Letting Players Draw Their Own Character: Artistic Expression VS Gameplay Strategy

by

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Abstract

Character customisation has been a major part of video games for some time now, appearing over all genres of games, and many papers have analysed this phenomenon. It has been concluded that players experience increased motivation (Birk at al., 2016) for playing, and feel a greater sense of presence in the game world (Steuer, 1995) when playing with a personal avatar. It has even been found that character customisation can influence a player's performance and self-perception (Yee & Bailenson, 2007) as well as how to positively impact player's performance and avatar self-connection via the creation of the idealised self (Jin, 2010; Koulouris, Jeffery, Best, O'neill, & Lutteroth, 2020). However, all this extensive literature written focuses solely on the visual appearance of a player's avatar, without considering any gameplay implication of a player's created character. This is strange, as there are plenty of games - mostly RPGs such as Skyrim (2011) and Elden Ring (2023) - where choosing certain races or equipping certain items changes both your in-game avatar as well as your gameplay abilities. Therefore, to address this gap, I created a game entitled *Chroma Mancer* where players freely draw their character in a pixel art canvas and their gameplay stats are directly based on their drawing - thus combining artistic expression and gameplay strategy. I analyse the drawings created by a small group of 21 volunteer playtesters, as well as their thoughts on their character creation approach and player motivation. Based on this data, I conclude that for my sample group no external factor or motivation profile has a universal significant impact on their approach to character creation, and that players will always seek to create artistic avatars even when it impacts gameplay, regardless of whether they claim that they intended to or not. These observations are nevertheless not conclusive or universal, merely a first glimpse into this field, and more studies with larger participant groups are required.

Introduction

Character customisation is becoming increasingly prominent in recent games, both in single- and multi-player games. It has long been a core part of role-playing video games, but has also become a staple in sports and simulation games. Players care deeply about the looks of their characters, even in first-person games. This fact has been exploited by many publishers who offer microtransactions or paid cosmetics, allowing paying customers to further customise their avatar. It has become a major part of big AAA companies' profitability to offer such in-game paid cosmetics. For instance, in 2021, Activision Blizzard generated a whopping $5.1 Billion in revenue from microtransactions ("in-game bookings"), out of a total revenue of $8.8 Billion (Strickland, 2022).

There have been many papers written about how players approach character creation in digital games where such a feature is present. It has been found that avatar customisation leads to an increased sense of presence and interactivity (Steuer, 1995) between the in-game character and the player. This makes players more engaged and immersed within the game world and makes them more likely to continue playing, as "identifying with an avatar in a game will increase the intrinsic motivation of the player" (Birk at al., 2016). Not only that, but the same study found that players got more enjoyment from playing the game with an avatar they identified with.

In particular, people who create their "ideal self" as opposed to their mirror-image "physical self" feel a "greater avatar-self connection" (Jin, 2010; Koulouris, Jeffery, Best, O'neill, & Lutteroth, 2020). Additionally, the creator behind the avatar matters. When players create an avatar of themselves, they experience greater self-efficacy, gameplay performance, and feelings of presence than if the same avatar had been created by someone else (Rahill & Sebrechts, 2021). This opens up questions about the role of self-expression and identity formation in character customisation, as games allow people to create an avatar possessing their desired traits, abilities, and appearances, and allow an escape from their real-world self.

Additionally, the Proteus Effect, introduced by Yee and Bailenson in 2007, suggests that an "individuals' behaviour and self-perception are influenced by the characteristics and attributes of their avatars" - which is to say that players behave differently depending on how they perceive the

visual attributes of their character within the context of the game world, regardless of the character's real gameplay attributes or other observers being present.

However, all of these papers and studies focus solely on the cosmetic/visual part of character creation. They presume that characters will have the exact same abilities and power levels regardless of how they are designed and further customised. This might be true in competitive multiplayer games, where the developers wish to keep things balanced and not give unfair advantages to paying players, but it is not true for all games as a whole.

For instance, in Elden Ring - an open-world action RPG and 2nd best-selling game in the US in 2022 (Statista, 2023) - every single piece of clothing the player finds and equips alters their character's gameplay stats and abilities in some way. And yet, none - or very few - papers have been written or studies conducted that examine player's approach to avatar customisation when their character's powers are on the line. To me, this is a glaring and odd gap in the literature written about avatar customisation.

Therefore, I sought to make my own study into this topic. I created an action game with RPG elements in which players draw their own character, and continuously customise it as they level up, with this character drawing directly impacting their attribute points and thus their in-game stats and abilities.

Brief History of Character Creators

This section will briefly explain the origin of character creators and where they are now. Their early uses are intrinsically linked with role-playing games, having first appeared in the 1970s with tabletop RPGs such as *Dungeons & Dragon (1974)* and *RuneQuest (1978)*. In these early iterations, players had character sheets - literally sheets of paper - where they would manually write the details of their characters. It varied from game to game, but they mostly all included their name, age, gender, race, background story, stats and skills, and items. Optionally, more invested players could make drawings of their character. Due to these games being controlled by a dynamic and reactive human Game Master, every detail that players put into their created character could impact the game world or gameplay experience in some way.

The first video games to include character creators were therefore role-playing video games inspired by the above-mentioned tabletop RPGs, such as the *Ultima (1981)*, *Wizardry (1981)* and *Might And Magic (1986)* series. Thus, their character creation process was similar but much limited. It focused on the basic elements like your name, gender, race and/or class, stat points, and good vs evil alignments. In some games, such as *Wizardry I (1981)* and *Wasteland (1988)*, the most you could do was pick a character class, with their individual stat points being decided by a digital dice roll. Noticeably, in these early games there was no option to edit your character's visuals or in-game representations. They all used generic predetermined portraits and sprites, usually based on their respective race or class.

Screenshot of character creation menu in Ultima (1981) via Lord Fenton Gaming on YouTube

At this point in time, character creators were steered heavily in favour of stats and the gameplay experience. With the role-playing and personalisation options being so limited, most people simply chose characters for their stats or to suit their gameplay style. The author of tk421.net, a *Wizardry* fan resource website, suggests a particular starting party of characters purely for their stats and gameplay potential (Hubbard, 2020).

It would be until 3D graphics matured and became the norm in video games before character creators got a significant upgrade, again with role-playing games leading the way. *Ultima Online (1997),* an MMO entry into the now well-established *Ultima* series, added an "Appearance" tab in the character creator, alongside the other standards. This allowed players to select a face, hair style, and facial hair style, as well as their respective colours and skin tone. Similarly in the single-player realm, *The Elder Scrolls: Morrowind (2002)* allowed players to choose a face and hair style for their character, but had no option for skin tone or colours thereof. In both examples, the faces and hairstyles that players could choose from were locked to the gender and race that they chose. These additions, although lacking, began to even the playing field between gameplay-oriented players and personalisation/role-playing-oriented players.

Screenshot of character creation menu in Ultima Online via MissEcho in UO Stratics

Eventually, video game character creators escaped the world of RPGs into other genres, first with life simulation games such as *The Sims (2000)* and *Second Life (2003).* The first entry in *The Sims* franchise was very limited and similar to previously mentioned RPGs, however. Players could only change a character's size, gender, head and overall body (including clothes) from a preset list of

options. Naturally, there is no setting for race or class. By 2004, with the second entry into the series in the form of *The Sims 2*, the character creator got massively more detailed and nuanced. Players could now independently choose the character's head, hairstyle, eyes, makeup, and clothing. The scales shifted completely in favour of role-playing/personalisation, with that being the whole purpose of these games, and replacing stat points (such as "attack" and "stamina") with personality traits (such as "neat" and "playful"). The game is not about winning, but simulating the life of a particular character, thus there are no gameplay considerations when making a character.

Character creation in The Sims 2 (2004) via The Sims Wiki

From there, character creators continued to spread to other genres and grow increasingly detailed, becoming a staple in modern day video games. *The Elder Scrolls: Skyrim (2011)* added so many more customisation options and sliders compared to its predecessors, too many to list, that now players could create a truly personal and unique character. Action RPGs such as *Dark Souls (2011)* and *Elden Ring (2022)* allow players to make characters freely with great detail, regardless of the class they choose, with their initial stats being predetermined by their class regardless of appearance. In the above-mentioned games, as well as most RPGs, a character's looks can be further customised by the equipment and items that they find in the game world and choose to use or wear. These items, in addition to being displayed on the character model, also have unique stats that will affect gameplay - however much - in one way or another. This brings together gameplay stats and character visuals, which were previously independent in character creation. For instance, a player might choose to wear a certain helmet because it grants them specific stat points, or because they like the way it looks (or both). This dichotomy and inter-dependency between gameplay stats and character appearance is exactly the main focus of this thesis.

Finally, character creators have also become an indispensable staple in sports game, such as *FIFA* and *WWE 2K*, where players can create their own athletes and set their exact stats. Fighting games like *Soulcalibur VI (2018)* and the recently released *Street Fighter 6 (2023)* have extremely detailed character creators that allow your imagination to run free and create any character you can dream of, including inhuman abominations (Easy Allies, 2023). Interestingly, in the case of *Street Fighter 6*, the way you create your character will actually directly impact your gameplay experience. “The length of your limbs and size of your body matter during battle” says the game’s character creator (Jerma985, 2023), with longer limbs increasing the reach of your attack but bigger body sizes making you easier to hit. This is one of the best examples where the choices made in avatar creation not only impact your looks but also your in-game abilities.

Screenshot of character creation in Street Fighter 6 (2023) via Jerma985 on YouTube

Why People Care About Avatar Customisation

As outlined in the preceding section, character creators and avatar customisation have become a major part of video games for some time now. They are ever-present in singleplayer, cooperative, competitive, and massively multiplayer games. They appear across all genres and appeal to all types of gamers in some way, from casual to hardcore gamers. What led to this? Why do people respond so positively to character creation and customisation? These questions will be answered with a primary focus on their psychological and gameplay aspects.

1. Psychological Significance

1.1 Self-Expression & Identity Formation

As with the original character sheets from the tabletop RPGs of *Dungeons & Dragons* and *RuneQuest*, character creators provide players with unprecedented means for self-expression and identity formation. Identity formation is defined as the "complex manner in which human beings establish a unique view of self and is characterized by continuity and inner unity" by Herman, W.E. (2011). By allowing players to design their digital self according to their desired appearance, preferences, desires, and personality traits, video game character creators become tools for players to manifest their unique identities and project their desired ideal-self. Players can ask themselves "Who am I?", and experiment with different answers within the safe space of a digital game world. This level of identity exploration was unprecedented before tabletop RPGs and has reached new heights with video games: "nowhere is self-representation more flexible and simple to transform than in virtual environments where users can choose or customize their own avatars - digital representations of themselves." (Yee & Bailenson, 2007).

1.2 Escapism & Experimentation

Any character players create can be endlessly tweaked and iterated upon until it fully resonates with the player. It can be adapted and updated as the player's identity and self-concept changes. "The mutability of our self-representations in online environments is a fundamental aspect of what it means to have a virtual identity" (Yee & Bailenson, 2007). This process of actively creating and

consciously moulding avatars in line with personal values and fantasies/desires acts as sort of identity exploration and formation, without opening oneself to any risks or outside judgement from others. Escapism is afforded by these character creators as players can detach themselves from their real-world identities to temporarily inhabit the virtual personas they handcrafted.

1.3 Attachment & Immersion

Furthermore, by spending their time, energy, and creativity into creating a character, players will naturally feel more emotionally connected and have a deeper bond with their avatar. Players can perceive these game characters as extensions of themselves or as their digital friends, and so their accomplishments and failures have a stronger emotional impact on the player. This sense of attachment heightens player engagement, immersion, and motivation with the game, since they will develop feelings of companionship and responsibility towards their creations. As quoted earlier, "identifying with an avatar in a game will increase the intrinsic motivation of the player" (Birk et al., 2016). Based on the study by Birk et al. where people played an endless runner game with a custom avatar, they found that "similarity identification, embodied identification, and wishful identification increases autonomy, immersion, invested effort, enjoyment, and positive affect." This leads to those players spending more time playing the game, even in a simple endless runner with no narrative.

Additionally, players become more invested in the outcomes of the game, and might alter their playstyle accordingly: for instance, behaving more carefully to ensure a character they have bonded with survives, whereas if it was a generic character they might play more recklessly and not be affected if they died. This concept was used to great effect in the squad-based tactics game *XCOM: Enemy Unknown (2012)* and its sequel *XCOM 2 (2016)*. All the soldiers at the player's command can be personalised and made unique and memorable. As players bond with a soldier and become like old chums, they will feel inclined to act much more carefully with how they order them around, to ensure that they make it out alive at all costs; and when they don't, their death packs an exponentially stronger emotional impact that would simply not be possible with generic pre-made soldiers.

This is greatly exemplified by a Reddit post entitled "Why are XCOM soldiers so easy to get attached to?" (Reddit, 2018). In it, the author (whose account has unfortunately been deleted) said that "When I play other games where I have a squad of soldiers like *Xenonauts* or *Battletech* or similar games, they're all just faceless meat fodder to me that I never learn to differentiate between". Conversely, they said that they can "highly value and easily memorize" the XCOM soldiers. In the same thread, user *u/stonehallow* attributes XCOM's success in this character attachment to "the deep customisation options", adding that the ability to give soldiers nicknames, customise their armour and appearance, and essentially being able to create any character you like, give XCOM's soldiers their unique charm and attachment in the eyes of players.

This question was also posed by Tiago Costa (2019) on an article he wrote for Game Developer titled *Why do we get so attached to our soldiers in XCOM?*. The author suggests that "all humans are storytellers" and, with this ability to personify soldiers through the character customisation and gameplay, the game turns players into the narrative's storytellers using the soldiers as the means to convey the story: "XCOM takes all the elements that enable our brains to generate a new story and puts all in the soldiers. As such, just like Pinocchio, they become real persons." He expands to say that the personalised nature of these characters - every player will create and play with unique soldiers - adds an extra layer of emotional attachment: "[...]It’s not just a generic rookie. It’s your PERSONAL generic rookie[...]".

1.4 Self-Efficacy & Empowerment

When creating a digital avatar in their ideal-self image, embodying their desired aesthetics and traits, players grow a sense of self-efficacy and empowerment in the real world as a direct result. Self-efficacy is "an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments" (Bandura, 1997). That is to say that players feel more confident and capable, as a result of their avatar looking more capable and idealised. This can change their performance in the game world and positively affect their motivation and perseverance.

1.5 The Proteus Effect

The Proteus Effect is a concept that can be linked to the above-mentioned self-efficacy and empowerment obtained from video game characters. It refers to the phenomenon where a player's behaviour and self-perception are influenced by the characteristics and attributes of their avatar in the game world - "an individual's behavior conforms to their self-representation independent of how others perceive them" (Yee & Bailenson, 2007).

The Proteus Effect suggests that individuals tend to internalise the qualities and attributes of their avatars, leading to changes in their self-perception and behaviour. For example, a study was done in a digital environment where people were given robes in one of two colours: black or white. It was found that people wearing black robes instinctively "expressed a higher desire to commit anti-social behaviors" than those clad in white robes (Peña, Hancock & Merola, 2009). This was explained by Frank and Gilvoch: "Just as observers see those in black uniforms as tough, mean, and aggressive, so too does the person wearing that uniform" (1988). Yee and Bailenson explained this as "users in online environments may conform to the expectations and stereotypes of the identity of their avatars" and "they conform to the behavior that they believe others would expect them to have."

Therefore, when players create a character exhibiting their desired traits and appearance, they subconsciously behave as though they themselves had those very traits in real life. If players create avatars that look powerful, confident, and capable, they will experience a boost in self-efficacy and also feel more powerful, more confident, and more capable while playing the game as that avatar. As players navigate the game's challenges and overcome obstacles with their empowered avatars, they can transfer the increased self-efficacy beliefs and feelings of empowerment to their real-life experiences. This transfer of self-efficacy and empowerment from the virtual to the real world is a manifestation of the Proteus Effect.

Thus, character creation, self-perception, and in-game player behaviour are intrinsically and inexorably linked. The relationship between them can be explored by considering the options that games present the player for creating and customising their avatar and the bearing they have on the gameplay experience as a result of their choices.

2. Gameplay Significance / How Customisation Can Impact Gameplay

Customising a character can also have a direct impact on gameplay and change character attributes, in addition to the aforementioned change in a player's behaviour. This is the case in most role-playing games, where the visual appearance of a character is altered depending on the items of clothing and weapons that the character has equipped. For example, equipping an iron helmet usually causes an equivalent iron helmet model to be placed on the character's head. Besides the addition of a new model on the player's character, equipping an item can also obscure elements of the character. For instance, in the same example where the player equips an iron helmet, such a helmet would cover the character's hair and possibly also some or all of their face. This can be undesirable to players who spent considerable time and effort into creating their avatar's face and hair; conversely, it can be desirable to players whose avatar self-concept aligns with wearing such a helmet or covering their face in some way.

In addition to their visual attributes, these items also have gameplay effects - usually by impacting a character's abilities and stats. An item or piece of equipment usually alters one or more character stats, and/or grants unique abilities or penalties. This allows players to tailor their gameplay experience and strategy to suit their preferences and desired gameplay approach. For example, in RPGs such as *The Elder Scrolls V: Skyrim* or *Elden Ring*, players can usually tailor their experience to melee combat, ranged combat, or magic spellcasting. Even within these broad categories, players can choose to focus into more specific niches: such as heavy-hitting greatswords or fast curved swords within melee combat, or choosing between various schools/types of magic within spellcasting. This flexibility in equipment and ability choice empowers players to adapt their character to different challenges and optimise their effectiveness in various situations, or to focus on the gameplay mechanics that they find more enjoyable and immersive. In multiplayer games, both cooperative and competitive, this degree of specialising becomes very important. Different builds - that is, the classes, stats, and equipment that players choose to have on their character - can create synergies with other team members, as players' strengths work together and cover for other player's weaknesses, and thus lead to better cooperation, gameplay effectiveness, and enjoyment from the game. In cooperative play, players may want or have to fill certain specific roles within their team - such as being a tank that draws enemy aggression or a support that heals

and buffs teammates. Similarly, in competitive games, players may choose specific character builds solely for the purposes of defeating other players as efficiently as possible.

Therefore, there is a curious relationship between character appearance and gameplay stats, as players to try to balance their character between their desired visual self-expression and their preferred playstyle. However, this relationship is usually asymmetrical/amensalistic: a character's physical appearance - the way they look, their stature, their gender, etc. - usually has no bearing on gameplay at all. For instance, in the *Dark Souls* or *Monster Hunter* series, no aspect of the avatar's physical appearance as designed in the character creator (excluding items later found in the game) will impact gameplay; making a character fat or athletic, tall or short, male or female, etc., will not impact stats or gameplay at all. On the other hand, the playstyle choices - made via the choice of which items to equip - will directly impact the character's appearance, by changing the clothing that they are wearing and possibly obscuring parts of the character's body, while providing gameplay changes in the form of stat changes and/or abilities or penalties. Continuing the example of *Monster Hunter*, in *Monster Hunter World (2018)* a player can choose to wear the Anja Alpha armour set to grant themselves a defence boost against fire damage, and this will give their character a red armour set with a dark fur coat and a helmet covering their whole face (Fextralife, 2019) - regardless of whether they wanted this visual change or whether it suits their desired visual appearance.

The Game / The Experiment

So what if there was a game that turned this character appearance and gameplay stats relationship from asymmetrical and amensalistic into interdependent and symbiotic: a game where the avatar's visuals directly change its stats and vice versa?

Enter, *Chroma Mancer*: a pixel-art bullet hell survival game in which players draw their own character, which was designed with this concept and experiment in mind. The player character's stats are then determined by the avatar drawing that they created. This drawing is done in-game with a pixel art editor inside a limited canvas (16x16 pixels) using a limited colour palette. Each gameplay stat is matched to a colour in the palette, and the number of pixels of each colour present in the character drawing represent the points you have in their respective stat. The available stats and colours are the following:

- Health: Magenta
- Attack: Purple
- Movement Speed: Cyan
- Fire Rate: Yellow
- Shot Speed: Light Green
- Stamina: Dark Green

So for example, if a player creates a drawing (any drawing) that has 88 Magenta pixels and 64 Purple pixels, they will have a Health value of 88 and an Attack value of 64.

However, players begin the game and create their starting character with only Black and White available, which have no bearing on gameplay. They then unlock the 6 stat colours by levelling up to a maximum of Level 6. Levelling up is done by defeating enemies and collecting the XP that their corpses drop on the ground. Once they level up, players are prompted to choose between three random colours to unlock. Then the Drawing UI opens up again and they are free to edit their character drawing in any way they want, using any combination of the unlocked colours. Players can make small adjustments, or completely re-draw the character. Additionally, players are not required to make any changes if they so desire.

The goal of *Chroma Mancer* is to reach the maximum level (level 6) - thus unlocking all colours - and defeating all the enemies that spawn in the level. For some in-depth information on the gameplay and game systems, refer to the Game Design Document annexed in the Project Documentation section or to the *Chroma Mancer* gameplay video[1].

Experiment Protocol

Playtester data from *Chroma Mancer* was collected in two ways: via a simple survey that playtesters filled out after playing the game, and by collecting the character drawings that they made in-game. Thus, the exact characters that players created, as well as the thoughts and personal profile of the player behind each character were gathered and paired. I believe that this combination of data points provided a great foundation from which to draw conclusions about their approach to character creation and customisation.

The survey was carried out via Google Forms, but neither the playtester's real name nor their email were collected – only their in-game username. The only personal data collected were age and gender (if they chose to disclose it).

Character drawings were either sent directly by the playtester via Discord or e-mail, or uploaded automatically by the game to a personal database via a self-created Web API, with no middlemen in-between. In some cases, people played *Chroma Mancer* but did not complete the survey, so their drawings will not be considered when analysing the results.

To get an understanding of what the survey was like, the following is an overview of the questions that were asked. A full transcript of the survey questions is available on Appendix A.

[1] Casaleiro, Sebastião. "CHROMA MANCER (Gameplay Trailer & Feature Showcase)." YouTube, June 8, 2023. https://youtu.be/1cT880NFZis.

Section 1: Gameplay Experience

This section asked playtesters to write their in-game username, so that their survey feedback could be linked to their character drawings. It asked for their game completion: whether they beat the game, or if not, how far they got into the game. It asked how challenging they found the game, and how powerful they felt while playing it on a scale from 1 to 5: 1 being Very Easy/Very Weak and 5 being Impossible/God-like respectively. The main question here was *whether they drew their character(s) to be visually appealing or to optimise for gameplay stats*. This was presented as a scale from 1 to 5: 1 being complete focus on Visuals, 5 being complete focus on Stats, and 3 being a perfect balance between the two. A playtester's *Visuals-VS-Stats focus value* will be referred to extensively throughout the analysis of the results.. That refers to the value they gave on this question. Finally, it asked players if they enjoyed the game, and if they had previously played any other games similar to *Chroma Mancer*.

Section 2: General Gamer Profile

This section focused on trying to understand what kind of gamer the playtester was. I was interested in knowing what games they usually play, whether they are a casual or competitive player (scale from 1-5 respectively), and what motivates them to play games. Playtesters were able to choose multiple items from a list of motivations given by me, or fill in their own. The list of motivations that I provided was:

1. Overcoming Challenges
2. Story
3. Achievements
4. Socialising
5. Relaxing
6. Expressing Yourself
7. Power Fantasy

This list was based around Bartle's famous player types as well as the Quantic Foundry (2019) gamer motivation models. However, I tweaked the list in a way that I felt better suited my game and experiment. Playtesters were able to add in their own motivations not present on the list already, but the majority of them stuck to the list. While some elements in hindsight should have

been included – like Exploration or Immersion – this list was nonetheless still adequate and fulfilled its purpose.

Section 3: Background Information

This section focused on gathering minimal and non-intrusive but essential background information on the playtester. It simply asked for their age, gender they identify as, and their field of work/study. This was done so that it could be analysed whether any of these factors had any bearing on the player's approach to character creation to any extent.

Results & Analysis

A total of 21 volunteer playtesters participated in the experiment and submitted the necessary responses. These volunteers mostly consisted of university classmates and friends, with some volunteers from online videogame-related forums.

Having had a look at the avatar drawings that players created in-game and the data that they submitted, some patterns emerge and some interesting and unexpected observations can be made; some obvious correlations are revealed, and some aspects unexpectedly don't show any significant correlation.

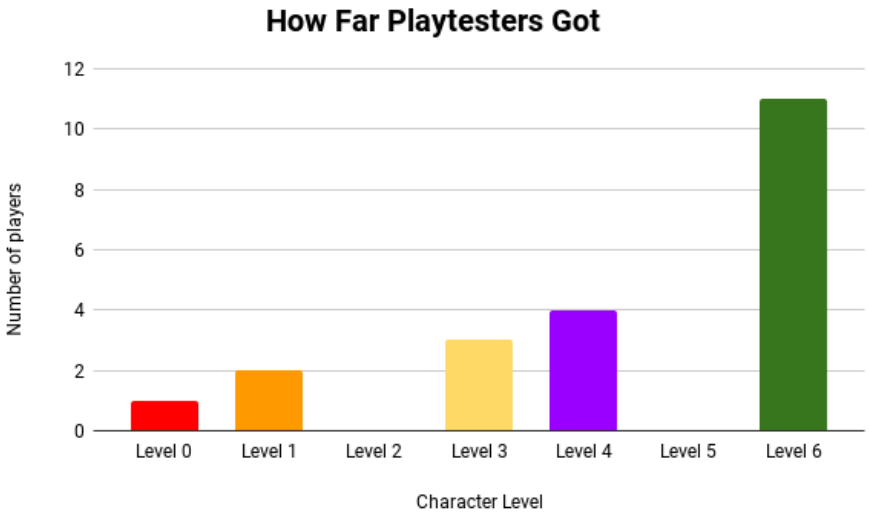
Overview of Participants

To start with a broad overview, slightly over half of participants (11 playtesters) successfully beat *Chroma Mancer*, while the remaining did not. Out of those that did not, 70% got as far as levels 3 or 4, with one player going no farther than level 0. The overall median average number of game playthroughs was 3. For people who reached the maximum level, the median is 5 playthroughs; for people who did not, the median is 1.5.

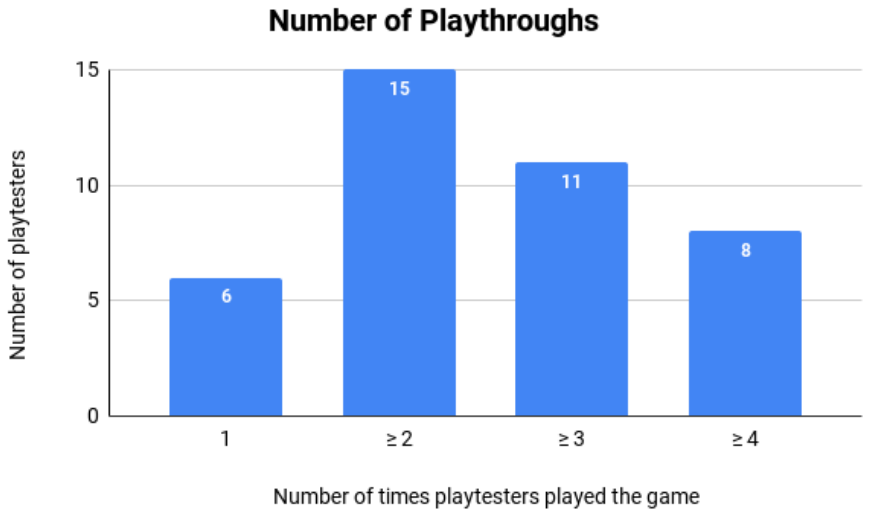
The 21 participants played *Chroma Mancer* a combined total of 76 times and created **190 unique avatars**.

Playtester game completion can be summarised with the following graphs:

Graph 1: the number of playtesters who reached the maximum level and unlocked all colours



Graph 2: the maximum level reached by playtesters
(Reaching level 6 is a win)



Graph 3: the number of times that playtesters chose to play the game

1. Everybody Drew Something Artistic

The avatars that players drew were split into three broad categories:

1. ***Figurative***
    - attempt at drawing a real-world figure
    - ex: person, animal, object

Figurative example from playtester *Zargeant*

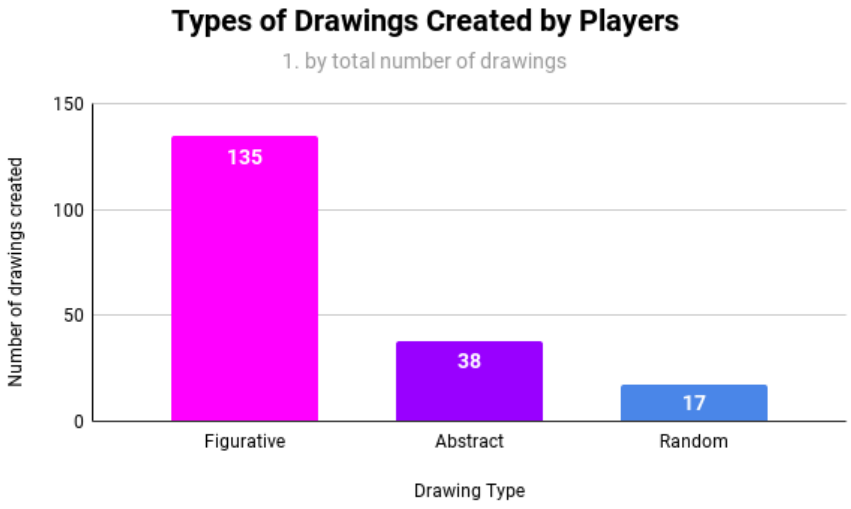
2. ***Abstract***
    - abstract symmetrical art with clear aesthetics
    - ex: symmetry, shapes, symbols

Abstract example from playtester *Alex*

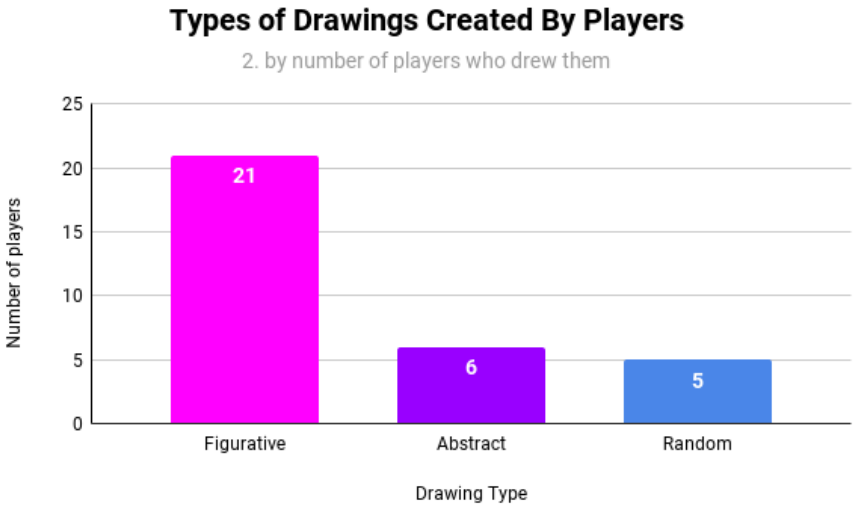
3. ***Random***
    - something truly random and careless
    - ex: closing your eyes and shaking the mouse

Random example from playtester *pie*

Drawings were sorted into a single category each. Upon subjective analysis of all submissions, this was the distribution of drawings concluded:



Graph 4: Total number of drawings in each category



Graph 5: Number of players contributing a drawing to each category

(Note: a player's repertoire of characters could contain drawings from multiple categories)

The overwhelming majority of characters created were **Figurative –** making up 71% of all created drawings – and out of the 21 participants, **all of them** drew at least one figurative character. The desire to create Figurative avatars spanned across all the different backgrounds, personal preferences, and gamer profiles of *Chroma Mancer*'s playtesters. Thus, this experiment's results hint that the desire to create artistic or expressive avatars in video games may be innate and universal to all players, though more research with bigger sample sizes is needed.

Moreover, Random drawings proved to be exceptionally rare, making up only 8.95% of characters, consisting of examples from only 15.63% of players. Everyone who created Random avatars later moved on to creating Figurative and/or Abstract characters, and those players later explained that they were simply testing the drawing tools: "[...] scribbles just to see how dorky they looked lmao", said playtester *pie*.

Interestingly, even the players who, via the survey, claimed they drew their characters purely for stats had created Abstract avatars with clear aesthetic intent - featuring symmetry, symbols, patterns, and even their initials - and Figurative avatars, featuring faces, creatures, people, and even a flower. One such example was a playtester that went by the name of *Username*, who said that "maxing out the stats was critical" and chose 5 on the far side of the Visual-VS-Stats scale, yet still created Abstract and sometimes Figurative avatars. It is also interesting to note that players

who focused on Visuals predominantly created Figurative avatars, while players focused on Stats created predominantly Abstract avatars. Nonetheless, everyone created avatars with noticeable artistic intent. Therefore, based on this experiment's findings, I put forth the following theory:

When given a blank canvas for avatar creation with gameplay significance, players will try to create something aesthetically pleasing - even when they claim they didn't intend to.

2. Factors Affecting Player's Approach to Character Creation

When trying to find an underlying reason for the choice of focus between artistic expression and gameplay strategy in player avatar creation, factors such as a player's motivation profile, what games they normally play, and their field of study or profession were considered. After analysing all the player data received from the 21 participants, no discernibly significant patterns tying the mentioned factors to the player's choice of focusing on Visuals or Stats when creating and customising their character were found. The following two sub-sections discuss the analysis of the impact (or lack thereof) that field of study or work and motivations for playing games had on the participant's choice of focusing on Visuals or Stats when creating their avatars.

2.1 - Field of Study/Work

Although one might expect that this factor would have some slightly noticeable effect in people's approach to character creation, in this experiment that was not the case.

People working or studying in the same field still gave fairly different answers on the Visuals-VS-Stats scale. For example, the 8 game developers who participated in the experiment gave answers across the entire scale from 1 to 5, for an average of 3.5: a slight lean towards Stats to be sure, possibly because designers and programmers are used to working with numbers and balancing values, but not a strong consistent pattern regardless. Even where one might think there would be an obvious connection, wildly varying results were given: as in the case of playtesters studying Art and Graphic Design, with one playtester focusing on Visuals (2/5) and another focusing on Stats (4/5), with yet another player in-between at 3/5. This experiment's sample size of players did

not contain any other large group of people all studying/working in the same field, so results here may not be accurate and further research into this factor is needed.

2.2 - Motivators

Looking towards game motivators - the reasons that motivate people to play games - does offer some clearer observable patterns, yet still nothing rock-solid, as well as some surprises and unexpected results. Of the seven motivators listed in the survey (Overcoming Challenges, Story, Achievements, Socialising, Relaxing, Expressing Yourself, and Power Fantasy), most of them are fairly well represented. The most chosen motivator was Overcoming Challenges with 15 players, followed by Story and Relaxing with 13 and 12 players respectively. The least chosen was Achievements with 5. It is worth noting that playtesters were able to pick multiple motivators when answering the survey.

When analysis these motivators, the *Visuals-VS-Stats focus value* given by each player was plotted against all the motivations that they picked (see Graph 6), and then their respective mean and median average values were calculated (see Graph 7). All of them turned out to have balanced values across the board, almost all of them having a median value of 3. The only outlier that emerged was Overcoming Challenges, with a median average of 4.

Motivations & Visuals VS Stats Value: for each Playtester

Motivations	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21
Overcoming Challenges	5		5		5	3		2	4		4	1		4		2	1	3	3	5	4
Story	5		5	1		3	3	2			4	1	3	4	3	2				5	
Achievements		3		1								1		4						5	
Socialising				1		3	3		4		4					2			3		
Relaxing		3		1			3	2		1			3		3	2	1	3	3		4
Expressing Yourself			5		5						4	1	3		3	2			3		4
Power Fantasy	5	3					3				4				3			3	3	5	

Graph 6: Visual-VS-Stats value and chosen motivations for each participant

Motivations	AVG Mean	AVG Median
Overcoming Challenges	3.4	4
Story	3.2	3
Achievements	2.8	3
Socialising	2.9	3
Relaxing	2.4	3
Expressing Yourself	3.3	3
Power Fantasy	3.6	3

Graph 7: Mean and Median values for each motivation

Legend	
Colour	Meaning
	Beat the game
	Reached Lvl. 4
	Reached Lvl. 3
	Reached Lvl. 1
	Stayed at Lvl. 0

Description of the highlights used in Graph 6

2.2.1 - Overcoming Challenges

Overcoming Challenges, as just mentioned, is the only outlier, showing its clear leaning towards Stats. Moreover, it is the motivator with the most 5s - i.e. the motivator with the most people that went all-in for Stats. This is not surprising, since this would be players who are mostly interested in defeating adversaries, problem solving, and beating the game, so it stands to reason that they would exploit the avatar drawing system to extract as many stat points as they can in order to reach their goals. However, while the median is an outlier, the mean average is 3.4 - just barely over the mid-point value of 3. This still doesn't tell the whole story, as this motivator is, alongside Story and Self-Expression, one of the only ones that include players from across the whole spectrum in the Visual-VS-Stats scale, having at least one player at every position.

With these facts in mind, Overcoming Challenges does somewhat explain player avatar focus in favour of stats, but only to some very limited extent – as it was chosen by a wide range of playtesters with different avatar focuses.

2.2.2 - Story

The Story motivator had a very balanced average of 3.2, and is tied with Achievements for second-most players going all-in on Visuals. Hardly surprising, since these players are normally not as interested in challenging gameplay and more so on the narrative and characters of a game. According to Quantic Foundry (2019), these types of players "want games with elaborate storylines and a cast of multidimensional characters with interesting back-stories and personalities", and so it is possible that they would be more likely to focus on the Visuals in order

to give their character more personality and something of a narrative, without too much care for its gameplay effects. This is the analysis one could make when taking the mean average at face value. However, the average is a bit misleading, as this category features Visuals-VS-Stats values all across the board, having players across every position in the spectrum. It even features 3 players that went all-in on Stats – just one short of Overcoming Challenges' occurrence.

Therefore, due to this extreme variance, I believe that the results are inconclusive and that it is not possible to infer anything concrete as to how this motivation factor affected character creation in *Chroma Mancer*.

2.2.3 - Achievements

The Achievements motivator, as just mentioned, is in the top three motivators with the most 1s - i.e. people that went all-in for Visuals. Being the least represented motivator in the sample size however makes it difficult to come up with a verifiable explanation for its effect in players' approach to character creation, so further research is required. Nonetheless, it could be argued that players who seek in-game achievements normally have to complete challenges that involve doing specific tasks or beating a level in a specific way, so it is possible that they imposed these challenges on themselves - such as beating the game with a deliberately underpowered character because it looked funny.

It is also worth noting that out of all motivators listed, this is the one with the worst completion rate - out of the five players that chose it, only one of them actually beat the game, with the remaining going no farther than level 4. One of these players was participant *Mushroomancer*, who went all-in on Visuals (1/5) and exclusively drew mushroom-like creatures. When asked why they drew their characters in such a way on the survey, their response was "I really like mushrooms, and mushroom-people". Therefore, it is not outlandish to say that Achievement-seeking players would want the satisfaction of beating the game in a specific way according to their personal preferences and playstyle, but still due to the low representation within a small sample size, results are inconclusive and further research is required.

2.2.4 - Socialising

Players motivated by Socialising play multiplayer games with their friends or strangers, so they might feel more interested in customising their in-game avatars, as this is what other players see when they interact with them and is one of the main means of communication. However, that was not demonstrated in this experiment, since these players went for very balanced avatars with an average value of 2.9. This could possibly be explained by *Chroma Mancer* being singleplayer, and thus having nobody else to judge their avatars.

2.2.5 - Relaxing

The Relaxing motivator shows the expected result of players leaning more towards Visuals, with an average value of 2.4. It is the strongest lean towards Visuals out of all the listed motivators observed in the experiment. Additionally, it also the motivators with the most 1s – i.e. the motivator with the most people that went all-in on Visuals. Surprisingly, despite being the third most chosen motivation by playtesters, it is remarkably the most consistent in terms of Visuals-VS-Stats focus – it has a median value of 3, with the only value higher than that being a single occurrence of 4.

These players likely play games to unwind and not to feel challenged, so they focused more on creating visually appealing characters. This is perfectly exemplified by player *Richard*, who said of his first playthrough: “The first time I created a visually appealing character […] and painted a funny cactus guy. Then, when I got my first 'proper' color I stuck with my cactus because I had grown attached to him :D”, and for their second character “focused purely on stats and filled the entire square, just to see how strong you could get. But it definitely wasn't as enjoyable as having a funny cactus guy on screen”.

The results from the experiment suggest that these types of players are not interested in winning at all costs, and more so in having a fun and enjoyable experience with a focus on their own creations. Yet, over half of these players still managed to successfully beat the game. Not bad!

2.2.6 - Self-Expression

The Expressing Yourself motivator shows some arguably unexpected results, as it leans towards a balanced approach with a median value of 3. Interestingly, it includes players on both ends of the Visuals-VS-Stats scale - those who went all-in on Visuals and those who went all-in on Stats. One might think that a player's self is expressed via the aesthetics of their avatar, and while that is true, a player may also express themselves via their playstyle and how they interact with the game world. For instance, player *Username* said that it "was fun to see what maxing out the stats did", which could be argued as being a form of self-expression. Participant *crashington* reported at first drawing their character “to look good” but when they noticed the power that colouring pixels granted, they “filled out all available space, filling in later colors only minorly to look good”.

Therefore, since the way in which people express themselves varies wildly and players can have various playstyles, it makes sense that the Visuals-VS-Stats values in this category would similarly vary wildly.

2.2.7 - Power Fantasy

The final motivator is Power Fantasy and it shows the most apparent lean towards Stats, featuring the highest mean average at 3.6 – however, its median value is still 3. Nonetheless, the results are surprising. It could be assumed that players motivated by a power fantasy would be the most likely to go all-in on Stats. According to Quantic Foundry, Power players "strive for power in the context of the game world" and wish to "become as powerful as possible, seeking out the tools and equipment needed to make this happen". Quantic Foundry continues and explains that this "may mean maxing stats". Ironically, the results observed from this experiment’s playtesters do not reflect this at all.

Out of eight playtesters who chose this motivation, only two playtesters went all-in on stats – a number fewer than that seen in the Story motivator – with the majority opting for a balanced approach. Expectedly though, no one in this category focused on the visuals, with 3 being the lowest value. However, much like Self-Expression, a Power Fantasy can come in many forms and not necessarily simply mean maxing out stats. Participant *Richard,* who also chose Power Fantasy,

is once again relevant, with his explanation that playing with a character “focused purely on stats […] wasn't as enjoyable as having a funny cactus guy on screen”.

Further research with a larger participant group is needed to get a clearer understanding, so unless this definition of Power-seeking players is outdated or incomplete, the results observed in the *Chroma Mancer* experiment are inconclusive as to their bearing on avatar creation.

2.3 – Conclusion Regarding Motivation Impact on Character Creation

To summarise, the preceding sections have analysed how - if at all - a player's professional or educational background and the motivations that draw them to play games influence their decision on whether to focus on Visuals or Stats when creating and customising their character. Within the framework of this experiment conducted with 21 participants, a player's professional or educational background had little to no bearing on their decision; while some of the player motivations had a slight yet noticeable influence, even though most didn't have a clear-cut impact.

In any case, further experiments with a much larger sample size are required to have more viable results. Regardless, I believe that these results allow me to draw the theory that there is no main motivator or overall singular reasoning behind a player's approach to character creation and customisation - it must therefore be much more nuanced, a mixture of a myriad different factors, and personal to each player.

3. Impact on Perceived Difficulty and Power

A much less surprising observation is the impact that player choices made during character creation had on the game's perceived difficulty. As mentioned before, a player’s avatar and their in-game stats are interdependent in *Chroma Mancer* – with the number of points in a stat being equal to the number of pixels painted with the stat's colour on the avatar. Therefore, there is sort of an incentive for players to colour in every single pixel in order to extract as many points as possible, and players who leave pixels transparent will not have as many stat points as they otherwise could. However it is not universally pleasing to fill everything and always make the character a square. As such,

players who focused more on the Visuals side of the scale and tried to create a Figurative avatar had less stats points overall than the Stats-focused players who filled in the entire canvas.

As a result of this, there is somewhat of a pattern where players who focus on the Visuals will report a higher difficulty, and conversely players who focus on the Stats report lower difficulty. Additionally, for the same reasons, players who focus on the Visuals will report feeling less powerful, and players who focus on the Stats will report feeling more powerful.

However, this is only a broad pattern and not very solid, as there are many other factors impacting this. For instance, a player's familiarity (or lack thereof) with the bullet hell genre and with other similar games (such as *The Binding of Isaac* and *Enter the Gungeon*) will strongly impact how hard they perceive the game – as they will have previous knowledge and skills required to be successful in *Chroma Mancer*. For example, a playtester that went by the name of *Zargeant* focused on the Visuals (2/5), yet still reported feeling very powerful (4/5 on the power scale) and finding the game easy (2/5 on the difficulty scale). When asked in the survey if they had played similar games, they answered "The game reminds a lot of *Binding of Isaac*, which is a game I very much enjoyed already, so it was fun to see the interesting twist to a gameplay style I was already familiar with." On the other hand, playtester by the name of *Joe* reported focusing as much on the visuals as *Zargeant*, but reported feeling less powerful (2/5) and experiencing more difficulty (3/5).

Thus, the extent to which players exploit the Stat Points system will naturally influence how challenging they find the game, but there are also external factors - such as which genre of games players normally play - that have a very significant impact.

Conclusion

With *Chroma Mancer* I created a game world where character creation and gameplay stats are inextricably linked and interdependent, with character customisation driving the gameplay. The goal was not only creating a unique game experience, but also to get a better understanding of how different players approach character creation and trying to find which factors (if any) affect these choices. In the case of *Chroma Mancer*, the choice was presented as creating your character drawing with a focus on Visuals or on Stats. However, after analysing all drawings made by players and their survey answers, it is clear that *everyone* drew visually-appealing avatars. Regardless of what they answered in the survey, all participants drew clearly artistic avatars that were Figurative and/or Abstract.

As such, instead of Visuals VS Stats, it became more of Figurative VS Abstract avatars. The Figurative players attempted to create an interesting character and work the newly unlocked colours/stats into it, while trying to maintain a somewhat cohesive drawing. This is exemplified by playtester *Zargeant* who focused on Visuals and said: "I wanted to have a character I could enjoy playing with, didn't want to go overboard with shapes that made the character more powerful, but in turn more and more indecipherable."

Abstract players conversely put stats first and were more interested in maximising their gameplay power, but while still working geometric shapes, patterns, and symmetry into their character. Playtester *Username* who claimed to focus solely on stats said it "was fun to see what maxing out the stats did" while still clearly creating Abstract art. Playtester *Divergray* (with a balanced focus) eloquently explained his approach to character creation simply as “Stats, perfectionism”.

Based on the facts presented here and the conclusions derived from the *Chroma Mancer* experiment with its small sample size of 21 participants, it seems to me that this desire - either conscious or subconscious - to create aesthetical and expressive avatars when given the chance cuts across the entire spectrum of people and is innately human.

Therefore, I put forth the theory that:

When given a blank canvas for avatar creation with gameplay significance, players will try to create something aesthetically pleasing - even when they claim they didn't intend to.

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Appendix A. Playtester Survey

This appendix contains the questions that were asked to participants via a survey created with Google Forms. Answers were either text input for multiple choice. When the answers available were multiple choice, a bullet point list displays here all possible choices.
To see the participants individual responses to the survey, refer to Appendix B.

Section 1 – Chroma Mancer & Character Creation

Q1. What was your in-game username?

- [Short text answer]

Q2. Did you beat the game?

- Yes
- No

Q3. If not, how far did you get?

- Level 0
- Level 1
- Level 2
- Level 3
- Level 4
- Level 5

Q4. How challenging did you find the game?

- Scale from 1 (Very Easy) to 5 (Impossible)

Q5. Did the game make you feel powerful?

- Scale from 1 (Weak) to 5 (God-Like)

Q6. Did you draw your character(s) to be visually appealing to you or to optimise for gameplay stats?

- Scale from 1 (Visuals) to 5 (Stats)

Q7. What motivated you to draw your character(s) in such way?

- [Long text answer]

Q8. Did you find the game fun? :)

- [Short text answer]

Q9. Have you played any games like this one before? If so, how did you enjoy them?

- [Long text answer]

Section 2 – Gamer Profile

Q1. What games do you normally play?

- [Short text answer]

Q2. Do you play mostly casual or competitive games?

- Scale from 1 (Casual) to 5 (Competitive)

Q3. What motivates you to play games?

- Overcoming challenges
- Story
- Achievements
- Socialising
- Relaxing
- Expressing yourself
- Power Fantasy
- Other…

Section 3 – Background Information

Q1. What is your age?

- 15 or younger
- 16-20
- 21-25
- 26-30
- 31-35
- Older than 35

Q2. What gender do you identify as?

- Male
- Female
- Non-Binary
- Prefer not to say
- Other

Q3. What field do you study or work in?

- [Short text answer]

Appendix B: Playtester Data

Accessing the individual survey responses from each participant, as well as the drawings that they created, can be done via the following Google Drive or directly from the Chroma Mancer website:

https://drive.google.com/drive/folders/130_b8v7I20FY8wCFCey9lVx98TIcrqVf?usp=sharing
https://chroma-mancer.com/data

Survey responses can be found inside the folder entitled “Survey Responses” and the characters created by participants can be found inside the folder “Drawings”.