**Design Patterns for Silent Player Characters
in Narrative-Driven Games**

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Bria N. Mears

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This thesis is dedicated to my mother, Stacey, who showed me how to strive for greatness despite any obstacle; and my father, Donald, who is my constant and unwavering beam of hope.

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Abstract
Design Patterns for Silent Player Characters
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Bria N. Mears
Advisor: Dr. Jichen Zhu, Ph.D.

The silent player character (SPC) is a reoccurring but vaguely understood type of player character in narrative-driven games. In this project, we present our findings from an analysis of SPC development in popular narrative games. We identify two main types of SPCs: expressive and projective characters. Based on a survey of related games, we synthesized a list of methods designers can use to effectively communicate a SPC's story. Then, we create a short narrative experience, featuring an expressive SPC, that is tested by players for story and character interpretation. Our results conclude that the design patterns developed within this study, used to communicate an expressive SPC, were largely successful in developing a pre-defined SPC who players were able to interpret as a character. All of the patterns were successful in impacting the interpretation of the SPC, as long as the information presented in the patterns is repetitive and clear.

1. INTRODUCTION

The silent player character (SPC), or often called the silent protagonist, is a reoccurring type of player character in contemporary narrative-driven games. Compared to other types of player characters (PCs), we define SPCs as a game character under the total control of the player, who cannot speak; thus unable to verbally express their immediate thoughts and characteristics. Some of the most iconic player characters in games are SPCs. Recent examples are *Tomb Raider*'s Lara Croft, *Half Life*'s Gordon Freeman, and *Portal*'s Chell; but, popular SPCs span back into some of our earliest childhood memories, like Mario from *Super Mario* and Link from *The Legend of Zelda*. There are on-going debates regarding if a protagonist that does not speak can be a useful design tool for storytelling. After all, the silence of SPCs makes it hard to apply many existing character development techniques developed both in linear media, such as fictions and film and in interactive media, such as games. However, there are many successful SPCs throughout the history of narrative-based games (e.g., *B*ioshock and *H*alf Life). AAA and indie studios continue to develop new SPCs.

Despite their popularity, there are very few works on SPC development. Researchers have analyzed PCs generally, but this does not account for the constraints and affordances of a PC who cannot speak. This paper presents our initial framework based on a survey of acclaimed, narrative-driven, contemporary games with SPCs. Based on our survey of contemporary narrative-driven games that utilize the SPC design, we found that we must first categorize SPCs into two different types: *expressive* and *projective* characters. These SPC types define different relationships that designers can build with their player using one of the select types of SPCs. Literature analyzing SPCs specifically is lacking, so in order to develop an understanding of how expressive SPCs have been designed and developed in narrative games, we conducted

a survey of related games. Each expressive SPC was closely analyzed throughout gameplay to identify each contributing factor in how the character is developed. We then introduce a list of methods built from analyzing our select games and attempt to determine their design implications. After presenting our list of methods, we describe the development of our prototype, *Motherhood*. *Motherhood* is a short narrative experience featuring a SPC that exemplifies how our found patterns can be implemented into a game's design to communicate a pre-defined SPC. *Motherhood* is used as a tool to directly test the design patterns created within this thesis. Play testers play the prototype and complete both a semi-structured interview and questionnaire process that tests for both story comprehension and each pattern's individual impact on the interpretation of the SPC.

1.1   Why Design Silent Protagonists?

Why is the design of silent protagonists important, and why should we care about them at all? Silent protagonists can be used for a number of different reasons; the most common reason being the *blank slate character*. A "tabula rasa" onto whom players can map their own emotions [3]. Game designers often choose this type of PC with the intentions that the player will project themselves, or their own image, onto the character [26] - feeling a sense of embodiment and essentially becoming the hero character [4]. The character represents the "you" [4]. Some players tend to like characters that they can project themselves, or whatever personality they like, onto. With these characters, players often state that they "voice their own lines and opinions in response to gameplay or dialogue," and might be annoyed with the character if they have an unfavorable personality. The silence affords the player a sense of presence, which can be described as "a psychological state in which virtual objects are experienced as actual objects/they feel like they are able to interact with

the people and objects found in the game" [7]. Empty vessels sometimes offer more immersion into a role, allowing the player to fill in the blanks.

Secondly, SPCs can be used as a *narrative device*: a character that represents a theme or tells a particular story. A contemporary example of this would be the theme of *Bioshock* [1] that uses the "tabula rasa" character to give the player the illusion of complete control over the outcome of the game; though, by the end of the game, players understand that they were just a pawn in a scheme designed by a character in the story.

Silent protagonists can also be used as a tool to *communicate tone* within a game; for example, using a silent protagonist to express a feeling of being completely alone in a vast environment. In *Dark Souls* [11], the PC does not communicate to the player beyond some light, or panicked breathing sounds. This breathing and otherwise lack of communication affords a hollow and empty feeling, while the player feels completely alone in the remains of a city.

Another benefit to using a silent protagonist is to *openly allow the player to experience the story, or construct the story* themselves; developing their own interpretation of the narrative. Games introduce a new layer of storytelling in popular media; players are given an active role in the story. Don Carson states that, "allowing the player to explore an environment provides them with the affordance that comes with feeling like they are a part of the experience, rather than a passive viewer" [5]. The story elements are infused within the physical space a player explores [5]. An example of this would be the environmental storytelling in Dark Souls [11], where pieces of the story are - instead of being told directly to the player - told through the objects, armor, and weapons you find. This allows them to develop their own interpretation of the narrative. Arguably, allowing the player to construct the story themselves allows the narrative to be directly experienced by the player and thus feeling more personal.

Lastly, silent protagonists can be a *practical and economical decision* for designers that may have less resources or limited time available to them. Studios can save time by not having to create dialogue scripts for the SPC, while saving money by not having to hire a voice actor for their protagonist.

1.2   Research Question

How can we utilize commonly used design patterns to effectively communicate a silent player character's story?

2. LITERATURE REVIEW

Good character design, in general, is an essential element for narrative-driven games. Game designer, Steve Meretzky notes that "of all the aspects of such a game [games where character is important] - the geography, the inanimate objects, the music, the action sequences, the interface, etc. - the element that is most likely to leave a positive lasting impression on players are the primary character or characters," [15] because "humans are hard-wired to respond to other humans (or human-like creatures)" [15, 19]. Players refer to memorably iconic characters as central to the pleasure of their play practice [26].

Though narrative games can exist without non-player characters, a PC must always exist. In video games, at least one character is always directly controlled by the user [7], so understanding how to design PCs for storytelling is important. At the core of a SPC exists two essential components: it is first and foremost a game character, which is an important component for narrative games; however, more importantly, it is a PC which has a central role in regulating the player experience [14, 6]. Major franchises are often built around well-defined PCs [8].

Many researchers focus on framing the relationship between the player and their PC [25] in attempt to understand the complexities of how a game is experienced by the player, however few researchers have focused on the character in itself [25]. Frasca argues that "the more freedom the player is given, the less personality the character will have" [10], which partners an issue Tychsen points out: "where character personalities are elaborate, this is often at the expense of player freedom [22]." Contrary to these statements, Petri Lankoski makes a pivotal point in saying that "while these kinds of arguments are valid, they seem to miss how game systems work" [14]. The constraints of games offer more control over the player's perception of the PC than we

seem to initially think. As Lankoski clarifies, "a game will always limit the player's choices, define what is possible, and restrict the player's progression in the game" [14]. SPCs are presented with different limitations and affordances than a PC that can speak; however, because the SPC is essentially a PC at its core, understanding the role of the PC and its effects on the playing experience is important.

2.1   The Role of the PC

A traditional silent protagonist is often linked with the term "avatar," defined as "a player's embodiment in the game" [6, 4, 7]; in other words, the "blank canvas" PC or "tabula rasa" style SPC. This means that SPCs are not conventionally seen as actual characters. The terms avatar and character each refer to different aspects of the player's relationship to the game they are playing [2].

To avoid confusion, Bayliss refers to the PC as the locus of manipulation, which is "used to describe the in-game position of the player's ability to assert control over the game-world, whether this is a visible character, an implied avatar, or a graphical user interface cursor" [2] or simply the player's point of control. He states that the terms "character" and "avatar" describes a different type of relationship between the player and their locus of manipulation, which is similar to Westecott's discussion of a PC to be seen in two ways at once, as a perceived object [avatar] and as an imagined life [character] [26]. This is not to say that a character cannot also be associated with feelings of embodiment, like an avatar; rather there exists interplay between embodiment as a state of being [avatar] and embodying as an act [character] [2]. "It is intrinsically mediated by the complex relationship between the player and their locus of manipulation, a relationship based on the distinction between embodiment as a state of being and embodying as an act," for example, "to consider the locus of manipulation as a separately embodied entity is to conceive it as a character" [2].

Then, where do we draw the line between the player's relationship with their locus of manipulation in terms of defining it as an "avatar" or as a "character?" The fact is, the player-PC relationship is hybrid [4]. Andrew Burn and Gareth Schott performed a study examining the player-PC relationship. They present the statement that, "the two roles are interdependent and leak into each other, just as the game's system and [story elements] affect each other" [4]. This is to say that, in one particular instance, the player can be more involved with who the PC is as a character, and in another, more involved with how the PC operates as their in-game embodiment. "The battle scenes, perhaps, are the most demand-dominated scenes, where the system of the game would seem to be all that matters" [4]. The terms "avatar" and "character" are isolated as they seek to deliver different types of player-PC relationships within narrative games.

2.2   SPCs as Avatars

In the early days of digital games, game characters were little more than generic figures that lacked both personality and depth in their design [22] and players played through the game [2], focusing on their ludic goals, rather than taking an interest in the avatar itself. The avatar was simply used as a tool, or puppet [26], to complete the game; the avatar's role highlighted the "player's own embodiment outside of the game world" [2].

However, contemporary games have begun designing pre-defined characters for their game narratives and have been met with increasing success. Recently, designers use "blank-slate" characters to afford players with the actor role within the game narrative [26, 4], essentially becoming the hero character [4]. "Industry designers refer to the necessity of the player character as representing a kind of 'every man' to enable the player to fully and functionally inhabit their game" [26].

Figure 2.1: "Link." The avatar from a popular 1987 game, *The Legend of Zelda* [18].

The "every man" tale is told like a traditional hero's tale, formulaic in nature; this provides a type of "protagonist ideally suited to be constructed by rules and formulae, being already predictable in his behavior" [4]. A popular example of the avatar described here is "Link" [seen in Figure 2.1] from *The Legend of Zelda* [18]. He is a typical, blank-slate SPC (whose personality was intentionally left open) that must save the princess - a typical hero's goal. Yet, this method results in "game characters with internal personalities that are intentionally left open and loosely defined" [22]. Though sometimes beneficial, the "blank slate" approach ignores some opportunities that emerge with more complex characters [22]. Many narrative games could benefit from the use of a well-defined SPC.

2.3 SPCs as Characters

In this project, we move towards a "character" approach to designing SPCs, rather than the "avatar" approach. The "character" is defined in PC research as a predefined entity, used to tell a story. According to Bayliss, "the idea of character necessarily entails a sense of characterization" [2] or, "a sense of imagined life" [26]. Contrary to the avatar's ludic focus, a character has a "fictive focus on narrative and character development" [2]. While the avatar is largely played by the player, the character is read by the player [4], providing the impression of an individual with its

own identity [25]. However, designing player characters, in general, as "characters" is not the same as designing them for other forms of media.

Designing characters in games presents an interesting challenge compared to characters used in other forms of linear narrative because the player has a significant role in determining the nature of the PC. "The experience of playing games can never be simply reduced to the experience of a story" [13], because "the player always has some degree of input, no matter how minimal, in the shaping of the [PC]" [25]. Unlike characters in novels and film, a character's description is not present and accounted for from the start, "but is only fully determined once the player's selections and ludic actions have traced out a path of traversal through the network of possibilities offered by the game" [25]. Vella presents an interesting perspective in defining a character as both "mimetic, a representation of a possible person, and synthetic, a textual construct constituted of signs" [25]. This means that the interpretation of the PC must always be built from what the player thinks - even when definitive textual signs have been presented to the player, they can perceive this information differently, depending on their own experiences. "This understanding leads us to conceive "character" as a mental construct arrived by the reader, built up piece by piece" [25] and the pieces, instead of being presented to the player in a linear fashion, are spread throughout gameplay. Vella suggests a modification to our understanding of a character, "framing it as containing both a set of fixed [characterization] and a mechanism for the generation of further characterization that, during the course of a given play through, come together into a unified set of statements which, together, are interpreted by the player in the form of a possible non-actual individual" [25].

Figure 2.2: "Joel." The character from a popular 2013 game, *The Last of Us* [17].

For instance, if two players both play "Joel" (considered to be a well-defined character) from the popular narrative game *The Last of Us* [17] [seen in Figure 2.2], their interpretation of him will vary - depending on the types of textual cues the players encounter while carrying out their respective player actions [25].

PC research defines methods in which designers may impact the player's interpretation of the PC. However, many researchers mention that a measure of personality of the PC shines through in the dialogue and cut-scenes [14, 22]. While some parts of PC design methods apply to SPCs (for instance, how actions and goals impact interpretation [14]), other methods simply do not apply because of the character's lack of verbal (and often visual) expression. How can we construct characters that may not have "linguistic or audiovisual" cues or cannot "shine through in the dialogue or cut-scenes"? "The contemporary digital games approach generally avoids complex character personalities and instead conveys a limited modus of emotions and personality via appearance and body language" [22]. Researchers ponder this limitation in saying, "SPCs [like *Gone Home*'s Kaitlin [12]] require far more in terms of reconstruction on the reader's part" [25] and call for other characterization methods.

3. SPC TYPES

Among the many contemporary games that utilize the SPC character design, games vary in their methods of SPC design, meant to deliver different experiences to the player. We introduce the *projective character* and *expressive character* variations as separate types of SPC design. These SPC types define different relationships with the player and deliver different experiences within the narrative of the game. For example, in some games, the SPC design is utilized to encourage the player's embodiment into the hero role; in others, the SPC design is still meant to deliver a predefined character as the main protagonist.

3.1 Projective Characters

The first type of SPC we introduce is the *projective character*: a SPC with little to no characteristics, history, or pre-defined personal relationships - allowing the player to project (or embody) themselves onto the in-game entity. Projective characters are designed to afford presence and immersion within the game space. This type is often used in games that emphasize their ludic goals; games where the character is "largely played by the player" in order to progress through the game's content [4, 2]. Projective characters are also useful in increasing identification with the SPC, allowing the player to fill in a role they prefer, rather than providing them with a predefined one. Customizable projective characters used in combat-based games support a very large span of possible characters, adding a sense of personalization to the game experience [9].

Contemporary examples of projective SPC design are the protagonists in Dark Souls [11] - used to provide embodiment within the dark would, while giving a feeling

of solitude and loneliness; and Journey [21] - used to allow the player to fill in the blanks of the anonymous character's life journey.

3.2   Expressive Characters

Contrary to the projective character, we introduce the *expressive character*: a definitive SPC with personality, history, and characteristics that must be communicated (or expressed) to the player. Expressive characters are designed to be the protagonist in their story, most similar to the character, and is the main focus of this research. As is the trouble with designing PCs as predefined characters, expressive characters must be communicated using other characterization methods than ones used in traditional linear media [9], void of the ability to speak their mind or clearly portray personality traits to the player. Because the player has a significant role in determining the nature of the expressive character [25], the struggle with designing them is to define ways in which the player can accurately interpret these characters based on the information presented to them in various forms.

Examples of well-designed expressive characters are in *Gone Home* [12], where players are very aware of the fact that they are playing a character named Kaitlin and not themselves, despite the first-person perspective; and in *Transistor* [20], players know they are simply "playing *as*" [2] Red, as she often acts on her own, reminding players that she is an entity separate from them.

Projective SPCs are designed to afford presence and immersion within the game space; often used for games with high levels of action, or high focus on the player's ludic goals. Expressive SPCs are designed to tell stories; offering the role of the main character to the player. Players understand their role in the narrative, and play as the character, rather than playing as themselves. Projective SPCs are dull and uninteresting within complex narratives; while expressive SPCs can be pointless and

time-consuming in games where narrative is not a focus.

3.3 SPC Scale

The idea of the SPC scale, a rating of silent protagonists and their level of characterization on a scale, is meant to detail the varying levels of characterization among the different types of SPCs.
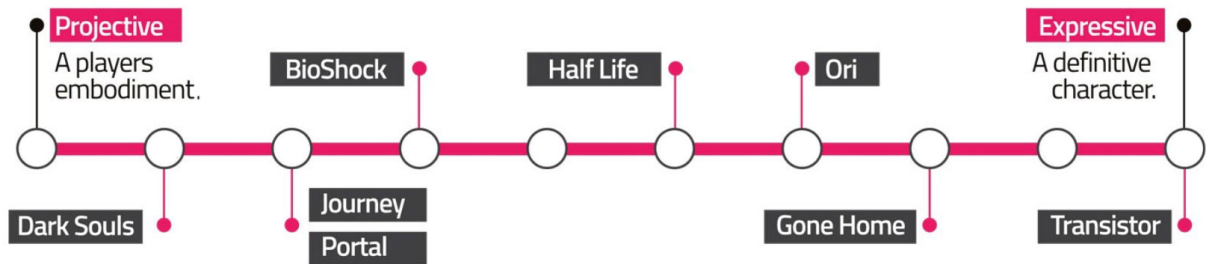
Figure 3.1: The SPC Scale.

A silent protagonist that is purely projective is placed towards the left end of the scale [see Figure 3.1], defined as an entity with no characterization involved; allowing the player to fully embody the in-game tool to complete their ludic goals. It is of importance to note that the difference between various positions on the scale is solely based on the perspective and appearance of the protagonist in the game. This is because the visibility of the SPC is a contributing factor in a protagonist's characterization; allowing the player to either customize or see a projective character in third-person perspective ultimately affects the player's interpretation of the SPC [14, 25].

SPCs placed towards the right end of the scale, for example Red in *Transistor* [20],

are expressive characters that have the highest level of characterization throughout the course of the game - essentially the only thing missing from these characters is their voice. SPCs that are considered expressive characters, but are utilizing some of the "blank slate" attributes (for instance, Gordon Freeman in *Half Life* [23]) would near the middle of the scale. These character's personalities may not be clearly defined, but the player is informed on who they are playing, and their relevance to the game world. To lower a SPC's ranking on the scale would mean to decrease the amount of information players can infer about the character, specifically beginning with their reflection of an inner consciousness or personality separate from the player.

Overall, most existing SPCs are projective characters. However, expressive SPCs have more narrative affordances and are currently less understood. Therefore, we introduce our initial framework on character design for Expressive SPCs.

4. EXPRESSIVE SPC SURVEY

There are not many existing works specifically for SPCs, so in order to develop an understanding of how expressive SPCs have been designed and developed in narrative games, we conducted a survey of related games. These games include both AAA games and indie titles that utilize this particular type of character design. Our list includes indie titles: *Gone Home* [12], *Transistor* [20], and *Ori and the Blind Forest* [16]; along with AAA titles: *Portal 2* [24], and *Half Life* [23]. Among this list of games, all the protagonists are characters that attempt to be communicated to the player without the use of voice. Select games were chosen due to their industry and fan success, and their varying levels of characterization. Each expressive SPC was closely analyzed throughout gameplay to identify each contributing factor in how the character is developed. Found methods that were used to characterize each expressive SPC among our selected games were then categorized and detailed below.

We begin with *Gone Home* [12], an adventure game developed by Fullbright, players take on the role of Kaitlin Greenbriar in a first-person perspective during her trial to discover what happened to her family upon arriving home to an empty house from a trip abroad. As Kaitlin, the player's goal is to wander the house in search of clues that may answer the question of where her family members may have gone - focusing mainly on her sister's (the narrator) story and whereabouts. The player is not directly informed of their goal, but is encouraged with more story elements upon exploring new areas of the house. Beyond her sister's narration, Kaitlin is the only active character in the story. Progression in the game is dependent upon finding specific objects that unlock access to the hidden sections of the house.

Figure 4.1: Kaitlin's passport found in her inventory [12].

Kaitlin begins in the porch of her family's new house, next to her luggage sporting her name tag and her passport in her inventory [see Figure 4.1]. A note from her sister, directed at Kaitlin, is left on the front door, requesting she not try to find her. Kaitlin's personality is realized through objects found within the environment, along with her visuals subtly introduced in the form of family portraits (or her passport). Kaitlin will sometimes act/think on her own, reminding players that, regardless of who is in control of her "mechanically," she can still have thoughts separate from the player.

In *Portal 2* [24], a puzzle-platform game developed by Valve, players take on the role of Chell in a first-person perspective. As Chell, players must navigate a depre-cated science lab, run by a powerful super computer named GLaDOS, armed with only a portal gun (allowing Chell to shoot portals and travel through them as passage ways) to traverse obstacles. In the beginning, Chell follows Wheatley, a "personality core" who helps her escape the lab through the test chambers. Progression in the game simply means the player must solve each puzzle Chell encounters.

Figure 4.2: Chell seen through the portal [24].

Chell's internal personality is ambiguous - not much information is given about her specifically, but the game provides other characterization methods that, not only reminds us that we are Chell (and not playing ourselves), but also tell us more about Chell's past. GLaDOS continuously reminds the player they are playing Chell by constantly referring to her and Chell's past together - specifically when Chell "killed" her in the last game. GLaDOS often uses dark humor as reminders that we are playing Chell by referring to her as "big," or "fat;" a joke normally deemed offensive by females. Players can also sometimes see Chell when entering/exiting portals from a certain angle [see Figure 4.2], reminding players of Chell's physical appearance.

In *Transistor* [20], an action role-playing game developed by Supergiant Games, players take on the role of Red in a third-person isometric perspective. As Red, the player travels to various locations, fighting "the Process," an army of robots, accompanied by her sword and companion - who is the absorbed consciousness of a man. Red, a controversial singer, was to be assassinated by a group called "the Camerata," but she manages to escape, without her voice - which was absorbed by

the transistor. Progression in the game is for the player to battle "the Process" while finding other victims that can be absorbed by the transistor to unlock more abilities.

Figure 4.3: Red pauses to reflect on her inner turmoil [20].

Upon beginning the game, Red is already characterized by her appearance alone. She's dressed in very sharp clothing, appearing to be someone of importance. Red has many moments hinting at her inner turmoil. For example, Red spends a significant amount of time staring at her show's posters (upon player interaction) [see Figure 4.3], and her sword/companion comments, "Hey, let's just go. C'mon just go. Just... yeah." This displays the longing Red feels for her voice. Moments like these remind the player that Red is feeling emotions separate from them.

In *Half Life* [23], an action-shooter game developed by Valve, players take on the role of Gordon Freeman in a first-person perspective. As Gordon, the player learns they are a physicist who works as a researcher in a deep underground secret research center, "Black Mesa." As events unfold at the beginning of the game, players take part in an experiment gone wrong, when a dimensional rift created by the experiment allows a race of aliens to enter our world and attack the facility of "Black Mesa."

Gordon Freeman is then tasked to find a way to the surface for help. Progression means to complete objectives, kill aliens and government officials, while escaping "Black Mesa."
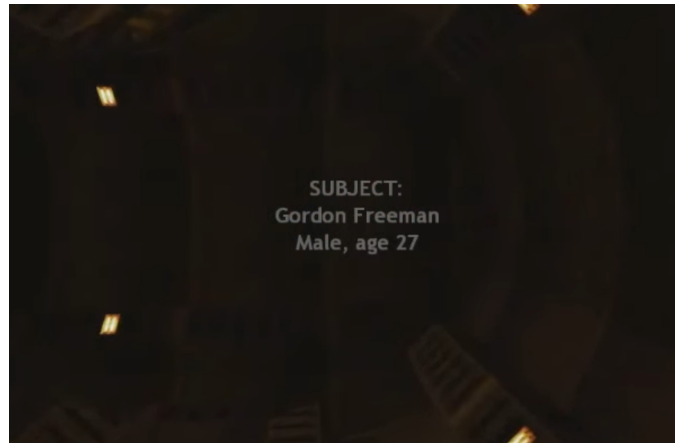

Figure 4.4: Player is directly introduced to their character, Gordon Freeman [23].

As players begin the game, they are introduced to who they are immediately, in the form of text on the screen [see Figure 4.4], which introduces Gordon's name, gender, age, education, position, and other trivial information about the character up-front. Players are then confirmed of this knowledge as they arrive to his workplace; a science lab where other scientists address him respectfully and friendly. Beyond the initial formalities of introducing the character's identity, Gordon Freeman's personality is left purposefully ambiguous, allowing players to then immerse themselves in the environment and embody themselves into the role of Gordon.

In our last contemporary game, *Ori and the Blind Forest* [16], a platform-adventure game developed by Moon Studies, players take on the role of Ori in a third-person 2D perspective. As Ori, the player must travel through various locations in the forest to empower Ori and ultimately restore the forest. Ori is guided by "Sein," the light

and eyes of the Tree who guides him, and helps fight enemies and blow up obstacles. Ori's tale is narrated by the voice of the Spirit Tree. Progression in the game is to use Ori's nimble abilities to combat enemies and solve puzzles that unlock new areas of the forest.

Figure 4.5: The voice of the Spirit Tree speaks highly of Ori and his intentions [16].

Ori is introduced from birth, narrated by the voice of the Spirit Tree, who often speaks highly of Ori's kindness or friendly intentions [see Figure 4.5]. A short cut-scene and beginning gameplay details the relationship between Ori and his friend Naru, who perished while raising Ori. Since Ori is seen in a third-person perspective, his emotions are often visually clear - for example, when Ori is feeling sad his facial expression reflects the emotion. However, Ori tends to not have any specific personality traits, minus what the voice of the Spirit Tree sometimes describes him as.

In the next section, we use these select five games to construct a list of reoccurring methods that can be used to characterize expressive SPCs.

5. EXPRESSIVE SPC DESIGN PATTERNS

How do we develop complex characters that may lack appearance or body language communication methods, and above all, speech? "A player-character is established through a set of interrelating medialities that, in addition to the linguistic and audio-visual, includes modes of signification that are specific to games" [25]. We examined our selected games and compiled a list of reoccurring patterns to determine their design implications. Patterns here are defined as a categorization of "textual cues from which an attribute or trait pertaining to a character can be inferred" [25]. These patterns only pertain to the development of an expressive character, as their purpose is to increase characterization among SPCs.

5.1   Personal Cues

Our first pattern and possibly the most versatile is *Personal Cues*, which are defined as objects or hints that reveal information about the SPC's personality, characteristics, or history. These are items that tell various personal information regarding the character, thus impacting our interpretation of who they are. This is an interesting pattern because it can be used a variety of different ways; for instance, Vella identifies parts of this pattern as "static mimetic elements," which refer to "statements regarding fixed facts regarding a character, such as their name, appearance, customs, habits, etc." [25]. While these facts interpret our understanding of the character directly, there are also *personal cues* that give more subtle information about the character. Lankoski and Vella discuss the player's active role in the interpretation of *personal cues*. For example, the expressive SPC's "capabilities and limitations in relation to the other entities in the game world can themselves become a vehicle for

characterization" [14, 25], meaning that what the SPC is able to do within the game world will impact the player's interpretation of the SPC; as well as the SPC's goals. "Ludic goals assigned to the player, when grasped as the player-character's goals within the game world, can serve as yet another [characterization] layer" [14, 25]. Understanding that these attributes can also be interpreted by the player as a form of characterization is essential, because these things can tell us more information about who the SPC is both outwardly and internally.
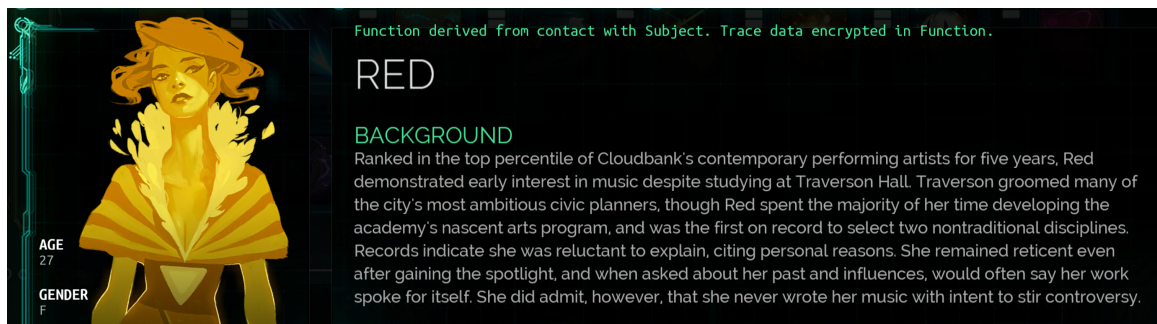
Figure 5.1: Red's biography displays a concise description of her [20].

An example of this pattern in play is in *Gone Home* [12], where *personal cues* are found within the environment as hand-written post cards to her family; revealing her bubbly personality and desire to travel while keeping in constant contact with her family. Beyond using *personal cues* as a vague clue that the player must interpret, in *Transistor* [20], Red's biography can be found upon inspecting her sword [see Figure 5.1]; informing us a great deal of Red's past and controversial career, along with further information of why she became a target for the Camarata.

5.2 Personal Relationship Cues

The second pattern developed in this project is *Personal Relationship Cues*, similar to *Personal Cues*, which are objects or hints that reveal information about the main character through relationships with other characters in the narrative. These cues are designed to reveal the people who are close to the character and/or understand who the SPC is - giving more detail into their characteristics or history. While general facts about the character affect the player's interpretation (name, job, etc.), interactions with other characters can inform players on the characters exact role within the environment [25], which can further inform the player of the character they are playing. For example, if a character interacts with their mother in a polite or passive manner, players might assume that the character is obedient in nature (at least towards their mother). Along with inferred (indirect) information that can be learned from characters, designers can also use other characters to reveal general knowledge or history of the PC.

Figure 5.2: The player is introduced to Gordon Freeman's coworkers [23].

An example of this pattern in play is in *Half Life* [23], where these *personal relationship cues* are given to the player as NPC communications directed at the SPC. Players talk to other characters in the lab [see Figure 5.2] and learn [by their interactions with the SPC] that Gordon is a well-known scientist respected among his peers based on their friendly, familiar banter directed at the SPC. Another example from our list of games is in *Portal 2* [24] when GLaDOS mentions to Chell that she has parents (who abandoned her at birth) which is giving the player some direct, exponential information about Chell's past.

5.3 Narrative Assistant

Third is the *narrative assistant* which is defined as an object, character, or literal narrator that assists the player in a clearer understanding of various narrative elements; including how the SPC fits into the narrative. These assistants can come in the form of characters that talk with the SPC, or even a voice over. The *narrative assistant* is a strong storytelling tool, able to directly give the player narrative information that can frame the game's story. In addition the framing the story as a whole, *narrative assistant*s are used to communicate SPCs to the player - often used to signal players on what the SPC's inner thoughts may be. However, a *narrative assistant* is not to be confused with a game character or object that is simply relaying the game's goals to the player (for example, a distinction between a *narrative assistant* and quest giver, for instance, is that the *narrative assistant* will inform the player of story elements that frame the SPC's world and likely the SPC's role in that world, while a quest giver is simply used to assign goals that progress the player through the game's content - no new information about the SPC is ever given).
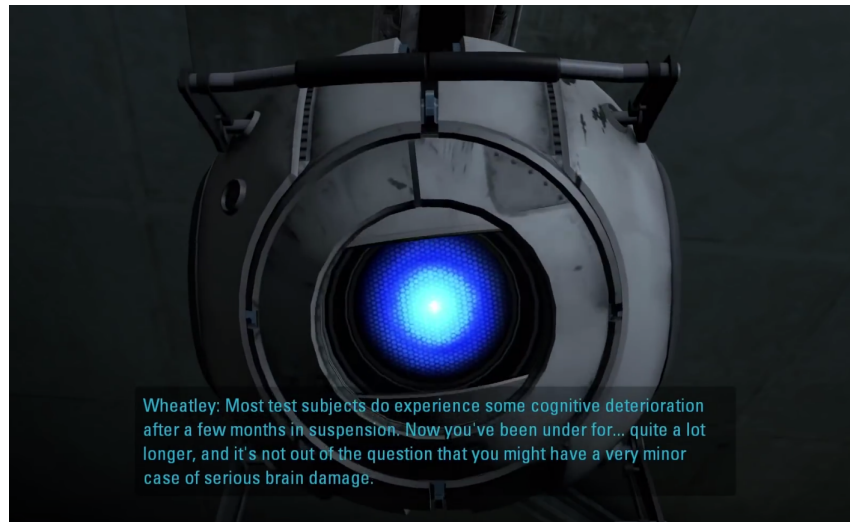
Figure 5.3: Wheatley updates Chell on her condition [24].

A clear example of this pattern in play is in *Ori and the Blind Forest* [16], where the *narrative assistant* is featured as an actual narrator, the voice of the Spirit Tree, delivering the game's narrative. Players listen to the narrator tell the story of Ori's birth and early-life hardships, framing our early understanding of Ori as an empathetic, underdog orphan character before the player is given control over him. Another good example of a *narrative assistant* is in *Portal 2* [24] is Wheatley [see Figure 5.3]. In the beginning of the game, he tells Chell all about her current state, how long she has been unconscious, and the condition of the facility - revealing her role in the updated context (since the last game) of the narrative.

5.4 Mind Glimpse

Our next pattern is the *Mind Glimpse*, defined as a fixed incident or event that allows the player a peek into what is inside of the SPC's mind. This is the most unique method introduced in this paper, as it can be done in various, creative ways (depending on the game). Mind glimpse events are designed to communicate a char-

acter's inner intentions or thoughts; however, these incidents can occur in the present tense (displaying what the character is currently thinking), or through an object or past reference (displaying what the character was thinking at one point) - meaning that any access to the SPC's inner thoughts would be considered a *mind glimpse*. For example, character actions that can be attributed to the character can easily be taken as strong [characterization] [25, 14]. If a character does something, players can infer by the action what the SPC might be thinking. These instances can also come in the form of objects, text, or notes that a SPC has left behind, informing the player on what the SPC is thinking/was thinking at the time of the note.

Figure 5.4: Kaitlin's thoughts sometimes appear on hover [12].

A contemporary example of this pattern in play is when *Gone Home*'s [12] Kaitlin thinks [in the form of text upon a hovered object] to herself [see Figure 5.4]. Players are given direct insight on Kaitlin's thought about the hovered object, allowing the player sight into her mind momentarily. Another example is when Red, in *Transistor*

[20], uses the news terminals to communicate with the public (while looking for other citizens). Players can choose to leave a comment, and Red will type out a pre-defined message to the community (i.e. "Is anyone out there? -R"). Sometimes Red writes things and erase them, exemplifying how frustrated she is at the current situation, and the things she would like to say, but convinces herself not to say them. Moments like these remind the player that these characters can feel emotions or have thoughts separate from them.

5.5 Character Identification

Lastly, a seemingly obvious, but important pattern is *Character Identification*, which describes the notion of revealing to the player exactly who they are playing in the context of the narrative. This patterns essentially describe the methods the player must encounter to interpret who they are. This pattern varies depending on the perspective of the game (first-person or third-person). While playing a third-person perspective game, it is difficult to confuse who you are playing within the context of the narrative because you can visually see and control them (though designers must clearly consider how the SPC's visual appearance impacts their interpretation of the character [14, 25]). This is more important when playing in first-person perspective. If players are confused about who they are playing within the story, their other interpretations of the character - the characterization the other patterns attempt to infer - will be confused, as well.

Figure 5.5: Ori was born and adopted by his caretaker and friend, Naru [16].

A contemporary example of this pattern in play is in *Gone Home* [12], when players arrive to the house next to her luggage which has her name on the tag, that matches the name on her passport within her inventory, players are able to immediately identify who they are playing within the context of the narrative. Another example is the opening scene of *Ori and the Blind Forest* [16] when players are introduced to Ori from his birth cut scene [see Figure 5.5], seeing the beginning of Ori's story in play from his exact time of birth. After being introduced to Ori at the beginning of his life, players eventually assume control over him.

5.6   Patterns-Characterization Relationship

These patterns are meant to encourage storytelling with the use of expressive characters. However, not all patterns must be used to create expressive characters. Different patterns are used to communicate various levels of characterization. The *Mind Glimpse* and *Narrative Assistant* patterns tell the player more directly who

the character is internally. A *mind glimpse* literally defines what is within the SPC's mind. Designers would not use a *mind glimpse* event if the character is not meant to be internally defined, as exemplified in *Portal 2* [24], *Half Life* [23], and *Ori and the Blind Forest* [16] [see Table 5.1], whose expressive characters are mostly void of definitive personality traits. A *narrative assistant* helps the player in understanding the character and their role within the narrative more clearly; certain SPCs are designed so their role is loosely defined instead - allowing the player to easily take over/embody the character's role in the narrative, for example, *Half Life*'s Gordon Freeman [23]. The *Character Identification* pattern, however, is a necessary attribute to designing expressive characters because the player must at least know the character they are playing within the narrative (otherwise, the character would be considered more projective). This pattern is used among various characterization levels in order to specify the character's general identity.

	Personal Cues	Personal Rel. Cues	Mind Glimpse	Narrative Assistant	Char. Identification
Ori		X		X	X
Half Life		X			X
Transistor	X	X	X	X	X
Portal 2	X	X		X	X
Gone Home	X	X	X		X

Table 5.1: Design patterns found in select contemporary games.

Both the characterization levels of *Personal Cues* and *Personal Relationship Cues* may vary. For example, a player can learn general information from a personal relationship cue (like Gordan Freeman [23] learning he is a scientist) or more specific character information (like analyzing the way in which Red [20] communicates with her companion/sword, revealing that she clearly cares a lot about this person). Same goes for *personal cues* in which the information can vary from general information (like seeing Chell's [24] science project from a lab event - revealing her parents were employees there), to more specific character information (like finding the post cards written by Kaitlin [12] which display her personality) depending on the content the designer chooses to communicate via these patterns.

6. MOTHERHOOD

After the initial introduction of our design patterns, we must find out if they can be applied to the development of expressive SPCs as intended. In order to evaluate the patterns identified in this project, we designed a short narrative experience called *Motherhood*, featuring the story of an expressive SPC named "Alice." *Motherhood* is a first-person perspective, narrative-driven experience set in a 2-bedroom apartment with a horror-suspense atmosphere. The goal of gameplay is to unveil the letter Alice has written by finding the specific objects she references. The items are presented as blurry, handwritten lines and the player must interact with the correct objects to unveil each line. Upon finding the object, the player must place it in a box of "Scotty's Things." Players encounter various instances during gameplay where the patterns are exemplified.

6.1 Alice's Story

Alice and Nelson were high school sweethearts. In their prime, they were the ideal couple; seemingly a perfect match that would last forever. Throughout their twenties, Alice and Nelson had trouble having their first child, but was determined to start a family together. They were finally successful come their early thirties. For a while, Alice was a hard-working stay-at-home mother; constantly taking care of her baby, Scotty, whom she loved with all her heart.

While she was happily-married for years, Alice struggled with depression and anxiety, was on several medications to control her mood, and developed a tendency to fight and argue with her husband. It became too much for him to bear. Nelson decided to move out of the house and initiate divorce proceedings in an attempt to

move on with his life. However, he felt that Alice was becoming increasingly unstable and stubborn with her medications, so he decided to hire a good lawyer and receive full custody over Scotty. Alice - heartbroken, devastated, and unstable - was destroyed by the fact that her once perfect life was falling apart at the seams. Scotty was the best thing that ever happened to her, and Alice could not imagine living a life without him. She decided to write a letter to Nelson, explaining to him all the important things their son will need when he picks him up. After soothing Scotty and turning on a lullaby, Alice went into her room and took a large amount of pills all at once.

Alice awoke from her slumber with a goal. She had forgotten to pack the box of things before she took her life. Alice was given a small window of time before her departure to finish caring for her son, one last time. Alice (as the player) packs Scotty's box of things and gives him one last kiss goodbye. Upon the arrival of her husband, Nelson, Alice disappears forever.

6.2   Project Design

The player begins in Alice's room. In the beginning, the only interact-able item is the letter Alice left on her side table. Once the letter is picked up and the goal of the game is revealed, players can interact with other objects in the bedroom (i.e. a birthday card, Alice's credit card, and a teddy bear). Upon finding the teddy bear, players can leave the bedroom by walking *through* the door. This is one of our design patterns exemplifying that Alice is a ghost [see Table 6.1]. After this initial introduction, the player can then visit the other rooms in the apartment (the living room, the bathroom, the closet, the kitchen, and the office space); not including the nursery, from which the player can hear a lullaby playing through the door. The player can interact with various objects, and can pick up the specific items that must be placed inside the box of "Scotty's Things." Once the player has placed all four of

the items listed into the box, Alice signs her name at the bottom of the letter and places it on top of the box. The player's only option is to then enter the nursery where they watch a cut scene featuring Alice's departure from the world.

While designing Motherhood, decisions were important to the aesthetic and player decision making. As stated, Alice is a first-person perspective character. This was done for two main reasons. (1) The most important reason was because we sought to tackle an important problem - communicating an expressive SPC that is also faceless. We wanted to make sure that Alice could be properly communicated to the player via our list of design patterns, without the need of showing her physical appearance. (2) Time constraints for the creation of the project made it a smarter design choice. Along with designing Alice as a first-person character, Alice's footsteps are left intentionally silent and her shadow was intentionally hidden. This was meant to further the notion that Alice was a ghost as the player played through the game (in addition to Alice's ability to walk through doors).

Alice is the sole character within Motherhood and the other characters are presented simply as voices. This was largely due to both time and technical constraints; however, this served beneficial to the player's overall feeling of isolation (similar to an emotion Alice is feeling throughout the game). The goal of gameplay - Alice collecting the things her son needs - was designed to (1) communicate what is important to Alice and how much she cares about her son, and also (2) to prompt the player to explore the environment aimlessly. Players were unsure of exactly what they were looking for, so they explored the environment and narrative elements more thoroughly, instead of rushing around to simply finish the game.

6.2.1 Patterns in Game Design

In this project, we have used our design patterns roughly 24 different times, represented through different objects or actions throughout the environment (defined as instances) [see Table 6.1]. Story information the player is expected to conclude is included for each instance. Ten main intervals (use cases of the design patterns) were picked from our list of design pattern references that explored a variation of our design patterns used in the project. These ten intervals were evaluated individually in our user study section [highlighted in Table 6.1]. In this section, we will define each of our ten intervals and their intended story relevance.

Interval 1: The medicine on the table [see Figure 6.1] is designed to correspond with the *personal cues* design pattern. This gives the player initial information that the character they are playing is on medication, or has overdosed on medication (due to the knocked over bottle). These are the pills that led Alice to her death.

Figure 6.1: The medicine on the table in *Motherhood*.

Interval 2: The credit card on the shelf [see Figure 6.2] is designed to correspond with the *character identification* design pattern, by giving players the SPC's first and

last name up front. The player is only given this information directly in one other instance, by viewing the mail on the kitchen counter. However, players may realize they are Alice by the voicemail messages (they are directed at Alice) or the medicine schedule (found in Alice's bathroom).
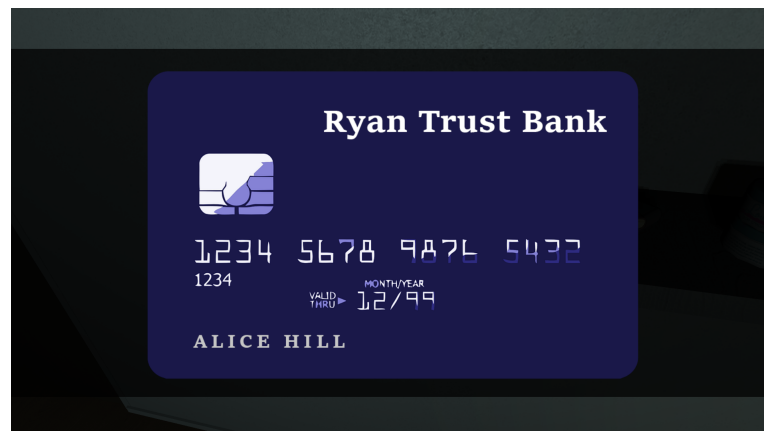

Figure 6.2: The credit card found on the shelf in *Motherhood*.

Interval 3: The birthday card [see Figure 6.3] corresponds with the *personal cues* design pattern. Upon seeing this, the player can infer that the main character has a sister that really cares about her (and a love for her son).

Figure 6.3: The birthday card found on the shelf in *Motherhood*.

Interval 4: The door passage [see Figure 6.4] is designed to correspond with the *personal cues* design pattern. This action is utilizing the fact that character's possible actions [14, 25] can inform the characterization of the SPC and is meant to infer that Alice is a ghost from the beginning of gameplay. Though other narrative information references this fact, this is the main clue exemplifying this information.

Figure 6.4: The door passage action exemplified in *Motherhood*.

Interval 5: The closet letters [see Figure 6.5] are designed to correspond with the *personal relationship cues* design pattern. These are meant to tell the player that Nelson and Alice had a happy relationship that began in high school, which might inform the player on why the break-up is impacting Alice so strongly.
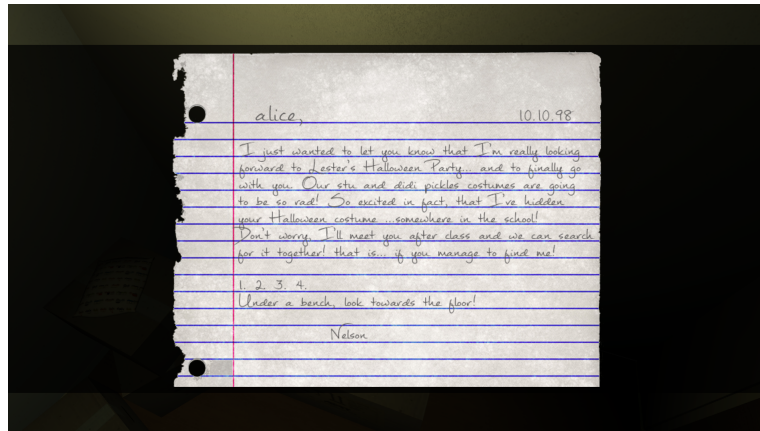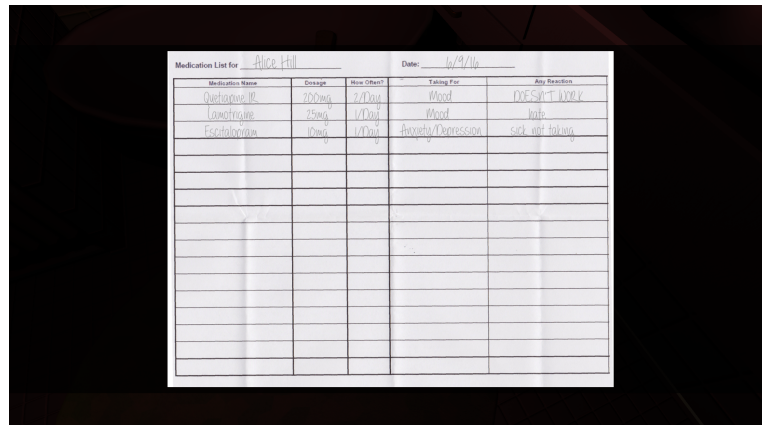

Figure 6.5: The closet letters found in *Motherhood*.

Interval 6: The medicine schedule [see Figure 6.6] is designed to correspond with the *personal cues* design pattern. Upon finding this schedule, players understand that Alice's medication makes her sick and that she does not want to take them, further informing the player on Alice's personality (she may appear to be stubborn).

Figure 6.6: The medicine schedule found on the bathroom floor in *Motherhood*.

Interval 7: The voicemail messages [see Figure 6.7] left on the phone are designed to correspond with the *narrative assistant* design pattern. The characters Laura and Nelson assist the player in understanding their overall history with Alice and help clarify parts of the narrative. Hearing what these characters have to say to Alice further defines her role in the narrative.

Figure 6.7: The voicemail machine found in *Motherhood*.

Interval 8: the acceptance form [see Figure 6.8] is designed to correspond with the *personal cues* design pattern. Upon finding the X'd out letter that she was supposed to sign to initialize the divorce proceedings, players can infer that she feels strongly about not wanting the divorce/custody battle to happen. It also illustrates her total frustration with the situation.
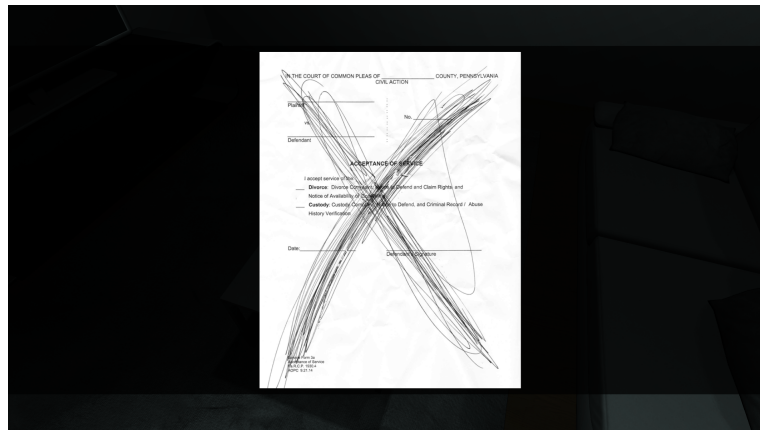
Figure 6.8: The acceptance form found on a table in *Motherhood.*

Interval 9: the final letter [see Figure 6.9] is designed to correspond with the *mind glimpse* design pattern. The player must reveal the entire final letter to finish the game. Upon revealing the letter contents, Alice signs her name on the bottom and places it on top of the box of "Scotty's things." The player is able to witness Alice act on her own for the first time, further defining her as her own character (with separate thoughts from the player), and revealing her final intentions to the player.
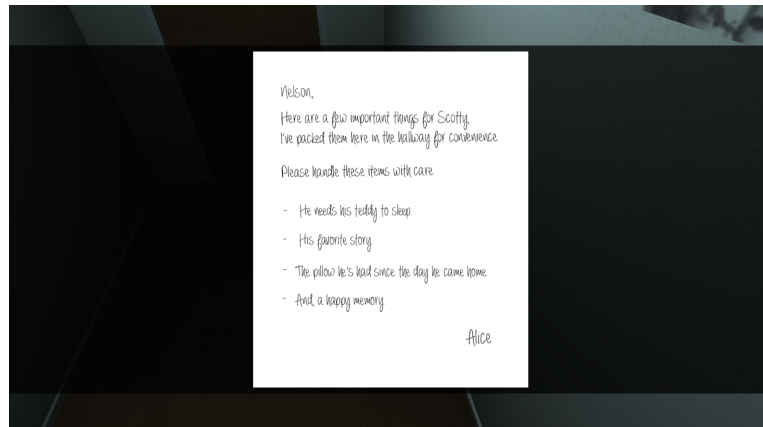
Figure 6.9: The final letter revealed in *Motherhood.*

Interval 10: the final scene [see Figure 6.10] is designed to correspond with the *mind glimpse* design pattern. The player is able to watch Alice act on her own; seeing her react to her son and watching her give him a kiss goodbye. Alice hears her husband call from the apartment front door, and she begins to cry - revealing her extreme sadness as she fades away.

Figure 6.10: The final cut scene at the end of *Motherhood.*

We have discussed ten instances where each of our design patterns have been used throughout the design of *Motherhood*. There are 24 instances in total; a complete list can be found in Table 6.1, along with their corresponding design pattern and intended story information.

INSTANCE	PATTERN	INFORMATION
Medicine on table	*Personal Cues*	Alice took a lot of pills that eventually led to her death.
Credit Card	*Character Identification*	The player begins as Alice in her room.
Birthday Card	*Personal Relationship Cues*	Alice has a caring sister.
Final Letter	*Mind Glimpse*	Alice leaves the letter for Nelson.
Door Passage	*Personal Cues*	Alice is a ghost and can pass through doors.
Closet Letters	*Personal Relationship Cues*	Alice and Nelson were together for a very long time.
Medicine Schedule	*Personal Cues*	Alice does not like to take her medicine.
Voicemail Messages	*Narrative Assistant*	Laura and Nelson help the player to understand the history of Alice and help the player clarify parts of the narrative.
Acceptance Form	*Personal Cues*	Alice broke down and x'd out the acceptance papers. She does not want to lose her son.
Final Cut Scene	*Mind Glimpse*	Alice's final goodbye to her son.
Scotty's Bear, Blanket, Book (Pick-up Items)	Personal Relationship Cues	Alice cares a lot about her son and what he needs.
Picture Frame (Pick-up Item)	Personal Relationship Cues	Alice wants her son to remember her.
Bear, Blanket, Book, Picture Frame (Pick-up Items) Shadows	Personal Cues	These objects have shadows, while Alice does not (ghost).
Mail	Character Identification	This is Alice's house.
Boxes on one side of bedroom	Personal Relationship Cues	Someone (Nelson) has moved out.
Scattered Pills in Bathroom	Personal Cues	Alice does not like to take her medicine. She flushes them.
Bathroom Toys	Personal Relationship Cues	Playful bath time with her son.
Child's Drawing on fridge	Personal Relationship Cues	Proud mother of a young child.
Cookbook + Sticky Note	Personal Relationship Cues	Alice likes to bake for her son.
Cake	Personal Cues	Alice enjoys baking.
Office Calendar	Personal Cues	Alice's week is filled with activities with her son.
Child Custody Papers	Personal Cues	Alice is in a custody battle.
Divorce Papers	Personal Cues	Alice is going through a divorce.
Living Room Photos	Personal Cues	Alice had a happy life.

Table 6.1: Design patterns found in *Motherhood*. Each instance represents an object or action found in the project that corresponds with a design pattern and its story relevance. The highlighted instances indicate the patterns directly rated for impact within our user study.

7. EVALUATION

In order to test the design patterns exemplified in *Motherhood*, we have developed a user study that tests for both story comprehension via a semi-structured interview [see Appendix A], and each pattern's individual impact within a questionnaire [see Appendix B]. Twenty-one participants (10 males and 11 females) were recruited via posters and email recruitment messages. Each student played through our prototype, participated in a semi-structured interview and completed a Google Forms questionnaire.

In the semi-structured interview, we collected qualitative data and players were asked two questions: 1) "In your opinion, what was the general story of the game?" and 2) "Describe the character you are playing in as much detail as possible." Our expectations were that players would tell us their general interpretation of the game's plot in question one, and then examine the SPC at a deeper level in question two.

In the questionnaire, we collected both qualitative and quantitative data. Players were asked to rate each interval (as described in section 6.1) on a Likert scale of 1 to 4, based on how strongly the object or action impacted their interpretation of the SPC. The Likert scale ratings were as follows: 1 (Strongly Disagree) - This gave me no new information about who the character is; 2 (Disagree) - This gave me information about the character, but it did not change my interpretation of them; 3 (Agree) - This gave me information about the character and vaguely affected my interpretation of who the character is; and 4 (Strongly Agree) - This gave me information about the character and strongly affected my interpretation of who the character is. There was no neutral option available. After rating the interval, players were asked: "How did the [interval object] affect your interpretation of the character you were playing?" Our expectations for this question were that the player would describe the content

they learned from the specific interval in more detail.

     With this study setup, we hoped to find out if the player can 1) explain the general narrative of the game and the expressive SPC in detail, and 2) identify which patterns impacted their interpretation the most. After testing was complete, we compared each section's responses to our expected story information, and each pattern's expected impact levels with the average impact level; as well as searched for emerging themes among player's interpretations.

8. RESULTS

To determine the validity of the design patterns developed within this thesis, we tested our prototype on 21 participants to analyze their (1) overall story comprehension, (2) their SPC comprehension, and (3) the impact of each design pattern interval. In this section, we discuss our findings from the semi-structured interview, including expected and emergent story themes, and our findings from the questionnaire, including our expected versus average impact, and general and emergent themes.

8.1 Interview: Expected Themes

We begin with the results of the semi-structured interview, where we asked qualitative questions to analyze the player's overall story and SPC interpretation. In our expected themes table [see Table 8.1], we first introduce the set expected themes (story elements we wanted to communicate to the player). Then we list the amount of participants that were able to infer the expected theme (out of 21 participants total) from gameplay, and the patterns used to communicate the expected theme, along with how many times one type of pattern occurred among each one.

The first expected theme was *Alice as the player character*. As the player, this is an important element to understand to evaluate the rest of the content effectively. Out of 21 participants, 18 were able to come to this conclusion. Others suspected they may be Nelson, or expressed some confusion between the two. When asked to describe the character they are playing, one participant answered, "This was a little confusing, but I guess you're playing as the father (or at least that was my understanding)." Players seemed to be somewhat confused by the fact that the beginning letter was addressed to Nelson.

Expected Themes	Participants	Patterns Used *(Occurrences)*
Alice is the player character.	18 (out of 21)	Character Identification *(2)* Mind Glimpse *(1)*
Alice is a ghost/dead.	9 (out of 21)	Personal Cues *(2)* Personal Rel. Cues *(2)* Mind Glimpse *(1)*
Alice is struggling with mental illness.	19 (out of 21)	Personal Cues *(4)* Narrative Assistant *(1)*
Alice is going through a divorce/custody battle.	21 (out of 21)	Personal Cues *(3)* Mind Glimpse *(1)* Personal Rel. Cues *(1)* Narrative Assistant *(1)*
Alice loves her son over everything.	16 (out of 21)	Personal Rel. Cues *(4)* Personal Cues *(1)* Personal Rel. Cues *(1)* Narrative Assistant *(1)*
Alice had a happy past.	9 (out of 21)	Personal Rel. Cues *(2)* Narrative Assistant *(1)*

Table 8.1: Expected themes found in the semi-structured interview.

Next was the interpretation that *Alice was a ghost*. Only 9 out of 21 participants were able to accurately assume this about Alice, while others expressed either confusion, or no knowledge of it at all. This includes the players that were confused about their identity. This information was communicated to the player approximately five times across different patterns, but many of them told the player this information abstractly (for example, the door passage (*personal cues*), which many participants thought was a mechanical solve).

The theme of *Alice's struggle with mental illness* was communicated quite effectively, even though the number of occurrences were the same as the last theme. 19 out of 21 participants mentioned this interpretation in their interview in plainly saying that, "Alice also struggles with mental illness" or as the cause of her death, "Because of her separation anxiety, she decided to end it." The patterns that commu-

nicated this information were told in a very obvious manner, possibly upon reading the medicine schedule, seeing all the scattered pills, or hearing Nelson ask, "Have you been taking your medications?" over the phone.

Alice's divorce/custody battle was the most obvious theme players could infer. All of the participants noted this as a core story element within the interview. This is likely because it was a central plot point that was communicated six different ways over the course of gameplay in a very clear manner. Despite having the divorce papers available for review, Nelson even calls asking about her required signature.

The next theme was *Alice's internal love for her son*, which was important to communicate to the player because it expresses Alice as a character with pre-defined thoughts. While the player might not love Alice's son, they openly realize that the character they are playing does. 16 out of 21 participants noted Alice's love for her son during the interview process, drawing on their interpretation of her inner emotion in saying, "There was her child that she was very much in love with," and that "She was trying to be a good mother to him, even after death." However, some players who did not mention this in the interview did mention this within the questionnaire.

Alice's happy past was the last expected theme, which many players either overlooked, or did not interpret this information at all. Only 9 out of 21 participants referenced this theme in their interview. However, upon analyzation of the patterns used and how many times they occurred, this conclusion makes sense. This pattern was communicated in two instances rather abstractly. There remained only one clear example, the old letters in the closet (*personal relationship cues*) that displays Nelson's early love notes to Alice. If this information was missed, players had to draw conclusions elsewhere. Though, some participants were able to do this. One participant stated that, "There were the happy pictures on the wall, telling me she was happy at one point in her life," even after missing the old letters in the closet.

8.2   Interview: Emergent Themes

Besides the expected themes, participants identified a few emergent themes about Alice. The first emergent theme discussed *Alice's isolation from her support group.* Players inferred this information based on the fact that Laura, her sister, calls twice with a clearly worried tone; asking her if everything was OK. It showed players that Alice has not been responding to any phone calls, and that her sister had reason to worry. Players stated that, "She's not returning anyone's phone calls, she's shut off from life," and "She's isolated herself from her family," which is a fact that we did not necessarily intend on, but makes clear sense in the context of the narrative. Another emerging theme was *Alice's alcoholism.* Players intensified the interpretation of a wine bottle and wine glass left on the table next to her divorce papers. Some players believed in this theme intensely by saying, "Maybe that's part of the reason why [they broke up], because of alcohol problems," while others simply stated that she "Had an empty wine glass or two..." The last emergent theme from the interviews were *Alice's emergent personality traits.* When asked to describe her, some participants defined Alice simply as, "unstable, stubborn, and non-confrontational." In this case, these interpretations of Alice are entirely left up to the player to conclude.

8.3   Questionnaire: Expected Impact

Next we discuss the results of the questionnaire, where we measured our expected impact (of the interval on the interpretation of the SPC on a scale of 1-4) with the player's average reported impact. In our expected impact table [see Table 8.2], we first introduce the interval object (described in detail in Section 6.1), and its corresponding design pattern linked with the expected impact and average reported impact. This table is meant to display how strongly each pattern impacted the player's interpretation of the SPC.

Intervals (Object/Action)	Corresponding Design Pattern	Expected Impact	Average Impact (SD)
Medicine on Table	Personal Cues	3	3.36 (0.68)
Credit Card	Character Identification	2	2.11 (0.92)
Birthday Card	Personal Rel. Cues	3	2.76 (0.66)
Door Passage	Personal Cues	4	2.71 (1.27)
Old Letters	Personal Rel. Cues	3	3.52 (0.51)
Medicine Schedule	Personal Cues	4	3.72 (0.46)
Voicemails	Narrative Assistant	4	3.9 (0.30)
Acceptance Form	Personal Cues	3	3.45 (0.82)
Final Letter	Mind Glimpse	4	3.57 (0.67)
Final Cut scene	Mind Glimpse	4	3.47 (0.47)

Table 8.2: Expected impact versus average impact found in the questionnaire.

According to our collected data, it is clear that the *narrative assistant* pattern, with an average impact of 3.9 (SD = 0.30) provided the strongest overall impact to player interpretation. This pattern is loosely defined as something that assists the player in a clearer understanding of narrative elements. This corresponds with our expectation that the voicemails would be rated at a 4, which says that the *narrative assistant* element in *Motherhood* does a fairly good job of communicating narrative information to the player; thus greatly impacting their interpretation of Alice. The lowest average impact was the credit card as the *character identification* pattern, rated at a 2.11 (SD = 0.92) impact; however, this is not a bad thing. The expected impact of the credit card was a 2, which means the credit card was meant to provide information about the main character, but not change the player's overall interpretation of who they are. Arguably, it tells the player that they are a female character as well as their first and last name, but it does not go beyond surface-level information. The most controversial interval was the door passage, corresponding with the *personal cues* pattern, which had an average impact of 2.71 (SD = 1.27), but an expected impact of 4. Some players were confused by the door passage relevance, thinking

it was a mechanical solve (and rated it as a 1 for no impact); while others knew that it meant Alice was a ghost (and rated it as a 4 for strong impact). Depending on the player's interpretation, the door passage either meant a great deal, or meant nothing to them at all; meaning there is room for clarity in communicating this information. More generally, the *mind glimpse* and *narrative assistant* patterns are strong characterization methods; while the *personal cues* and *personal relationship cues* varied, based on the story information presented, and/or overall clarity of the information presented.

8.4   Questionnaire: Inferred Themes

In our inferred themes table [see Table 8.3], we present a collection of data that communicates the themes found by players within each interval. We first introduce the interval object, and its corresponding design pattern linked with the inferred themes. This table is meant to display which pattern gave players the most (and possibly the clearest) information.

As seen in our previous chart, players had a lot to say about the *narrative assistant* pattern, with the largest amount of varied inferred themes. Players were able to gather lots of different information based on this one pattern (Alice's isolation, Alice's illness, Alice's support group, Alice's divorce/custody battle, Alice's death, and Alice's love for her son). Like the narrative assistant pattern, the mind glimpse patterns (the final letter and final cut scene) communicated a good amount of information. Though, in these particular instances, players often noted Alice's personal feelings. Likely because the mind glimpse patterns are meant to voice Alice's internal monologue without the need of her saying anything.

Intervals (Object/Action)	Corresponding Design Pattern	Themes
Medicine on Table	Personal Cues	Illness, On Meds, Suicide
Credit Card	Character Identification	Alice as Protagonist
Birthday Card	Personal Rel. Cues	Alice's Support Group, Alice Loves her Son
Door Passage	Personal Cues	Alice is Dead, Mechanical Issue, Unsettling tone
Old Letters	Personal Rel. Cues	Alice's Happy Past, Alice as Protagonist
Medicine Schedule	Personal Cues	On Meds, Meds Not Working, Illness
Voicemails	Narrative Assistant	Alice's Isolation, Illness, Alice's Support Group, Divorce/Custody battle, Alice is Dead, Alice Loves Her Son
Acceptance Form	Personal Cues	Illness, Divorce/Custody battle, Childish
Final Letter	Mind Glimpse	Alice Loves Her Son, Alice is Dead, Uncertainty of Death, Alice as Protagonist
Final Cut scene	Mind Glimpse	Alice is Dead, Uncertainty of Death, Alice Loves Her Son

Table 8.3: Inferred themes found in the questionnaire.

These mind glimpse moments served as a discussion piece for players, as they were easily able to see the significance of her actions corresponding with her thoughts. For example, one participant begins with, "This shows that she still cares about her son greatly. In the beginning I thought she was packing for her son to go away for a few days [...]," displaying that they now feel comfortable describing Alice's thoughts and emotions in detail. Similar to our previous chart, the *character identification* pattern shows the lowest amount of inferred themes (only Alice as the protagonist). This is because players are only identifying Alice and interpreting who she is at a surface-level. The other patterns' inferred themes vary based on the object, but largely reflect her history or past actions, rather than her inner emotions or thoughts.

8.5 Questionnaire: Emergent Themes

There exists a few emergent themes that players communicated within the questionnaire. The first theme is the *door passage as Alice's emotional state*, which describes how some participants interpreted the meaning of the door passage (beyond either Alice being a ghost, or simply a mechanical issue). One participant stated that, "As the story became clearer I began interpreting this [door passage] as being representative of the character's emotional state - her mind is muddied and preoccupied, and she barely registers passing from room to room." Though this is not what the design pattern was intended to communicate, this still means that the player senses the character's inner emotion and turmoil, which means they are registering Alice as a character with emotions. The other emerging theme in the questionnaire was viewing the acceptance form and seeing *Alice as childish.* Some participants expressed that they thought Alice to be childish because of the scribbled-out form, in saying that, "she refuses to sign the form, instead, acting like a child." This seems to be an uncontrollable element that may be based on the player's own interpretation or experiences. Though in the case of designing SPCs, no player's interpretation is wrong, because the only way the character becomes *someone* is through the interpretation of the player [25].

8.6 Discussion

Based on the results on the semi-structured interview, players were able to effectively interpret many of the expected themes intended to be communicated throughout gameplay, along with some of their own emergent themes. Players built their own understanding of Alice that matched many other participants without the use of speech. Some of our design pattern's narrative information may have been communicated throughout gameplay more clearly (rather than abstractly) to provide for

better results. A good mix for the use of each design pattern is likely to include both abstract details and concrete details amongst each expected theme or story element, like the divorce/custody battle theme was communicated (across 6 different occurrences, via 4 concrete examples and 2 abstract examples).

In the questionnaire, it is observed that the *narrative assistant* pattern was always the strongest for SPC interpretation; giving the widest array of story information and allowing the players to place their character within a bigger narrative picture. While the *character identification* pattern was always rated at the lowest impact, it allows the player to properly place their SPC into the context of the narrative, which is important to impacting the interpretation of all the other design patterns. For example, players who did not realize they were Alice had no chance of interpreting the door passage as Alice having already committed suicide (the other patterns simply would not match this reference). The *mind glimpse* patterns did well in effectively communicating the SPC to the player, an rated highly amongst various tables. As we have stated before, the information and clarity of the *personal cues* and *personal relationship cues* patterns vary the amount of impact the pattern will have and the story elements the player will interpret about the SPC. For instance, the birthday card (*personal relationship cues*), was rated an average impact of 2.76 (SD = 0.66), but the old letters (*personal relationship cues*) was rated an average impact of 3.52 (SD = 0.51). The birthday card revealed vague information about Alice's family, while the old letters described the history of her relationship with Nelson.

There exists some overall story comprehension trends, based on the relationship between the answers given for the interview and the answers given for the questionnaire. Players that did not see the old letters (reported in the questionnaire) generally did not report Alice's happy past during the interview, meaning this information was easily missed if not for this design pattern. Players that did not interpret Alice's

death saw the final letter and ending as Alice's love for her son (they did not think it was weird that she disappeared, but instead saw it as her metaphorically leaving). One interesting trend (that did not occur often) is that players who did not find or click the voicemails - the *narrative assistant* - reported not to understand the ending of the narrative. This may mean that either the *narrative assistant* is a vital part of effectively developing a mainly expressive SPC, or the vital information in this particular narrative experience was developed largely through the *narrative assistant*; this remains to be tested.

9. CONCLUSIONS

Silent player characters continue to be developed in contemporary narrative games, but this character type is currently not well understood in terms of storytelling. In this thesis, we introduce two types of SPC types: expressive and projective characters. Expressive SPCs are pre-defined characters that must be communicated to the player. This project aimed to develop an initial framework for developing them. We asked the question, "How can we utilize commonly used design patterns to effectively communicate a SPC's story?" To answer this, we surveyed related contemporary games that featured expressive SPCs, and developed a list of methods designers can use to create this particular type of SPC. We then tested our found methods within a prototype called *Motherhood*. Participants were recruited for our user study, testing for both story comprehension and each pattern's impact; this required them to play *Motherhood*, participate in a semi-structured interview, and complete a questionnaire.

Our results conclude that the list of design patterns developed within this study, used to communicate an expressive SPC, were largely successful in developing a pre-defined SPC who players were able to interpret as a character. All of the found methods were successful in impacting interpretation of the SPC, as long as the information presented in the patterns is repetitive and clear. The *narrative assistant* and *mind glimpse* patterns have arguably the strongest impact on expressive SPC interpretation, as predicted. The *character identification* pattern is important and, if neglected, will confuse players. Lastly, the *personal cues* and *personal relationship cues* impact can vary, as expected, depending on the information and clarity of the execution. To answer our previous question, the patterns developed within this thesis can be used to effectively communicate a SPC's story.

A key feature of an expressive SPC is its ability to dynamically build a pre-

defined character based on the player's own interpretation. Designers can go into the development of these SPCs with one idea in mind, and the player might interpret a completely different character than intended. However, this is not a bad thing. Designers may need to build expressive SPCs with an intended character design, rather than a definite character design. All of the intended information that must be communicated to the player (to make sense of the narrative) should be detailed across various different patterns, then the player can have room to detail the character in a way that works for them within the gray areas. Overall, this method could make for a positive evaluation of the expressive SPC, which will increase the player's allegiance with the character and their overall enjoyment of the game's narrative [14].

9.1   Limitations & Future Work

One limitation for the project was the lack of time to produce a longer narrative. A longer narrative would extend the period of time the player has to analyze the expressive SPC throughout gameplay as well as extend the number of patterns used within the actual project. Currently we were limited to adding only 24 separate instances to communicate our expressive SPC. Another limitation is our inability to include other speaking characters in this iteration. We could not analyze the effects of using these design patterns in narrative games that include a variety of different characters. Future work for this project can include developing a longer narrative experience with an increased sample size to collect more data over an increased amount of participants. Future work may also include analyzing the effects of adding speaking characters to the narrative experience. While we only analyzed the development of expressive SPCs (used for storytelling); there remains a future analysis to be done on development for projective characters (used for immersion and embodiment), as well.

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Appendices

Appendix A. Semi-Structured Interview

Testing for story and character comprehension.

1. In your opinion, what is the overall story of the game?

2. Describe the character you are playing in as much detail as possible.

Appendix B. Questionnaire

Testing for each pattern's individual impact; rated on a scale of 0-4.

List of Interval Objects:

1. Medicine on the Table [see Figure 6.1]

2. Credit Card [see Figure 6.2]

3. Birthday Card [see Figure 6.3]

4. Door Passage [see Figure 6.4]

5. Closet Letters [see Figure 6.5]

6. Medicine Schedule [see Figure 6.6]

7. Voicemail Machine [see Figure 6.7]

8. Acceptance Form [see Figure 6.8]

9. Final Letter [see Figure 6.9]

10. Final Cut Scene [see Figure 6.10]

Questionnaire Questions:

1. The [insert interval object] impacted my interpretation of the character I was playing.

   - 0 (Not Rated) - I did not hear/see this item.
   - 1 (Strongly Disagree) - This gave me no new information about who the character is.
   - 2 (Disagree) - This gave me information about the character, but it did not change my interpretation of them.
   - 3 (Agree) - This gave me information about the character and vaguely affected my interpretation of who the character is.
   - 4 (Strongly Agree) - This gave me information about the character and strongly affected my interpretation of who the character is.

2. Explain how the [insert interval object] impacted your interpretation of the character you were playing?