way, usually to gain an in-game advantage [13, 14, 36, 40]. Two common examples would be item duplication — a process in which a player performs a sequence of actions that result in the production of more of a particular item — and passing through walls or other barriers. Glitches and bugs may be difficult to uncover and commonly involve a series of unintuitive actions (or else they would be have been exposed and addressed by the game developer in testing) [13, 36] so they may bear some similarity to cheat codes, although cheat codes are more likely to be considered outright cheating than exploits and glitches are [40]. Exploits and glitches are also features that are part of the unaltered code of a game, but once again are arguably not part of the base or intended experience.

Passing the Controller Passing the controller is exactly what it sounds like: passing the gaming controller, and therefore control of the game, to another person. This happens mostly between two or more people playing a single-player game (that does not have multiplayer capacity) together, or a less skilled player getting a more skilled player to complete a difficult part of the game for them [41]. Ultimately, this alters the gameplay experience from the base or intended experience of playing the entire game solo, and is thus a modification by our definition.

This list of modifications is, of course, not exhaustive, and there are other types of modifications that would fit our definition; these examples are simply ones that we felt were known enough for our participants to be aware of and covered examples that are prototypical to our approach to defining gameplay modification, although they may be atypical in current understandings.

Another type of modification would be hardware modifications. In hardware modifications, players alter the hardware of the game, including the game console and the game disc or card that stores the software of a particular video game, to manipulate their gaming experience. Although fairly widely-accepted, the rise of software-based approaches to game distribution has made hardware modifications less popular and less immediately relevant.

Somewhat controversially, it is also possible to include certain behaviours, such as role-playing [42] or—more negatively—trolling and griefing [43, 44], within the wider definition of gameplay modification. These behavioural modifications involve a player or players acting in ways that differ from the base or intended experience

of a game, altering their experience and, potentially, the experience of other players. Behavioural modifications can occur without actually altering the game hardware or software in any way. For example, role-players may meet up in multiplayer games and act out elaborate storylines using their in-game characters, whereas trolls are known for acting in "undesirable ways" such as killing other players, even when those actions conflict with the intended goals of the game [43, 44]. Discerning whether or not behavioural modification is a gameplay modification is not necessarily within the scope of this work, but it is something we consider the potential of.

Ultimately, a variety of possible modifications exist, and boundaries are not necessarily clear around what exactly is a modification, nor does this thesis necessarily aim to solve the problem of how to conclusively define gameplay modification at large. That said, an understanding of the characterization of gameplay modification — blurry boundaries and all — is important for informing how we examine and interpret what gaming modifications are and how they impact players.

2.2 Player Experiences in Modified Play

The main focus of this study is to examine player perspectives of gameplay modification: how using modifications affects them; why they use modifications, paying attention to the pros and cons that may push them to use or not use modification; and how they view the morality of gameplay modification. In this section, we discuss findings from previous work as it relates to these aims.

2.2.1 How Does Modification Affect Players?

The effect of using gameplay modification on players can be considered in terms of the impact on their cognition and emotions, and on their social experiences. To contextualize the known benefits and harms of modification to other stakeholders, which may affect players in turn, we also examine how game modifications affect the game industry.

Cognition and Emotions in Modified Play

Previous work has shown that modification can support player wellbeing, helping them manage stress and improve bad moods [10, 45–47], possibly by helping them exercise agency over how they play [10, 46] to increase their immersion in play [47].

Immersion has been shown to be an important mechanism in stress recovery through digital games [47], although the relationships between gameplay modification, immersion, and stress relief have not yet been studied. Related to immersion and wellbeing, some work has indicated that modifications can be used to address a lack of representation of gender, sexuality, body, or racial diversity in games [48], which may in turn manage issues of decreased immersion in and engagement with play seen in players who are minorities [49] and support their wellbeing through increased immersion [47]. In general, it seems that modifications can be important to player identity and self-representation [48, 50], and can act as a vehicle for reclaiming and transforming stories for players outside of the majority in gaming [11, 51]. Alongside the possibilities of exercising agency for immersion, there is also some evidence that players may find games more enjoyable to play when they use modifications, possibly due to how modifications may enable personalization and streamlining of play [12].

There is also a body of work that suggests that modification can play a key role in enabling play for disabled players in particular. Previous work has shown that disabled players play 'mainstream' games (games that are not created solely for a disabled audience) [28–30], although the extent and consistency of accessibility features in mainstream games varies widely [17, 31], as do the access needs and preferences of disabled players [27, 31], creating gaps in digital game access. Even when official accessibility features are available, they may sacrifice game quality for access [17]. As such, modifications that enable personalization, such as toggle-able game settings, customizable controls, mods, and exploits, are important to making games accessible for disabled players [7, 27, 29, 52]. With access to games, disabled players experience many of the same benefits that that non-disabled players get from games, including fun, diversion, and social connection [7–9, 53, 54], alongside a sense of equality and autonomy from being on equal footing with non-disabled players [8].

As far as the current evidence goes, using modifications — even modifications that provide one player with a performance advantage over another player during play — does not negatively affect player satisfaction with play [45], player experience [55], or skill development in games [56], nor does the use of modifications for unfair advantages appear to induce players to seek out unfair advantages in real life [20].

Social Experiences in Modified Play

Evidence for an effect of game modification on the social life of participants is somewhat more mixed. No one study has focused on the social experience of playing when using modifications, although two studies have reported that their participants were motivated by social interaction to use mods among other motivations identified in their analyses. Hackman and Björkqvist [5] found that one of the reasons that their participants were motivated to use mods in *The Elder Scrolls V: Skyrim* [G3] was discussion, collaboration, assistance, and mod sharing with members of the game's modding community. Similarly, Bilińska-Reformat et al. [57] reported that social affiliation and engagement — such as playing with others and interacting in game communities — was a motivation to use mods for their participants. These two findings indicate that participants may be more social as a result of modification use, both through engagement in communities centred around games and modification and through enabling shared play with others. There is also some evidence that modified play scenarios may focus on social interaction over other goals of play (such as high performance), and encourage social viewing of play [41], demonstrating that social interaction may be an important component of modified gameplay experiences despite the current lack of research.

Additionally, previous work has also identified that there is a strong sense of community between people who utilize or create mods, and that these communities are active hubs of social interaction and collaboration [3, 32, 58], usually centred around modifying a single game or game series [58]. These existing studies, however, mostly analyze the experiences of people who create mods, not people who simply use modifications, so the extent to which mod usage alone guides engagement with a modification community is unknown. In the vein of supporting community involvement: as mentioned previously, one of the benefits disabled players found in using modification to enable accessible gameplay is social connection. According to Beeston [7], many disabled players report being a part of game communities for games that they played, both in-game and on external platforms, and connecting with others that are similar to them (with regard to attitude towards play or ability). That said, players in Beeston's study also reported experiencing toxicity as a result of playing differently than the game 'standard' in a multiplayer game due to the adaptions they make to their play, indicating that using modifications may result in social friction. This toxicity is not necessarily exclusive to disabled players; Curtis et al. [59] found that, while mods

can have both pro- and anti-social applications, people who do not modify tend to view people who use modifications as a homogeneous group of antagonists who take part in harassing other players and avoid them entirely, showing a stigma around modification use broadly. Research is needed to examine the dynamics of social interaction more fully, exploring social benefits (such as increased connection) and harms (such as toxicity and stigma).

Impacts of Modified Play on Industry

In addition to the impact of modification on players, there is reason to discuss the impact on other stakeholders, such as the game industry, as there are ties to why players believe that modification should be supported. While much of this research makes reference to the value generated by the free labour of creators of modifications (mostly mods and walkthroughs) [32, 57, 60, 61], the use of modifications to increase the quality of and renew and update games has the potential to extend the lifespan of the game, helping the game reach a wider audience and sell for longer [35, 61, 62]. Active and prolific game modification communities have been tied to increased revenue for game developers [32, 62, 63]. These benefits, however, hinge somewhat on what supports for modification — if any — the game developer offers. Official supports for modification, such as software development kits, tutorials, and guides offered by the game developer, appear to mediate game modification community activity [63, 64] which has been connected to revenue [63].

2.2.2 Why Do Players Modify Their Play?

A wide variety of player motivations to use modifications have been examined and categorized in multiple papers; however, as written by Thiel and Lyle [32] in their systematic review of game modding communities: "while identified motives do overlap to a great extent, the found categories do mostly not." Consider: Dewalska-Opitek and Hofman-Kohlmeyer [61] report the customization of play as one of many motivations to use mods, while Newman [36] identify the related-but-different motive of customizing play to appeal to 'hardcore' players as opposed to the mass market as a reason to use walkthroughs. Presenting an exhaustive list of detailed known motivations would be unwieldy, so instead we present a summary of general categories of motivations in Table 2.1 with a few stand-out motivations detailed below.

Motivation to Use Modification	References	Modifications Studied
For pleasure, fun, and/or to improve mood	[1, 5, 6, 10, 32, 36, 43, 44, 57, 61, 65]	mods, walkthroughs, EGAs[4], cheats, behavioural modifications (trolling, griefing, etc.)
For stress relief	[10, 32, 43]	mods, EGAs, behavioural modifications (trolling, griefing, etc.)
For social interaction and connection	[5,6,32,57,66]	mods, 'extrinsic play'[5]
For customization and personalization	[10, 36, 61]	mods, walkthroughs, EGAs
To improve the game (update graphics, audio; fix bugs, other issues in game)	[5,6,32,51,61, 65]	mods, cheats, ROM-hacks
To explore possibilities of play	[14, 66]	glitches, 'extrinsic play'
To add content and variety to game/play experience	[5,6,43,57,61]	mods, behavioural modifications (trolling, griefing, etc.)
To extend the game's lifespan, maximize usage of game	[36, 61]	mods, walkthroughs
To avoid financial cost	[57, 65]	mods, cheats
To get advantage over, dominate others	[10, 14, 65]	EGAs, glitches
For mastery or prestige	[1, 23, 32, 36, 43]	mods, walkthroughs, cheats, macros, behavioural modifications (trolling, griefing, etc.)

[4]EGAs (extraneous game advantages) were defined by Passmore et al. [10], and include the use of walkthroughs/wikis/forums, mods, cheat codes, save file editing, getting help from others, passing the controller, and exploits.

[5]Extrinsic play, as defined by Ang et al. [66], includes activities they consider to be beyond the original context of a game, such as mods, forums, and wikis.

To be (more) competitive	[23, 43]	macros, behavioural modifications (trolling, griefing, etc.)
To make progress in game	[1, 10, 14, 65]	EGAs, glitches, cheats
To learn about and develop skills in game development or technology	[5, 6, 32, 36]	mods, walkthroughs
To address boredom; thrill-seeking	[1, 43, 44]	cheats, behavioural modifications (trolling, griefing, etc.)
To save time	[1, 10]	EGAs, cheats
For revenge	[43, 44]	behavioural modifications (trolling, griefing, etc.)
For creativity, artistic vision, or making personal meaning	[5, 32]	mods[6]

Table 2.1: Motivations to use modifications identified in previous work, presented in an informal summary.

These informal categories cover the most common categories of motivations, but there are a few that stand apart. Hackman and Björkqvist [5] identified using modding as a way to pass the time and modding for the construction of buildings as motivations, while Bilińska-Reformat et al. [57] found that some of their participants were motivated to use mods because they conferred greater focus on their play. In their examination of game archiving and preservation, Dym et al. [51] offered a unique perspective on why some players may modify their play, where participants they spoke to were motivated to use modifications such as mods and ROM hacks to access, restore, and preserve play experiences over time.

Thiel and Lyle [32] invoke the three innate needs of self determination theory (SDT) [67] — relatedness, competence, and autonomy — to summarize the bulk of their identified motivations to use mods, although they also acknowledge that there are motivations that fall somewhat outside of what can be explained by SDT. Relatedness describes a need to interact and connect with others, which could be compared with our social interaction and connection category. Competence is the

[6]The motivation to modify games for creativity, artistry, or to enact something personally meaningful was more often associated with mod creators, not necessarily mod users [4, 57, 60, 61].

need to be effective and master problems, aligning with our categories for mastery, game progress, skill development, and advantage over other players. Autonomy is about the need to control one's own life, like our informal categories of personalization and creativity, although this is a somewhat ill-fitting comparison. While there are benefits to using the SDT framework, a number of the motivations described above do not easily fit within it.

2.2.3 What are the Ethics of Modification?

Broadly, the morality of modification use is complex and mostly centres around whether the use of any given modification is a 'cheat' that should be regulated. Here, we report on the ethics of gameplay modification from player, industry, and rhetorical perspectives.

Player Perspectives

Player perspectives can be varied, and exist on a spectrum [20, 59, 68], ranging from viewing all modifications as cheating (and therefore unethical) [1, 23] to viewing all modifications as ethical because "it's just a game" [19]. Common views in-between included viewing modification as ethical:

- in all games because modifications are available for any player to use [1, 12];
- in single-player games because cheating requires having an unfair advantage over other players [1, 10, 20], and as such multiplayer games should be held to strict ethical boundaries [19, 20];
- in all games, except when it confers unfair advantage to a player [1, 12, 19];
- or, in all games, except when it breaks any explicit rules laid out in the game [1, 40].

The extreme view that all modifications are unethical also comes in degrees, from considering asking for help from other players as ethical (but nothing else is) to complete purism where assistance of any kind is cheating [1, 20].

Despite holding these moral bounds, some work indicates that players may break their own ethical rules at will, often under the justification that 'other players do it' [1]. Getting the consent of all people involved may also allow players to play 'ethically' outside of their normal boundaries [19, 22].

Behind this variation in player perspectives can be a few factors, such as player orientation toward play, the perspective of the community a player is within, and the context of play. Bainbridge and Bainbridge [13] found that players can be oriented in two ways: towards the game, where they focus on achieving their play goals through 'legitimate' means (using only what already exists in play); or towards the metagame, where they wield their power to define the nature of their play. At least some player-created walkthroughs have been shown to recognize and cater to these divided orientations, formatting their work so that users may choose what information to engage with to best suit how they wish to play [35].

Modification communities also tend to establish and enforce their own rules and expectations for play, often based within the context of the game and modification practices [37, 40]. For example, Scully-Blaker [40] described the rules imposed by some speedrunning[7] communities to standardize speedruns. Within the context of speedrunning, cheating is considered to be modifications that may shorten the time needed to make a run beyond what may be achieved through skill and knowledge of the game. As such, while exploits may be permissible, the use of cheat codes are not.

The context of the play experience can also affect what modifications are considered ethical by players. While many players find the use of modification that improves one player's performance to be cheating and unethical, they may also find these modifications to be acceptable in a social or casual context [22, 69, 70] or to level the playing field between players with different capabilities (e.g., in the case of a disabled player; or, between PC and console players: console controllers often have lower accuracy than a PC mouse, so aim assist may be used to allow PC and console players to play together equally) [7].

Industry Perspectives

The act of modification is intrinsically tied to the games that are being modified and, by extension, the industry that produces those games. Game developers have a major role in determining what modifications are easily achievable in their games, even beyond the modifiers they may offer themselves (e.g., game settings), in how they structure their games and what tools they offer to assist with modification [3, 4].

Research is fairly thin for the incidence of modifications that are provided by developers, although there is work that identifies that the accessibility features of-

[7]Speedrunning is the practice of completing (some portion of) a game as quickly as possible. Individual attempts at completing (a section of) a game are known as 'speedruns'.

fered by mainstream games are usually lacking [17, 31]. There is more research on how the digital games industry approaches modifications instigated by the player, specifically mods. A developer's outlook on modification can generally be derived from a combination of the supports they offer to aid players in making modifications, such as software development kits, modding tool kits, tutorials, and guides, and their approach to legal action related to modification of their games [63].

Modifications like mods occupy a tenuous position legally. Modifications may violate End User License Agreements (EULAs) or copyright laws, meaning that creators (or users) of many modifications may be subject to legal action if they are used without the consent of the developer [2, 32, 71–73]. Digital game developers who oppose modifications — Nintendo is a popular example — often seek to prevent any modifications that they do not provide themselves through litigation, to the point where some players find that secrecy around their modification activities is key to the preservation of their play [51, 71, 72, 74]. Other developers, such as Valve and Bethesda, are known for being much more supportive of modifications, to the point of openly allowing modifications or even contracting mod creators to commercialize their mods [2, 60, 75]. Kretzschmar and Stanfill [2] explore this dynamic in greater detail, noting that the content and context of the modification may be an important factor in when legal action is taken, scaffolding their analysis in the benefit and harm experienced by the consumer and the digital games industry.

Issues over the legality of modification has created a tension between players and developers, where the developer is seen as 'gatekeeping' play [51], that the player must navigate when modifying their play [59, 73]. These issues may inhibit the activity of game communities, which would hamper the benefits to players and industry we described in Section 2.2.1.

Although there has been no legal resolution to this tension at this point, game modification has increasingly been considered in academic circles to be a space where developers and players collaborate to give rise to a player's preferred experience, as studies apply theories of convergence culture [11, 73, 76], participatory culture [34–36, 76], co-creation [33, 57, 63, 77], and 'prosumption' [61] to modification practices.

Rhetorical Approaches

There was also been rhetorical work contemplating the ethics of gameplay modification. While perhaps less influential than industry on player experiences, these

approaches can be helpful for understanding how current academic work considers the morality of modified play.

Some apply ethical frameworks from the 'real world' to gameplay, arguing that any modification that harms others or breaks rules should be banned. Kimppa and Bissett [19] dispute the idea that "it's just a game" in digital games in the face of the value that players place on games, and push for an ethical understanding of play that aligns with treatments of cheating in chess and poker. They draw the boundary of morality at negatively affecting other players, defining any modification that harms the play of others (including behavioural modifications, exploits, cheat codes, aim-assist, and mods) to be cheating. Other approaches may be more nuanced, and rely on players to regulate their behaviours appropriately. Brooke et al. [78] focuses more on the setting and breaking of rules, describing ethical play and fairness in games to align with fairness in the real world, where societies set rules that their constituents (players) agree and adhere to. Players must have faith that everyone else is also following the rules, so transgressions of these rules must be detected and punished. Work by Consalvo [38] postulates the existence of a "magic circle" around games as a space apart from real life, where different rules, rewards, and punishments exist. Players take an active role in negotiating play in and out of the game, and shape their behaviour and understanding of ethics to the scenario. Similarly, Kretzschmar and Stanfill [2] and Reisinho et al. [68] both argue for a more multifaceted approach to ethics in modified play, accounting for the variation in intentions between players, disparate standpoints between developers in the game industry, and the possible benefits and harms experienced by players, developers, and other stakeholders.

Overall, prior work indicates that gameplay modification is a complex and contentious, with players and industry alike taking a variety of approaches. Even though prior work indicates that there may be benefits to both players and industry, findings are fragmented across definitions of modification and coloured by biases for accessibility and against cheating. Taking an broad and agnostic (separate from cheating and accessibility) view of modifications may then provide further insights into the dynamics of gameplay modification use, which can inform research and industry approaches on gameplay modification support and regulation.

Chapter 3

Methods

The goal of this study was to explore player experiences with modified gameplay across a broad array of player contexts (e.g., type of game, type of modifier, etc.). As such, we opted for an online survey with open-ended questions rather than more in-depth interviews, as this approach allowed us to examine responses from a number of participants who have a variety of experiences.

Ethical approval was obtained from the University of Victoria Human Ethics Board (see Appendix A.1).

3.1 Survey Design and Deployment

The survey was advertised through Prolific [79], a survey-hosting platform that allows verified account holders to host or participate in surveys online.

Prior to the survey, participants were required to pass a pre-screening questionnaire that confirmed their experience with modifying games.Upon starting the study, participants were presented with a consent form specifically for their participation in the pre-screening questionnaire (see Appendix A.2). This consent form used broad language—referring to 'gameplay experiences' as the object of the study rather than 'gameplay modification experiences'—to prevent participants from passing pre-screening dishonestly. If they consented to the pre-screening questionnaire, they were asked to verify their Prolific ID before continuing to the pre-screening questionnaire.

The pre-screening questionnaire asked three yes-or-no questions about various aspects of the participant's gameplay, with one question to determine their eligibility and two distractor questions that asked about other aspects of their gameplay

experiences (questions available in Appendix A.3). The eligibility question asked whether they had modified their gameplay within the last year, given the definition that "modifiers include any method that alters gameplay from its base state, including accessibility features, mods, glitches, cheats, the use of wikis/forums, and more." If they responded 'yes' to this question, they passed pre-screening and were notified that they had passed and redirected to the rest of the survey. If they did not pass pre-screening, they were notified and redirected back to Prolific to receive compensation for their involvement in the pre-screening process.

Participants who passed pre-screening were then shown the consent form for the rest of the survey (see Appendix A.4). If they consented, they began the survey (see Appendix A.5), starting with a page that more thoroughly defined 'gameplay modification' and asked participants to confirm that they modify their gameplay. To limit the effect of implicit values around cheating and accessibility on participant responses, the survey instructions defined and referred to '*gameplay modification*' using neutral language. As discussed in the primer on digital game modification (see Section 2.1), this included defining gameplay modification simply as "*the use of some method that alters the experience of playing the game from the base or 'intended' gameplay. Examples of methods could include: difficultly adjustment, accessibility features, mods, walkthroughs, wikis/forums, 'passing the controller' to have someone else play certain parts of a game, save file editing, cheat codes, using gameplay mechanics in unintended ways, using glitches, and more*".

Next, the participant was asked to fill out their demographic information, including age, gender identity, English fluency, and any access barriers they would face in gaming. The participant was also asked to provide some background information about their gaming habits. Questions about their gaming habits included rating their experience with gaming, their frequency of play, how often they play different types of games (single-player, multiplayer, competitive), what gaming platforms they use, their top games, their engagement with gaming communities, and the extent to which they identified as a video game player/'gamer'. These questions established the level of experience players had with gaming at large, and the context from which they approached modification (e.g., they solely play single-player games and therefore are not experienced in multiplayer games).

Before proceeding to the rest of the survey, which delved into the participants' experiences with gameplay modification, participants were given a break to reflect on their experiences with modification more deeply.

The next section dealt with the participants' general experiences with modifying their gameplay. This section included open-ended questions about how and why they had modified their gameplay, any differences in their cognition or behaviour that they experienced as a result of modification, any benefits or drawbacks they have experienced, and why they persist despite drawbacks. They were also asked about their personal opinions about the morality and ethics of gameplay modification. To further quantify why participants play games, which may be connected to their motivation to modify their games, this section also included the Online Gaming Motivations Scale (OGMS) [80], which assesses a player's high-level motivation for playing games in terms of three high-level factors (social, immersion, achievement) by calculating a score from how they rank—as measured on a 5-point Likert scale—a set of 12 gameplay elements in terms of importance to their digital gaming. We also asked participants a multiple-choice question about their motivation to modify their digital games in hopes of getting a more quantitative measure (albeit unvalidated) of their motivations to complement our qualitative analysis.

Finally, participants were asked about the social experience of playing a modified game. They were asked open-ended questions about whether they had had positive or negative social experiences, whether there are any differences in social experience when playing a modified game or not, and what they have heard from others about modified games.

After completing the survey, participants were shown a debriefing letter (see Appendix A.6) before being redirected back to Prolific to receive their compensation for participating in the pre-screening questionnaire and survey.

3.2 Qualitative Data Analyses

As this study is searching for patterns of meaning across gameplay modification experiences, we opted to use an inductive and reflexive thematic analysis approach to analyze the qualitative data [81]. Aligned with a constructivist and interpretivist paradigm, this approach highlights the experience of the participants and the role of the researcher in interpreting the data to produce themes and construct knowledge. Accordingly, the results of this study are shaped by the knowledge and experience of the researchers and the framing of this project.

The reflexive thematic analysis was carried out by the first author[1] in an iterative,

[1]The 'first author' refers to the student, Laura E. Paul, who will be first author when this paper

multi-step process. The first step was data familiarization through actively reading and reviewing the data. Next was open-coding; each survey question was initially coded separately to examine patterns in that topic across participant responses, then codes generated in that process were compared across questions for similarities in meaning and collated or expanded to represent patterns over the entire dataset. Finally, the codes were gathered around 'central organizing concepts' that were further organized into a set of named higher-level concepts. The results were then additionally refined through discussion with the second author[2].

While performing the main thematic analysis, we also generated two additional, separate sets of codes about how our participants modified their gameplay to answer the first research question (RQ1). These codes taxonomize the types of modifiers that our participants referenced using and the changes that they used modifiers to make to the game.

A reflexive thematic analysis highlights the unique interpretations that individual researchers produce, and discourages concepts of consensus or reliability that may be seen in other methods of qualitative analysis [81]. As such, we did not deem it necessary to have multiple coders involved in the analysis, outside of the second author's role in aiding the reflexive process of sense-checking and refining ideas.

3.2.1 Researcher Positionality Statement

As we apply a qualitative, reflexive method to our data, the experience of the researchers plays an active role in the analysis [81]. As such, we present the relevant experience of the first author (who performed the analysis). The first author has an academic background in cognitive science, computer science, and human-computer interaction, and has previously performed research on game mods. She is a long-time player of digital games with some experience playing modified games and a familiarity with a variety of modifications, although she has little practical experience with performing modifications other than using walkthoughs, wikis, or forums.

goes to publication.

[2]Here 'second author' refers to the main supervisor, Dr. Regan L. Mandryk, who will be listed as the second author when this paper goes to publication.

3.3 Quantitative Data Analyses

Questions that provided quantitative data—the Likert scale, slider, and multiple-choice questions—were generally not subjected to extensive analyses, as they were largely used to characterize the dataset. Counts, averages, and standard deviations were calculated parametrically or non-parametrically as suited. Data gathered through the OGMS were calculated into a score per category by taking the average of the responses to the gameplay elements in that category, with categories and gameplay elements as described in Yee et al. [80]. That is, the social category included 'Chatting with other players', 'Being part of a guild', 'Grouping with other players (e.g. forming teams)', and 'Keeping in touch with your friends', while the immersion category included 'Learning about stories and lore of the game word', 'Feeling immersed in the game world', 'Exploring the game world just for the sake of exploring it', and 'Creating a background story and history for your character' as elements. The achievement category included 'Becoming powerful', 'Acquiring rare items', 'Optimizing your character as much as possible', and 'Competing with other players'.

3.4 Participants

Participants in this study were required to be at least 18 years old, speak English fluently, and reside in Canada, Australia, New Zealand, the United Kingdom, or the United States of America. To be able to offer relevant insights into gameplay modification, they were also required to have modified their gameplay within the last year, as verified by the pre-screening questionnaire.

It should be noted that our demographics do not necessarily reflect the demographics of the population of people who modify their games, as we deliberately gathered roughly equal amounts of data from men and women, non-binary, and genderfluid people. We initially gathered responses from 114 participants (80 men, 31 women, and 3 non-binary or genderfluid), then continued gathering data from only participants who identified as women, gender non-binary, or genderfluid until they equalled roughly in number to those who identified as men.

We grouped women, non-binary, and genderfluid people together due to their combined status as gender minorities in digital game spaces and lack of representation within game modification research. A minority of papers on gameplay modification

report the demographics of their participants, however, the papers that do report their demographics usually show that fewer than one fifth of participants (people who modify or create modifications) are women or other gender minorities [4, 12, 57, 58, 61, 70]. Passmore et al. [10] are an outlier, with one third of their participants identifying as women. Our drive for gender parity in our data was in service of our goal of getting data from a broad range of people who modify, as some has suggested that players in underrepresented groups (gender, racial, etc.) may have unique perspectives on gameplay modification, with some researchers postulating that there may be differences in game modification behaviour based on gender specifically [1, 6]. In light of the findings that women and gender minorities are underrepresented in game modification research and may modify their play differently from men or have different experiences doing so, it was important to us to see greater representation of women and gender minorities in our data so that we could explore a greater breadth of possibilities for gameplay modification and how modification affects player experiences.

In total, 169 participants completed the survey. Two were excluded for nonsensical responses to the survey questions, for a final group of 167 participants. Most of our participants were between 26 and 45 years old, with an almost even split between participants who identified as women, non-binary, or genderfluid and those who identified as men. The vast majority of participants identified as experienced gamers who play digital games at least once a week for thirty minutes to four hours. See Table 3.1 for more detailed demographic information of the participants in terms of their age, gender, experience with gaming, time spent gaming, and their identification with the title of a video game player.

Demographic	**Number of Participants (/167)**
Age	
18 - 25 years old	24
26 - 35 years old	72
36 - 45 years old	46
46 - 55 years old	15
56 - 70 years old	9
Gender Identity	
Woman	81
Man	80
Non-Binary or Genderfluid	5

Experience with Gaming	
Very experienced	97
Somewhat experienced	59
Neither experienced or inexperienced	6
Somewhat inexperienced	3
Very inexperienced	1
Frequency of Gaming Sessions	
Several times per day	27
At least once per day	38
Almost every day	44
2-4 days a week	43
About once per week	10
1-3 times a month	2
Average Duration of Gaming Sessions	
More than four hours	11
Two to four hours	48
One hour to two hours	73
30 minutes to an hour	28
Less than 30 minutes	4
"Being a video game player is an important reflection of who I am"	
5 - strongly agree	36
4	66
3 - neither agree or disagree	34
2	23
1 - strongly disagree	5
"In general, being a video game player is an important part of my self-image"	
5 - strongly agree	29
4	56
3 - neither agree or disagree	43
2	25
1 - strongly disagree	10

Table 3.1: A summary of the demographic information of participants who completed the survey, including age, gender, experience with gaming, frequency and curation of gaming sessions, and affiliation with the title of 'video game player'.

Our participants reported playing a wide variety of games, with no one clear motivation behind why they play or why they modify their play. Most participants were also involved in some sort of social gaming activity or community, including playing with strangers or friends, watching streams, and interacting on forums about games (see Table 3.2 for a more complete summary of social gaming involvement). We report findings from the demographic questions below.

When asked to rate their experience with digital games on a Likert scale, 97 participants identified themselves as very experienced and 59 as somewhat experienced, while six identified themselves as neither experienced or inexperienced, three as somewhat inexperienced, and one as very inexperienced. The majority of participants gamed multiple times per week, with 44 who game almost every day, 43 who game two to four days a week, 38 who game at least once per day, and 27 who game several times per day. Ten said that they game approximately once per week, and two gamed one to three times per month. Participants tended to play for 30 minutes to 4 hours each time they gamed, with with 73 participants saying that they played for one to two hours each time, 48 saying they played for two to four hours, 28 saying they played for thirty minutes to an hour, 11 who reported playing for more than four hours, and 4 who played for less than thirty minutes.

In evaluating their relation to the title of video game player/'gamer', we asked them to rate their agreement with two statements on 5-point Likert scales. First, in response to the statement "Being a video game player is an important reflection of who I am", the majority of participants rated medium to high agreement, with 36 participants rating a 5, saying that they 'strongly agree,' and 66 participants rating their agreement at a 4. Thirty-four participants chose that they 'neither agree or disagree' and rated the statement at a 3, while 23 rated it a 2 and 5 said that they 'strongly disagree' and rated a 1. Similarly, when asked to rate their agreement with the statement "In general, being a video game player is an important part

Gaming Community Involvement	**Number of Responses (/167)**
Play with strangers (e.g. during matched multiplayer competitive games)	128
Play with friends you originally met outside of video games	124
Watch streams of gameplay (e.g. on Twitch, etc.)	110
Play with friends you originally met through video games	107
View, comment, or post on an online forum (e.g. on Reddit)	100
Join, participate, or otherwise engage with an online community (e.g. on Discord)	94
Play with in-game communities (guilds, clans, etc.)	63
Stream your own gameplay	16
Other	6

Table 3.2: Participant involvement with gaming communities, as recorded as responses to the select-many multiple-choice question: *"In what ways (if any) do you engage with groups or communities for digital gaming? Select all that apply."*. Participants that chose 'Other' wrote the following as their involvement: "Watch videos on YouTube, and discourse on Twitter", "Compete with others for the best times (speedrunning)", "watch gameplay on youtube", "Watch lore (i.e., in-depth dives on the fictional universe) videos on YouTube", "Play with family", "Play with my brother".

of my self-image", most participants rated neutral or medium agreement. Twenty-nine participants said that they 'strongly agree' with this statement, while 56 rated their agreement at a 4 and 36 said they 'neither agree or disagree'. Twenty-five participants rated their agreement a 2, and 10 said that they 'strongly disagree' with this statement.

Participants ranged in the types of games they played. When asked how often they play single-player, multiplayer, and competitive games on a scale of 1 (never) to 100 (always), participants reported playing multiplayer ($M = 54.1$, $SD = 27.4$, $range = 1 - 100$) and competitive ($M = 53.6$, $SD = 27.7$, $range = 1 - 100$) games roughly equally. They reported playing single-player games slightly more often ($M = 60.5$, $SD = 23.3$, $range = 9 - 100$) than multiplayer or competitive games. Based on these numbers, it is likely that there was a small number of players who played only single-player games, while most players played a mix. Given the opportunity to (optionally) elaborate on their gaming habits in an open-text field, some participants confirmed that they only played single player games.

Most participants played on multiple platforms, but playing on PC was overwhelmingly popular ($n = 136$) compared to other platforms such as the Playstation ($n = 91$), mobile or tablet ($n = 85$), Nintendo Switch ($n = 56$), Xbox ($n = 43$), or the Steam Deck ($n = 8$). Other platforms mentioned include the Nintendo 64 ($n = 1$) and Nintendo 3DS ($n = 1$). The popularity of PC among our participants—who are all players who modify—is likely due to the number of existing supports for modifying on PC and the ease of modification on PC compared to other platforms, such as dedicated gaming consoles. However, it should be noted that participants do not necessarily modify games on all the platforms they play on.

Regarding our participant's motivation to play digital games in general, we utilized the OGMS, which calculated scores for participant immersion, achievement, and social motivations on a range of 1-5. Participants mostly emphasized the immersion ($M = 4.03$, $SD = 0.71$) and achievement ($M = 3.88$, $SD = 0.77$) categories as important; however, social ($M = 3.38$, $SD = 0.98$) motivation to play was also higher than the midpoint of the scale (i.e., greater than 3).

In terms of their motivation to modify games—not just to play games—participants responded with a wide range of motivations, often choosing more than one of the available options. That said, the most common responses by a fair margin were that the participant modified for enjoyment and relaxation ($n = 135$) or to alter the game to their preferences ($n = 108$). See Table 3.3 for other participant responses.

Motivation to Modify Play	**Number of Responses (/167)**
For enjoyment/relief/relaxation	135
To tailor the game to your preferences (e.g., change game controls, character appearances, etc.)	108
To reduce the level of difficulty	77
For a challenge or to increase feelings of competence	76
For novelty in gameplay	74
For curiosity	69
To manage frustration/anger	57
To make a powerful character or acquire rare items	54
For certainty (e.g. want the best items/outcome, ensure finding certain items, etc.)	46
For social purposes (e.g. to play with others who use modifiers)	40
To save time	39
The game is inaccessible otherwise	29
For professional purposes (e.g. related to your job, such as streaming)	10
Other	6

Table 3.3: Self-reported motivation to modify gameplay in response to the select-many multiple choice question: *"Why do you modify your gameplay? Please select all that apply. If your reason is not listed here, you can make use of the 'other' option to list any number of additional reasons."*. 'Other' responses include: 'Prevent playing against cheaters', 'Inability to move forward', 'To make the game look better', 'For cash rewards', 'to increase my chances of winning', 'to make it multi-player'.

Chapter 4

Results

In this section, we report the results of our qualitative analyses. First, we present a taxonomy of modification that describes *how* our participants modified their play from two angles: the methods they used and how their gameplay was changed. This taxonomy is the basis of the language we use to describe modification throughout the rest of this thesis. Second, we present a framework of participant perspectives of gameplay modification that describes how our participants engage with and think about digital game modification in the context of six core themes: play, agency, connection, community norms, leet, and technology.

4.1 Taxonomy of Modification

To refine our conception of digital game modification and establish a common vocabulary for how we talk about modification throughout the rest of this paper, we developed a taxonomy of modification based on our participants responses to the following question, analyzed with a focus on *how* they modified their gameplay: *"Please describe between one and three experiences you have with modifying. When responding, please answer the following: what game was it? How did you modify it? How did the modifier alter your gameplay? Why did you modify the game?"*.

This analysis does not include an in-depth examination of the nature of each method or outcome of modification. That is to say, we do not rigorously interrogate the boundaries between different types modifications or seek to resolve fuzzy boundaries between methods, such as the boundary between mods as generic alterations to game software and methods like save-file editing or ROM-hacking as edits to specific

components of a game's software. Instead, we focused on describing the language used by our participants.

One of our first observations was that our participants appeared to be able to use different modification methods to achieve the same change in play. For example, P167 (Woman, 38) used save-file editing to change the amount of building materials in her inventory in *Satisfactory* [G14], while P45 (Woman, 36), P123 (Woman, 42), and P131 (Woman, 30) used cheat codes to achieve the same end in *The Sims* [G38] games. The inverse also appeared, in that one modification could alter a game in several different ways. To address this disconnect, we considered the *method* of modification and the *outcome* of the modification separately in our taxonomy, where the method refers to the tools or procedure used to modify a game and the outcome refers to the changes made to a game. This allowed us to account for the fact that the same method can be used to achieve multiple outcomes, and multiple methods can be used to achieve the same outcome. To create this taxonomy, we needed to tease method, outcome, and motivation apart in our participants' responses. Consider this sample response from P10 (Man, 28): "Modify Medieval 2 total war [[G16]] to make it harder and longer. Its too easy as base game and it ends too fast, you scale against the AI too fast so modding it gives the dumber ai, more strategic advantanges [sic]". The method of modification would be mods ("modding"), the outcome would be an alteration to the behaviour of enemies in the game ("the AI"), and the motivation would be to make the game more difficult through giving the "dumber" enemies more strategic advantages.

Our taxonomy is also shaped by the need to be both broad and specific — broad enough to apply across game genres and contexts, and specific enough to provide meaningful information. This is perhaps best illustrated in an example: consider that *Medieval II: Total War* [G16] has enemies and a system to determine the behaviour of those enemies, while *The Sims 4* [G39] has no enemies (at least, not in the way that *Medieval II: Total War* [G16] does), but it does have a system for determining the behaviour of non-player characters (NPCs). Other games, like *Moving Out* [G17] do not have a character behaviour system at all, as the game does not have any NPCs. Within our taxonomy, we would consider an alteration to the behaviour of the enemies in *Medieval II: Total War* [G16] and the NPCs of *The Sims 4* [G39] to be an alteration of existing game mechanics, which provides some context for what was changed, but is broad enough to also be applied to games without NPC behaviour systems.

We start with describing the methods our participants used to modify games, with an examination of how we may organize these methods into higher-level categories that can be used to discuss common features and dynamics in modification. We then move to examining the outcomes of modifications, with the goal of looking at what players are changing in their games regardless of the method they use to make that change.

4.1.1 Methods of Modification

Our participants reported the use of a wide array of methods to modify their gameplay, with a small number of methods that were used by many participants. Only three methods were used in more than ten instances: mods ($n = 119$); walkthroughs, guides, forums, and wikis ($n = 40$); and cheats ($n = 31$). Of all the methods, mods were by far the most used. A complete summary of the modification methods with a description of the method and a count of the instances where that method was used in our dataset can be found in Table 4.1. Note that *World of Warcraft* [G8] add-ons ($n = 7$) could be considered a subtype of mods, but: enough participants referred to them as a specific method; and *World of Warcraft* add-ons are facilitated by the game developer in a way that mods may not be, so we counted them independently from the general mod method.

Instances of modification that were labelled as 'unclear modification method' were responses where the participant was clear about the fact that they made a modification, and perhaps how that modification affected their play, but gave few to no details for us to use to identify the method by which they modified. For example, P74 (Man, 37) spoke about his modification in one of the *FIFA* [G20] games as helping his players "run better and [be] stronger against other opponent[s]", which could be achieved with mods, cheat codes, glitches, exploits, or macros, to name a few of the possibilities.

Modification Method	**Count**	**Description**
Campaign planning	1	Strategizing gameplay prior to play and creating a 'script' to follow using knowledge of game meta.

Modification Method	**Count**	**Description**
Walkthroughs, guides, forums, and wikis	40	The use of external resources (provided and accessed outside of a game) to learn about the game, including wikis, forums, gui38des, and walkthroughs. These resources are often created by other players.
Mods	119	Modifications to game source-code/software, from simple alterations in graphics to extensive 'total conversions'. Can be performed locally by the player on their own set-up or may be created by another player, downloaded, and integrated into the the player's local set-up.
Mods - *World of Warcraft* add-ons	7	Essentially 'mods' that *World of Warcraft* [G8] has approved the usage of. As add-ons are approved of by the game developers, they are considered 'legal' to use, unlike many mods.
ROM-hacking	3	Modifications to the data in a ROM (Read-Only Memory) file of a game's source code.
Save-file editing	4	The alterations of data within a save-file of a game (which stores a player's progress in a game).
Hacked clients	1	Refers to a copy of a game program ('client') that has had the source code altered ('hacked') to modify how the game behaves. Often provides the player access to multiple mods or cheats in one integrated system.

Modification Method	**Count**	**Description**
Cheat consoles and game trainers	4	A piece of third-party hardware or software that enables the addition of cheat codes or other modifications. Common examples include the Game Genie and GameShark.
Cheats	31	The use of cheat codes, hacks, etc. in a game to provide the player with various in-game advantages.
Glitches and exploits	10	The utilization of game mechanics or bugs in an unintended way.
Passing the controller	5	Passing control of a game to someone else during play, usually by physically passing the game controller.
Remapping controls	7	Changing the keys/buttons/etc. that perform an action in-game. Often can be executed through a games' settings.
Macros	1	Shortcuts that allow a player to perform an action that usually requires multiple key strokes with fewer key strokes. Can be a setting that the player must record themselves, or players can download and install pre-set macros.
Aim assist	2	Assists the player in targeting objects in-game, either as a toggle-able game setting or a mod. The level of assistance can vary.
Difficulty levels	9	Altering the difficulty level of a game using the games' settings.

Modification Method	Count	Description
Game settings	9	Altering some feature of gameplay using settings provided by the game developers. Includes colour, graphics resolution, audio, various accessibility features, and more — it depends on the game.
Joining private servers	7	When a player joins a server that is not hosted by the game developers or their official partners. Usually these servers are hosted by other players, and can have their own rules and additional systems, such as stronger anti-cheat protections.
Source-porting and emulation	1	The modification of a games' software or use of third-party software to enable a game to run on different hardware than it had been developed for.
Changing technology set-up	2	A player altering their local hardware set-up with precipitating changes to the gameplay experience.
Someone else modifies the game for the participant	2	The participant had someone else modify their game for them.
Unclear modification method	7	The type of modification used by the participant was not identifiable from the information they provided.

Table 4.1: Modification methods mentioned by participants, either referred to by name or identifiable through description, with a description of the modification and count of the number of instances the modification appeared in.

We further organized our identified methods into five categories based on shared features of what mechanism of a gameplay experience was being modified to give rise to a change: software, hardware, settings, information, or player behaviour. We summarize the methods within each category in Figure 4.1. Notice that some categories overlap — this is because some methods could fit within multiple categories depending on the context of a game.

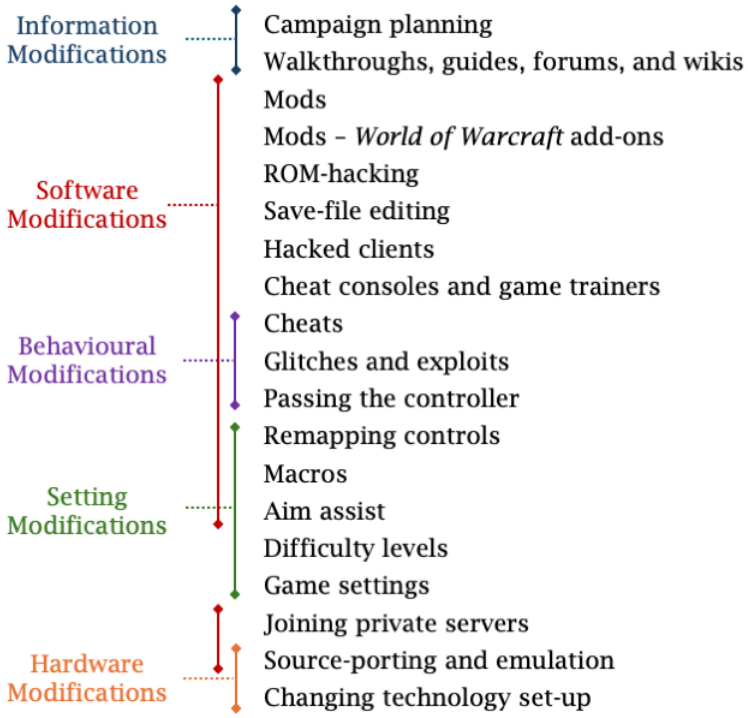

Figure 4.1: Methods of modification referenced by participants, grouped by our categories of software, hardware, information, behaviour, and settings.

Software modification is the broadest category, comprising all modification methods that may be performed through an alteration of the software of a game. This includes mods (with *World of Warcraft* [G8] add-ons), ROM-hacking, save-file editing, hacked clients, and cheat consoles and game trainers as typical methods. We also include methods that are not typically software modifications, but may be enabled by the use of a software modification, such as cheats, glitches, passing the controller, remapping controls, macros, aim-assist, private servers, and source-porting and emulation. For example, consider P102's (Man, 37) use of PlayStation's Share Play software (a software modification) to be able to pass control of the game *As-*

troBot [G60] to his online friend (a behavioural modification). Hacked clients and game trainers were similarly often used by our participants to enable the use of cheats, glitches, or exploits in a game.

Our participants also spoke about using a couple methods that altered the hardware that the game software runs on, which we categorized as **hardware modifications**. These methods were fairly unpopular, but most often included altering the console a participant used to play, such as using a different monitor for their PC. As source-porting and emulation may require specialized software to modify the hardware a game can run on, we consider it to be within both the hardware and software categories.

In addition to technical changes to software or hardware, we also consider changes that alter the gameplay experience without necessarily altering the game software or hardware itself. This includes information, behaviour, and settings modifications.

Information modifications change the knowledge the player has about the game by providing them with additional information about the game, which can then alter their behaviour in-game. For example, P122 (Woman, 21) used the wiki for *Elden Ring* [G26] to easily search for weapons or items she wanted to get in-game, and for the best locations to "farm exp"[1] to quickly level her character up. P122's prior research allowed her to streamline her play, where instead of spending time wandering the game to search for items or naively completing tasks, she could direct her efforts to maximizing her preferred outcomes in a way she couldn't without the information she gathered outside of the game. Other than the use of wikis, walkthroughs, and forums, we also count campaign planning as a form of information modification, as the player utilizes information about the game while planning.

Behavioural modifications occur through the player changing how they interact with the game. In this case, the mechanism of modification may already exist within the source code or hardware of a game, such as a cheat code or a bug, but the player *using* that modification is what deviates play from the standard experience. Passing the controller, cheat codes, glitches, and exploits all count as a behavioural modification.

The final category is **setting modifications**, where the game is altered through settings provided to the user as a component of the game. Gameplay may be altered

[1]'Farming EXP' is slang that refers to the process of rapidly gathering experience points (abbreviated as EXP, experience points are often used to level up a character) through repetitively performing a task such as fighting certain enemies.

by a setting modification, but the ability to perform these changes is a component of the base game implemented by the developers, and they require little extra effort from a player to implement. This is in contrast to software or hardware modifications, which often require some degree of technical knowledge and skill to execute, or behavioural modifications, which may exist within the base game, but their use is usually unintended by the developer. Games are not necessarily uniform in the types of settings they provide, so there is some overlap between setting and software modification, as a mechanism that is a setting in one game may require a software modification to execute in another game.

4.1.2 Outcomes of Modification

Moving beyond methods, we consider the outcomes of our participants' modification in how their gameplay experience was changed. In looking at the results of modification, not just the mechanism used to achieve those results, we can achieve a greater understanding of what players frequently alter in their play, which we can extend to understanding why they modify and how we may better support modified play.

Our participants described a wide variety of changes in their responses, which we have split into five categories (content, mechanics, aesthetic, utility, and community) with subcategories. A summary of our categorization can be seen in Table 4.2. The vast majority of changes related to altering the content ($n = 180$) and mechanics ($n = 89$) of gameplay, although a significant number of changes were also aesthetic ($n = 37$) or utilitarian ($n = 34$). Very few changes involved the alteration of the community ($n = 2$) that the participant played with. Although it is not a category, we also discuss our participants usage of the term "quality of life" to refer to a variety of modifications across categories that made their play a better experience.

Content

Modifications to game content relate to changing 'items' within a game. Examples of game content includes any variety of game assets or other components, such as: locations, maps, or worlds; levels, dungeons, and quests; characters, including both player and NPCs; enemies; items such as armour and clothing, weapons, materials; scenes, such as cut-scenes, or simply interactions that only occur in certain circumstances within the game; and achievements.

Modification to Game		Code Counts
Content		**180**
	Adding new/changing existing assets	138
	Accessing content	38
	Randomizers	4
Mechanics		**89**
	Adding new/changing existing mechanics	70
	Altering the game loop	13
	Adding functionality	6
Aesthetic		**37**
	Graphics	34
	Audio	3
Utility		**34**
	User interface (UI)	25
	Controls	5
	Performance	4
Community		**2**
	Play with preferred community	2

Table 4.2: Changes to gameplay described by participants, with a count of how many instances of modification described by our participants they appeared in.

We have three sub-categories on content modifications, with one comprising addition or changes to existing content, another for modifications that allowed greater access to existing game content, and a final category for a specific modification know as a 'randomizer'.

Adding New/Changing Existing Content Adding or changing existing game content includes alterations to any variety of game assets or other components. We focus on non-cosmetic changes to content in this category; cosmetic changes are addressed in the 'aesthetic' category. Overall, participants reported 138 total instances of making non-cosmetic changes to an element of game content.

In an example of adding new or changing existing content, P151 (Woman, 31) described adding additional scenes, clothing, and weapons to *Baldur's Gate 3* [G35] alongside altering the characteristics of existing skills within the combat system (we would call these skills 'objects' within the combat system and therefore content, rather than a mechanic): "I also added some things ... to overall just enhance my gameplay, like extra romance scenes, re-balancing some of the combat skills to be more fair, additional armor and weapons I can use that fit my playstyle better, and some silly stuff too (like a set of Mojo Dojo Casa House clothing for the men, silly glasses anyone can wear, etc)."

Another example would be P53's (Man, 29) use of the *Fallout 4* [G4] mod 'Fallout: London'. As a total conversion mod, 'Fallout: London' completely overhauls the gameplay of *Fallout 4*, replacing the setting, including the game map and NPCs, and adding new quests and weapons, while retaining the majority of the mechanics from *Fallout 4*.

Lastly, some participants sought out modifiers for in-game advantages such as unlimited lives or invulnerability for their character. One example is P15 (Man, 41): "My most memorable modification is the game Sekiro [[G25]] because it was so hard. I had to go and look for cheats that allowed me to be invulnerable so I could practice the bosses long enough to learn their mechanics." Since invulnerability and other in-game advantages tend to involve simply maxing out or changing existing attributes (health of character, number of lives character has, etc.) of items, we consider this to be a modification of content rather than a modification of a mechanics.

Accessing Content Thirty-eight participants used modification specifically to get access to various gameplay assets more easily. It allowed them to find or spawn in

items, currency, and existing game content, including hidden and secret content, in the game.

Accessing in-game currency is more or less a means to an end for our players: by getting more in-game currency, they can focus their play. Like in the real-world, in-game currencies are used to buy any variety of goods and services within a game. By using modifiers to access more currency easily, players can skip time- or effort-intensive activities that may be needed to generate currency usually. For some, this is a simple modification that allows players to focus on a subset of play that they most enjoy — for example, unlimited currency cheats are popular among players of *The Sims* [G38] games like P45 (Woman, 36), P123 (Woman, 42), and P131 (Woman, 30) who prefer to focus on building and decorating homes over the rest of *The Sims* life-simulation mechanics. By allowing them to access building materials and decorations more easily, currency modifications let our participants have a more relaxed, fun, and "painless" (P136, Woman, 25) experience, and more rapidly reach higher levels, get other content, and complete gameplay.

Some players took a more direct approach to accessing items, using modifiers to directly spawn existing items that they wanted into gameplay, like cars in a *Grand Theft Auto* [G57] game (P48 (Man, 44) and P91 (Man, 29)) or materials in *Satisfactory* [G14] (P167, Woman, 38). These items could serve to help the player advance in-game, add fun to play, or let the player have something they simply desired to have.

In terms of gameplay scenes, our participants used modifications that allowed them to access more dialogue, gameplay choices, side quests/missions, achievements, special events, and more. For example, P73 (Man, 29) described using a mod that allowed him to have more companions in *Baldur's Gate 3* [G35] to experience content that you only get when you have certain NPCs as your companions without having to replay the game multiple times: "Another modification I did recently was with baldurs gate 3 [[G35]] by adding a modification that would allow more companions to be beside you during your gameplay. In the base game, you would only be allowed 3 companions, with the modification it would allow you to have an unlimited amount of companions - allowing more gameplay choices and dialogue options."

Some participants used modifiers to help them uncover specifically hard-to-find game content, like hidden levels in *Oddworld: Abe's Exoddus* [G48] (P62, Man, 33), side missions in *God of War Ragnarök* [G58] (P92, Man, 34), or achievements and collectibles in *Moving Out* [G17] (P125, Woman, 39).

Randomizers Four players described using a specific type of modification they referred to as a 'randomizer', where the location of existing game assets (enemies, items, armour, etc.) are randomized throughout the game. P40 (Man, 40) described this process in a bit more depth:

> "I recently played through Elden Ring [[G26]] and used a few mods to change my experience up. I utilized a piece of software called a 'randomizer' that effectively randomizes all item and enemy locations within the game. It made certain areas of the game far more difficult and exciting because I really didn't know what I was going to get in various areas. It also changed the location of every item and so it was harder to make a powerful character since I had in the past memorized most important locations."

Where his knowledge of the game allowed P40 to more easily become powerful in-game, the randomizer disrupted this knowledge and allowed him to play 'fresh' again. Randomizer modifications could be stand-alone, such as is the case in P40's usage, or as part of a larger modification; P51 (Man, 24) also used a randomizer, but as part of a popular fan challenge in *Pokémon* [G27] games known as the 'Nuzlocke Challenge' that combines randomization with an additional set of new rules for play.

Mechanics

Modifications to game mechanics describe changes to the systems and processes that compose gameplay. This included participants adding mechanics or changing new ones, as well as adding new functionality to play. We also identified a subset of modifications that affected the greater *game loop*, which refers to the flow and cycle of activities within the game that comprise gameplay. Mechanics make up the game loop, dictating what those activities are, hence our placement of these modifications within the mechanics category.

Adding New/Changing Existing Mechanics It's perhaps best to discuss mechanics in the context of an example. P113 (Man, age not shared) used the 'Realistic Needs and Diseases' mod to add systems for hunger and fatigue to *The Elder Scrolls V: Skyrim* [G3], introducing new mechanics to his gameplay. Other participants altered existing game mechanics instead, such as P72 (Woman, 36), who used mods to alter the NPC companion system of *Baldur's Gate 3* [G35] to allow the player to

have more companions at once. P72 also changed the inventory system of the game to remove weight restrictions on what the player character can have in their inventory. These examples show alterations of the systems of rules that underpin gameplay (inventory systems, companion systems, survival systems), distinguishing them from alterations to content, which tend to alter individual items within these rule sets.

Some participants used modifiers to achieve changes in game difficulty, either utilizing an existing difficulty system within the game or altering other features of play, like enemies, to make the game easier or more challenging. Instances of making the game more or less difficult were fairly evenly split. P41 (Woman, 37) is an example of exploiting an existing difficulty system. She shared that, should game difficulty levels be available in a game, she always use them to place the game on easy mode. In an example of altering other features of play, both P162 (Woman, 32) and P169 (Woman, 43) spoke about how they used modifiers to alter the behaviour and characteristics of enemies to increase the difficulty of their play. P162 used modifiers to increase difficulty in *The Elder Scrolls V: Skyrim* [G3] by adjusting the behaviour system that dictates how the enemies act to make combat more difficult. P169, on the other hand, adjusted the difficulty of *Valheim* [G33] by altering the attributes of the enemy asset itself, giving the enemies higher health and damage output. This means that it takes the player more attacks to defeat an enemy, and the player takes more damage if they are hit by an enemy. By altering the attributes of the enemy asset, however, P169 is actually making a content change rather than a mechanics change, showing a fine line between the alterations players can make.

Altering the Game Loop Modification was also used to skip sections of play, specifically advertisements, repetitive tasks (termed 'grinding'), and sections that are repetitive when replaying the game like opening scenes or early tutorials within the game.

P37 (Woman, 24) is an example, as she used a mod to gain control of the game loop itself. She said:

> "In the Sims [[G38]], one experience I have modifying my game is installing a "mod" someone else created called MCCC. This mod allows me to take more of a master control of the game. For example, it gives me the ability to add or subtract money, increase or decrease skills, promote or demote jobs, change relationship levels, put their needs on high level, etc. I use it frequently because it just makes it easier for me to not have

> to start from scratch every single time or it speeds up something that I want to happen."

By taking master control over the game and all its systems and attributes, P37 has disrupted the existing game loop to reforge her own, allowing her to skip mechanics as she wishes.

Participants also reported using modifiers to quickly upgrade their character to avoid the grinding process that goes into levelling up. A higher level provides the player with advantages, like a more powerful character and items that are locked until the player achieves a certain level. P75 (Man, 47) spoke about him and his friends using an exploit in *SOCOM II U.S. Navy SEALs* [G69] to quickly level-up their character: "We discovered that if you stand over a dead player, and repeatedly switch pistols with him, you rank up. So we were running games just to do this to each other. The gain was that I got ranked really high on the leaderboards. I guess looking back on it, it was kind of stupid. But whenever I joined a room, people respected my name because of my rank."

Adding Functionality Some participants used modifiers to add extra functionality to their play, including additional multiplayer and anti-cheat features.

One player (P24, Man, 39) modified their gameplay to introduce additional anti-cheat functionality to *Counter-Strike 2* [G63]. The additional functionality reduced the number of "cheaters" P24 interacted with when playing.

More common was adding multiplayer functinality. A handful of participants described using modifiers to expand the multiplayer capabilities of games they played. Some, like P78 (Woman, 39), used modifiers to turn a single-player game into a multiplayer experience. P78 used the *Half-Life* [G66] mod 'Sven Co-op' to turn the normally single-player game into multiplayer, co-operative game. For other participants, modification allowed them to alter and expand the existing multiplayer functionality of the game. For example, P126 (Woman, 29) spoke about modifying *Stardew Valley* [G15] to increase the multiplayer capacity and remove the requirement of a 'host' player who had to be active for any of the other players to be playing. According to P126, this allowed her entire friend group to share one farm in *Stardew Valley* and reduced barriers to them playing together, such needing to find one time they could all play together rather than whoever is available at a given time being able to play together. P126 also spoke about how adding multiplayer functionality to *RimWorld* [G37] allowed her to surmount other barriers to her play, and play more

comfortably: “i was curious about trying the game but it seemed daunting given i had no experience. so this mod made it so my friend (who know what they were doing) could play with me and teach me the ropes.”

Aesthetic

Other changes to gameplay were more topical, affecting mostly the cosmetic experience of playing the game. Thirty-four participants made changes that altered the game graphics in some form, and three altered the audio of the game.

Audio In terms of audio, the few participants who modified the sound of their games described changing the music, sound effects, and auditory aids of the game. P27 (Man, 29) for example, when talking about the mods they used in *Risk of Rain 2* [G28], described “even changing the sound effects and music too”. Or P142 (Non-Binary or Genderfluid, 27): “I often add mods to World of Warcraft [[G8]] when I play it that aid in gameplay. Anything from auditory or visual aids to timers and map markers to better find collectables [sic].”

Graphics Modifications to graphics were much more common that auditory modifications, with many participants making reference to using graphics modifications like texture packs, shaders (or ‘reshaders’), and skins to alter the appearance of game elements to align more with their preferences or to bring higher-resolution graphics to older games. Texture packs and shaders are generally applied to the game world at large, while skins are more specific to characters or items. For example, P11 (Man, 33) described using a shader in *Minecraft* [G41] “to make the water, trees, and skies look more real so that it looks better in my eyes and it looks pretty compared to the base game.” P151 (Woman, 31) also used cosmetic mods, although she used mods to introduce new cosmetic assets into *Baldur’s Gate 3* rather than update the look of existing assets: “I mostly wanted cosmetic mods so I could edit my party members as well as have a whole slew of new hairstyles, skin tones, eye colors, clothing, makeup, tattoos, horns, tails, and other fun stuff to try on.”

Using graphics modifications to update graphics to more realistic higher resolutions was also common. For example, P162 (Woman, 32) described using “high-resolution texture packs” in *The Elder Scrolls V: Skyrim* [G3] for a more immersive and realistic look in game. In another example, P2 (Man, 26) spoke about using

"mods that may improve visuals or sound, such as the 'Seamless HD Project' for the PC ports of the classic Resident Evil[2] games."

Utility

It was quite common for participants to make utilitarian changes to play, with twenty-five participants altering the user interface (UI), five altering the controls, and four altering the technical performance of a game.

User Interface (UI) A game UI includes all the elements of the game that a player uses to interact with the game, usually visual elements. Common elements may be icons, text, buttons, menus, maps (or minimaps), and other features such as health bars, although the specific elements will depend on the game.

Our participants used modifications to change the UI to be more personalized to their play style and to make play easier. For example, P72 (Woman, 36) used modification to customize her UI to her role as a healer in the multiplayer game *World of Warcraft* [G8], able to heal and buff (temporarily increase a skill of a character) or debuff (temporarily decrease a skill of a character) other players: "I play a healer so had mods to show raid frames better, to allow me to click heal those frames, to track important buffs and debuffs."

UI modifications usually involve adding elements, such as more detailed statistics and information about play (e.g., damage meters, indicate enemy positions, skill cooldown), to the UI to increase the amount of information the user can easily find, but a small number of participants also used modifiers to remove elements from the UI, such as P169 (Woman, 43), who used modifiers to remove counter-attack prompts in *Assassin's Creed Valhalla* [G62] to make her play feel more realistic and "skill-based".

Controls In a similar vein of personalizing their UI, some players modified the controls they use to play. The most common way to modify controls was to change key-bindings, which is the mapping of key (on a keyboard, or a button on a controller) to an action in-game. P114 (Woman, 39) demonstrates remapping alongside a UI modification: "I modified *Fortnite* [[G21]] by customizing the HUD[3] and optimizing building key bindings, which made my gameplay feel smoother and helped me

[2]This participant is referring to the first few games of the *Resident Evil* game series, specifically *Resident Evil* [G13], *Resident Evil 2* [G12], and *Resident Evil 3: Nemesis* [G11].

[3]HUD stands for 'head-up display', which describes the elements of the UI that overlay actions occurring in-game.

focus during intense moments. Reducing screen clutter allowed me to track enemy movements better, while faster building controls gave me a competitive edge. I made these adjustments to create a more streamlined experience tailored to my play style."

Players also use modifiers to change the controller that they use to play, such as P119 (Woman, 28) who used modifiers to allow her to play using "mkb" (mouse and keyboard) with her friends that were using the PlayStation 4 console, as she was more comfortable with a mouse and keyboard than a controller.

Performance Other utilitarian modifications focused more on how well the game performed technically, and used modifiers to reduce lag and latency issues. For example, P9 (Man, 25) used the *Minecraft* [G41] mod *Sodium* to optimize the game's performance, while P24 (Man, 39) took advantage of the lower latency offered by using a third-party server for *Counter-Strike 2* [G63].

Community

Other changes that participants made included using modifiers to play with a certain game community ($n = 2$). For P24 (Man, 39) and P81 (Man, 37), modifiers allowed them to join a multiplayer server that catered to a specific sub-community. P81 used it to play on role-playing server in *Grand Theft Auto V* [G56], where he could act out role-playing scenes with other players, and P24 used it to play with other players that aligned with his "more serious" stance about *Counter-Strike 2* [G63] gameplay.

Unspecific

Some participants did not adequately describe their modification enough for an outcome of modification to be identified, which we categorized as 'unspecific modifications'. Responses categorized as unspecific modifications usually indicated that the participant changed the game, but did not clarify specifically what changes they made enough for identification of the change they made. One example is P16 (Man, 29), who described that he had changed "some element of gameplay" in *Starfield* [G5], or P106 (Woman, 35) who described using mods in *Insurgency: Sandstorm* [G45] for "more gameplay variety", which does not convey what was changed to create variety.

Quality of Life

When describing their modifications, our participants often spoke about making what they referred to as "quality of life" changes. Although the exact change players made varied from bug fixes to alterations of UI and modifications of game mechanics and assets, the common thread to quality of life changes appears to be that they make a game more convenient or usable for players, improving the *quality* of the game's gameplay experience for players throughout the game's *life*time. We mention it due to how often participants used it to refer to their modifications, even though it's actual outcomes are spread across our categories of modification outcomes.

For P78 (Woman, 39) and P165 (Woman, 27), quality of life changes were augmentations of the UI of *Final Fantasy XIV* [G59] that made play "less tedious" (P165, Woman, 27), including "enabling the ability to teleport by typing in commands instead of navigating menus, to help track my progress when doing quests, or adding information from a wiki into the game so I don't have to look back and forth while playing" (P78, Woman, 39). Showing the variety of quality of life changes, P19 (Non-Binary or Genderfluid, 31) also made a "quality-of-life" change to make play less tedious, but altered the player character's walking speed in *Stardew Valley* [G15] instead.

P143 (Woman, 26), approached quality of life modifications differently. To her, quality of life modifications are ones that "fix in-game bugs (e.g. Skyrim [[G3]], Morrowind [[G2]], Fallout [[G32]]) ... left in the game by developers", letting her "[avoid] annoyances that would prevent [her] from properly playing the game (i.e. crashes)".

4.1.3 Taxonomy Summary

In this section, we presented a taxonomy of modifications performed by our participants, considering both the methods and outcomes of modifications, to create a vocabulary of modification to use throughout the rest of this paper. The taxonomy identifies 19 different methods of modification that fit within five categories (software, hardware, information, behavioural, and settings), and five major categories of modification outcomes (content, mechanics, aesthetic, utility, and community) with more specific subcategories, that provide a general and neutral lexicon to describe modifications.

4.2 Player Perspectives of Modification

Based on an inductive thematic analysis of responses to the survey questions, we identified six core themes that clustered around participant play experiences, motivations, challenges, and perceptions related to gameplay modification: play, agency, connection, community norms, leet (1337), and technology. Each cluster is also connected to player conceptions of fairness and cheating, as violations or undermining of these concepts relate to our participant's perceptions of what is fair for modification.

The six core concepts are summarized below, and described in greater detail throughout the remainder of this chapter.

Play conveys the joy taken in playing and intrinsic motivations to play such as a love of games, creativity, and curiosity. This includes the ability of modifiers to enhance and expand the enjoyment of a game, and to elicit positive emotions like joy and relaxation. It also describes the inverse, where improper use of modifiers may ruin the joy that a player would have taken in play.

Agency encompasses the freedom and control that modifiers gave to participants to suit a game to their needs and wants, and how violations of player agency relates to cheating.

Connection describes participant experiences of gameplay modification as a vehicle for social connection to other people, particularly those who also modify their gameplay.

Community Norms details the key role that the rules and standards of gaming communities play in determining how and what modifiers players perceive to be ethical and fair, and how community norms affected the play experience of our participants.

Leet (l33t/1337) illustrates the shared characteristics between some players who modify and elite players (sometimes nicknamed 'leet' players) who are dedicated to dominating gameplay.

Technology comprises the technological skills and supports — or lack thereof — that were fundamental to our participants' success at modification, and how our participants managed technical errors.

4.2.1 Play

The principle of **play** encompasses the ludic enjoyment of gameplay, or 'play for play's sake', as it relates to our participants' experiences with gameplay modification. Subthemes include the ability of modifiers to enhance gameplay experiences, make games more interesting and complex, and invoke or heighten positive emotions like happiness, excitement, fun, and relaxation. The play principle also includes the inverse of enjoyment of play; that is, we see how modifications can be involved in the invocation of negative emotional experiences. In this, we see elements of gaming purism, in which some players may conceive of the base gameplay as something that can be ruined by irresponsible modifier use. Additionally, we discuss our participants' perspectives of how modifiers relate to gameplay, and how this impacts their perceptions of modification.

Enhancing Gameplay Experiences

A simple idea was behind many of our participants' use of modifiers: according to them, the overall gaming experience is better when modifiers are allowed. As shared by P42 (Woman, 26), "[a]llowing modification in games can enhance the overall gaming experience for many players". Several other participants agreed, saying that modifiers "positively enhanced [their] gaming experience" (P5, Woman, 44), "provide[d] a better gameplay experience" (P9, Man, 25), "add[ed] to the experience" (P46, Man, 62), "improve[d] overall gameplay" (P49, Man, 33) and that without modifiers their "gameplay experience would be worse" (P78, Woman, 39). Some participants provided further details about how the overall game was improved, such as making the game look "visually stunning" (P118, Woman, 26) or creating a "smoother" (P114, Woman, 39) play experience. Participants also changed parts of play that they found to be boring or tiresome, such as P19 (Non-Binary or Genderfluid, 31), who used a mod to make travel in *Stardew Valley* [G15] faster by increasing the walking speed of the player character.

Adding Interest and Complexity

Over half of our participants shared experiences where they used modifiers to introduce new features into gameplay, adding novelty, complexity, and realism into gameplay, making the game more interesting, engaging, and fun for them. This reflects findings from the multiple-choice survey question about player motivations to

modify games, where 74 out of 167 (approximately 44.3%) reported that they modify games for novelty in gameplay.

One example is P110 (Man, 56), who "installed [the mods] 'IndustrialCraft' and 'Thaumcraft' [to *Minecraft* [G41]] to incorporate tech and magic." In his words, the addition of systems for technology and magic into *Minecraft* "transformed [his] gameplay into complex resource management and automation" and "added depth and variety to the sandbox experience."[4] This new complexity inspired him to "experiment more with building" and "sparked [his] creativity, leading [him] to create complex machines and intricate structures [he] wouldn't have thought to try in the vanilla game", expanding the possibilities of play that P110 engaged with.

P147 (Woman, 31) also spoke about using mods to augment her gameplay, adding that "mods in Skyrim [[G3]] that improve visual aesthetics or introduce new quests can refresh the game, making it feel unique and engaging even for seasoned players." Not only did P147 add new quests for novelty, but she included using mods to improve graphics as a way "refresh" her gameplay experience and make it unique from other games she might have played. Unique play enabled participants to enjoy games they might not have otherwise enjoyed. As P3 (Woman, 38) said, "[w]ith some mods, I can change the base game experience to be exactly what I like to play, and at times that can deviate significantly from what the game developers had in mind. But it means whatever design choices they make, I can still have fun in that world". Making the game unique and suited to the player is something that P113 (Man, age not given) valued as well. In his words:

> "Modifying gameplay has been a rewarding way to shape each game to fit my preferences, giving me control over everything from visuals to difficulty levels. I enjoy experimenting with mods that make games more immersive or aligned with my interests, and it's become a way to enhance the core experience and make it feel uniquely mine."

We'll discuss personalization and control over gameplay further when we discuss the principle of agency in Section 4.2.2, but of note for play is how P3 and P113 perceived personalization as a method for enhancing the gameplay experience and injecting fun into play.

[4] *Minecraft* is known as a 'sandbox' style game. Sandbox games are characterized by giving players a great degree of freedom to interact with the game as they wish without imposing goals on their play.

P113 is also an example of a participant who was motivated to modify by realism in play and the subsequent heightened immersion and engagement that can come from it. He used "realistic mods" in *The Elder Scrolls: Skyrim* [G3] that made him feel "more immersed" and encouraged "more patient gameplay" as the "heightened immersion made me appreciate the small details and added layers of realism." He provided an example of using mods that added survival elements to *The Elder Scrolls: Skyrim*, saying that they "required [him] to plan carefully and manage resources, making [him] approach the game at a slower, more thoughtful pace".

Additional complexity in gameplay, while mostly positive, could at times add frustration and stress into the gameplay. P164 (Woman, 21) said that her use of modifications that "made the game more complex and challenging" also made her "sometimes get more stressed or frustrated while playing." These cases, however, were uncommon, and presented as being worth the overall enjoyment the player got from modifying the game.

All together, our participants spoke about modification as a tool to enrich their gaming experience, making games complex, unique, fresh, and immersive.

Eliciting Positive Emotions

Enrichment of their play also elicited positive emotions from our participants. For example, P164 (Woman, 21) describes adding mods to add both challenging and "calm activities" to *Minecraft* [G41], which made a game she had been playing for 10 years "more exciting as [she had] played it so much that [she] almost ran out of exciting things to do. It made the game feel more fresh, which meant [she] had more fun playing it".

In fact, the majority of our participants expressed that using modifiers allowed them to feel a variety of different positive emotions like happiness, excitement, joy, fun, and relaxation, and helped them improve their mood and recover from stress. We can see this mirrored in responses to the multiple-choice survey question about motivations to use modifications, in which 135 of our 167 participants (approximately 80.8%) reported that they modified for enjoyment, relief, or relaxation, with 57 out of 167 (approximately 34.1%) modifying to manage their negative emotions, like frustration and anger.

Some experienced increased excitement as a result of refreshing the game, like P164, but the elicitation of positive emotions was not limited to this circumstance.

Any number of modifications were described as making the game "more enjoyable" or "more fun", such as modifications that focused play on a subset that the player preferred (e.g., focusing on designing characters and homes in *The Sims 4* [G39] using unlimited currency modifications (P123, Woman, 42)), making the game more visually appealing to them (P1, Man, 27), or adding 'fun' or 'silly' elements, such as new outfits in *Stardew Valley* [G15] (P137, Woman, 27), different types of vehicles (including tanks) into a *Grand Theft Auto* [G57] game (P135, Woman, 33), and turning the dragons in *The Elder Scrolls V: Skyrim* [G3] into trains (P7, Man, 27).

Keeping with the prior theme of modifiers enabling players to personalize their experience to their interests, some players had specific situations enabled by modification that made them happy. One was P150 (Woman, 34), who found happiness and relaxation in being able to fulfill life goals she has through gameplay. She said, "I think using mods makes me happier because it allows me to simulate the life that I would like to have. I'm certainly much happier after playing a modded game of Sims 4 [[G39]] vs an unmodded version. It makes me feel good and is one of the only times I relax and am ever still."

Beyond happiness, fun, and excitement, modified games may provide players with a way to relax and overcome frustrations, letting them recover from bad moods and stress. Our participants spoke of being able to skip "some of the more irksome proccesses [sic]" such as repetitive tasks (grinding), letting them "escape from the day-to-day" (P126, Woman, 29) and relieve stress when playing games. Our participants also used modification as a support tool for handling sections of play they found to be difficult while maintaining relaxation and enjoyment of play. P1 (Man, 27) said, "[u]sing modifiers has generally made me more relaxed and open to exploring different aspects of games. I find myself spending more time enjoying the narrative and world-building rather than getting frustrated with difficult sections." By supporting them through difficult sections, modifiers can reduce anxiety and reintroduce the fun of gaming. P156 (Woman, 37) reported simply that, as a result of modifying games, "I have experienced less frustration. I have also looked forward to gaming more when I know what is coming if I've watched a playthrough beforehand. I seem to have less anxiety about the level and can just enjoy the game."

Modifiers for surpassing difficult sections went hand-in-hand with modifiers that affected player skill, where modification allowed participants to play for leisure without needing to stress about being at a lower skill level. For P79 (Man, 36), using modifiers like difficulty adjustments and aim assist "relieved stress" associated with

playing difficult games and games where "the base player is extremely better" than he is. As a result, he gamed more often, which occasionally had the run-off benefit of improving his skills and reducing the level of modification he needed. Another example is P156 (Woman, 47), who found her enjoyment and relaxation increased as a result of being able to "see everything and complete the games, achievements, missions, etc., see all the scenes that [she wants] to without having to grind or become better than [she] naturally [is]" using modifiers. She spoke about an instance when she felt frustrated playing *Life is Strange* [G18] after missing a single "correct" action early in the game that changed the ending of the game, and using a walkthrough next time she played to make sure she got the ending she wanted to experience.

At the same time as reducing frustration and stress, some participants found that being able to perform better as a result of using modifiers made them happier. P3 (Woman, 38) said, "Mods also allow me access to extra information that isn't easily accessible with un-modded gameplay. That extra information can allow me to fine-tune my gameplay and perform at a higher level, which of course improves my happiness and confidence."

In the same vein as allowing the participant to enjoy gaming in the face of difficult sections, modification was also used by some participants to allow them to enjoy gaming despite barriers or restrictions they may face. P156 (Woman, 47) spoke about lacking the time to play games they way she wished to, and using modifiers to still achieve her goals in-game and enjoy gameplay without negatively affecting her life outside of the game:

> "I love games with a long, involved storyline and multiple characters/endings, but I rarely have the time to experience them all. These games often involve making certain choices or maxing out certain stats. I don't have the time or the inclination to wade through every part of the gameplay. I rely heavily on others who have charted out this information before. I rely of wikis, chat groups, walkthroughs, and tutorials. I also rely on gameplay videos showing all the endings. I recently used all these strategies to get a 'good' ending for Detroit:become human [[G51]]. I just didn't have the time to play the way I used to when I was young, and I want to experience all aspects of immersive games like that. I modify so I can get the full enjoyment without sacrificing other areas of my life."

P15 (Man, 41) was similarly affected by restrictions on his time to play games due

at least in part to the growth of his responsibilities as he has grown older. Despite these restrictions, modifiers allowed him to still play games and feel a sense of accomplishment for his progress while balancing his other responsibilities. He said, "I find that it is a better use of my time which I seem to have less of as I grow older and now have a family to take care of. It allows me to still get a sense of accomplishment without needing to invest large amounts of time."

Getting 'More' From Gameplay

As a result of the ability of modification to enable greater enjoyment, creativity, complexity, and innovation in games, many of our participants found that they play games more or for longer when they are able to modify the game, extending the lifespan of the game for them. This increase in play can extend to entire game communities, as reported by P149 (Woman, 32):

> "Although I haven't played Skyrim [[G3]] in a while, I think it's an amazing example of what people who mod are capable of achieving. The game is pretty old now, but still has a thriving community due to mods. The mods in this game can change entire storylines, gameplay, house builds, followers, and more. It's wild to me that a game so old can still feel so new, due to never ending customization opportunities."

Our participants also spoke about how modifications enabled them to "get the most out of [their] games" (P145, Woman, 38) through being able to play "in a variety of ways" (P145, Woman, 38), or helping them optimize their play time. Refer back to P156 (Woman, 47) and P15 (Man, 41), who use modification to enjoy play to its fullest extent despite constraints they face on their time. Or, consider P75 (Man, 47), who emphasized that using modifications could be necessitated by the design of modern games, saying: "Using forums and Discord should definitely be allowed. Some games these days NEED you to do research if you are going to maximize your time playing the game. There are things you will literally never find if no one tells you how to do them."

Undermining Play: Satisfaction, Purism, and Eliciting Negative Emotions

While modifiers generally enabled our participants to achieve satisfaction and happiness in play situations they otherwise may not have been able to, occasionally modification negatively affected the enjoyment that participants felt.

Some participants found that using modifications "doesn't give you the full satisfaction of fully completing a game/level as intended without any modifications. Overall,... engagement and enjoyment of the game gets reduced." (P20, Woman, 24) Even if they felt satisfaction in the moment, they may became bored afterwards and "wished that [they] had completed the task without any support" (P66, Woman, 28). Modification may undermine the experience of the game and the sense of accomplishment our participants felt from playing with only their own skills, or even go so far as to make play feel pointless. P97 (Woman, 40) said "[s]ometimes if I use cheats or mods in games too much I start to feel a sense of dissatisfaction with the entire game, as if it detracts from the overall meaning of the game, and can go so far as to make the entire game feel meaningless".

P97 does, however, go on to say that her dissatisfaction "is [usually] easily resolved by giving the game a break and coming back to it after some period of time (Eg.Weeks)", but the impact could be more permanent; P35 (Man, 45) mentioned that he stopped playing a game entirely after he used cheats in it.

Multiplayer games were particularly vulnerable, where modifications like aim assist can overtake skilled components of play, leaving little for the player to do. P63 (Man, 25) experienced this in *Call of Duty: Warzone* [G52], saying that "once a lot of aimbots became available and anti-cheats were not able to keep up, the enjoyment was not there anymore. Playing really decreased unless with a party of friends and the game became secondary to socialising." While this indicates that modified games can be used for socializing, which we explore more in Section 4.2.3, it also shows that modification may take away from play when used in multiplayer games when social interaction is not the goal for the play experience.

Our participants also described that their enjoyment and satisfaction were affected by their perception of their own ability after using modifiers. P36 (Woman, 52) describes feeling a sense of "incompetence" after she "[gave] in" and used modifiers. P20 (Woman, 24) expands on this feeling, saying that after "using [modification] to learn how to beat a level, I often feel disappointed because I find that the answer was simpler than I expected, and I feel like I should have been able to solve it on my own without a modifier." In some situations, however, P20 perceived herself as more competent after using modifiers, which fed into a positive mood: "if the game modification allows me to beat other players,... overall, I experience a more positive mood, as I get satisfaction over beating other players, even if it's because of an unfair modifier." This ties back to the experience some participants had using

modifiers that affected their skill in game, with some modifiers increasing the player's confidence in their skill. P20's complex feelings about modifications and her skill in games also demonstrates that the relationship between play, experienced satisfaction, and modifiers is complex and dependent on the situation, while differences between our participants show that it also depends on the individual.

Other participants yet viewed the use of modification as a trade-off in terms of satisfaction. Returning to P156 (Woman, 47) and P15 (Man, 41), who used modifiers to play games in spite of the time constraints they face, both of them described a complex relationship between their modification and their satisfaction from play. P156 said:

> "I always feel a little bad that I have to rely on a walkthrough. I would love to sit down and just play, and figure it out myself. But the reality is that I would never finish any game, and I would feel bad about that. Games are made to be enjoyed, and I want to see all of it! So I feel more enjoyment playing with help than I feel bad about cheating a little. Sometimes I do feel rushed. I wish I could just sit and play, but these games that take 50+ hours are just not going to work into my life anymore."

Even though P156 feels bad about using modifiers, she would feel worse about being unable to finish the game and experience the enjoyment of play. In the bigger picture she gets more enjoyment from being able to finish the game, even if she feels negative about needing to use a modification to achieve the play experience she wants. P15 (Man, 41) described a similar mix of emotions, saying, "[g]enerally I feel a combination of a bit of guilt knowing that I did not accomplish the task the 'right' way however I also feel some sense of satisfaction and relief that I did not invest a large amount of time when I am busy with other things in my life." Ultimately, other priorities took precedence over the experience he would have playing without modifiers (playing the 'right' way), and there is some positive feelings to be found in overcoming barriers to continue to do something you enjoy.

The idea of a 'right' way to play is fed from what are known within gaming circles as 'purist' sentiments. Purist players are those who "think the game should be played unmodified" (P21, Man, 49) and that "playing the original game [is] the only 'right' way to play" (P40, Man, 40). To a purist player, "mods alter the developer's intent" (P147, Woman, 31), ruin the gameplay experience, and "devalues... play" (P36, Woman, 52), "defeating the purpose" (P21, Man, 49) of playing a game. Al-

though almost none of our participants spoke about holding purist views themselves, a number of them would invoke purist perspectives in reviewing their own play — such P15 (Man, 41) feeling guilty for not playing the 'right' way — or shared encounters they had with purist players who viewed modification as illegitimate. In general, these references to purist players were characterized by our participants feeling guilty or ashamed for the way they play, or angry with the judgment of the purist player.

Purism and anti-cheating sentiments may be considered different concepts, at least technically, but overlap existed in the ways our participants spoke about their play, as the aspect of cheating we encounter in the play principle has to do with the guilt and worry of being perceived as a cheater for playing the game 'impurely'. Our participants described feeling "a small, creeping sense of guilt" (P36, Woman, 52) for using modifiers, and worried about whether or not they were cheating for using modifiers, even in single-player games. P20 (Woman, 24) said, "I feel like it's cheating [to use modifiers], and I get annoyed.... I feel like I'm breaking the rules of the game and it makes me feel guilty at times." P20 also worried about the perception of others should she be caught 'cheating': "I experience slight nervousness about getting caught and being perceived negatively."

Our participants who held a small degree of purist sentiments themselves usually expressed rules around when and where it is appropriate to modify gameplay. A fairly common rule among this subset of players was that a person should play the base game completely before adding modifications; that modification "should be done for games you've played through before" (P137, Woman, 27). P61's (Man, 29) stance discouraged and encouraged modifying in turns, saying: "I think they should require you to play unmodified for the first play through to experience the game, then allow mods in an easy to use way (like the fallout 4 mod system) on subsequent [playthroughs]." While not strictly purist, these views maintain the emphasis on experiencing the game unmodified ("the 'pure' game experience" (P147, Woman, 31)) that we see in purism, albeit to a weaker degree.

A less common rule emphasized developer intent and permission, with participants saying that they only play games "as the developers intended" (P68, Woman, 47) and that "[modding] is ethical as long as the developers allow modding. Modding without dev permission is basically editing an artist's work without their consent." (P103, Man, 30). The idea of a game as an artist's work brings up a debate over who owns a game — the player or the developer — which we'll discuss more when we talk about players exerting agency over their play experience in Section 4.2.2.

The Relationship Between Modifications and Play

Our participants differed in how they viewed the relationship of modification to gameplay. While their commitment to modification was commonly presented as an extension of their love for gaming, our participants appeared to exist in two teams of thought about the type of relationship between modification and base gameplay. Some perceived modification as a part of overall gameplay and just "a different way to experience the game" (P63, Man, 25), while others perceived it as a separate activity, like P151 (Woman, 31), who spoke about "the modding process" as "a puzzle"[5] on its own that she "really enjoy[s]".

P63's perspective was that modifications like mods emulate outcomes that could be achieved with cheat codes — which generally exist within the base game, as we discussed in Section 2.1 — and therefore might as well be a part of the base gameplay. P67 (Man, 59) added to this argument, using the potential performance boost offered by the use of high-performance technology ("low latency gaming monitors, gaming PCs on fast internet connections") as an example of a modification that most players would not consider to be a modification despite the uneven "playing field" it may create in a game.

P75 (Man, 47) further explored the boundary between modified and unmodified play, but took the opposite approach, saying that there were elements of unmodified play that are treated like modifiers by the game community at large, such as particular elements of base gameplay being perceived as unfair for being 'overpowered' (considerably more powerful compared to similar elements): "There are always people who complain in video game land. People take video games extremely seriously. Play enough first person shooters and you will hear many complaints about people using certain guns that they believe are overpowered. And that isn't even a modifier. Those guns are part of the game!" This all distills down to the idea that, modified or not, there are factors that may make games unfair, and unfairness and frustration are part of the gaming experience. As such, modifications are a feature of gameplay. This idea will be extended when we discuss the use of modifications as resourcefulness in Section 4.2.5.

Other participants, like P151 (Woman, 31), saw modifications as somewhat separate from gameplay. To them, modification was an activity — almost a game — on its own, and enabled players to innovate on base gameplay and expand gameplay beyond

[5]This is in reference to the potential difficulty of getting multiple mods to work well together, which we discuss in Section 4.2.6.

the borders of a game. According to these participants, modification can serve as a practice separate from play, especially for those looking to work in the game industry. While P151 saw modification as a puzzle, P27 (Man, 29) saw it as a opportunity for "aspiring developers to experiment and try some fun things out," helping him learn the trade of game development and explore his creativity.

These stances about the relationship between modifications and games, and by extension players, modification creators, and developers, interacted. Some of our participants commented how "[t]he things that people can come up with to change a game can be so incredible, they can end up forming a unique franchise of their own" (P3, Woman, 38), displaying how a modification may grow beyond the game it originally altered. One example of this phenomenon would be the game *PUBG: Battlegrounds* [G50] (also known as *PlayerUnknown's Battlegrounds*), which originated as a mod for *Arma 2* [G10] created by Brendan Greene (also known by his online handle PlayerUnknown) to address a lack of quality battle royale games at the time. Some players, however, maintain the view that games are "an artist's work" (P103, Man, 30) that should not be altered by modifications other than those that are condoned by the developer, tying modification and gameplay closely. P151 (Woman, 31) summarized this complex relationship when asked about the perception that other people she encounters have about modification, saying, "I've always just seen people praise it, though a few times I've seen people whine about how mods "dont support the developer's visions for the game" when the developers often look to modding communities to see whats going on and even work with modders sometimes to make official additions to their games."

Summarizing Play

In summary, the principle of play comprises the ludic enjoyment our participants found in games, and how they perceived modifiers as fitting into their play. Our participants spoke about modification enriching and augmenting their gameplay experience, adding features that made games more novel, complex, and personalized, supporting them in continuing to enjoy play through barriers they may face, and allowing them to get 'more' from their play. Predominantly, modifiers increased our participant's experience of a variety of positive emotions, such as excitement, happiness, and relaxation. Even though modifications were overwhelmingly a source of positive emotions, we did find occasional reports of participants experiencing frus-

tration or anger from modification. Some of our participants also expressed complex relationships with satisfaction, competence, and the idea of cheating and playing the 'right' way, connected to feelings of guilt and shame when using modifiers. These feelings, however, were often temporary or overshadowed by the enjoyment the player received from modified play. Finally, we discuss our participant's perception of modifiers as an extension of gameplay, with two schools of thought: modification as an extra element of a game's gameplay; and modification as a separate, complementary activity to gaming.

4.2.2 Agency

The theme of **agency** referred to modification giving players the ability to exert control over their play experience. Our participants spoke of modifiers as giving them the control and freedom to alter their games as they pleased, personalizing and customizing play to fit their needs and preferences. In some cases, however, modification was a double-edged sword: the same modifications that let one player suit the game to their play could negatively affect the experience of others, taking away agency from other players. Players who took away the agency of others were often labelled 'cheaters' by our participants. At the same time, some of our participants spoke about modification as a tool for restoring their agency when faced with cheaters. Further, participants also identified that they had a complicated relationship with modifications and agency, where they felt dependent on the agency they experienced from modifications and, by extension, felt dependent on the modifications and the developers and community members who create and maintain them.

When asked about how ethical their modification was, some participants expressed that, since they had purchased and now owned the game, they could ethically alter it as they pleased. This contrasts the sentiments we examined in the play section (Section 4.2.1), where participants felt that the ethical use of modifications required developer consent.

Control and Freedom

We found themes of control over play, and subsequent freedom to play as desired regardless of limits, throughout our participant's responses. Our participants said that modifiers let them "have more control" (P90, Woman, 41), "feel in control" (P48, Man, 44), and "control aspects of the game that [they] can't otherwise control"

(P97, Woman, 40). Participants used this "to experience an alternative to reality" where they were able "to change specific aspects of the game that [they] wish to do so" (P109, Man, 31), personalizing play to their desires.

Personalization and Customization

Shaping the game to your needs and desires through the control afforded by modifications was a significant draw to modification for a number of our participants, with 108 out of 167 (approximately 64.7%) saying that they were motivated to use modifications to tailor the game to their preferences. According to them, modification "make [the game] feel more personalised" (P112, Man, 44) and "make the game more 'custom' to your chosen experience" (P103, Man, 30), and made them "able to tailor the game to [their] specific preferences" (P164, Woman, 21), "shape each game to fit [their] preferences, giving [them] control over everything from visuals to difficulty levels" (P113, Man, no age given), and "[able] to customize and control the game" (P106, Woman, 35).

A smaller but still meaningful number of participants used modifiers to help fit the game to their needs for play (e.g., UI edits for accessibility), with 29 out of 167 (approximately 17.4%) participants reporting that they were motivated to modify their play because the game was inaccessible otherwise. Nevertheless, even participants who did not utilize accessibility features spoke about the importance of modification for playing comfortably. One example is P99 (Non-Binary or Genderfluid, 28), who stated that they do not use modification for accessibility purposes ("[modifiers] can provide better accessibility features for some people, but this isn't why I use them") while also acknowledging their importance to accessibility ("I think it's a shame that so much accessibility within gaming relies on the use of modifiers - it's really important that game developers think more about integrating these modifications into base gameplay moving forward").

The changes that participants made when personalizing were as varied as the participants and their motivations were. Though our participants are broadly experienced gamers who play games fairly frequently, they represent a broad range of different gaming styles. Some participants are current (or former) professional/competitive players, speedrunners, or content creators who game as a job, and modify as a part of that job (10 out of 167 participants, or approximately 6% of participants, reported that one of their motivations to use modifications is for professional pur-

poses). Others game to connect with family and friends, or as a personal hobby for relaxation. Our participants wanted different things from their games, or, even when they wanted the same thing (enjoyment of play) they achieved it in different ways. We discuss some specific examples below, within the categories of difficulty, controls, aesthetics, and mechanics of gameplay.

Difficulty and Balancing One way our participants personalized their play was through customizing the difficulty of the game to suit them and their situation. As P1 (Man, 27) said, "I can adjust difficulty to suit my skill level, allowing for a more satisfying experience."

Difficulty adjustment went in both directions, with many participants using modification to make their gameplay easier, but a significant number also using modification to make the game more difficult to play. This was also reflected in the multiple-choice question about motivations to modify, where 77 of 167 participants (approximately 46.1%) reported one of their motivations to use modifications was difficulty reduction, and 76 of 167 participants (approximately 45.5%) were motivated to use modifications to increase challenge or feelings of competence. It should be noted, however, that increasing feelings of competence could be a result of making gameplay easier so that the player could be more successful in play.

While P141 (Woman, 33) and P131 (Woman, 30) both spoke about modifiers as allowing them to "to tailor games to my ability to play them, like making the levels harder or faster" (P141) and "challenge yourself more" (P131), participants like P133 (Woman, 40) and P121 (Woman, 37) both used modifiers to reduce the difficulty of the games they played due to their skill and preferences for play. P121 modified *Star Wars: Republic Commando* [G36] to fit her skills and abilities by changing the difficulty to 'easy' and watching walkthroughs of "difficult" levels in the game before she played them. She said, "[t]his made it easier for me to anticipate what was about to happen in the game and where I needed to position my squad in order to be successful. I modified the game because I found that I was not able to process what was happening fast enough in order to play successfully." P133 modified as, regardless of her skill level or ability, she doesn't "particularly enjoy playing a game that involves a lot of fighting/battles", so she "will always lower the difficulty level to the lowest it will go" in RPGs[6] as she "[plays] the game only for the story value

[6]RPG stands for 'role-playing game', where the player assumes the role of a character within a fictional setting.

and not due to the in game fights, etc."

Difficulty adjustment wasn't only about the individual player's skills, but also for balancing play among groups of players of disparate skill levels. Balancing allowed weaker or less skilled players to participate and enjoy games alongside stronger players, and to dictate how they play. P111 (Man, 24) shared one example:

> "while playing a modified version of FC24 [[G19]]... a group of friends and I decided to customize teams using a random draft feature. We each picked players from different leagues and eras, resulting in unique squads that we wouldn't normally see in regular gameplay. The excitement came from both the unpredictability of each game and the friendly banter as we discussed tactics, player selections, and strategy. This setup also allowed for everyone to feel more included, as it leveled [sic] the playing field, and even those who weren't typically the best players had a fair shot at winning."

Through modification, P111's friend group could share the experience and fun regardless of their individual skill level. P70 (Man, 56) shared a similar experience, where his son helped him modify the difficulty level of various "regular games [he] play[s]" for him, as he "wanted to be more competitive with [his son] and [his son] allows this kinda as a Handicap to accomodate [sic] his old man". Balancing play allowed these participants to enjoy play together with their friends and family, regardless of their individual skill levels or abilities in game. Our participants also used difficulty adjustment to balance their play among strangers and achieve fun: P88 (Man, 50) said that, "[p]laying FPS games with the younger crowd, aim assist is important to have a little fun, because just dying over and over and over is not that exciting!"

Controls As we discussed in Section 4.1.2, our participants made utilitarian changes that altered the controls they use in the game. These controls can be personalized to the player and their role in gameplay, such as P72 (Woman, 36), who used modification to customize her UI to her role as a healer in the multiplayer game World of Warcraft [G8]: "I play a healer so had mods to show raid frames better, to allow me to click heal those frames, to track important buffs and debuffs." Controls may also be modified to reflect the individual player's preferences, such as P119 (Woman, 28), who uses modification to be able to use a mouse and keyboard when playing on the PlayStation 4 with their friends, as she has "played PC longer and just find[s] it

more comfortable than a controller".

Mechanics It wasn't uncommon for participants to use modifications to adjust mechanics that they found annoying or burdensome. P151 (Woman, 31), when giving an example of a personalization that made gaming a "go a little smoother for [herself]", spoke about using a mod for the *Baldur's Gate 3* [G35] food inventory system to turn any rotten food she found in the game into fresh food, and to send all food back to her camp rather than needing to store it in the limited inventory space available to players outside of their camp.

Allowing her to circumvent multiple game mechanics, P123 (Woman, 42) used cheat codes to focus on the creative aspects of play that she enjoys the most in *The Sims 4* [G39]. She said, "With this new version of The Sims [[G39]], gameplay has gotten more complicated and less enjoyable, so I really like being able to spend time with the more fun (to me) aspects of the game."

Aesthetics Aesthetic modifications were also popular among our participants. For example, P11 (Man, 33) said that he used modifiers in *Minecraft* [G41] to make the game "look more real so that it looks better in my eyes and it looks pretty compared to the base game". For audio, P166 (Woman, 34) described often using modifiers to "turn off annoying sounds that repeat often", giving the example of a mod in *Space Engineers* [G34] "that turns the suit sounds off (when your inventory is full the voice says "Inventory Full" on repeat and it's VERY annoying)".

Personalizing to Short-Term Preferences Modifiers may be used by participants to modulate games to their overall preferences or personality, but also in the short-term to fit what the player desires from a given play session. For example, P36 (Woman, 52) described using difficulty adjustment in *Minecraft* [G41] to "avoid some repetitive annoyances, and to avoid jump scares on days I'm not up for that."

All together, modifications can be used to suit play to a variety of player needs and wants, making play more accessible and enjoyable.

Representation, Identity, and Personal Creativity

Our participants also used modifications to take control of the narrative in a game, exploring their creativity and acting out their own artistic vision, and moulding games to be more representative of their identity.

Some players utilized agency players to enact their "creative vision" (P149, Woman, 32) for play, such as P149. She used mods in a *The Sims* [G38] game to help her "to create more in depth stories for [her] characters, and alter their looks to closely match [her] vision".

This went hand-in-hand with altering games for greater representation of minority groups in games. P133 (Woman, 40) spoke about using mods to fulfill a personal fantasy of hers that is not possible in reality inside or outside of gameplay. She said:

> "Playing with modifiers allows me to play the game and experience it how I want. This leads to a happier experience with less frustrations. For example, I am in a same sex relationship in real life and it is a fantasy to be able to have a child that is genetically both mine and my partners, alas in the real world, this is not possible! But in 'The Sims' [[G38]] world, it is possible with the use of mods."

If life simulation games like those in the *The Sims* [G38] series are meant to simulate how a player wishes to live, then the agency offered by modification delivers on that promise for players, like P133, who are outside of the norm that the base game is directed towards.

Modifiers were also a tool used by a few of our participants to help them design player characters that they felt more represented by, "especially in games where character creation can be limited" (P78, Woman, 39). P130 (Woman, 34) said, "you get to play a character that aligns way more closely with how you want your character to look" regardless of the game, which helped her enjoy games "a lot more". P78 described that her friends use "a combination of Penumbra, Mare Synchronos and Glamourer [in *Final Fantasy XIV* [G59][7]], which together allow users to sync their graphical mods so that other people they choose to sync with can see them without changing how it looks on everybody else". In specific, the 'Glamourer' mod lets players alter their outward appearance beyond the possibilities available in the base game to themselves, while 'Penumbra' and 'Mare Synchronos' may be used to project that non-base appearance to other players. According to P78, this feeling of representation afforded by modification agency can affect the social experience that players have in-game. P4 (Woman, 27) builds on this idea, where the modifications used by a player themselves are also an expression of a player's interests and creativity to others who

[7] *Final Fantasy XIV* is a massively multiplayer online role-playing game (MMORPG), which allows a large number of players to play a role-playing game simultaneously with some degree of interaction between players.

modify. She said, “I find that in games where modding is commonplace people relate and socialize with the individuality some people put into their mods”. We discuss sociality in games more when we consider connection in Section 4.2.3

Accessibility and Comfort, Tailored to Individual Needs

A subset of customizations allowed players to tailor games to be more accessible or comfortable for them.

For some participants, modifications helped suit the game to their physical and cognitive abilities. For example, when asked about the benefits of modification P42 (Woman, 26) said: “[u]sing modifiers can provide several benefits, the ability to tailor the game to my specific preferences and access or play games more comfortably. For example, in a Call of duty: Warzone [[G52]], using a modifier to adjust the sensitivity of the controls makes aiming and shooting more comfortable for me.” Another example is P36 (Woman, 52), who said that one of the benefits she experienced from modification is “[s]ome degree of just making [the game] work better for my particular slow fingers/ distractable hearing”.

P104 (Man, 46) similarly used modifiers to adjust games to better match physical and cognitive function, but he used modifications to make games more appropriate to share with his children. He described using mods to remove blood from games when his children were young, alongside using mods to skip sections of play that were difficult for his son who “didn’t have the coordination for some more intricate gameplay stuff”.

Some participants faced technical barriers to playing games that they used modifiers to address. Previously, P139 (Woman, 29) had lacked a computer powerful enough to play games on, so she used modifications that would help her “play the game without breaking [her] laptop”, such as mods that lowered graphics and eased fight scenes in *Dragon Age: Inquisition* [G7]. We will discuss technical barriers in more depth later, in Section 4.2.6.

Why Personalization?

Personalization of play and the ability to control play to customize it is a major component of agency and of our players’ experiences with gameplay modification in general. Why was personalization so important, though?

Several of our participants shared a common idea behind their modification: a

game, as designed and intended to be played by its developers, cannot suit how every individual player of the game may want to play it. Modification gives players the agency to alter the base game to suit themselves, and improve the game in their eyes. On this topic, P167 (Woman, 38) said, "[s]ometimes the way that the game designers envision the game isn't the way that everyone wants to play. I think that's fine. You can also add to the experience [with modification] if you feel something is missing and it makes the game better." P134 (Woman) agreed, saying "I think that games can be better when they allow modification, as no game will be perfect for everyone, and having the option to make adjustments allows the game to be closer to perfect for everyone." Whether it's personalization, customization, or accessibility, at the heart of agency is the idea that game developers cannot create a game that suits everyone or every situation, so modification empowers players to make changes to perfect their play experience for themselves so "[e]veryone can play as they want to" (P41, Woman, 37).

Part of this idea is that "game designers... tend to create a game play that they deem with be enjoyed by everyone" (P131, Woman, 30), but in trying to cater to the average play experience they can exclude other players. By introducing modifiers, "players can do even more with the game and enhance their experience and gameplay styles" (P131, Woman, 30), expanding game play beyond a "one size fits all for gameplay or difficulty" (P125, Woman, 39).

Modifiers also shift the power in this scenario from the game developers and the experience they create to the player and the experience they find enjoyable, placing the player as the arbiter of their experience. As P118 (Woman, 26) said, "[b]y allowing modification, developers empower players to customize their experiences, fix bugs, or even create entirely new content".

This shift in power from modification appears to create a tension between who controls the play experience — game developer or player — that in turn has manifested a variety of approaches to how people think about modification. As we discussed in Section 4.2.1, some participants spoke about other players (labelled 'purists') who emphasized the developer's intent for dictating how a game should be played. In our data we also saw the inverse, where some participants asserted that the player owns a game once they purchase it, and can therefore dictate their play in an act of agency. As P157 (gender not specified, 38) put it, "I'm a grown ass adult playing a stupid video game I paid for, I can do whatever I want with it". P104 (Man, 46) made a similar point, but by comparing game ownership to the ownership of other

items, saying "I think all games should be like owning anything else and you should be allowed to mod it in any way that isn't harmful to others." P25 (Man, 39) directly compared game ownership to car ownership, saying "if I buy a product like a car, I should be able to use that product how I see fit should I not? I did pay for it or else what am I paying for, the renting rights?..I find it ridiculous that game companies profiting off of sales can dictate how I find my enjoyment". Vehicle ownership may be an interesting comparison, where owners can use their vehicle as they see fit within legal regulations meant to protect the wellbeing of others.

Outright ownership in these terms is a fairly strong position among our participants, and most of our participants tended to present a more moderate stance between the purist and total ownership camps, where their modification was a collaboration with the game developers and both the developers and the player were stakeholders whose opinions were considered in the final product. The two ends of purism and ownership appear to bound the spectrum of perceptions held by our participants about who dictates play.

Cheating: Violating and Restoring Agency

In some cases, we saw the use of modifications result in the violation of our participants' agency when playing. We've already seen evidence of modifications that affect multiple players at once, such as P111's (Man, 24) modification of *EA Sports FC 24* [G19] with his friends in multiplayer mode, or P78's (Woman, 39) description of her friend's modification of *Final Fantasy XIV* [G59] with the mods 'Penumbra', 'Mare Synchronos', and 'Glamourer'. However, the modifications described by P111 and P78 both required the players involved to modify their play as well, implying that they have consented to having their experience affected by modifications. It is also possible, though, for modifications to affect players who have not modified their play, thereby affecting their play without their permission.

P124 (Woman, 24) gave one example from *Final Fantasy XIV* [G59]: "if someone has an automatic tracker that uploads the results of each dungeon, other players in the party have no say and their skills are automatically published online." The publication of a player's performance metrics puts their skills — good or bad — on display, and "could make the experience worse within the community" when they try to engage socially, taking away their agency to engage with play on their terms.

People who modify can also cause disruptions in the experience of other players.

For example, people who mod in the multiplayer mode of *Grand Theft Auto V* [G56] (known as *Grand Theft Auto Online*) can be hated for their modification, as "they usually mess with the entire lobby. They can crash the server, make everyone die, etc" (P48, Man, 44). P40 (Man, 40) shared a similar story, where dealing with "'cheaters' or 'mod menu"' users in *Red Dead Online* (the online, multiplayer component of *Red Dead Redemption 2* [G55]) disrupts his play, as he will "often have to change lobbies whenever it happens". His negative experience was compounded by a lack of resources for meaningfully dealing with 'cheaters', leaving him to manage his situation by changing game lobbies when it happens, which "wastes [his] time". In his own words, "[i]t can be quite frustrating as there is little recourse for dealing with these people."

It is not necessarily that the modifiers themselves are problematic, but that their use in context is. P75 (Man, 47) spoke about how the use of a particular glitch to rank up in *SOCOM II U.S. Navy SEALs* [G69] was "annoying" although he had previously described the glitch as "the modifier [he] personally engaged in the most." The difference was that his use was during dedicated matches with his friends — implying that the players involved consented to the use of the glitch — while the players he was annoyed at used it during "an actual match" where other players have not consented. Like P40, P75 was also frustrated by the limited resources for dealing with these players: "My options were to stay there losing rank, or disconnect from the game."

Agency Restoration In some cases, modification gave participants the tools to restore their agency when another player took it away, mostly in terms of dealing with modifications being used by players that may be negatively affecting their experience. These players may use modification to avoid 'cheaters', such as P24, who played on a modified server for *Counter-Strike* [G64] with stronger protections against cheating that the base game. Or, they may engage in *revenge cheating*, where they cheat to ruin the cheaters experience in turn. One such participant was P92 (Man, 34), who "bought cheats - Wall (to see through walls) and Aim (To aim better)" in *Counter-Strike* [G64]. He said, "I used cheats because I was angry as others cheated against me all the time.... I just tend to see the glass half full. If they cheated against me, why wouldn't I against them?"

Agency and Ethics In general, using modifications that only affect those who have consented to their use was an ethical boundary many of our participants held about modification. They spoke about only using modification in single-player games or generally where they would not affect anyone else who has not given informed consent to playing with modifications. They do this as they believe that modification may "ruin others experiences" (P105, Man, 38), "create an unfair scenario for many players" (P7, Man, 27), or otherwise cause harm to another player.

Participants were not necessarily against all modification in multiplayer and/or competitive games, but often distinguished modifications "to gain unfair advantages" (P34, Man, 37) for the player as harmful, while other modifiers — such as "visual changes" (P34, Man, 37) or "mods that provide you with either more information or show the information in a different way" (P72, Woman, 36) — were considered mostly inert in how they may affect other players and therefore ethically okay.

Having said that, our participants did not define unfair advantage, and the boundary between 'fair' and 'unfair' could be unclear. The basic idea was that anything that made something any player could achieve *too* easy — P72 (Woman, 36) gave the example of "a mod that just 1 shots a boss because that wouldn't be fair for everyone else who needs 20 other people and 20 hours of their life to kill." — or makes the impossible possible — like seeing through walls in a shooting game — could be considered an unfair advantage. P71 (Man, 29) stated simply, "[i]f it ruins someone else's experience, it's unfair and shouldn't be done."

A smaller number of participants found that modifications were "unfair" not for how they affected play, but whether players had equal access to the modifiers. P5 (Woman, 44) said, "I truly believe it [(modification)] is morally right as long as the other players also have the same modifiers or have the option to use modifiers". The idea is that when others are also "allowed to and [know] how to" (P14, Man, 33) modify, then "it's fair to other players, [as] they could modify as well" (P64, Woman, 51). In this situation, "[e]veryone modifies based on their preferences" (P96, Man, 40). P166 (Woman, 34) encapsulated this idea well, where she framed the work to develop the skills to play well on your own as being replaced by the work to develop the skills to modify effectively:

> "I like it when a game is a free-for-all and everything is accessible. You can use modifiers if you want, but they're available to everyone which levels the playing field. If everyone can use them, I think it's fair. It's on you as the player to learn how to do it, look up the code, or whatever you

need to do, and that's the work you're putting in."

From P166's perspective, modification is a resource for players to use to affect their play, which is value neutral and therefore fair on its own. P166 did go on to say, however, that she doesn't "like it when [modification is] used to cheat, or ruin a round in a game, so the cheater automatically wins and there's no enjoyment or gameplay for anyone else," which aligns with the earlier definition of an unfair advantage and connects it to the concept of cheating, and ideas about maintaining the meaning in play discussed in Section 4.2.1. As P96 (Man, 40) said: "if the modificaitons [sic] are not allowed for all players to the same degree then unfair advantage can kill the experience for all".

Unfair advantage was also frequently tied to the concept of cheating, in that modifications that gave a player an unfair advantage over others were considered to be cheating. Participants said that modification "becomes cheating" when it "impact[s] competitive gameplay" (P16, Man 29), and that "mods that give unfair advantages in multiplayer settings should be banned, and players using them should face consequences." (P53, Man, 29).

In the context of agency, the balance of good and bad brought on by modifiers can be mediated by consent. As P164 (Woman, 21) described, "using mods when playing with friends who know youre using them and are fine with it is different to using them when playing with strangers who have no clue you have them on." P75 (Man, 47) embodied this idea. Recall that he described the use of glitches in *SOCOM II U.S. Navy SEALs* [G69] as "funny" and a way to "make the game more interesting" when he and his friends used modifications in the matches played together, but "annoying" when other players used glitches during "an actual match". Our participants suggested that "when playing team or competitive games... all players should decide collectively whether modifiers should be used or not, and this should be stuck to" (P99, Non-Binary or Genderfluid, 28) or "if you're playing with other people, you should agree on the rules before beginning. If everyone wants to play with mods, then great. If not, that's great too. Everyone needs to agree and follow the rules, though." (P167, Woman, 38). This would allow everyone to consent to a modification and its impact on their play, maintaining the agency of all players involved.

To fulfill the need for consent, our participants suggested systems for the disclosure of modifier usage. Spaces (such as separate servers) could also be created in competitive or multiplayer games for players who modify or are okay with modification, allowing players to consent to playing alongside modification. Participants also

suggested the inverse, where modification-free spaces could be created.

Dependency Paradoxically, for a small number of players, the agency afforded to them by modification became so integral to their enjoyment of play that they felt "dependent" on modifiers. P3 (Woman, 38) said:

> "I have noticed that I feel a great loss if my usual mods aren't working for some reason (perhaps after an update). It almost feels like I'm playing the game naked. I can become so reliant on them as an important part of my gameplay that I will avoid playing my games until the mods are fixed... The biggest drawback [to modification] I think is becoming dependent on mods, and not being able to enjoy a game without them."

While modifiers enable players to take control of their play experience, in some ways it just changes who they depend on for enjoying play. Without modification they relied on the game developers for their ideal play experience, while with modification they may need to rely on the people who create and maintain modifications, particularly for software modifications that are not from the game developers and may require specialized knowledge and skill to implement. For P3, one of the drawbacks of playing modified games was that "[m]ods depend on the community to create and maintain them, and support for them can end without warning".

Summarizing Agency

Throughout their responses, our participants emphasized that modification allows them to exert their agency and control their play experience, personalizing and customizing play to suit their needs and wants. This customization contributes to making games more accessible, and enables players to express their creativity and individuality. In taking control of their play, participants express some degree of ownership over their play, on a spectrum against the ownership and influence of the developer on gameplay. While modifications are usually sources of agency, in some situations they may contribute to violations of our participant's agency, such as when other players who modify use modifiers that disrupt the play of others. We also saw a small number of participants that expressed, perhaps paradoxically, feeling dependent on the modifications that provide them agency.

4.2.3 Connection

For a significant number of participants — 40 of our 167 participants (approximately 23.95%) reported being motivated to use modifications for social purposes — gameplay modification was a source of **connection** to other players of digital games, creating unique opportunities for players to connect with each other. Players depicted modification to be a commonality that fuelled gaming communities and individual relationships alike, and allowed players to play games together more easily by improving the multiplayer functionality of games.

Community Formation and Friendships

According to our participants, modification encouraged community formation and engagement. This occurred at multiple different levels, from small individual groups who play a game together, to communities around modifying a game, to a game's community at large.

At a smaller group scale, we saw communities develop between players who modify their play in a common space (e.g., a server). For example, P110 (Man, 56) spoke about how modified multiplayer servers for *Minecraft* [G41] helped build a community between him, his friends, and strangers they played with, saying:

> "Joining multiplayer servers that use mods has allowed me to collaborate with friends and other players on massive building projects. For instance, while using mods like 'BuildCraft' for automation, we created an intricate transportation network with trains and factories. Sharing ideas, solving problems together, and celebrating our accomplishments fostered a strong sense of community and teamwork."

In this case, modification enabled collaboration and created a shared environment for deep interaction, which led to the development of a community between the players in the server.

At a game level, our participants thought that modification could both contribute to engagement in the general community around a game ("helps with building community around [a] game" (P106, Woman, 35)) and to the development of a separate community solely for modification ("builds a community of modders which is its own thing" (P129, Woman, 31)).

In general game communities, modification was seen as way to engage in gameplay at a less superficial level, encouraging interaction between players. P118 (Woman,

26) said: "[b]y allowing modification, developers empower players to customize their experiences, fix bugs, or even create entirely new content. This can lead to a hriving [(thriving)] comunity [sic] around the game, fostering creativity and engagement." In altering play, modifications were reported to "[help] the game grow a bigger following" (P149, Woman, 32) and "[keep] the community growing" (P88, Man, 50).

In some cases, defined sub-communities grew around modification within the larger community around a game. Some participants noted specific games with large existing modification communities that are active in creating, maintaining, and supporting the use of "a wealth" (P6, Man, 39) of modifications, such as *The Elder Scrolls V: Skyrim* [G3], *Half-Life* [G66], and *Stardew Valley* [G15]. Certain developers who tend to support modification across a number of their games appeared to also gather dedicated fans who participate in several of their game communities, such as Bethesda[8] and Valve's Source engine[9] games.

In any case, modification played a key role in the development of and engagement with game communities in our participants' experiences. One participant, P48 (Man, 44), went so far as to say that the difference in social experience between modified and unmodified games is that "there are communities for modified games", implying that there are not comparable communities that he is aware of outside of modification. P16 (Man, 29) directly said that "[g]ames that allow modifications usually have a bigger and tighter community".

Connection within Communities

The gaming communities developed around modification were sources of connection for many of our participants, where they reported having positive social interactions, meeting new people and maintaining friendships.

For example, P131 (Woman, 30) uses mods that "allow you to remove restrictions when building to include curved features and structures" in the *The Sims* [G38] games to design and create "dream houses" that she posts online. She says that the community responds with "a lot of positive reviews and support", and that she has "had a lot of people praise and like [her] design and even had others ask [her] to do a tutorial on making certain curved sections of the building and others asked to use

[8]Bethesda is the developer of the *The Elder Scrolls* [G6] series of games (which includes *The Elder Scrolls V: Skyrim* [G3]), the *Fallout* [G31] series, and a number of other games.

[9]The Source engine was developed by Valve and used in the *Half-Life* [G65] and *Counter-Strike* [G67] series of games, among others.

[her] building main picture as a feature for a blog of theirs". Other participants, said that they "met a lot of new people on discords and other social media platforms" (P145, Woman, 38) related to modification, or made friends on the modified servers they played on, such as P24 (Man, 39), who spoke about making friends with people he played with on a modified *Counter-Strike* [G64] server that gathered players looking for stronger anti-cheat protections. These connections could be diverse and with people they may not encounter usually; "I made so many friends online with different ages and from different countries. It's super fun chatting to them." said P127 (Woman, 25).

As they do in single-player games, modifications may allow players to perform impossible feats, overcome challenges, and add new content within multiplayer games. Sharing this play was reported to contribute to the formation and maintenance of lasting friendships for our participants. For example, P3 (Woman, 38) modified *Guild Wars 2* [G1] to join a "sales group for raids". She said, "I've made some incredible memories with that group, and some of the people I still talk to on a regular basis even though we've all dispersed to other games and life events. We would run 10-man raids with only 6 or 7 people, and it's a challenge we would not have been able to achieve without the help of mods." P113 (Man, age not shared) also shared that playing in a modified server in *Minecraft* [G41] "strengthened" the friendships between him and the friends he played with. He said:

> "Playing on a modded Minecraft [[G41]] server focused on building and exploration led to some great teamwork experiences. With mods that added new blocks and crafting options, my friends and I worked together to design a massive castle and surrounding village. Sharing ideas and seeing our individual contributions come together was incredibly rewarding. We spent hours discussing design choices, planning expansions, and even celebrating our progress through in-game events, which strengthened our friendships."

Our participants also reported that modification communities were key sources for technical support to help players navigate modification safely, with our participants both receiving and offering this support in fairly equal numbers. P37 (Woman, 24) said,

> "I think when it comes to Sims mods, the online communities are very helpful for starting out and giving instructions on how to do it safely,

> offering feedback and improvements for suggestions, providing solutions if you're experiencing issues, and recommending other mods to use. I've found it very helpful for expanding my experience."

In the absence of, or in addition to, support from developers about modification, other players were a major source of information about how to modify games. P127 (Woman, 25) reported that community sharing of knowledge is "how we [(people who modify)] know what to do most of time".

Communities centred on modification were described to be different — and usually better for social interaction — than other gaming communities our participants engaged with. For example, P46 (Man, 62) said, "[f]or me a modified game allows more interaction, and is therefore more social, be it in real-time or not (forums). An unmodified game is a more solitary experience." Modification communities were also reported to be a more "collaborative environment" (P89, Man, 46). P102 (Man, 37) said that playing *Rust* [G22] on a modified server had "more of a community... where as playing non modded on the orginal [sic] servers seems a bit toxic and players don't really talk or give feedback like they would on a modded server." P110 (Man, 56) offers the shared common ground of modification as a reasoning behind the greater social interactions in modified games, saying:

> "[i]n modified games, players often gather around specific mods, which creates a shared interest that can deepen discussions. This common ground fosters a stronger sense of community, as players connect over the unique content and experiences these mods offer, leading to more engaging conversations compared to the more general experiences in unmodified games."

Modifications may also drive a community culture that leads to interaction, such as taking photos together with other players who use modifications. For example, P124 (Woman, 24) described the use of visual modifiers that improve photos in *Final Fantasy XIV* [G59], saying that "[i]t is common to take pictures with other online players in FFXIV [[G59]] so these modifiers can promote a more social environment."

However, a few of our participants maintain that the types of modifications you use dictate the experiences you have in gaming communities, where modifications that are labelled 'cheating' may still lead to negative experiences. P139 (Woman, 29) said, "[i]t depends on why you are modifying the game and who you are playing either with or against. If you are modifying a game to cheat, I believe it will cause less

and less people to game with you. If you mod for technical reasons, I believe you're [sic] social experience might be good since you could still relate to other players of a game." Communities may form around players using similar types of modifications and excluding others ("Since I play with others who do the same as I do, they are supportive, cheats etc. although they are mentioned, tend to be excluded from my groups." (P46, Man, 62)), indicating that communities establish norms for play. We will discuss the norms held by gaming communities and community regulation of modification more when we discuss community norms in Section 4.2.4.

Modification communities may also form expectations and cliques around the use of certain modifiers. P113 (Man, no age shared) said:

> "While participating in a modded The Sims 4 [[G39]] role-playing community, I faced exclusion from certain events due to the specific mods I used. Some players had strong preferences for particular mods or play styles, which led to cliques forming within the community. When I tried to participate in discussions or activities that didn't align with their preferred mods, I felt ignored or marginalized. This experience made it challenging to connect with others and left me feeling disheartened... Modified games can create more exclusive social circles, where certain players might feel left out if they are not familiar with specific mods or play styles. This can lead to cliques or groups forming around particular modifications, which may hinder broader social interactions. In unmodified games, the gameplay experience is generally more accessible to newcomers, facilitating easier integration into the community."

Since modification usually requires some skill or knowledge above and beyond what is required to play the unmodified game, a barrier to play and engagement with modification is created. This may keep players from engaging with certain communities, or even being excluded like P113. P21 (Man, 49) spoke about this dynamic from inside, saying that a modification community "feels like you are part of an 'elite' club where people mod the game, and feels a little more exclusive" than a community for unmodified play.

These in- and out-groups contributed to social pressure, where a few participants felt pressured to modify their play to join or stay with a community of players. P3 (Woman, 38) spoke about using "DPS meters as well as boss ability alerts and pathing markers with Blish or TACO addon packs" in *Guild Wars 2* [G1], as "[t]hese addons

were typically required to be in guilds that regularly killed raid bosses".

Connection Outside Communities

Even in the absence of a larger gaming community, modification was reported to enable connection between players, where other players offered compliments, support, and engaged in conversation about modification.

Our participants described that when they interact with other players who modify, modification provides a common topic to talk about. P151 (Woman, 31) said, "I love swapping stories about funny things that have happened with mods, sharing what i've done with mods and seeing what other people do, and swapping mod lists can be pretty fun." P147 (Woman, 31) shared a similar experience: "With mods, there's often a sense of shared excitement among players who enjoy experimenting and creating custom experiences. However, when playing unmodified games, discussions tend to focus on the default experience, which can be more straightforward but less personalized." P21 (Man, 49), who said that being a person who modified was like being part of an "elite club", said that he's "found its a good way to connect with others who play the same game. Its been a good way to chat about the game, and also make friends online."

As discussed in Section 4.2.1, modifications also enabled our participants to present themselves differently — and more true to self — within games. When asked if she experienced any differences in social experience between playing a modified game and an unmodified game, P78 (Woman, 39) said that she found there was a difference, as "the mods you use can make you feel more represented by your character, especially in games where character creation can be limited." In response to the same question, P112 (Man, 44) shared the same sentiment, going on to say "[i]n the sense that it makes it [(the experience)] more personal, I think it's a good thing."

Some of our participants found that modification improved the social experience they shared with other players. P149 (Woman, 32) said, "Modified games make for a better social experience, because we can download whatever kind of mods we want and it often makes things funnier or just better aesthetics, which can make the game feel cozier and more enjoyable with a friend." Others found no difference, saying that "at the end of the day, I'm playing a game making connections with people who enjoy the same thing I do, whether it's modded or not" (P19, Non-Binary or Genderfluid, 31).

Enabling Robust Multiplayer Experiences

Our participants described situations in which modification enabled them to play more with others, such as through turning single-player games into multiplayer experiences, thereby allowing them to connect with others. Modification provided a common topic for them to connect over, and the dynamicism of modifiers provided novelty in their shared experiences that kept them connected longer than they otherwise might have been.

Increasing the multiplayer functionality of games allowed players to share play experiences with others. For example, P138 (Woman, 25) used the mod 'Entangled Worlds' to modify *Noita* [G47] from a single-player game to a multiplayer game she could play with her brother, which led to them playing more and spending time together.

Some games already have multiplayer functionality, but may place limits — such as on the number of players — on play. In these situations, participants used modification to remove these limits to improve their ability to share play experiences with others. For example, P126 (Woman, 29) used mods to increase the multiplayer capacity and remove the requirement for a player to host the farm and always be present during play in *Stardew Valley* [G15]. This allowed more people to play and reduced barriers to when P126 and her friends could play, increasing their social interaction in play.

Summarizing Connection

In all, modification enabled connection between players, acting as a common topic that brought players together and deepened their relationships. Modification was also key to the formation of different communities and to altering games to allow for more robust multiplayer functionality. Overall, our participants also found games with modification to be more social and less toxic, contributing to greater social interaction, although a few did experience exclusion and social pressure based on the modifications that they used.

4.2.4 Community Norms

Based on our participants' experiences, gaming communities are not only sources of connection, but also guideposts of ethical modification. The **norms** of different com-

munities were often a major component in how our participants described determining the ethics of using modification in different contexts, in addition to other ethical considerations we have already discussed, such as purism of play in Section 4.2.1 and the maintenance of agency for other players in Section 4.2.2. The norms of a community were also a determinant in how our participants were treated by other players, to the point where our participants described carefully curating their social circles based on their norms.

Before we proceed, it should be noted that gaming communities appear to be omnipresent among our participants; all but two of our participants reported that they were involved with a gaming community in some format, either playing with others, watching others play, or engaging in public spaces like forums (return to Table 3.2 for a more complete summary of their community involvement).

Variance in Norms

When asked about their opinions on modification, participants shared that the ethics of modification depended, at least in part, on the norms of the community, which vary between communities. "A lot depends on community standards and what players expect from the game," P20 (Woman, 24) said, echoed by P97 (Woman, 40), who said "I get the impression that the impression of modifying gameplay varies widely according to what gaming community you are in." As discussed in Section 4.2.3, gaming communities can exist at different levels, with some participants referencing the game community at large, communities around a developer or a game, or smaller groups who play together.

Some communities were strong supporters of modifications, while others were staunchly against them. "Modifiers is quite a nuanced topic" P89 (Man, 46) said, "due to the fact the gaming world is vast with many times [(types)] of games and genres. Some communities may frown upon a mod but some will actively encourage it". The variance in norms between communities was attributed in part to several different factors, such as game design, developer stance, and game genre, to name a few.

P111 (Man, 24) found that genre was a factor in norms, where "[s]ome games, especially sandbox or RPGs, lend themselves well to modifications while competitive games have stricter rules about mods to ensure fairness." The need to preserve the competitive landscape and manage unfair advantage seemed to often result in gaming

communities that are broadly against modifiers. Certain game structures may also lend themselves to modification, where a mixture of game design and developer choices may lead to a game "built with modifiability in mind" while other games "prioritize a controlled and standardized experience" (P42, Woman, 26).

Developers, beyond shaping the design and rules of the game, may also influence norms in the opinion they express about modification. A small number of participants spoke about the developer's stance on modification as an influence on the norms of modification. For example, while mods are against the terms of service for *Final Fantasy XIV* [G59], P78 (Woman, 39) described the developers as taking a "don't ask, don't tell" approach, where "if you're not impacting anybody else's gameplay experience directly, they don't tend to take any action against you", that has allowed the formation of sub-communities supportive of modifying in *Final Fantasy XIV* despite the presence of "a large contingent of the FFXIV [[G59]] community that despises the concept of mods and can be very negative whenever they come up in conversation (eg wishing that all mod users get permanently banned)".

The attributes of the community itself — such as where the community is hosted — may also be relevant. P167 (Woman, 38) said, "I think that depends on the culture of the game and the source as well. If you're on a website where you're downloading the mods, obviously people are going to be supportive."

These factors, among others, may contribute to a culture of modification in a gaming community, which in turn form norms. Games that have developed a culture of modification, like *The Elder Scrolls V: Skyrim* [G3] (some would say Bethesda games in general) or the *The Sims* [G38] games, are more likely to have communities that are accepting of modification. For these communities, modification is an avenue for engagement in the game and with other players. For example, multiple participants spoke about how positive the *The Sims 4* [G39] community was about modifiers. They spoke about how other players within the *The Sims 4* community can be "extremely welcoming" for some modifications, offering "positive reviews and support" (P131, Woman, 30) towards players who post about their modification. Some participants even went so far as to say that modifications were "expected" (P100, Woman, 51) and "in the Sims 4 community, people are very open about modifying their gameplay, and it is much rarer to find someone who does not modify their gameplay than to find somebody who does" (P134, Woman, 19).

Not all communities have developed concrete norms about modification, though, which can lead to uncertain social interactions. P84 (Man, 44) described using modi-

fications in *Resident Evil: Resistance* [G44], saying, "[p]eople in this small community disagree on what is cheating and what isnt. So sometimes when i did it i was made to feel guilty."

Violating Community Norms

When they violated — or were accused of violating — community norms, our participants reported experiencing guilt, shame, bullying, and social exclusion as a few of the consequences.

In multiplayer games, our participants described that using modifications could result in a "bad reputation" (P20, Woman, 24) and accusations of cheating. P1 (Man, 27) said, "the gaming community can be negative towards players who use mods, labeling [sic] them as 'cheaters."', and P78 (Woman, 39) adds that "[t]here is a large contingent of the FFXIV [[G59]] community that despises the concept of mods and can be very negative whenever they come up in conversation (eg wishing that all mod users get permanently banned)".

Beyond negative talk, players who use modifications may also face exclusion, reports, and bans for not following community norms. P89 (Man, 46) described being excluded from a group for using mods in *Dark Souls* [G23]. Similarly, P3 (Woman, 38) was removed from a guild she was a part of in *EverQuest* [G68] for using a certain modification. She said, "[i]n my EverQuest days, there was a mod called MacroQuest that would get you ostracized from guilds and groups if it was rumored that you used it. Well, for me it wasn't a rumor and I had to find a new guild." As we discussed as an undermine to connection in Section 4.2.3, even communities that were positive about modifications in general may exclude players using modifications that were outside of the norm.

Negativity towards modification use could spill over onto players who do not use modifications as well. P84 (Man, 44) reported that he had seen many players be accused of cheating, but "[s]ometimes the person accusing them (a lot actually) is just new to the game or unskilled. So in my experience most people being called cheaters aren't cheating".

Often, negativity from the general community pushed our participants to limit their social interactions, either avoiding interaction or only interacting with other people and groups who they knew would be supportive of modifications. P131 (Woman, 30) summarizes this point well, saying:

> "I have seen a mix of responses [from communities in general]. I believe I have seen more negative responses as I believe a lot of people still see mods as 'cheating' and it can be that case depending on the mod used. I feel that a lot of people who use mods nowadays keep more quiet about it and only discuss it amongst more trusted friends. And unless the community is welcoming of mods for that certain game, I feel that people are not likely to mention or comment about it."

Overall, our participants agreed that the majority of reactions they experienced related to modified play were either positive or at least mixed. This may be in part due to our participants largely adhering to norms or joining communities that are specifically positive about the modifications they use, mitigating the backlash they experience.

Managing Backlash to Modification

To manage backlash against modifications they may experience, many of our participants chose to limit their engagement with other players. Some only played with other people who modified their play, or only with people they had confirmed to be supportive of modification, while a few participants avoided interacting with others entirely.

P119 (Woman, 28) said one of the main differences in her social experience when using modifications was that she kept to herself when using mods, as in her experience "people will likely report you" if they notice you use modifications. Keeping your modification secret from other players was something that P3 (Woman, 38) also did. She said, "[t]here are times when I simply don't mention to anyone else that I'm using mods, unless I'm in a community that is sympathetic to altering games in that way" (P3, Woman, 38).

Players may also opt to only use modifications in single-player games to avoid affecting others. "When facing drawbacks, such as negative reactions from some gaming communities," P147 (Woman, 28) said, "I manage them by limiting my use of mods to single-player or cooperative games, where they don't affect other players. I also engage with communities that are supportive of modding, focusing on spaces where creativity with mods is encouraged and appreciated."

In our participants' experiences, it seems that supportive communities are not targets for players who are against modification, making them safe spaces for players

to use modifications together. P3 (Woman, 38) said, "[p]eople that don't like to use mods don't seem to seek out posts about them just to shame mod users." So, by respecting the norms of communities (as seen in their use of modifications only in communities that are supportive of it), our participants were able to avoid negative experiences from players who are against modifications, or, at least, the bulk of them.

Summarizing Norms

Altogether, our participants described the norms of communities as a major determinant in what they and others perceived as ethical in modified play. Norms may vary widely between community, though, with influence from factors such as the game, genre, design, developer stance, and the attributes of the community. The violation of these norms resulted in negativity and exclusion from others, as well as possible bans from play, so most participants were careful to only openly use modifications in spaces that were supportive. As such, norms were a factor in how, what, when, and who with they decided to modify. Norms were thus a gatekeeper to play and connection — if you break norms, you may lose access to the game and or face social struggles.

4.2.5 Leet (l33t/1337)

A '**leet**' — derived from 'elite', also spelled 'l33t' or '1337' in leetspeak — player is a highly-skilled gamer that is dedicated to, even obsessed with, gaming. They tend to be some of the best players in a given area of digital gaming, and spend many hours maintaining their status, sometimes without regard for other responsibilities or players. Although none of the participants in this study directly identified themselves as a leet player, this cluster of player perspectives best aligned with the label 'leet' — it is about being more skilled than other players, dominance over others, and the satisfaction or prestige of being a top player.

Improving Performance, Skill, and Level

First, modification supported some players in achieving an elite level of play, helping them improve their skills and performance in-game. Most directly, modifiers can be used to quickly level-up characters in a game to make them more powerful, but modification could also be used to support players as they learn and execute strategies in gameplay.

In an example of levelling-up the player character, P32 (Man, 23) used a cheat in *Elden Ring* [G26] to "gain souls which are used to level up" in the game, so he could then become "overpowered"[10] for the challenges of the game. Using modifications can allow the player to advance through play more quickly and achieve goals. Similar to P32, P105 (Man, 38) used modifications to look for ways to "optimize or exploit the game to level up fast and to unlock more" after playing the base game for a bit. Somewhat different from P32 and P105, P88 (Man, 50) improved his performance directly by using an aim assist (specifically "in games that the base player is extremely better than [he is]"). This allowed him to enjoy play more, but also acted as a trainer for him. He found that, by using modification, he plays more and gets more practice to improve his skills, which may allow him to reduce his modifier usage overall.

It was more common, however, for our participants to talk about how modifiers augmented their strategy. One way that they used modification to enhance their skills was changing the key-bindings and UI of a game to be more aligned with their preferences, which, in turn, could improve their performance. For example, P114 (Woman, 39) customized the UI and key bindings in *Fortnite* [G21] "to create a more streamlined experience tailored to [her] play style, enhancing both [her] performance and enjoyment". Specifically, she said that she removed screen clutter, which "allowed [her] to track enemy movements better", and optimized her key bindings for building in the game, which gave her faster controls and "a competitive edge".

Another common use of modification for performance enhancement was to alter the UI of the game to get more detailed information and feedback about play, allowing participants to "fine-tune [their] gameplay and perform at a higher level" (P3, Woman, 38), and train and strategize more effectively. A specific example of how the UI is modified is P89 (Man, 46), who used TurboHUD in *Diablo 3* [G9] that "provides detailed stats, skill cooldowns, and indicates enemy positions" in game. A wide range of other alterations to the UI also fall into this category, including "questlog/profession helper, damage meters and boss assistants" (P49, Man, 33). This additional information "allows [players] to make more informed decisions about their gameplay" (P15, Man, 41). Another example is P161 (Woman, 31), who said that she used the Weak Auras add-on for *World of Warcraft* [G8], which alters the UI and automates some gameplay actions. She said, "[add-ons] can be used to modify when certain buffs are applied on your character (to know when to apply damage) or to know when an enemy is using a big defensive ability (to know to switch targets). These are heavily

[10]The term 'overpowered' is used to mean overly or excessively powerful in gaming circles.

modified and tinkered to the users liking which drastically improves gameplay if done correctly." (P161, Woman, 31).

Modification could also be used to help players learn more about the game and its 'meta', which describes knowledge around the most effective ways to play a given game (often developed and shared between community members), to become more strategic about and effective at gameplay. One participant went so far as to say that this "sometimes was necessary to keep [him] competitive" (P75, Man, 47), since it allowed him to perform better and stay informed on the best strategies for play. Some examples include: P20 (Woman, 24) using wikis, guides, and forums to learn how to complete levels in games, such as *Overcooked 2* [G61]; P31 (Man, 34) using guides to "better understand a mechanic in any games"; P31 (Man, 34) using guides to learn a game boss's attack pattern and mechanics; and P102 (Man, 37) using a guide to find certain locations and the "best loadouts"[11] to "help [his] gameplay and make the game little bit easier for [him]" in *Vampire Survivors* [G49].

While the experience of elite play can be enabled by modifier use, it may also be thwarted. Some participants reported that their skills in unmodified gameplay eroded when they played modified games. P96 (Man, 40), for example, found that "[s]ometimes modifiers change your gameplay so much that when we revert to your old style of play, you're just NOT that good anymore".

Prestige and Superiority

Alongside improving skill, modifications were also associated with the image of elite play. Modifications were affiliated with high ranks on leaderboards and highly skilled players, although a few participants connected modifications more with superiority, where players who used them relished in dominating play, potentially to the point of harming others.

Beyond improving play, modifications could be used to help players artifically climb the ranks of leaderboards. Consider P75's (Man, 47) use of an exploit in *SOCOM II U.S. Navy SEALs* [G69]:

> "...the modifier that I personally engaged in the most was in order to rank

[11] A 'loadout' in gaming refers to a combination of weapons, equipment, abilities, and skills that a player can equip to their character, somewhat interchangeable with the terms 'build' and 'set-up' (certain terms tend to be used for certain games). The best loadouts are then the ones that are most effective in a given situation. This is a subset of the knowledge that would comprise a game's meta.

> up. We discovered that if you stand over a dead player, and repeatedly switch pistols with him, you rank up. So we were running games just to do this to each other. The gain was that I got ranked really high on the leaderboards. I guess looking back on it, it was kind of stupid. But whenever I joined a room, people respected my name because of my rank."

The ranking system in *SOCOM II U.S. Navy SEALs* [G69] acts as a representation of the player's ability compared to other players, but otherwise does not have any bearing on player performance or skill improvement. There is no benefit to a higher rank, other than the *prestige* it conveys to a player and the respect that comes with being highly ranked. As conveyed by P75 (Man, 47), "[the benefits of modification are that] I can perform better and also seem like I perform better when other players see my name or avatar." A high rank indicates a skilled — perhaps leet — player, so using modifications to achieve a high rank may confer the same prestige and treatment that elite players receive, especially "[i]f [other players] don't know that you're modifying the game" (P20, Woman, 24). P20 went on to say that when you have a high rank (and others do not know that you used modification to get it), "other players perceive you as a good player and may want to be on your team and engage with you because you're a "good player"". So not only may a high rank be a source of prestige, but it may also act as an catalyst for connection (the benefits of which we discussed in Section 4.2.3).

Outside of competitive and/or multiplayer games — where issues of fairness led to complex opinions of ethics — some of our participants held the opinion that gameplay modification is only for 'good', 'hardcore', or 'serious' players, and that using modification is niche and signals a high level of performance and intensity in gaming. That is to say, a player who uses modification is seen as being leet. Participants who associated modified play with serious players said that "the more serious players usually" support modification (P24, Man, 39), and that "players you meet in modified games are more likely more hardcore gamers" (P5, Woman, 44). Participants found that players in modified games "are more competitive and have higher expectations for you" (P120, Woman, 33), and that using modifications "make[s] it more likely you be playing at your best levels and signals competive [sic] attitude rather than just casual player" (P55, Man, 54).

This association of 'good' players and modification also came through in P105's (Man, 38) view that modification is something that "all the famous video game players do", at least to a "higher degree [than the average player] as they have the money to"

— he pointed to the "many popular game streamers [who] manipulate and exploit the game to get better lobbies and scores etc." — implying that modification is common among high-level players (or, at least, those who want to project an image of being high-levelled) and therefore may be modelled to other players aspiring to the same.

This is in contrast to the views held by purists (which we discussed in Section 4.2.1), who held the stance that a 'good' player should not need modifications to do well in or enjoy play. Having said that, purism in that form is not a view seen among the members of our participant pool, only the people they interact with. This indicates that people who use modification may be more likely to associate modification with 'good' players than the inverse.

While the modifying player may enjoy the feeling of prestige, a few other participants reported being annoyed by players who "think they're better because they have 'everything' in the game" (P136, Woman, 25). In this sense, prestige may turn into superiority and a joy in having power or prestige over others.

Aligning with a sense of power over others, a few participants also spoke about how modification could enable trolling and griefing. For example, P104 (Man, 46) shared his thoughts about people he befriended who had been banned from guilds for "hacking", saying that they "just like being good at stuff and trolling. It's mostly trolling when they do the negative stuff like using aimbots on FPS[12] online. Outside of the hacking online games they acted like any other friend of mine, just normal gamers most of the time." For some players, such P104's friends, a degree of "negative" play appears to be the goal, and this negative play may be dismissed by others as just trolling. P12 (Woman, 30) is another example, as she described playing "for fun and you want to be unethical while playing; like how it is fun to kill people while playing GTA [[G57]]". To P12, her play is ethical because "[i]t's just a game" and she draws enjoyment from it, even though others may be affected negatively by her behaviour.

Ultimately, players that seek power by harming others are in far the minority of our dataset, with most players focusing on respecting the play experiences of others (as we discussed in Section 4.2.2). We do see, though, that modification can be associated to prestige and leet-ness, and that players may seek to achieve this prestige through the use of modifications.

[12]FPS is an acronym for 'first person shooter', which is a type of game that involves fighting (usually with guns) with the player experiencing the game from a first person perspective. An aimbot will assist a player in aiming their weapon automatically, helping them be faster and more precise.

'Gaming the System' and Resourcefulness

A sense of power in play associated to modifier use also came through in other ways. For some participants, modification was about outsmarting or gaming 'the system' and the feelings of smugness, competency, and adrenaline — a "rush"— that they drew from overcoming the limitations placed on them, being more powerful than others, and winning.

In their words, players described feeling "a bit smug when using a modifier, as I feel like I've "got around" something" (P99, Non-Binary or Genderfluid, 28), receiving "short term adrenaline when the cheat works and I am gaming the system" (P32, Man, 23), and "joy that I defeated everyone that plays with me when I am with the modified team" (P74, Man, 37). This connects to the ideas of prestige and superiority, as these participants relish in their superiority over others and their superiority over the system.

In this perspective, our participants often justified that modification is simply a tool to use. "I think people using modifiers to enhance their gaming experiences is just an example of resourcefulness, really" P152 (Woman, 46) said, contextualizing her perspective by saying "I don't think there should be ethical standards applied to game play unless there are specific rules set within guilds, etc. ... I do not think modifiers should be discouraged or sanctioned or shamed. [However,] in fairness, as I said earlier, I think I don't tend to play the kinds of games about which people are super rigid re: "ethical" gameplay" (P152 had previously stated that she didn't tend to "play the kinds of games that tend to attract rigid purists").

The idea is that, instead of needing to put effort into honing game-specific skills, players can put the same amount of effort into learning how to modify instead. P166 (Woman, 34) actually found enjoyment specifically in games that are "a free-for-all and everything is accessible", with the caveat that players are using modification responsibly; i.e. not using it to "to cheat, or ruin a round in a game", as "[i]t's just not fun when people are jerks." In this scenario, she said, "[y]ou can use modifiers if you want, but they're available to everyone which levels the playing field. If everyone can use them, I think it's fair. It's on you as the player to learn how to do it, look up the code, or whatever you need to do, and that's the work you're putting in."

Both P152 and P166 emphasize that it should be a personal choice to use modifications or not, and that play is fair and ethical if modification is available to everyone regardless of whether they ultimately utilize it. In this emphasis of personal choice

you can see elements of agency alongside the idea of resourcefulness. P32 (Man, 23) exhibits personal choice even more strongly, saying "[i]ts fair to [modify] because we are free to tackle a game in anyway we see fit. There are no options off the table. ... all is fair, if you can find a way to exploit the game, do it by all means. If it saves you time, gives you an advantage, gets you better items, why would you not want to be in that state." P32 also extends the idea of resourcefulness, framing backlash about modification use as players who are angry for not knowing about it and not being able to take advantage of it themselves: "The only backlash you get is from people who didn't know about it".

Tailoring to Elite Skills

Modification was also used by participants to tailor gameplay to their leet-ness, alternately streamlining play to their advanced knowledge of digital games and complicating their play when they found the base gameplay to be too simple.

In terms of streamlining, participants often used modifiers to skip early sections of play, particularly "skipping the launch opening scene" of *Baldur's Gate 3* [G35] (P72, Woman, 36), "skip[ping] parts of the story that are repetitive in new characters" in *The Elder Scrolls V: Skyrim* [G3] (P104, Man, 46), and using mods and cheat codes to speed up early game progression in one of the *The Sims* [G38] games ((P37, Woman, 24) and (P99, Non-Binary or Genderfluid, 28)). This way, experienced participants do not "have to start from scratch every single time" they replay a game (P37, Woman, 24).

Some participants also had a tendency to find games "generally very easy", such as self-described "hardcore gamer" P85 (Man, 26), and used modification to make games a more unique experience and less "streamlined for the masses" (P10, Man, 28). As we spoke about when discussing personalization in Section 4.2.2, players used modifications to increase the difficulty of a game to suit their needs for competency and challenge and match an above-average skill level. While this is a show of agency and their ability to personalize play, it also depicts their elite level.

At the same time, modifications also had the potential to frustrate the sense of leet-ness and accomplishment experienced by players, mostly by making play too easy for them. For example, modifications such as the "god mode" in *The Elder Scrolls V: Skyrim* [G3] had the potential to make "the gameplay a bit boring" for P31 (Man, 34) as it "[n]ullifies any challenges the game gives you". While being

overpowered can be “fun at first”, it can make the challenges of play “too easy” (P61, Man, 29), which can make “the game boring as it was almost impossible to lose and didn’t give me any sense of accomplishment during gameplay” (P50, Woman, 37). Players may even stop playing a game because of the boredom of a too-easy game, as they “can’t be bothered playing anymore because [they]’ve “completed” it” (P136, Woman, 25). These leet players then spoke about their approach to some modifications as balancing temporary enjoyment from using certain modifiers against long-term boredom and apathy towards the game from taking away challenge in play, and needing to employ willpower to not ‘ruin’ the game for themselves.

Summarizing Leet

There are multiple dimensions to leet play, and while none of our participants explicitly identified themselves as a leet player, they show different aspects of leet play in their use of modification to improve their performance in games, gain prestige, exert superiority and power over others and the games themselves, their belief in modification as resourcefulness, and their use of modifications to streamline play to suit their desire for challenge and to avoid boredom.

4.2.6 Technology

Technology (hardware and software) is at the core of the digital gaming experience, comprising the bones and flesh of digital games and the majority — in number of methods and in number of uses by our participants — of modifications. Accordingly, technology was one of the core concepts our participants spoke about in relation to their experiences with digital games, comprising a bulk of their challenges with modification and offering some motivation for play, although perhaps less in magnitude (in the number of participants who referenced it) compared to motivations from agency, play, connection, and leet.

Improving Games Through Modification

One technological modification was game improvement. Game improvement through modification was fairly common, where modifications allowed the player to perform technical fixes on a game, fixing bugs, improving performance, and configuring the game to work on incompatible systems. An example is P143 (Woman, 26), who said that a large number of modifications she has made have been “to fix bugs left in

the game by developers" using "community patches", giving *The Elder Scrolls V: Skyrim* [G3], *The Elder Scrolls III: Morrowind* [G2], and Fallout [G32] as examples of games that she fixed with modifications. Modifications may also offer benefits such as frame rate improvements (P24 (Man, 39) described going from a frame rate of 64 frames per second (fps) to 128 fps) and optimization. P9 (Man, 25) described using the mod 'Sodium' for *Minecraft* [G41] "which helps optimise performance to provide a better gameplay experience. I find the game doesn't run all that well, even on decent hardware".

In some cases, altering the performance of the game may be important to making the game accessible to folks who lack high quality hardware. For example, P139 (Woman, 29) said:

> "Before I bought my PC, I wasn't able to run games on my old laptop so the mods would help me play the game without breaking my laptop. Therefore, I had access to games I normally wouldn't be able to play. For example, the only reason I was able to run Dragon Age Inquisition [[G7]] on my laptop (from 2013) was because I installed mods on it that made the fight scenes easier (I installed an insta-kill mod) and a mod that lowered graphics."

In addition to optimization, software modifications like source-ports can be used to reconfigure games across generations of technology (e.g., from an older PC to a newer one), as demonstrated by P2 (Man, 26). He described using the 'ECWolf' and 'GZDoom' source ports for *Castle Wolfenstein 3D* [G29] and *Doom* [G30] respectively to be able to make the games more "user-friendly" and compatible with modern technology.

Technical Challenges to Modification

Depending on the game (and system) the process of making a technical modification to a game "can get a bit complicated" (P72, Woman, 36). P169 (Woman, 43) found that installing and managing mods could require "in-depth technical knowledge" and be "very time-consuming", particularly when problems occur. And, based on our participants' experiences, problems may occur frequently. In their words, modification can "cause instability, leading to crashes or unexpected bugs" within games (P154, Woman, 39), and that adding mods to games "can be a hassle", as "it can sometimes break your games and lead to reinstalling something that could take hours" (P58,

Man, 29). It "takes a lot of trial and error to make sure everything operates correctly" (P138, Woman, 25) in a modified game. As our participants mostly spoke about using mods (rather than other modifications) in relation to technical challenges, this section refers mostly to the technical challenges of mods. These technical challenges have the potential to be extended to other software and hardware modifications, though.

To illustrate the variety of technical challenges faced by our participants, let us step through the process of modding *Baldur's Gate 3* [G35] that was outlined by P72 (Woman, 36) and where issues may occur. Note that the developers of *Baldur's Gate 3* support modifications, and offer resources to help players with the process, which may affect some steps of this process compared to modding games without developer support. P72 described first downloading and setting up a program to install mods within *Baldur's Gate 3* (likely a mod toolkit or mod manager), then needing to download mods into the program. Technical demands of the user include installing software and navigating the file structure of the game and system, copying and moving files. Players also need to ensure that they fulfill any of the dependencies of the mods, which are other files that a mod may need to run properly. During this phase, other participants described taking the time to research a mod beforehand to determine its trustworthiness and compatibility with their system to prevent issues and soothe anxieties that they had about downloading files off the internet due the possibility of malicious code (like viruses) within those files.

Once mods are downloaded, then they need to be activated. P72 was using multiple mods, so she first needed to organize the load order, which dictates the order in which mods are added into the game. Dependencies must be loaded before the mods that require them, and mods that conflict with each other must not be loaded into the game together. Mods loaded in the wrong order may cause modifications to occur out of order, negating the mods, causing bugs, glitches, or breaking the game entirely. Bugs and breaks may also occur from other causes throughout the process. The user must resolve these problems, requiring them to have (access to) some level of technical skill and knowledge.

The more mods the user has, the more complex the technical problems may become, as more mods may create greater opportunity for conflicts, be more difficult to manage, and reduce the game's performance (introducing lag and reducing the frame rate). In extreme cases, this can become a major drawback to modified play, according to P167 (Woman, 38):

> "The biggest drawback is in The Sims 2 [[G40]] when I downloaded so

> much custom content that the file I saved it in became enormous and impossible to manage, even with a custom content manager. It massively slowed down the game load time too. I would go do something else while I waited for it to start."

P154 (Woman, 39) agreed with this assessment. She said that, in her opinion, "too many mods can complicate the game setup, requiring more time and effort to manage than playing the unmodded game".

Even once initial issues are resolved, modifications may require maintenance throughout time in updates, especially if the game software itself updates. "As the game is updated and evolves," P23 (Woman, 26) said about modificaiton in *The Sims 4* [G39], "some mods become obsolete/no longer work in game, or worse, can break your game," reintroducing instability to the game. In that case, the user needs to identify the problematic mod, which, she went on to say, "can be quite tricky to identify if it's a piece of custom content, as it doesn't take long to amass hundreds or thousands of custom content items for your game." The user then either has to find a way to address the problem themselves, wait for the developers of the mod to create an updated version, or abandon the mod and find another alternative. In some cases, this may be a relatively minor setback, as sometimes "the mod developer(s) [are] able to push out a new update within hours of the update coming out" (P9, Man, 25), although the user will still need to repeat the process of downloading the mod, which P9 described as a "hassle". Mod updates may take more time, requiring the user to wait, which "can be frustrating if [they] want to experience new features but also rely on specific mods" (P113, Man, age not given). Note that mod developers tend to be community members, so an update is not guaranteed; "Mods depend on the community to create and maintain them," P3 (Woman, 38) said, "and support for them can end without warning".

To help them manage instability and technical problems in their games, participants employed a vast variety of methods, including: extensively researching and maintaining their modifications and their personal gaming system; keeping copies of files and a stable version of the game; utilizing existing software such as mod managers and systems to detect malicious files like viruses; and relying on the game community to provide resources and support. This self-maintenance adds to the effort and time required of the user to game, and relies on their technical knowledge and skills. P150 (Woman, 34) described the process as "frequently laborious if there's a bugged mod to figure out which one to fix it" and that "[i]t takes a lot of work to keep up

with all of the mods that I have installed". Software like mod managers may be a great alternative to self-management, but official supports for software modification that are offered by the developers of a game are still uncommon. As P27 (Man, 29) said, "[t]here's no official support with many games that have mods for them". In fact, there is a not-insignificant number of games that use anti-modification policies in hopes of limiting cheating. As a result, some of our participants experienced bans and loss of access to play features like online play, leaderboards, or in-game achievements, regardless of the modification they were making.

In lieu — or in assistance — of official efforts from the developers of the game to support modifications, modification communities were one of our participants' greatest resources for handling technical problems. Community members not only create mods and mod managers, they also create guides, tutorials, and wikis about how to modify games and how to solve common problems. Community forums also allow people who modify to access topic experts who may offer custom advice on how to handle problems in a given context (for a certain system, game, or modification). Many participants mentioned that they turn to YouTube, Reddit, and other forums for guides and tutorials when they encounter issues, or may offer this support themselves (as discussed in Section 4.2.3). Modification community support also lets users access real-person reviews that give them feedback on a mod before the they invest in it themselves — some participants mentioned that they only use "reliable mods from trusted sources and always read reviews to check for compatibility issues" (P154, Woman, 39). That said, as mentioned earlier, community support relies on the passion, knowledge, ability, and availability of the community to contribute to robust supports, which may not exist for all games.

Summarizing Technology

The technological aspect of modification was most often a barrier to play, but modifiers were also able to augment and improve upon existing technological factors in play, such as fixing bugs, optimizing performance, and letting players port older games to modern systems. Software modifications provided many failure points in which technological aspects created issues (e.g., bugs, crashes, glitches, etc.) that the player needed to manage, often though self-management practices such as maintaining stable set-ups, using software systems to manage modifications, and relying on community support in the absence of robust official supports from game developers.

4.2.7 Framework Summary

In this section, we presented perspectives of modification use by players who use them, organized into a framework with six main concepts: play, agency, connection, community norms, leet, and technology. These clusters encompass player experiences, motivations, challenges, affective states, and ethical conceptions of digital game modification.

Chapter 5

Discussion

In this chapter, we summarize our findings within the context of our four research questions and situate them in previous work. We then present implications of this work, and discuss limitations and future work.

5.1 Summary of Findings

This study produced a taxonomy of modifications to address how players modify their digital games (RQ1), and a framework that describes player experiences with modification broadly, conveying the effects of modification (RQ2), benefits, challenges, and motivations (RQ3), and ethical perspectives (RQ4) of players.

5.1.1 RQ1: How Do Players Alter Their Gameplay?

Starting from the idea that gameplay modification changes gameplay from the base or intended experience, we developed a taxonomy of modification to describe patterns in how our participants modified their play.

To account for an observed disconnection in the relationship between the method of modification and the outcome, where the same method can be used to achieve multiple outcomes, and multiple methods can be used to achieve the same outcome, we examined the *method* and *outcome* of modifications separately. Our participants also played games in a variety of genres on multiple different platforms, making it difficult to pull together specific categories of modification. We opted, then, to include higher-level categories that describe common features of several more specific subcategories.

Our participants used 19 different methods of modification spanning five different categories, including software, hardware, behaviour, information, and settings modifications. Only three methods, however, were used in more than 10 instances of modification use described by our participants. Mods were by far the most popular, with 119 individual instances mentioned, followed by using a walkthrough, wiki, or forum at 40 instances and cheats at 31 instances.

The outcomes described by our participants altered a game's content, mechanics, aesthetics, utilities, and community that the participant interacted with, each with more specific subcategories. Content modifications were the most common at 180 instances, follow by mechanics at 89 instances, aesthetic modifications at 37 instances, and utility modifications at 34 instances. Community modifications were extremely unpopular, with only two instances described by players.

5.1.2 RQ2: How Are Players Affected by Altering Their Gameplay?

Overall, we found that players were affected by modification use in multiple ways, including in their wellbeing, social experiences, skill, and how long they play games.

The majority of our players found that modifications improved their wellbeing, eliciting more happiness, excitement, joy, fun, relaxation, and stress relief compared to when they played unmodified games. There were a few instances of modifications connected to negative emotions, though, where players felt frustrated due to the challenges introduced by modification, or felt guilt and shame for using modifications. A few players also reported complicated feelings about satisfaction in play. While modifications generally helped them feel more satisfied with their play, letting them game despite barriers, they also felt guilty or somewhat less satisfied with having to use modifications to play. This is not necessarily something that could be fixed, but it demonstrates how modification use can be a trade-off.

Modifications also affected our players' social experiences, helping participants initiate, maintain, and deepen connections with others, but could also bring negative interactions (experiences of ostracism and toxicity) from people who are against the form of modification that they are using. To manage negative reactions, our participants tended to limit their modification usage or social interactions when modifying to only people or groups that they knew were supportive.

Modifications also affected their skill. Many participants reported that using

modifications helped them improve and refine their gameplay skills and strategies, with a few reporting that they felt their skills atrophied when they used modifications.

Players reported playing games more or for longer when they could modify them, as modification let them make it more interesting, engaging, and accessible, and to complete content they wouldn't otherwise. They felt that their games had a longer lifespan when they could use modifications to fix problems and experiment in play.

5.1.3 RQ3: Why Do Players Modify Their Gameplay?

Motivation and perceived benefits and challenges varied widely between participants and situations, depending on what the participant was seeking in their gameplay experience.

Within the maxims of play, participants were motivated to use modifications: to 'enhance' their play (make their gameplay experience better); to add variety, novelty, and/or complexity to play experience; to get more out of play, extending and bulking up their play experience; and for the elicitation of positive emotions, such as happiness, excitement, joy, fun, relaxation/stress relief, or recovery from bad moods.

Motivations to modify related to agency included: to gain control over their play experience; to feel more represented in play; to restore agency when it has been (perceived to be) taken away; and for personalization of play to suit the game to their needs and wants, in the long-term (e.g., personality traits, preferences) and short-term (e.g., to recover from a bad day). Within the motivation of personalization, we also saw participants use modifications to make a game more accessible or comfortable for them to play, or to enact a creative vision.

In terms of leet play, our participants were motivated by: improving their gaming skills and/or performance; to gain prestige; and to dominate (over other players) in gameplay. Other motivations include: for greater social interaction and connection; to fit in with community norms; and to improve the game, fixing bugs and optimizing technical performance.

Note that affect and motivation could overlap: that is, a participant could use modifications because they wanted to experience a specific affective state from their play. Consider a player motivated to use modifications because they wanted to experience positive emotions and improved wellbeing.

A player could also have multiple motivations for performing a modification. P44 (Man, 24), for example, used modification to add complexity and novelty to

a *Minecraft* [G41] server he shared with his friends so that they had more activities to share, displaying the dual motivations of variety in play and social connection.

Underscoring most of our participants' experiences was the motivation of personalization: i.e., the participant modified games to change parts of the base game that did not suit their personal needs. The changes being made varied as much as the players themselves, with some using modifications to make games easier, others to make them harder, some to make them prettier (to their eyes), some to make them more accessible, and so on. In a reflection of the diversity of players, we saw an array of different motivations to modify and modifications used, with a few motivations mentioned by many participants, and many mentioned by only a few participants. Tied to their use of personalization, our participants recognized that games cannot be made to suit every person who may wish to play them, and that with modifications, players could tailor gameplay to their needs and wants for individual sessions or across time.

Alongside exploring motivations to use modifications, we also asked our participants about challenges they faced to modifying their play, and what factors may *prevent* them from using modifications. Excluding ethical boundaries, which we discuss in the next section, the majority of challenges our players faced centred on technical issues, followed by the toxicity they may experience from other players. A much smaller number of participants were troubled by a dependency on modifications, guilt or shame for 'needing' modifications, loss of meaning, loss of skill, or decreased satisfaction.

5.1.4 RQ4: What Do Players Perceive as the Ethics of Modification?

Like affect and motivation, the ethical opinions held our participants varied, drawing mostly on the concepts of agency and community norms, although a small number promoted a degree of purism that we associated with play.

Most common in our participants was an ethical stance based on maintaining the agency of all players in a game. In this view, modifications that gave an "unfair advantage" to a player over other players or that could affect other players without their consent were unethical. Unfair advantage had several definitions among our participants, and was associated directly to cheating in multiplayer and/or competitive games. Some thought of an unfair advantage as a modification that provided

an outsized reduction in the difficulty of play, where some degree of optimization of player performance or automation of tasks was allowed, but there was a limit at which optimization and automation became unfair. Unfair advantage was also thought of as a modification that makes the impossible possible in play, such that a player can break the rules of the game. One participant offered the example of wall-hacks, where a player gains the ability to see and possibly even shoot through solid walls in first-person shooter games. The final interpretation of unfair advantage we saw were modifications that were not available to all players, which our participants perceived as creating an uneven playing field. This tied not only to respecting player agency, but also to leet play, as some players viewed modification as resourcefulness and therefore ethical because everyone has equal opportunity to utilize modifications. Within the concept of leet play in modification, using modifications effectively is just another skill to learn to become a master of gameplay.

Agency was also seen in the significance of consent as a mechanism for mediating ethical modified multiplayer gameplay. Rather than avoiding other players to 'protect' them from the possible and unfair effects of modification — which would hamper social connection — our participants shared stories of using modifications with other players that had agreed to their use, giving players the agency to determine whether or not they wanted to be involved and letting them benefit collectively. With consent, typically unethical modifications could be used ethically.

Other than agency, the norms of relevant communities were often involved in determining the ethical boundaries of modification for a given activity or game. Simply, our players reported that the rules of ethical modification are set and regulated as norms by the presiding community, and these norms may align, replace, or compete with rules set by a game developer. Even so, not all communities our participants interacted with had developed a unified sense of norms/ethical boundaries. This is illustrated by P78's (Woman, 39) experience in *Final Fantasy XIV* [G59], where the game rules explicitly stated that modification is not allowed, and a "large contingent" of the community is very against modification usage. She also reported, however, that the developers of *Final Fantasy XIV* take a ""don't ask, don't tell" approach" where they do not take action against players using modifications that do not affect the gameplay experience of other players, and that there is a thriving sub-community supportive of modifications for the game. These divisions of norms and ethical viewpoints could be sources of friction between players.

Less common ethical views held by our participants included moderate versions

of purism, where participants thought that players should not modify a game until they have played it unmodified in its' entirely at least once, or should only play a game as the developer intended it to be played (i.e., modifications are only ethical if the developer allows them). The ethical position based on developer permission came from the view that a game is a developer's work of art, and that it is unethical to alter an artwork without permission. In contrast, leet play could dictate that "it's just a game", so all modifications are ethical regardless of how they affect play. In a similar vein, a few players took a technological view to modification ethics, where the only limits to play are what a game's technology is capable of handling.

5.2 Findings in Context

Next we compare our findings to previous work, discussing where they align and diverge. We start with discussing the taxonomy, then consider the contents of the framework, addressing: motivations; wellbeing, accessibility, and personalization; social experiences; skill development; game lifespan; ethics of digital game modification; and ownership of play.

5.2.1 Taxonomies of Modification

As established previously (in Sections 1 and 2.1), existing work in the area of gameplay modification has issues with extensibility in part due to limited taxonomies of modification. These existing taxonomies are often narrow, addressing only a subset of possible modifications, and too specific, leaving them vulnerable to future developments in game modification. Our taxonomy attempts to address these issues. First, we took a broad view of modifications as any alteration to gameplay from the base or intended gameplay experience, presenting participants with a variety of exemplar modifications that captured the breadth of possibilities. Second, we examined the methods and outcomes of modifications separately to account for the observed disconnection between the two, where multiple modifications can be used to achieve a common outcome, and one method may achieve multiple outcomes. And third, we utilized a hierarchical structure that allowed for common features and dynamics of modifications to be captured by higher-level categories and specificity to be captured in more specific sub-types within these categories. The sub-types of modifications describe the modifications reported by our participants, while higher-level categories

leave room for later addition and extension to allow for future developments in modification or other genres of games.

While Passmore et al.'s [10] work that defined modifications as 'extraneous game advantages' (EGAs) is perhaps the most similar to this study in how it approaches and defines modification, we found a much more extensive set of modifications, and also drew connections between modification types (such as getting online help and asking another player for help) that they did not. We further found that modification methods and outcomes are not one-to-one; rather, the same method can be used to achieve multiple outcomes, and one outcome can be achieved through multiple methods. In allowing us to consider modifications separately from context, we can get a clearer view of what players are using modification for. This, combined with our framework, could guide the development of systems to support ethical modification in games.

While no existing work has utilized a two-pronged approach, taxonomizing modifications by method or outcome separately is not uncommon. For example, Bainbridge and Bainbridge [13] organized glitches by their cause, and Hackman and Björkqvist [5] categorized mods based on how gameplay changed as a result of the mod. Our approach is somewhat more similar to mappings developed by Carvalho et al. [15, 16] and Yan and Randell [18], who utilized multiple dimensions to classify accessibility modifications and cheating respectively. Previous work has also taken both broad and fine-grained approaches to modification taxonomies; Meades et al. [14] and Sihvonen [42] both presented more abstract taxonomies, while Lee et al. [3] and Targett et al. [12] were much more specific. Some work has also utilized hierarchical or semi-hierarchical approaches, such as Bainbridge and Bainbridge [13] or Yan and Randell [18].

Moving beyond the structure of our taxonomy, our usage of participant responses in the development of the taxonomy gives us an insight into what players of digital games view to be modification separate from issues with clearly defining the boundaries of modification. We can see that, despite issues with conceptually defining 'base' or 'intended' gameplay and what exactly constitutes a change to gameplay theoretically (as we discussed originally in Section 2.1) our players consider a wide array of different methods outside of strict software and hardware modifications to be modification. This includes information modifications, which have usually not been considered in previous literature.

However, since our taxonomy is based on participants responses, it errs on the

side of a descriptive approach to representing their perception of modification over a more rigorous and prescriptive approach that clearly defines the boundaries between types of modifications. This leaves open questions about the academic nature of modifications, such as the difference between mods and games built using code from other games, unanswered. However, considering work by Boldi and Rapp [70] that found that determining what actions are cheating is a socio-technical process, it could be possible that gameplay modifications are defined using contextual factors that make it difficult to draw a single boundary between what is modification and what is not, contributing to the difficulty of creating a consistent academic definition.

5.2.2 Player Perspectives of Modification

There is significant overlap between previous work and the findings of this study regarding how players perceive aspects of gameplay modification, although we unify and extend previous work.

Motivating Modification

In terms of motivation to use modifications, almost all of the motivations noted in the related work appeared in our dataset. Generally, our findings extend previous motivations that were limited to modification creators to modification users, such as creativity and artistic vision, or to other modifications entirely, such as the use of cheats for revenge, where we saw the use of mods, private servers, and more.

Some were straightforward matches between the motivations we identified and those found in related work. Using modifications for social interaction and connection occurred both in our framework and related work [5, 6, 32, 57, 66], as well as using modifications to personalize or customize play [10, 36, 61], to improve games (fixing bugs, optimizing technical performance, and updating older games) [5,6,32,51,61,65], to achieve dominance over other players [10, 14, 65], or to enact the players' creative vision and assist them in generating personal meaning in play [5, 32].

Other motivations involve slight mismatches between prior work and those we identified. The motivation to use modifications to elicit positive emotions, such as happiness, excitement, joy, fun, relaxation/stress relief, or recovery from bad moods, aligned with the motivations of pleasure [1, 5, 6, 10, 32, 36, 43, 44, 57, 61, 65], stress relief [10, 32, 43], and reducing boredom/thrill-seeking [1, 43, 44]. Our conception of adding variety, novelty, and/or complexity to play aligned with the related work mo-

tivations of adding content and variety to play [5, 6, 43, 57, 61] alongside addressing boredom [1, 43, 44], which also overlapped with our motivation of eliciting positive emotions. Further, our framework splits the previously identified motivation of using modifications for mastery or prestige [1, 23, 32, 36, 43], with the prestige component matching our motivation of increased prestige and the mastery component matching our motivation of using modifications to improve gaming skills or performance. Improving skill and performance additionally encompasses the motivation to be more competitive in gameplay [23, 43].

Our motivation to use modifications to get more from play does not have a mismatch with previous work so much as it reframes prior motivations. Using modifications to get more from play, extending and bulking up play experiences, matched with the motivations to extend game lifespan [36, 61] and avoid financial cost [57, 65]. We relate reducing cost and getting more from play as both our participants and Bilińska-Reformat et al. [57] noted that modifications allowed them to play games they already owned for longer without needing to spend money on additional content or new games, as most modifications are free to use. In a similar relationship, using modifications to get revenge on other players [43, 44] fits within our motivation of agency restoration, in which participants felt they were provoked into using modifications by something negatively affecting their experience and taking away their agency to play as they wish. In some ways, the label of 'agency restoration' downplays some of the anger and frustration that players felt as part of this process, and the reactionary lash-out that could be occurring. We felt, however, that it better captures the root drive behind this usage of modifications, in which players are reacting to a perceived harm in an attempt to address and repair it. We acknowledge, however, that the previous work by Cook et al. [44] and Seaborn and Iseya [43] specifically studied players who utilize modifications for acts that are considered immoral and egocentric, such as trolling and griefing, meaning that they may have produced insights into specific motivations among that group of users that our more general exploration did not. We would still include the caveat that the majority of our participants — even those using modifications for agency restoration — displayed little to no negative intent towards other players, and that the incidence of players who do so may be incredibly small.

Accessibility as a motivation is a somewhat more complex topic. Outside of a mention in Carvalho et al.'s systematic mapping [15, 16], accessibility is not an explicit motivation laid out in any prior work. Instead, it is more often framed as an outcome

of modifications, and players who use modifications for accessibility are ascribed other motivations, such as enjoyment, wellbeing, and social connection, as their reason for gaming in general [29,30]. We would argue, however, that the motivation to use modifications to gain access to play in situations where it is not accessible in a game's base form is implied in these cases. Making play more accessible or comfortable for players integrates the motivation of using modifications for accessibility, but also for making progress in play [1, 10, 14, 65] and saving time [1, 10]. For our participants, making progress and saving time were about being stuck and unable to progress, or being unable or unwilling to spend the time needed to overcome certain scenarios or barriers. Participants in those situations described finding some aspects of play too difficult, needing to balance play with their other responsibilities, or finding activities like grinding unsatisfying. These participants then used modifications to improve their play experiences, and make games fit within their lifestyles, abilities, and preferences for play, which aligns with the principles of making games more accessible or comfortable.

The motivation to use modifications to attain control over gameplay has been similarly identified in previous work, where findings indicate its importance to players largely without naming it as a motivation. Thiel and Lyle [32] position mods as a tool to address the need to have autonomy in play as stipulated by self-determination theory (SDT) [67], while Passmore et al. [10] frame their participants' use of modifications as a means for editorial control that lets them achieve other ends, such as improved mood, and Poor's [58] participants widely report that they enjoy the control over games that mods give them. Even more indirectly, some work indicates that feelings of agency and autonomy may be important for enabling wellbeing [46, 69]. Together, though, these findings indicate that feeling in-control over play can be important to players, and they may be motivated to use modifications to achieve that control.

Moving into our more novel motivations that have less precedent in previous work, the motivation to use modifications to feel more represented in play has not been identified in any works that we are aware of, but it has been speculated as a potential benefit by some studies [48, 50]. Using modifications to unspecifically enhance play is also an uncommon finding, although Poor [58] reports that the vast majority of their participants agree (or strongly agree) with the statement "I mod to make the game better for myself", implying the potential for modifications to be used to make some degree of generalized improvement to play. Finally, we are unaware of any papers that

discuss the motivation of using modifications to fit into the norms of a community, in which fitting into norms allows them to gain access to the community and avoid scrutiny.

We can see that, with some omissions, we found the same motivations identified in previous work alongside some more novel motivations. Aside from the more common motivations discussed above, we could also see some rare or specialized motivations from previous work reflected in our participants' experiences. Hackman and Björkqvist's [5] motivation to construct buildings in *The Elder Scrolls V: Skyrim* [G3] can be seen in our participants' usage of modifications to focus on creating buildings in the *The Sims* [G38] games, and Dym et al.'s [51] restoration of content can be seen in our participants who used source-ports, emulators, and mods to gain access to older games or localized, copyrighted material.

Interestingly, we did not find our participants to be motivated by the desire to learn more about game development or technology like participants in previous work were [5, 6, 32, 36], although our participants did assert that technical skills were important to using modifications and that one of the benefits of play some other players may experience is growing their skills in game development. This could be because our players appeared to largely be modification users more than modification creators, and that modifications and the associated technical skills were a means to other ends for them. Or, it could be that they associated modification use with people who are already knowledgeable in technology and game development, as displayed in our leet category (see Section 4.2.5).

We also did not find our players to be motivated by the desire to explore all the possibilities for play in a game like users of glitches [14] or 'extrinsic play' [66] (activities outside of the original game context, such as mods, forums, and wikis) were identified to be. Rather than testing the boundaries of what is possible in gameplay, our participants were more interested in other pursuits, such as the related motivations of adding variety and complexity and getting more from play. This may be a result of our sample of participants not capturing players who are oriented towards pushing the boundaries of play, or it could be a phenomena related more specifically to glitches and extrinsic play that requires further research to characterize.

With regard to other frameworks of motivations to use modifications, we return to Thiel and Lyle's [32] use of the self-determination theory (SDT) framework [67] and the innate needs of autonomy, competence, and relatedness to summarize player motivations. While our categories of agency, leet, and connection align to autonomy,

competence, and relatedness in broad strokes, we find there are nuances in our framework that Thiel and Lyle's application of SDT does not capture. Further, SDT (as they apply it) does not appear to represent many of the motivations associated with our play category, in which users were driven by a love of games and pleasure in play experiences. It is possible that a more fine-grained application of the theories of SDT could capture some of this lost nuance, but such an application is outside the scope of this thesis.

Moving beyond motivations to use modifications, we considered motivations to *not* use modifications. While motivations to use modification have been examined in multiple studies, the challenges of modification and motivations to not modify are less studied — as far as we are aware, we are the first work to examine this area or develop a framework that includes it. Our work adds the technical struggles experienced by users of modifications as a major challenge to using modifications, especially technical modifications like those in the software or hardware categories, and the restraining influence of community norms in providing a reason to not use a given modification to the greater understanding of considerations for using modifications in play.

Wellbeing, Accessibility, and Personalization

The effects of modification that we found also generally aligned with those identified in prior work. Previous work found that using modifications could improve player wellbeing [10, 12, 45–47], with a potential connection to increased agency [10, 12, 46] and immersion [47]. The majority of our participants did find that gameplay modifications improved their wellbeing, eliciting more happiness, excitement, joy, fun, relaxation, and stress relief than when they played unmodified games. This improvement came in part from modification giving the player the agency to personalize their play to their wants and needs for gameplay, but also was influenced by modifications introducing enhanced play experiences and making gameplay more interesting and engaging to the player.

Some of the factors we saw behind wellbeing improvement could be framed within Mella et al.'s [47] hierarchical value map of immersion for post-work recovery, in which game attributes were associated with consequences (such as increased or decreased challenge, increased cognitive involvement, and real-world detachment), which in turn were associated with values (such as relaxation, psychological detachment, and mastery) that tied to engaging and absorbing the player to help them recover from work.

This applies most directly to our findings related to stress relief and recovery from bad moods, in which players like P79 (Man, 36) used modifications that reduced challenge to support relaxation. At the same time, applications of modifications to make play more fun through adding silly elements, such as turning the dragons in *The Elder Scrolls V: Skyrim* [G3] into trains (P7, Man, 27), or adding Ken's Mojo Dojo Casa House wardrobe from the *Barbie* movie as clothing items for characters in *Baldur's Gate 3* [G35] (P151, Woman, 31), do not fit within Mella et al.'s framework.

Regarding wellbeing, personalization, and accessibility[1], we find that personalization for accessibility can be important for wellbeing among players who would be considered able-bodied. Previous work exhibited that personalization is key to disabled players, as it would be almost impossible for game developers to cater to the variety of needs and play styles of disabled players [7, 27, 29, 52]. We extend this idea, and show that this inability to cater to all players seems to occur regardless of player ability, with our participants using modification to shape games into their preferred play without a particular disability access need, such as making a game more or less difficult to suit their skill level. The use of modifications for personalization in play, supporting accessibility and positive emotions, ties to Passmore et al.'s [10] conception of modification as problem-solving, in which players use modifications to address perceived issues that may arise in play for a given individual at a given time.

In a more traditional accessibility sense, we also saw participants who used modifications to make play more possible or comfortable for them. This includes P156 (Woman, 47) and P15 (Man, 41), who used modifications to be able to play despite restrictions on their time from adult responsibilities, or P36 (Woman, 52), who used modifications to make games more comfortable for her "slow fingers/ distractable hearing". While more traditional, these accessibility needs are still somewhat outside the realm of disabilities considered in previous work, falling more into disabilities that arise in gaming scenarios associated with healthy aging or changes in lifestyle throughout a person's lifetime. This is in part due to the lack of more traditionally disabled participants in our dataset, but could also be reflective of the somewhat older demographic of this study, in which all participants were adults over the age of 18 years old, and approximately 15% of them were over the age of 45 years old. It

[1]We should note that, although we had a handful of participants identify various access barriers or conditions that made gaming more difficult for them, this study did not focus specifically on recruiting disabled players and is as a result more limited in discussions of accessibility than it might otherwise be. Beeston [7] offers a fairly comprehensive review of the experiences of disabled players that may offer insights in this area.

could be an interesting avenue of exploration for future work to expand on the experiences of older digital game players and strategies they use to enjoy games throughout changes to their circumstances in their lifetime.

Returning to personalization, we saw that it also extended to supporting a player's sense of identity in play, although our participants mostly spoke about using modifications to express personal style or creativity rather than explicitly for representation in terms of race, gender, sexual orientation, or body, as described by Cook and Semaan [48]. Our participants also did not necessarily use modifications to reshape play beyond normative boundaries as other works have theorized [11, 51], but rather to create experiences that cannot exist in the 'real world'. Consider a participant in Dym et al.'s [51] work that used modification to add an option for a non-binary gender identity in a *Pokémon* [G27] game, compared to P133's (Woman, 40) use of modification to be able to have a biological child between same-sex parents in a *The Sims* [G38] game. While both modifications are centred around minority identities and achieving some level of parity in the experience had by a player within the majority and a player in the minority, Dym et al.'s participant was straightforwardly seeking greater representation of their identity, while P133 sought to fulfill a "fantasy" of hers that she can't achieve in real life.

Personalization modifications (within ethical boundaries) were widely accepted by players who use modifications, and could even be considered enviable from a leet perspective. At the same time, some of our participants expressed shame for 'needing' to use modifications, implying that there may be greater dynamics around how players feel about modification use for more accessible or comfortable play, such that while it may be impressive to use modifications to make a game more difficult, and acceptable to use modifications to overcome 'real' barriers to play, using modifications to compensate for a perceived lack of talent or skill at gaming is cause for embarrassment. Beeston's [7] work may offer some further insights based on the social dynamics of acceptability of modifications, particularly from an accessibility perspective.

Alongside feelings of shame, we also saw that modification use, especially 'overuse', could reduce the satisfaction experienced by our participants. This is in contrast to prior work that found that the use of cheat codes does not negatively affect player satisfaction with play [45]. It is possible that these conflicting findings can be attributed to differences in method. Waldenmeier et al. [45] utilized a short laboratory study, with participants completing questionnaires to report on their experiences with cheat codes in a 15-minute play session. This is in contrast to the current study, which

prioritized ecological validity and surveyed participants about their lived experiences with gameplay modifications. It is also possible that satisfaction reduction comes from longer, more involved play experiences than those represented in Waldenmeier et al.'s study, or that players feel an initial rush (that Waldenmeier et al. captured) that is followed by decreased feelings of satisfaction upon reflection (which we captured). Further research could shed light on the relationship between modification and satisfaction.

Social Experiences: Connecting, Setting Norms, and Gaining Capital

In general, we found that modifications affected our players' social experiences, helping them initiate, maintain, and deepen connections with others. This confirms the indications towards a possible role of modification in social interaction that we saw in the related work, where a reported motivation for using modification was for social interaction [5, 57]. Our participants also described participating in communities for modification, like players in Beeston's [7] and Thiel and Lyle's [32] work, and that modification communities can be highly active and have a strong sense of community among users, not just creators as examined in earlier work [3, 32, 58]. We also found that players may use modifications specifically for social purposes, such as sharing play experiences with others, over any other reason, as seen originally in work by Consalvo et al. [41]. Returning to the use of modifications for representation, some of our participants' use of modifications for identity aligns with work by Kordyaka and Hribersek [50], in which they found that skins were used in *League of Legends* [G54] as a tool to show a player's identification with certain groups and achieve a player's desired impression on others. Similarly, our participants saw modification as a way to express personal interests and creativity to others in a game, and subsequently felt it influenced their social experience by helping them relate to others and socialize.

Our participants also dealt with stigma against people who modify games and the perception of people who use modifications a cheaters, as seen in Curtis et al.'s [59] analysis of Reddit posts, although we augment their work by examining the social experiences of players who modify more closely, showing a greater variety of experiences shared among family, friends, and strangers — Curtis et al. appear to have mostly examined the opinions of players talking about modification users that they did not know. The majority of negative reactions from others in our participants' experiences seemed to be rooted in the violation of community norms, which is in some

ways comparable to Beeston's [7] finding that disabled players may become targets for toxicity for not playing within a game's meta.

Our results about connection and communities show some relation to applications of social capital to massively-multiplayer online (MMO)[2] gaming [82]. Social capital uses the analogy of financial capital to formalize the value of social ties and social contributions as investments that will return value in the form of social support and wellbeing [83]. Within the social capital framework, previous work has identified two different types of relationships: bridging ties that focus on breadth over depth, comprising informal relationships that expose those involved to diverse world views, and bonding ties that focus more on depth than breadth, with less diversity but stronger, reciprocated social support [83, 84].

Our participants' experiences of connection with others who use modification display the features of bridging capital described by Williams [84], where they described themselves as members of modifications communities in which they experienced informal connections with a diversity of other people through modification communities and reciprocal support in the form of technical help (that they were offered and offered others) and compliments. Even outside of explicit communities, using modifications seemed to mark a user as part of an in-group that engendered greater social connection. Our participants also appeared to experience bonding social capital in modified games, or at least used modifications to maintain bonding capital, through their usage of modifications as a social activity with friends or strangers that later became friends.

Consalvo [1] also utilizes the idea of capital, but focuses more on knowledge of games and in-game performance as capital that then confers power onto the user when they are in gaming circles. This concept of gaming capital aligns with ours of leet play, and our participants' usage of modifications to bank prestige and mastery.

Although previous work identified that players found connection in modification communities, the community's role as norm-setters and support systems is more novel. Communities as technical support systems has been investigated in very little prior research. In fact, beyond a brief mention of the possibility of this capacity by Thiel and Lyle [32] in their systematic review of communities of mod users, we know of only one study in the area: Reid et al. [85], who found that communities for the creation

[2]Massively-multiplayer online games (MMOs) are games that allow a large number of players to play simultaneously with some degree of interaction between players (e.g., chatting, shared quests, guilds).

and distribution of mods display aspects of distributed mentoring, in which users share knowledge through small, asynchronous pieces of feedback and peer-to-peer mentoring, thereby supporting each other in learning and using mods.

There is more work that has indicated the possible role of communities for setting norms and rules for acceptable play. For example, Scully-Blaker [40] described the rules imposed by speedrunning communities to legitimize speedruns that laid out which modifications are allowed, or what rules of play are allowed to be broken. While these communities allowed implicit rules to be broken (rules that the player assumes exist), they enforce explicit rules dictated by the unmodified game code, outlawing mods but allowing exploits. Similarly, Sköld [37] found that communities that create and maintain walkthroughs will develop their own culture for how they deal with game information. Other work has situated game communities as societies to explain the development and regulation of norms. Potsigo [73] applied the concept of a 'moral economy' to the development of rationale and norms for using mods in play among fans, where the fan norms are separate from rules imposed by game developers, while Brooke et al. [78] theorized about player societies within the 'virtual worlds' of multiplayer games, where societies (communities) set rules that everyone must follow or face consequences for a violation. We see a convergence of this previous work and the findings of this study in how communities and their norms were the authority that our participants used to measure how ethical or acceptable their play was in a given situation. Our work, however, differs from these papers in that it takes the position of a community member, rather than a community leader or moderator, and shows the real-life influence of modification communities on players' choices in the day-to-day. We also saw more variance in norms both between and within communities than most previous work theorized or identified, but maintained the expectation that players conform to the norms of the presiding community or face backlash.

Modification and Skill Development

One of the effects of modification our participants spoke about is how it affected their skill development. Our participants felt that modification use — particularly the use of information modifications that helped them learn strategies or utility modifications to tailor and streamline play — largely improved their performance and skills in play. On the other hand, we saw a few participants who felt that their skills atrophied when they used modifications, as modifications changed gameplay so much that they

were not practicing skills they needed for unmodified play.

There is little work on the effect of modification on skill development — we know of only one study, by Gutwin et al. [56]. Gutwin et al. looked at player performance and experiences between those who used aim assistance and those who were unassisted in a FPS (first-person shooter) game, and found that assisted players showed no significant differences in performance measures compared to unassisted players when assistance was removed, indicating that using aim assistance does not affect player skill development. The study further found that a player's sense of competence was higher when they were using aim assistance, but they also felt less competent, less intrinsically motivated, and more pressured after assistance was removed.

It could be said that our participants who described skill atrophy may be exhibiting the same experiential features of increased competence when using modifications and decreased confidence afterwards of Gutwin et al.'s [56] participants, but there may also be other factors at play. Our participants spoke overwhelming about using modifications that help them learn or apply strategies for play, which could differ from the support players found in using aim assistance or similar modifications that provide performance gains more directly. It is also possible that the modifications used by our participants altered the character of play in ways that aim assistance in an FPS game did not, reducing the usage and therefore constant practice of some skills, leading them to atrophy. Unlike Gutwin et al. [56], however, we do not have objective measures of player performance before, during or after modification usage, so it is also entirely possible that this perceived skill deficit comes more from a decreased sense of competence than an actual affect on performance.

Playing More and For Longer

In addition to other effects, our participants reported that modifications kept them playing games more or for longer than they would have played the game otherwise, as modification let them make the game more interesting, engaging, and accessible to them. They felt that their games had a longer lifespan when they could use modifications to fix problems and experiment in play. This aligns with the motivation to use modifications as a tool for extending and maximizing the lifespan and usage of a game seen in previous work with walkthroughs and mod users [36, 61]. Work that examined game sales from an industry perspective of modifications also validate this finding, showing that modifications for the renewal, update, and increased quality of

games were associated with games selling for longer and reaching a wider audience [35, 61, 62].

Ethics of Modification: Inbetween 'Real Life' and the Magic Circle

Most of our participants seemed to hold some form of ethics around modification in play. Like previous work (e.g., [20, 59, 68]), we found variety in how our participants viewed the ethics of modification. Some of our participants aligned with the idea that modification is ethical because it is available for all players, and it is just resourcefulness to take advantage of it, which we saw in work from Targett et al. [12] and Consalvo [1]. A few also agreed with the idea put forth by Consalvo [1] and Scully-Blaker [40] that modification is ethical so long as the explicit rules of a game are respected. The most common ethical stance among our participants, however, focused on preventing harm to and respecting the agency of other players. Some felt that this meant that modifications should be avoided in multiplayer games, while others felt that the character of the modification was more important for considering how it caused harm, matching earlier findings about unfair advantage in ethics [1, 10, 12, 19, 20].

Variance in player perspectives seems broader than what could be explained well by Bainbridge and Bainbridge's [13] player orientations towards the game or metagame. Our participants, who are players who modify their play, almost entirely fall into the latter category, but display a variety of motivations to do so, such as being oriented towards using games for social connection and for enjoyment of play. The people described by our participants as being against modification use, such as purists, more often seemed to fall into the orientation towards the game, so it is possible that Bainbridge and Bainbridge's orientations describe a key difference between players who use modifications and those who do not, but more research would be needed.

Our participants seemed to straddle the views of modifications as 'real world' phenomena and as a 'magic circle' presented in rhetorical approaches, combining Kimppa and Bissett's [19] conviction that gaming experiences deserve protection due to the value players place on their experiences, Brooke et al's [78] ideation of multiplayer game communities as societies, and Consalvo's [38] application of the magic circle, where players actively negotiate ethics between 'real life' and gaming experiences. Our participants recognized that games are a space apart from 'real life' that may

have different rules, and that different games create their own spaces, but also relied upon community norms to set expectations for those rules so that they may respect the play experience of others, acknowledging the value that others may find in digital games.

Stepping further into the magic circle, our participants also described that typically unethical acts (those that could harm the experiences of others) could be performed ethically with the consent of the involved players. This is something we saw implied in related work that examined the importance of context when evaluating the morality of modification usage [19, 22, 69, 70]. Work on balancing players of disparate skill levels in games most directly supports the idea of consent, where participants were reported to accept modifications that could significantly improve the performance of a less skilled player when in a social setting rather than a competitive space where such assistance is more likely to be viewed as cheating [22, 69].

Participants who viewed gameplay as a space apart where it is ethical to deliberately cause harm (even virtually) to others were few in number in our dataset — out of our 167 participants, only one reported that she found it fun to be unethical in games (such as killing other players) and one other participant shared that he had friends who liked to 'troll' in games using modifications. As stated previously, a number of our participants held not harming others as a keystone of their ethical values in play, and would go out of their way to prevent their modifications from affecting others. It is possible, then, that the association of modification with cheating, trolling, and other negative acts is due to a loud minority and largely unearned. At the same time, it is also possible that our participants simply did not disclose their less ethical acts, or that our participant pool captured an unrepresentative population by focusing on adult players who responded to an online survey, and may therefore under-represent the minority of players who intentionally 'troll' others.

Industry and Authorship of Gameplay

When our participants referenced the gaming industry, it was to illustrate how they mostly modified games by developers that were supportive of modifications. It is unclear whether this is because those games have more active modification spaces and/or communities, leading to more social interaction and support (technically or otherwise) for using modifications, or to align with the developer's stance on modification. A small number of our participants did emphasize respecting the developer's

intent for gameplay as a part of game ethics, but this was rare.

The significance of personalization in modification experiences lends support to the idea that gameplay is a collaboration between players and developers, which previous work explored from the perspective of convergence culture [11, 73, 76], participatory culture [34–36, 76], co-creation [33, 57, 63, 77], and 'prosumption' or 'prodsumerism' [61] In contrast to earlier work, however, this study looked at the experiences of users of modifications, not just creators. Rather than the two-way relationship of modification creators and developers that previous work reported, we found indications of a three-way relationship between the developer who provides the base material (and possibly some modifications or tools for modification), modification creators who are other players that provide third-party modifications to alter and augment the base game, and the player who chooses which modifications to implement to curate their own play experience. The implications of such a collaboration, legally and academically, fall outside of the scope of this study, but should be explored in future work.

5.3 Implications

Based on the findings of this study, we can derive some implications for future understandings of gameplay modification, as well as the design of digital games.

First, our findings indicate that digital game players who modify games are extremely diverse, with a variety of preferences for play and motivations to use modifications. From parents wishing to share play with their children (or to spend some time gaming themselves in-between other responsibilities) to former-pro players optimizing their performance and furries[3] seeking a role-playing experience that includes their fursona, our participants used modifications to help them take control of their play and augment their enjoyment of gameplay by shaping games to their needs and wants. Modification use was integral to our participants having their self-described optimal play experiences, or perhaps even just having the same experience as others, especially for those that felt they fell outside of the target audience of a game.

The demographic identifiers of age and gender did not appear to be associated with any particular usage or perspective of gameplay modification in our data; instead, individual differences, such as personality and gaming preferences, or the availability

[3]A furry is a person who has an interest in humanoid or anthropomorphic animal characters, who may develop a 'fursona' (furry persona) for themselves.

and normativity of modifications in a given gaming context, seemed more relevant. For example, a player, male or female, young or old, who prefers creating buildings in games may modify one of *The Sims* [G38] games, and utilize well-known and easy-to-implement cheat codes to focus gameplay on building rather than mods or other methods.

Second, our work shows that digital game modifications can include a wider spread of methods than previous work has considered, including not only software and hardware modifications, but also information, settings, and behavioural modifications, as they may produce similar outcomes in games and effects on players. While in-depth analyses of particular modifications may yet yield unique findings, we show that findings from these studies may also apply broadly across different types of modifications.

Third, we found our participants to be widely moral. A large number of them spoke about self-regulating their use of modifications in gameplay to prevent harm to others, and using a game's community norms as guideposts to determine what actions may be ethical or not in a particular context. Some players did hold other ethical boundaries for play, but still maintained play within the rules they imposed for themselves. To an extent, our findings support the idea that cheating is a dynamic concept affected by context and defined by communities and individuals. Further, we add that many users of modifications appear to not use them to cheat others, at least as they view of cheating, and actively strove to respect the play of others.

Overall, this diversity of users and usages of modifications implies that previous understandings of gameplay modification are too narrow, while their sense of morality implies that these understandings may be too cynical, and that researchers and industry need to largely reconsider how they view modification users and approach gameplay modifications to reflect this diversity and morality. Our findings lend strength to the argument that modification is not necessarily — and is perhaps most often not — used for cheating. Instead, gameplay modifications are a way for players to augment their enjoyment of play and take control of their experiences. As such, future work should consider separating the concepts of cheating and gameplay modification. Our findings on gameplay modification did align more with accessibility approaches, where alterations allow players to participate more in play and reap its benefits. We would caution against merging the two concepts, however, as gameplay modifications may enable accessibility and include accessibility features, but are not characterized entirely by these factors.

The diversity of users and usages also signifies the impossibility (at least improb-

ability) of game developers being able to cater to all the needs and wants of game players in the intended experience and therefore replace the value generated by modifications for players. We suggest that game developers consider supporting (ethical) modifications in their game designs, providing players with tools to help them modify games and designated spaces for modification in online multiplayer and competitive games, which would operationalize consent as a mechanism of ethical boundaries. In supporting modifications, industry could both mitigate the majority of challenges with modifications that we identified, helping reduce technical challenges and stigma against people who use modifications, and retain some degree of influence over the development of norms in games. Even if not wishing to support player-created modifications, developers could examine the outcomes of modifications in their games more closely and provide modifications (such as settings) that produce those outcomes themselves.

5.4 Limitations and Future Work

Although our design choices enabled us to examine the experiences of players who use gameplay modification broadly, they also create limitations that should be addressed in future work.

Our focus on a breadth of responses with limited depth, as gathered through a survey, allowed us to unify previous findings into a single framework and uncover some novel perspectives of modification. However, a weakness of this approach is that it did not allow us to clarify or expand upon topics in responses like a semi-structured interview design might have. In light of this, there are a variety of findings from this study that require more in-depth analysis, such as the experiences of older players of mainstream games, feelings of ownership over games, feelings of representation among minority players, the effect of modification on skill, and potential associations between individual differences, modes of modification, and motivations to use modifications.

We also only gather perspectives of players who currently modify or have recently modified their gameplay. This may skew our findings towards perceived benefits of play, as it would be unlikely that a player would continue to use modifications if they found them entirely immoral or generally not beneficial. To address this potential blindspot, it would be important for future work to examine the experiences of players who do not use modifications, or who stopped using it, to get a more complete picture of player perspectives overall.

By only studying players who use modifications, we also cannot speak to the popularity of modifications in games. A survey of modification usage in game players could be suitable for addressing this limitation in the future. We suggest that this work should be situated within a specific game community or game communities to account for the potential influence of norms.

We also did not explicitly involve the industry in our study, either in speaking to industry members or in explicitly asking our participants their perspectives on the role of the digital game industry in gameplay modification. Future work would be needed to offer more comprehensive perspectives for how modification could be situated within digital gaming, what official systems to support modification should look like, and how the industry could be involved in gameplay modifications.

Chapter 6

Conclusion

This thesis examined the perspectives of digital game modification held by 167 users of gameplay modifications, redefining modification to be both broad and agnostic, and distilling player perspectives into six core themes: play, agency, connection, community norms, leet, and technology. Addressing issues of extensibility in previous work, we unify findings from studies across modification domains and contribute novel insights into the dynamics of gameplay modification use.

We found that users and usages of gameplay modification can be extremely diverse, with players holding a variety of preferences and motivations for using modifications in play and utilizing a wide spread of modifications to achieve their goals for play. Within this diversity, the majority of our players reported that modification use improved their wellbeing, eliciting positive emotions and moods, and that modification empowered them to take control of their gameplay to achieve their ideal play experience. The diversity of experiences we found, combined with our participants' emphasis on personalization, implies that games are currently unable to cater to the needs and wants of all players, and that it may be an impossible undertaking for game developers to attempt to do so. Instead, modifications can fill the gap between the base game and a player's optimal play experience, adding significant value to play.

We also found that users of modifications are largely concerned with the ethical usage of modifications. While opinions on the ethics of digital game modification also varied, the most common stance centred around respecting the agency of others players to experience the game as they wish to, and thus ethical usage of modifications meant keeping them from affecting anyone who did not consent to their usage. Our participants also reported that the norms of relevant communities were important for determining the ethical boundaries of play, in which communities set, regulate,

and enforce rules for acceptable use of modifications. This is in contrast to the prevailing view of modification users as 'cheaters' who utilize modifications to gain unfair advantages over and cause harm to other players.

Altogether, our findings indicate that researchers and industry alike may need to reconsider how they approach and understand gameplay modifications. Further, our findings suggest that greater official support of ethical modification use can add significant value to games for players, although further research is needed to explore how modification can be situated within digital gameplay.

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Appendix A

Survey Documents

A.1 Research Ethics Approval Letter

University of Victoria

Office of Research Services | Human Research Ethics Board
Michael Williams Building Rm B202 PO Box 1700 STN CSC Victoria BC V8W 2Y2 Canada
T 250-472-4545 | F 250-721-8960 | uvic.ca/research | ethics@uvic.ca

Certificate of Approval

PRINCIPAL INVESTIGATOR:	**Regan Mandryk** (Supervisor)	**ETHICS PROTOCOL NUMBER:** Expedited review - delegated	**24-0332**
PRINCIPAL APPLICANT:	**Laura Paul** **Master's student**	ORIGINAL APPROVAL DATE:	15-Oct-2024
UVIC DEPARTMENT:	**Computer Science COSI**	APPROVED ON:	15-Oct-2024
		APPROVAL EXPIRY DATE:	14-Oct-2025

PROJECT TITLE: **Tailoring Gameplay: Examining Experiences Around Modifying Gameplay**

RESEARCH TEAM MEMBERS: **None**

DECLARED PROJECT FUNDING:
Natural Sciences and Engineering Research Council (NSERC), RAIS FN-11012

DOCUMENTS INCLUDED IN THIS APPROVAL:
tcps2_core_certificate.pdf - 01-Aug-2024
PreScreening Questions.pdf - 03-Oct-2024
Tailoring Gameplay Survey Questions 2.pdf - 03-Oct-2024
Tailoring Gameplay Interview Questions 2.pdf - 03-Oct-2024
Survey Debriefing Letter.pdf - 09-Oct-2024
Interview Debriefing Letter.pdf - 09-Oct-2024
PreScreen Consent Form.pdf - 09-Oct-2024
Survey Consent Form.pdf - 09-Oct-2024
Interview Consent Form.pdf - 09-Oct-2024
Interview Recruitment Letter.pdf - 09-Oct-2024
Survey Recruitment Letter.pdf - 09-Oct-2024
Prolific Study Description.pdf - 09-Oct-2024

Conditions of approval

This Certificate of Approval is valid for the above term provided there is no change in the protocol.

Amendments
To make changes to the approved research procedure in your study, please submit "Amendments" or "Annual renewal with amendments" form. You must receive research ethics approval before proceeding with your amended protocol.

Renewals
Your ethics approval must be current for the period during which you are recruiting participants or collecting data. To renew your protocol, please submit a “Request for Renewal” form before the expiry date on your certificate. You will be sent an emailed reminder prompting you to renew your protocol about six weeks before your expiry date.

Project Closures
When you have completed all data collection activities and will have no further contact with participants, please notify the Human Research Ethics Board by submitting a “Notice of Project Completion” form.

Certification

This certifies that the UVic Human Research Ethics Board has examined this research protocol and concluded that, in all respects, the proposed research meets the appropriate standards of ethics as outlined by the University of Victoria's policies for research involving human participants.

Dr. Sandra Gibbons
Chair, Human Research Ethics Board

Dr. Cindy Holder
Vice-chair, Human Research Ethics Board

Certificate Issued On: 15-Oct-2024

A.2 Pre-Screening Consent Form

Before proceeding, please read the following. You must give your consent to continue.

Gameplay Experiences Pre-Screening

You are invited to participate in a gameplay experiences study that is being conducted by Laura Paul, a graduate student in the Department of Computer Science at the University of Victoria as part of the requirements for a master's degree. This research is being conducted under the supervision of Dr. Regan Mandryk, a professor in the Department of Computer Science at the University of Victoria.

This study is being funded by the Natural Science and Engineering Research Council of Canada (NSERC).

In this form we provide details about the study and seek your consent for participation. Please reach out to us if you have any questions about this form or need clarification about the study. Our contacts are listed at the end of this form.

The Purpose of the Study

This survey is to determine your eligibility to participate in a study examining the experiences of people playing video/digital games. We will determine your eligibility for the study based on your responses to this survey, and you will be automatically redirected to the main survey if you qualify.

Your Role as a Participant

As a participant in this study, you will be asked to complete a three-question survey about your gameplay experiences. We estimate that the survey will take a minute to complete. In compensation for your time, you will receive $0.25 (CAD) through Prolific payment or Amazon e-gift card.

There are no known risks, harms, or discomforts associated with taking part in this study.

Your participation is completely voluntary. You may choose to not answer any question. You may also withdraw from this study at any point without penalty to your compensation or your treatment by the research team.

Data Collection

Your answers collected throughout the survey will be completely anonymous - each participant is randomly assigned an alphanumeric code to identify them, which is then associated with their survey responses. None of your identifiable personal information will be recorded or released. All information collected through this study will remain confidential.

Data collected through this survey will be encrypted and stored in a password-protected database only accessible to authorized personnel. The database servers are located at the University of Victoria, and maintained by the Digital Research Alliance of Canada. This data may be stored for up to five years, after which it will be destroyed.

The gathered data will be used to determine your eligibility for another study. It will not be shared outside of the research team approved to work on this study.

This research has been reviewed and approved by the University of Victoria Human Ethics Board. You can contact the Human Research Ethics Board at the University of Victoria at 250-472-4545 or ethics@uvic.ca to check the ethical approval of this study or to raise any concerns you might have.

Please Note:

- You may end the survey at any time.
- You may change your mind and withdraw from this study at any time. There is no need to explain why you have changed your mind. If you withdraw from the study your contribution will not be used in the analysis or final report.
- You do not have to answer any questions or complete any tests that make you feel uncomfortable.
- It's your choice whether or not you want to take part in this study. Your participation is voluntary.

If you have any questions about this study or need clarification, please contact Laura Paul by email at lepaul@uvic.ca or Dr. Regan Mandryk by email at regan-mandryk@uvic.ca.

If you agree to participate in the study, please indicate that you fully understand the above information and consent to participate below. Should you prefer not to participate, you may exit this study.

Please keep a copy of this form for your records. *Note: Webpages like this one can be printed into PDFs within most browsers using Ctrl-P (Windows) or Cmd-P (Mac) and following the subsequent prompts from your browser.*

Do you give your consent?

- I give my consent
- I do not give my consent

A.3 Pre-Screening Questions

Please answer the following questions to the best of your ability. If you would rather not answer any given question, just leave it blank.

1. In the last year, have you played a digital game together with other people in different time zones?
    - Yes
    - No
2. Have you used a gameplay modifier in the last year? Modifiers include any method that alters gameplay from its base state, including accessibility features, mods, glitches, cheats, the use of wikis/forums, and more.
    - Yes
    - No
3. Do you interact with others when playing single player games? This could be through streams, gaming communities, friends, etc.
    - Yes
    - No

A.4 Survey Consent Form

Tailoring Gameplay: Examining the Social Discourse and Experiences Around Modifying Gameplay

You are invited to participate in a gameplay modification study that is being conducted by Laura Paul, a graduate student in the Department of Computer Science at the University of Victoria as part of the requirements for a master's degree. This research is being conducted under the supervision of Dr. Regan Mandryk, a professor in the Department of Computer Science at the University of Victoria.

This study is being funded by the Natural Science and Engineering Research Council of Canada (NSERC).

In this form we provide details about the study and seek your consent for participation. Please reach out to us if you have any questions about this form or need clarification about the study. Our contacts are listed at the end of this form.

The Purpose of the Study

Gameplay modifiers alter a game and the experience of playing it from the base or 'intended' gameplay. This includes the use of accessibility features, cheats, glitches, mods, and more. Previous research, though limited, has shown that gameplay modification is used by players of digital games for a variety of reasons, from access purposes to mood recovery, and invokes a variety of reactions from supportive to negative from other users. This research project looks to expand on previous work and examine gameplay modifiers and the experiences of people who use them.

You have been invited to participate in this study because of your recent use of gameplay modifiers. We think your experience with gameplay modifiers can help us learn from you about the benefits and drawbacks of modifying gameplay, and understand the overall effect it has on players who use it.

This study provides an opportunity for you to reflect on your modifier use, and possibly find and address any drawbacks you experience. Through contributing to the knowledge about gameplay modification and the factors and affordances that may benefit or harm users, your participation in this study may provide opportunities to refine how game developers and gamers alike approach modification to improve player experiences. This can encourage well-being in the greater game-playing population.

Your Role as a Participant

As a participant in this study, you will be asked to complete a survey with some demographics questions about you and your gameplay habits and short-answer questions about your experiences with gameplay modifiers. We estimate that the survey will take 15 to 20 minutes to complete. In compensation for your time, you will receive $7 (CAD) through Prolific payment or an Amazon e-gift card.

There are no known risks, harms, or discomforts associated with taking part in this study.

Your participation is completely voluntary. You may choose to not answer any question. You may also withdraw from this study at any point without penalty to your compensation or your treatment by the research team.

Data Collection

Your answers collected throughout the survey will be completely anonymous — each participant is randomly assigned an alphanumeric code to identify them, which is then associated with their survey responses. None of your identifiable personal information will be recorded or released. All information collected through this study will remain confidential.

Data collected through this study will be encrypted and stored in a password-protected database only accessible to authorized personnel. The database servers are located at the University of Victoria, and maintained by the Digital Research Alliance of Canada. This data may be stored for up to five years, after which it will be destroyed.

The gathered data will be used for analysis (i.e., using the data we will explore the impact of gameplay modification on people who use it). The data collected from this study may be used in research articles, research presentations and a student thesis, and quotes from your survey responses may be shared. However, such sharing will be done anonymously and in an aggregate form. That is, we will not associate the data with any of your personal identifiers in any data release format.

This research has been reviewed and approved by the University of Victoria Human Ethics Board. You can contact the Human Research Ethics Board at the University of Victoria at 250-472-4545 or ethics@uvic.ca to check the ethical approval of this study or to raise any concerns you might have.

Please Note:

- You may end the survey at any time.
- You may change your mind and withdraw from this study at any time. There is no need to explain why you have changed your mind. If you withdraw from the study your contribution will not be used in the analysis or final report.
- You do not have to answer any questions or complete any tests that make you feel uncomfortable.
- It's your choice whether or not you want to take part in this study. Your participation is voluntary.

If you have any questions about this study or need clarification, please contact Laura Paul by email at lepaul@uvic.ca or Dr. Regan Mandryk by email at regan-mandryk@uvic.ca.

If you agree to participate in the study, please indicate that you fully understand the above information and consent to participate below. Should you prefer not to participate, you may exit this study.

Please keep a copy of this form for your records. *Note: Webpages like this one can be printed into PDFs within most browsers using Ctrl-P (Windows) or Cmd-P (Mac) and following the subsequent prompts from your browser.*

Do you give your consent?

- I give my consent
- I do not give my consent

A.5 Survey Questions

This study explores the 'modification' and 'tailoring' of digital games (also known as video games), where 'modification' and 'tailoring' refer to the use of some method that alters the experience of playing the game from the base or 'intended' gameplay. Examples of methods could include: difficultly adjustment, accessibility features, mods, walkthroughs, wikis/forums, 'passing the controller' to have someone else play certain parts of a game, save file editing, cheat codes, using gameplay mechanics in

unintended ways, using glitches, and more. Before starting this survey, please take a moment to reflect on your gameplay experiences and how you play video games. Do you modify your games to tailor them to your preference? How so? To what end?

According to the above description, do you modify your gameplay?

- Yes
- No

A.5.1 General Demographics Questions

Please answer the following questions to the best of your ability. If you would rather not answer any given question, just leave it blank.

1. How old are you? (in years)
2. What gender do you identify as?
    - Man
    - Woman
    - Non-binary or Genderfluid
    - Prefer to self-identify: [open text field]
3. Are you fluent in English?
    - Yes
    - No
4. Do you experience any difficulty in seeing or reading from a game screen (TV, computer screen, console screen)?
    - Yes
    - No
5. Do you experience any difficulty in using the controls (keyboard, controller, etc.) to play a game?
    - Yes

- No

6. Do you experience any deficits in hearing that affects your ability to play a game?
   - Yes
   - No
7. Do you experience any differences in cognition or neurodivergence that affect your gameplay?
   - Yes
   - No
8. Do you experience any other access barriers to gaming?
   - Yes
   - No
9. If you would like to elaborate on your responses to the last five questions, please do so here: [open text field]

A.5.2 Gaming Experience Questions

Please answer the following questions to the best of your ability. If you would rather not answer any given question, just leave it blank.

1. Do you play or have you played video/digital games?
   - Yes
   - No
2. How would you rate your experience with digital games?
   - Very inexperienced
   - Somewhat inexperienced
   - Neither experienced or inexperienced
   - Somewhat experienced

- Very experienced

3. What are the top three games you've been playing recently (e.g. in the last month)?

4. If they are different from your current top three, what are your top three games of all time?

5. What platforms do you usually play games on? Select all that apply.

   - Nintendo Switch
   - PlayStation
   - Xbox
   - PC/Computer
   - Mobile Device or Tablet
   - Steam Deck
   - Other, please specify: [open text field]

6. When you play games, how often do you play single-player games? [slider, values 1-100, default 51: Never play single-player games —— Always play single-player games]

7. When you play games, how often do you play multiplayer games? [slider, values 1-100, default 51: Never play multiplayer games —— Always play multiplayer games]

8. When you play games, how often do you play competitive games? Competitive games include those where you play against other players in battles or for high-scores/records. [slider, values 1-100, default 51: Never play competitive games —— Always play competitive games]

9. If you would like to elaborate on the types of games you play, please do so here: [open text field]

10. Approximately how often, on average, do you play video games?

    - 1-3 times a month
    - About once per week

- 2-4 days a week
- Almost every day
- At least once per day
- Several times per day

11. On average, how long do you play for each time you play a video game?

    - Less than 30 minutes
    - 30 minutes to an hour
    - One hour to two hours
    - Two to four hours
    - More than four hours

12. In what ways (if any) do you engage with groups or communities for digital gaming? Select all that apply.

    - Play with friends you originally met through video games
    - Play with friends you originally met outside of video games
    - Play with strangers (e.g. during matched multiplayer competitive games)
    - Join, participate, or otherwise engage with an online community (e.g. on Discord)
    - View, comment, or post on an online forum (e.g. on Reddit)
    - Watch streams of gameplay (e.g. on Twitch, etc.)
    - Stream your own gameplay
    - Play with in-game communities (guilds, clans, etc.)
    - Other, please specify: [open text field]

13. Please rate your agreement with the following statements:

    - Being a video game player is an important reflection of who I am. [Likert scale: Strongly Disagree – 2 – Neither Agree or Disagree – 4 – Strongly Agree]
    - In general, being a video game player is an important part of my self-image. [Likert scale: Strongly Disagree – 2 – Neither Agree or Disagree – 4 – Strongly Agree]

A.5.3 Reflection Break

Before continuing with this survey, please take a moment to reflect on how you modify your games, how your modifications affect your gameplay experience, and how modifications are treated in broader gaming communities. Also consider whether there are nuances for different types of gameplay modifiers, different games, multiplayer vs. single-player, and so on.

A.5.4 Gameplay Modification Questions

Please answer the following questions to the best of your ability. If you would rather not answer any given question, just leave it blank. As a reminder, if a question does not apply to you or you would rather not to answer it, leave the question blank.

1. Please describe between one and three experiences you have with modifying. When responding, please answer the following: what game was it? How did you modify it? How did the modifier alter your gameplay? Why did you modify the game? [open text field]

2. Have you experienced differences in your behaviour, mood, or gameplay habits as a result of using modifiers? Please describe. [open text field]

3. How would you describe your overall experience when playing a modified game? [slider, values 1-100, default 51: Totally Negative —— Totally Positive]

4. What are the benefits you experience, if any, from using modifiers? Some examples could be the ability to access or play games more comfortably, tailoring the game to your specific preferences, etc. Please provide examples if possible. [open text field]

5. What are the drawbacks you experience, if any, from using modifiers? Some examples could be negative community responses, barriers to modifier use within the game, etc. Please provide examples when possible. [open text field]

6. If you experience drawbacks, how do you manage them? [open text field]

7. If you experience drawbacks, why do you continue to modify your gameplay despite them? [open text field]

8. In general, how important are these gameplay elements when you play digital games? [Likert scale for each item: Not important at all — 2 — Neither important or unimportant — 4 — Extremely important]

    - Chatting with other players
    - Being part of a guild
    - Grouping with other players (e.g. forming teams)
    - Keeping in touch with your friends
    - Learning about stories and lore of the game word
    - Feeling immersed in the game world
    - Exploring the game world just for the sake of exploring it
    - Creating a background story and history for your character
    - Becoming powerful
    - Acquiring rare items
    - Optimizing your character as much as possible
    - Competing with other players

9. Why do you modify your gameplay? Please select all that apply. If your reason is not listed here, you can make use of the 'other' option to list any number of additional reasons.

    - The game is inaccessible otherwise
    - To manage frustration/anger
    - For enjoyment/relief/relaxation
    - For a challenge or to increase feelings of competence
    - To reduce the level of difficulty
    - To make a powerful character or acquire rare items
    - For curiosity
    - For novelty in gameplay
    - For certainty (e.g. want the best items/outcome, ensure finding certain items, etc.)

- For social purposes (e.g. to play with others who use modifiers)
- For professional purposes (e.g. related to your job, such as streaming)
- To tailor the game to your preferences (e.g. change game controls, character appearances, etc.)
- To save time
- Other, please specify: [open text field]

10. If you would like to elaborate on your experiences with modifying your gameplay, please do so here: [open text field]

11. If you have played games without modifiers, do you think that your reasons for gaming are different when using modifiers versus not?

    - No
    - Yes — please describe the difference: [open text field]

12. What are your personal opinions on modifying gameplay? Please consider the following: Do you think that games are better when they allow modification? Do you think it's moral/ethical/fair to other players? Should it be allowed in games? Should it be more mainstream? Should there be more possibilities for modification? Are there nuances depending on the game or the community you're playing with? [open text field]

A.5.5 Social Experience Questions

Please answer the following questions to the best of your ability. If you would rather not answer any given question, just leave it blank. As a reminder, if a question does not apply to you or you would rather not to answer it, leave the question blank.

1. How prevalent do you think modification is? Select one of the following.

    - Almost no one does it
    - Very few people do it
    - Some people do it
    - Most people do it
    - Everyone does it

2. How would you describe your overall SOCIAL experience when playing a modified game? [slider, values 1-100, default 51: Totally Negative —— Totally Positive]

3. If you have had any, please provide some examples of positive social experiences you have had when playing a modified game. [open text field]

4. If you have had any, please provide some examples of negative social experiences you have had when playing a modified game. [open text field]

5. Do you think that your social experience when playing a modified game differs from the social experience of playing an unmodified game? Why or why not? [open text field]

6. What have other people said to you about your modifications to a game? Are they supportive? Negative? Can you give examples? [open text field]

7. What have you seen people say about game modification in general? (i.e. in posts or comments on forums online, in gaming groups, etc.) [open text field]

A.6 Survey Debriefing Letter

First, **thank you for taking the time to participate in this study — your contribution is greatly appreciated.**

This study aims to explore the experience of using gameplay modifiers when playing a digital game, including any outcomes, the social experience, and the benefits and drawbacks of using modifiers in gameplay. This can allow us to better understand the use of modifiers in gameplay, and inform the approaches taken to modifiers by digital games and gaming communities to improve player wellbeing and experiences.

If you are interested in participating in a further 1-on-1 interview about your experiences with gameplay modification, or if you have any questions or concerns, please contact Laura Paul by email at lepaul@uvic.ca or Dr. Regan Mandryk by email at reganmandryk@uvic.ca.

To receive payment, please press the 'continue' button to be redirected to Prolific.

If you would like to read more about the topic of gameplay modification, these articles may be of interest to you:

- Cale J. Passmore, Mathew K. Miller, Jun Liu, Cody J. Phillips, and Regan L. Mandryk. 2020. A Cheating Mood: The Emotional and Psychological Benefits of Cheating in Single-Player Games. In Proceedings of the Annual Symposium on Computer-Human Interaction in Play (CHI PLAY '20). Association for Computing Machinery, New York, NY, USA, 58-70. https://doi-org.ezproxy.library.uvic.ca/10.1145/3410404.3414252

- Jen Beeston. 2020. Social experiences of people with disabilities in playing (in)accessible digital games. PhD thesis, University of York. https://etheses.whiterose.ac.uk/29408/1/Beeston_102026788_ThesisClean.pdf

This research has been reviewed and approved by the University of Victoria Human Ethics Board. If you have any questions or concerns about this study, please contact the Human Research Ethics Board of the University of Victoria at 250-472-4545 or ethics@uvic.ca.