



Glass Houses: Player Personality and Preferences in Video Game Dialogue Interaction

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INTRODUCTION

Foundation

I am a scientist to the core. I am also an avid gamer, and have a strong passion for the design and creation of new things, from ceramics to digital media. I have been playing role-playing video games (RPGs) since my father bought me the original Sony Playstation in 1995. When I began playing video games, my first true favorites were members of the Final Fantasy series, specifically Final Fantasy VII and VIII. As both the video game industry and I have grown and changed over the years, the way in which players interact within the virtual world has changed. While many aspects of gaming have changed over the years, of particular interest to me have been the changes in the way in which players interact with NPCs.

RPG-style games have been my favorite for their ability to draw me into a story and allow me to participate in it. My favorite aspect of both interactive and non-interactive digital media is the characters. It is probably this preference that biases me towards RPGs in general, and towards television vs film media. I love to see how characters grow and develop throughout a story. So naturally, I consider the way in which players interact with these characters in a video game to be of critical importance. The design of games is centered around the user experience, and in a game whose objective is to involve the player in a compelling story, interactions with the characters in that story is central to the experience. This experience of interacting with NPCs (non-player characters) has changed significantly over the years I have been playing, especially with the addition of new technologies.

Dialogue Interaction Style Changes Over the Years

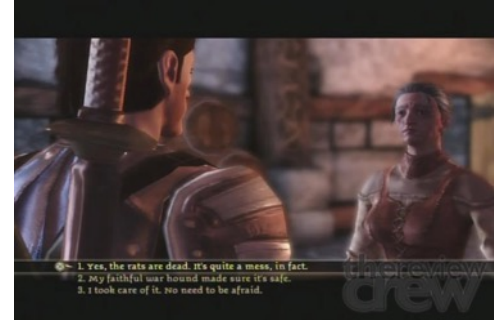
Text-Based RPGs (1990s- early 2000s)

Games such as Final Fantasy, Legend of Zelda, and many others relied on a text-based interface to interact with NPCs, and sound in the game was mostly MIDI and 8-Bit composition (music) that looped and changed according to the environment or context.

From left to right: Final Fantasy VII (1997)[1], Final Fantasy VII (1997)[2], Final Fantasy VIII (2000)[3],
Bottom: Legend of Zelda: Ocarina of Time (1998)[4]



Text-Based Player, Audio NPC RPGs (2000s)



(from left to right) Elder Scrolls IV: Oblivion (2006) [5], Fallout 3 (2008) [6], Dragon Age: Origins (2009) [7]

As technology progressed, more and more games had audio available, and leveraged it for NPCs with voice acting. In these video games, it was often the case that in NPC conversations, the NPC would speak aloud along with subtitles (these were sometimes optional, and allowed the user to turn off subtitles). The player would usually still respond via text-based interface, where the responses were shown, and the player would choose a response. The player character would not generally have a voice actor, and the player's speech would generally be subtitled without audio. Up until this point, most video games listed the entirety of what the player would actually say the menu options, allowing players more agency in regard to how their players would behave. In games where choices made in dialogue affected the outcome of the game, this agency was very important.

Voice Acted Player, Audio NPC RPGs (2010 to present)

As technology has progressed further, recent games have begun to give the player character a voice, even in games where the player character is given the option to customize their character in the beginning of a game.

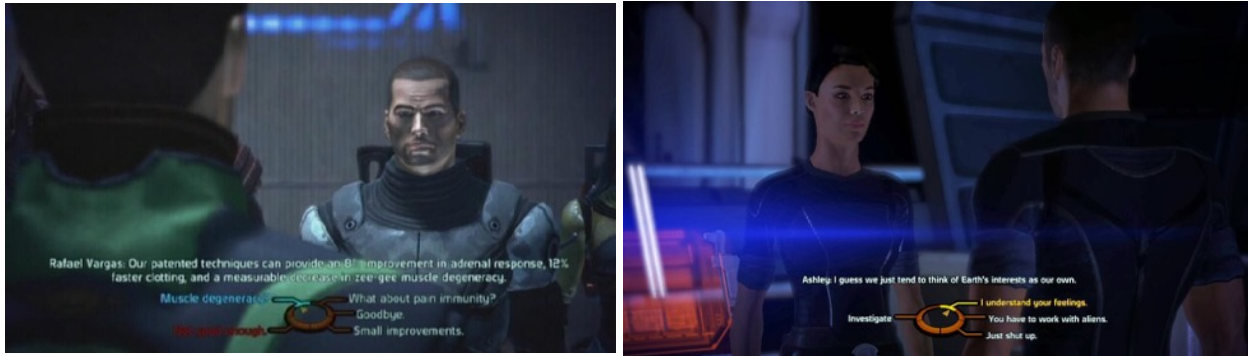
For context, in some RPG video games, the player customizes the look, race, persona, and abilities of their character in the beginning of the game. Bioware and Bethesda Softworks are two of the most well-known studios. Games like the Fallout series, the Elder Scrolls series, the Dragon Age series, and the Mass Effect series are well known for giving players a large amount of agency in the game in terms of who their characters will be. Other games, like the Final Fantasy series, have the player play as a specific character who is often given a backstory and personality.

Perhaps the most well-known example of this type of interaction style is Bioware's trilogy, the Mass Effect trilogy. Two voice actors (only one is used in the game, depending on whether the player decides to play a male or female Shepard) recorded dialogue choices for the series. In this game, the player can have romantic or platonic relationships with characters in the game, and the personalities and interaction possibilities with NPCs in the game are highly fleshed out. Interactions with companions, and even whether your companions live or die in these games depend on how well you interacted with them in previous situations.

It is interesting, then, that in this game, the dialogue interaction style was sometimes surprising, and contained unintended consequences. Whereas previously in games, the menu (where the player chooses what they want the character to say) showed the character more or less exactly what their character would say if that option were chosen, in Mass Effect, choices were sometimes unclear. My theory is that when having voice acting and animation follow these dialogue choices, a what you see is what you get approach could be redundant and annoying.

Since the release of Mass Effect 3 (the final installment in the Shepard Trilogy), another major game was released with a very similar dialogue style: Fallout 4. A key difference between the two games is the dialogue wheel (where certain types of choices are located on the wheel). In Mass Effect, (see below), options that lead you closer to

ending a conversation are shown on the right, while questions or options to delve deeper are generally on the left.



Mass Effect Trilogy (2008-2012) [8],[9]

Colored options require a certain level of reputation to do. Every time you choose a paragon or renegade option, you gain reputation in that category. Options that are blue are paragon options (good karma) while red options are renegade. Options that are dark grey are options that you lack the renegade or paragon points to use. Generally on the right side, the top right option is the paragon or good, the middle is neutral, and the bottom is renegade. Renegade options cause a bit of confusion in the early game, because sometimes choosing the renegade option is the cool, maverick, “badass” choice, but other times your character just ends up being a jerk. This can be an issue if, when trying to impress a character with a renegade option, you end up actually being mean and making the character angry. This makes the character less receptive and agreeable in later situations.

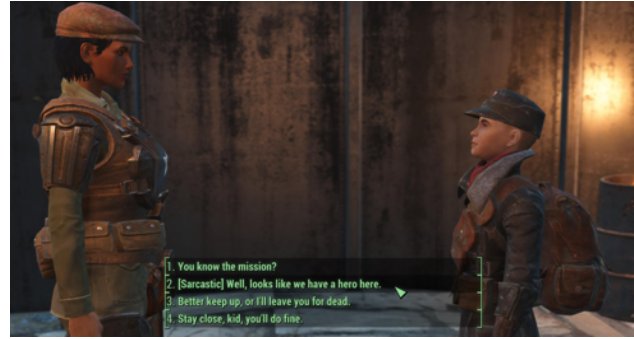
Fallout 4 (2015) [10]



In contrast, Fallout 4 uses a dialogue wheel where the “asking further questions” appears to the top of the spoke wheel, the left side of the wheel is generally a sarcastic response, the right part side is generally rude and abrupt, and the bottom part of the wheel is agreeable. The sarcastic response has the same issue as in Mass Effect, where sometimes the player character is funny, and his actions are received well, and sometimes the joke doesn’t land well, or is offensive. With this user interface, there is no way to know ahead of time what your character is actually going to say, so it’s a bit of a gamble, resulting in less agency for the player.

Another key difference is the basic infrastructure of Bethesda Softworks games in general. Players who play their games on the PC have the option to modify (or mod) their game. Player creators in the community often write long and detailed mod packages that change the look and feel of the game, or even add in new content. After the release of Fallout 4, which was striking change from the look and feel of previous games, Fallout 3 and Fallout: New Vegas (Obsidian Entertainment), there was even news about the release of a mod that changed the dialogue system to be clearer about the outcome of dialogue choices, indicating that the new dialogue interaction style was not well-received by at least some players [11].

Fallout 4 Dialogue Interface before (left) and after (right) the player-generated mod was installed. [11]



Problem/Research Question

It is the way in which I think about media, and video games in general, that led me to my research question. As I think about my preferences with regard to games and media, my background in psychology continually pushes me to try to understand why this might be. I am constantly trying to find the underlying causes and meanings of phenomena both in my life and in general. So when I started thinking about the way dialogue in games is changing, and analyzing my own preferences and wishes in regard to these changes, I wondered if it was just me, or if others share a similar experience. So, I returned to my core and my training, and sought an answer to these questions:

- Does a player's personality type predict their preferences and behaviors in a video game environment?
- Is there an ideal way to present dialogue choices to all players?
- Is there an ideal way to present dialogue choices to specific players, and might certain players have an inherent affinity for one type of interface or another based on their personality?

Implications

Because user experience and agency are central to the design and development, and ultimately, the success of video games, knowledge of the players is key to building good video games. In previous decades of gaming, there was a well-established way of creating and designing dialogue systems in video games, particularly RPGs, and many games followed this established best-practice. If more and more RPG-style games plan on utilizing voice-acted player characters, there is a need to find an optimal way to present dialogue options to players in a way that allows them to maintain their agency while still keeping the game interesting and non-monotonous.

This research project aims to act as a "pilot test" of sorts, to determine if there might be value in looking at player personality and its relationship to player preferences with respect to the dialogue interface in video games.

Findings from this study could be used to inform future research projects, in essence to tell other researchers where they might want to look deeper to investigate this relationship.

Previous Work and Study Design Decisions

There has been a good amount of research done in the intersection of psychology, video games, agency and personality. Nordin et al, for example, describe which instruments are available for researchers to use to evaluate

player experience, based on which variables researchers are interesting in looking at. Questionnaires that would be of good use for a study dealing with dialogue interaction with NPCs in gaming would be (for the following variables) the Social Presence in Gaming Questionnaire (empathy and negative feelings), GameFlow Questionnaire (social interaction, control, and immersion), Player Experience of Needs Satisfaction Questionnaire (autonomy and immersion), and Immersive Experience Questionnaire (control, emotional involvement)[12].

These scales would be a great fit for a study that utilized a full-fledged game, and varied up the dialogue interaction style between conditions. A good example of this would be with Fallout 4, where players played a level without a dialogue interaction mod, and the same level with the mod. This could be done as a between-groups or within-groups study, but in the within-groups condition would be better if the two levels played were very similar but not identical (to combat learning and order effects). I developed a very short video game for use in this project using Unity 3D. As the game was focused entirely on the dialogue and not fully-fleshed out, these scales were not a very good fit, as the overall gameplay experience for the users would not likely be very representative of gameplay experience in a fully-developed game.

Time was also an important factor in determining which tools to use to answer my research questions. The HEXACO-60 (a shorter version of the HEXACO-100), was utilized to assess the major aspects of personality, while keeping the length of the study as short as possible. The HEXACO-60 assesses personality on 6 scales: Honesty-Humility, Emotionality, Extraversion, Agreeableness (versus Anger), Conscientiousness, and Openness to Experience. According to the authors:

"Honesty-Humility: Persons with very high scores on the Honesty-Humility scale avoid manipulating others for personal gain, feel little temptation to break rules, are uninterested in lavish wealth and luxuries, and feel no special entitlement to elevated social status. Conversely, persons with very low scores on this scale will flatter others to get what they want, are inclined to break rules for personal profit, are motivated by material gain, and feel a strong sense of self-importance.

Emotionality: Persons with very high scores on the Emotionality scale experience fear of physical dangers, experience anxiety in response to life's stresses, feel a need for emotional support from others, and feel empathy and sentimental attachments with others. Conversely, persons with very low scores on this scale are not deterred by the prospect of physical harm, feel little worry even in stressful situations, have little need to share their concerns with others, and feel emotionally detached from others.

eXtraversion: Persons with very high scores on the Extraversion scale feel positively about themselves, feel confident when leading or addressing groups of people, enjoy social gatherings and interactions, and experience positive feelings of enthusiasm and energy. Conversely, persons with very low scores on this scale consider themselves unpopular, feel awkward when they are the center of social attention, are indifferent to social activities, and feel less lively and optimistic than others do.

Agreeableness (versus Anger): Persons with very high scores on the Agreeableness scale forgive the wrongs that they suffered, are lenient in judging others, are willing to compromise and cooperate with others, and can easily control their temper. Conversely, persons with very low scores on this scale hold grudges against those who have harmed them, are rather critical of others' shortcomings, are stubborn in defending their point of view, and feel anger readily in response to mistreatment.

Conscientiousness: Persons with very high scores on the Conscientiousness scale organize their time and their physical surroundings, work in a disciplined way toward their goals, strive for accuracy and perfection in their

tasks, and deliberate carefully when making decisions. Conversely, persons with very low scores on this scale tend to be unconcerned with orderly surroundings or schedules, avoid difficult tasks or challenging goals, are satisfied with work that contains some errors, and make decisions on impulse or with little reflection.

Openness to Experience: Persons with very high scores on the Openness to Experience scale become absorbed in the beauty of art and nature, are inquisitive about various domains of knowledge, use their imagination freely in everyday life, and take an interest in unusual ideas or people. Conversely, persons with very low scores on this scale are rather unimpressed by most works of art, feel little intellectual curiosity, avoid creative pursuits, and feel little attraction toward ideas that may seem radical or unconventional.”[13]

While one study suggested that there was no difference between the personality of gamers and non-gamers [14], another showed that online-game players scored higher in openness, conscientiousness and extraversion than non-players[15]. Another showed that players who scored lower on the Agreeableness scale of the Big 5 Personality test were more likely to play violent video games than those who scored highly, suggesting that there may be a link between aspects of personality and gaming habits and preferences [16].

There is also evidence to suggest that personality types may influence the types of games that players prefer to play [17]. There is also an interesting notion as to whether players tend to play the player characters in their games in the way they themselves would behave or whether they play in contrast to their own tendencies in the real world [18, 19]. I included questions about both of the above in the final study questionnaire (see Appendix D).

Because many of the scales available were very long, and often involved and asked about variables which were not of particular relevance to my research questions, I decided to create my own questionnaire, to allow me to ask the questions I wanted answers to. Although I would have preferred to ask questions in multiple ways for more reliability, I opted to keep the survey short and easy to finish, especially because my research questions lend themselves to data analysis with correlations (which need fairly large sample sizes).

Based on the literature review, I hypothesized that:

- There would be a correlation between the types of games players preferred to play and their personality traits (especially the Agreeableness trait)
- There would be a correlation between frequency of gameplay and personality traits
- Player personality traits would map fairly well to in-game habits and preferences such as:
 - Making sure to complete all quests and missions in a game (conscientiousness)
 - Not wanting NPCs to be mad at them (agreeableness)
 - Liking to compete with friends (agreeableness, extraversion)
 - Liking to play the bad guy in games (agreeableness)
 - Returning to previous saves to get everything right (conscientiousness)
- Players who scored higher on conscientiousness would prefer dialogue interaction styles that were clearer and allowed more agency/control
- Players who scored higher on openness to experience would not have a strong preference for interaction styles

I was not sure whether:

- Players would tend to report making gameplay decisions that reflected decisions they would make in real life

Testing Hypotheses:

For testing, H_0 for each correlation is that there is no relationship between the two variables, or:

$H_0: R = 0$; (where R is Pearson's R for correlations)

$H_A: R \neq 0$;

I chose a standard 95% confidence interval, meaning that the calculated p would need to be <0.5 to overturn the null hypothesis.

USER AND SYSTEM REQUIREMENTS

Eventual Users (Population of Interest)

- Video game players
- Variety of ages, races, genders
- Variety of media for gameplay (phones, consoles, PC, tablet)
- Variety of lifestyles (students, employees, unemployed, parents, non-parents, married, single)
- Variety of ability levels (hand-eye coordination, eyesight, mobility, reading ability)
- Variety of languages spoken
- Possibility of users not understanding colloquialisms and idioms from particular societies

System User Requirements

Because this Masters Project focuses on answering a research question rather than building a system meant to solve a particular problem, my user requirements analysis focused more on what the game I was building needed to accomplish to answer the research questions effectively. As I worked towards developing a game as a testing apparatus, I focused on building a user experience that was simple, intuitive, and did not rely heavily on the players understanding complicated PC game functionality. I also sought to develop a game that was simple, fun, and had a bit of humor to it. I also targeted the style and game feel to appeal to seasoned video game players (video game tropes, references to popular games).

Description of Tasks/Context of Use

The purpose of this game was to:

- Demonstrate 4 different dialogue interaction styles to players
- Provide the option for players choosing the wrong or "rude" dialogue interaction choices
- Provide slight consequences for players choosing the wrong or "rude" dialogue interaction choices
- Demonstrate the interaction styles in a way that is as close to a real video game as possible
- Avoid introducing anything else into the game that might confound the results (keep the game as simple as possible)

Development of 4 Interaction Style Types: Comparative Analysis

For this stage of requirements, I looked at other video games for comparison. As described above (Introduction), I looked at the Mass Effect series, the Elder Scrolls series, the Dragon Age series, Fallout 3, Fallout 4, and games like Wasteland 2. The Mass Effect series, Dragon Age: Inquisition (2014) and Fallout 4 used wheel interaction styles and had voice acted player characters, while Fallout 3, Wasteland and Dragon Age:Origins used list-style interfaces and did not have voice-acted player characters (VAPCs).

Delving deeper, I noticed a few different types of interaction styles that emerged across types. Regardless of the organization of the choices (wheel or list), the **descriptiveness** of the menu options with respect to what the

player character actually said after a choice was made (menu vs subtitles) was decidedly inconsistent throughout the games, sometimes it even varied within the same game.

In some games, there was a wysiwyg (what you see is what you get) type response. This exclusively occurred in games without VAPCs. In these situations, there were usually not subtitles for the player character, because the entirety of the text the character was expected to say was provided beforehand. In some games, there was a “short description” style, where in around 3-7 words, the “gist” of what the player would say was presented in the menu, and the subtitles would then expand around that. This occurred in the games with VAPCs, and also in Wasteland 2. It should be noted, however, that Wasteland 2 did not have subtitles, which often led to some confusion. Another option that appeared frequently was that of the emotional intent (for example “sarcastic”). A fourth very common dialogue style was description of intent. An example of this would be “give him the money” or “compliment her dress.”

I chose to use the above 4 styles as the interaction styles to test in my game. As a result, I needed to build a game, story, and find a framework and system that would allow me to easily build in variance in the game.

DEVELOPMENT AND DESIGN PROCESS

Development Tools

To keep the testing environment as close to real-life as possible, I opted to use Unity 3D (Unity Technologies: <https://unity3d.com>) to build my game for testing. I also used the Dialogue System for Unity package to build the dialogue interactions into the game (Pixel Crushers: <http://www.pixelcrushers.com/dialogue-system/>).

Within Unity, I used 3D models from Unity Technologies, Pixel Crushers, wensk (<https://www.assetstore.unity3d.com/en/#!/content/9480>), and hedgehog team (<https://www.assetstore.unity3d.com/en/#!/content/3392>), and modified them heavily to fit the aesthetic of the game. NPC 3D models and animations came from Pixel Crushers and Mixamo (<https://www.mixamo.com>).

For scripting, I used Lua code within Dialogue System for Unity, and monoDevelop to modify scripts for player movement.

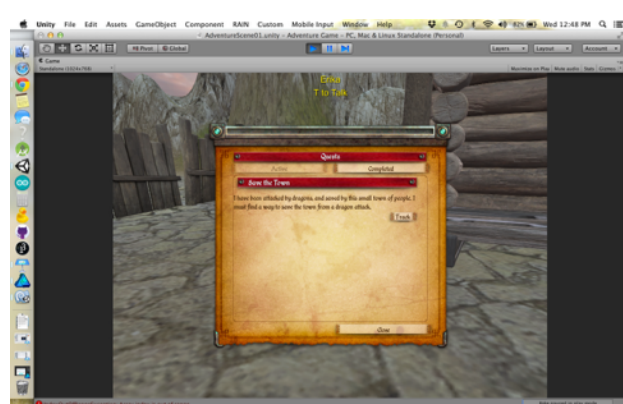
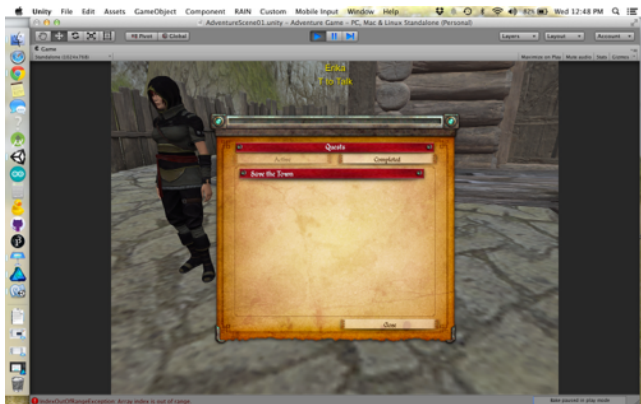
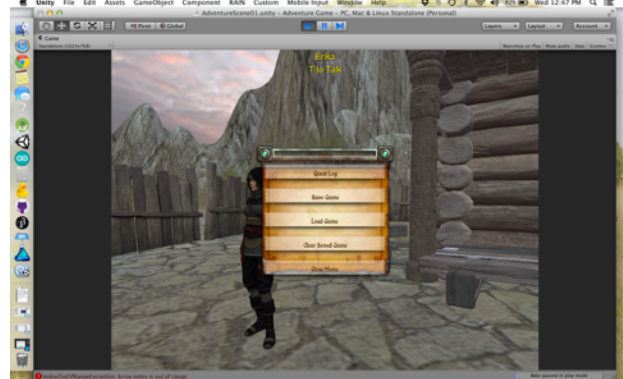
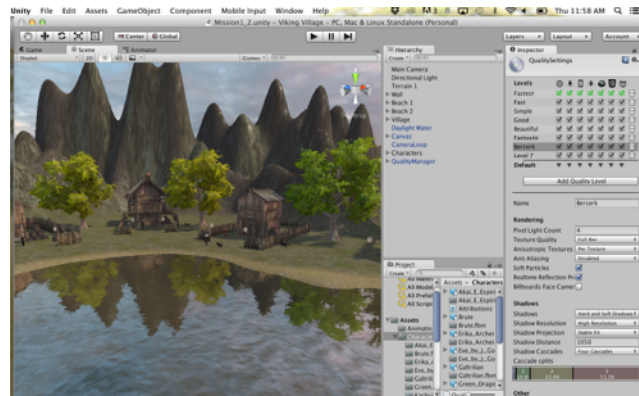
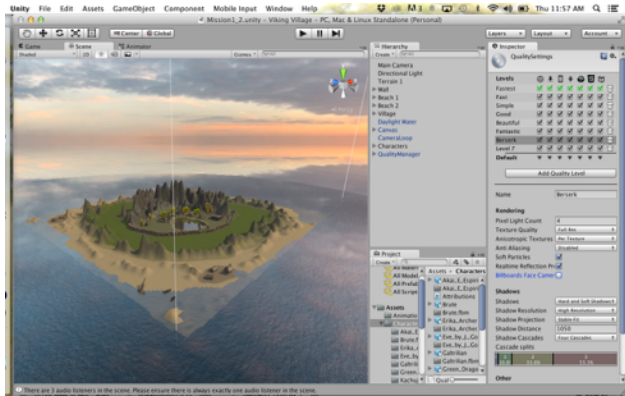
For version control (after Iteration 1 became corrupted beyond repair, and I realized I needed version control), I utilized github. <https://github.com/hannahjgb/GlassHouses>

Early Design Work

Iteration 1: Adventure Game

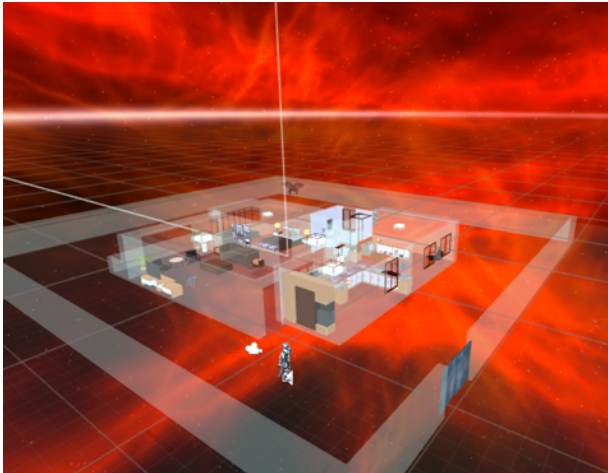
My first idea for a video game was a longer-length game where the player had to complete quests given by various NPCs in order to save his island town from a dragon attack. At this point, my plan was to build 4 “levels” or side-quests for the player to solve, and intended to modify the interaction style for each quest.



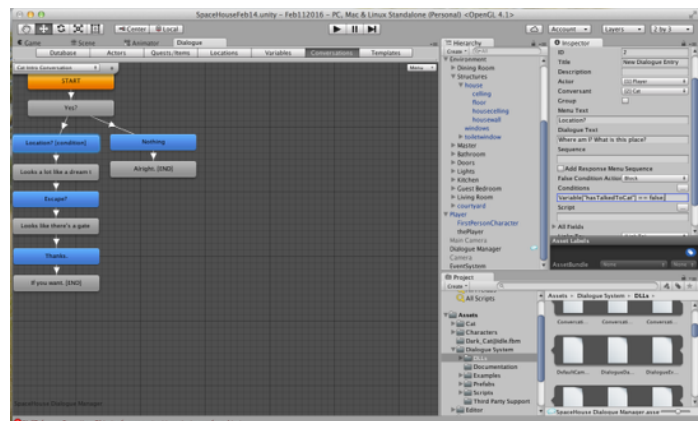


I sculpted a terrain and built a semi-functioning model, with characters, a few quests, and working dialogue, but had imported several scripts from different sources, and the game became too corrupted to work. I also realized as I played through the corrupted version that for the purposes of getting the answers to my research questions, I needed a simpler and much shorter game if I wanted to collect a sizable number of responses.

Iteration 2: Glass Houses



For my second iteration, I focused on building a short and simple game, and rather than manipulate my independent variable between quests, I decided to manipulate my variable between the NPCs. Dialogue System for Unity allowed me to do this easily in the conversation tree editor, as it allowed me to enter text for the menu and separate

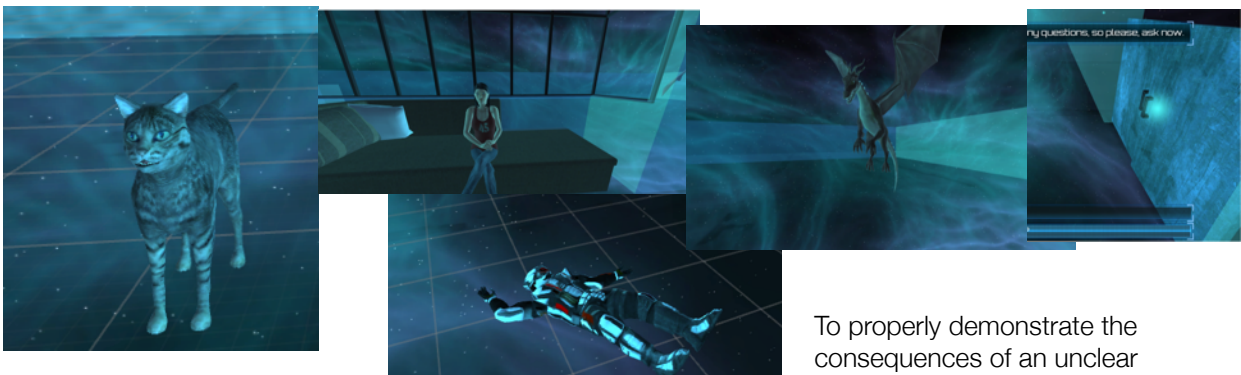


text for the subtitles.

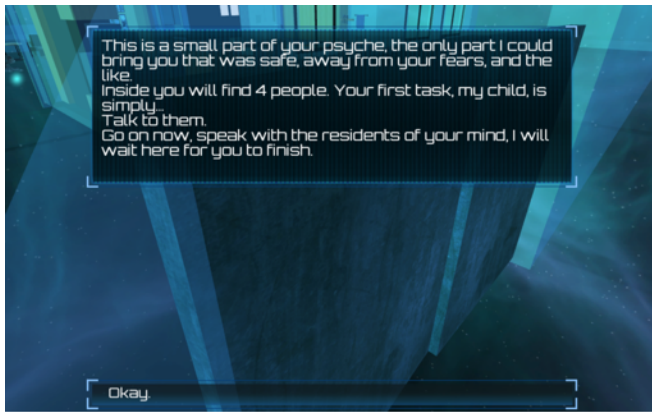
As I tinkered with the 3D models I had available, I realized that I had a dragon, a cat, two soldiers and a random NPC female character. I also realized that I had the ability to make any 3D object into an NPC with the dialogue system. I also had galaxy skyboxes, a house, and lots of textures to work with. Using the pieces, I put together a level and placed furniture and items into the house, and turned the wall textures to glass, resulting in an interesting aesthetic of a floating glass house in space. With the models I had available, it seemed only natural to build a dreamscape, full of interesting creatures and characters.

I created 5 characters. One, the front door/courtyard gate, would be the quest-giver, and have a guiding and wise persona, a common video game trope. This character would assign the two game quests: 1: Get to know all of the players in the game by talking to them, and 2: After talking to all the players, return to them and request their part of a pass-phrase, needed to escape the dream. Dialogue choices made in quest 1 resulted in 3 outcomes, which I coded using Lua variables in the Dialogue System. The outcomes were affinity = -1 (negative affinity, or, the NPC is unhappy with the player), 0 (neutral affinity), and 1 (positive affinity, or the NPC is happy with the player).

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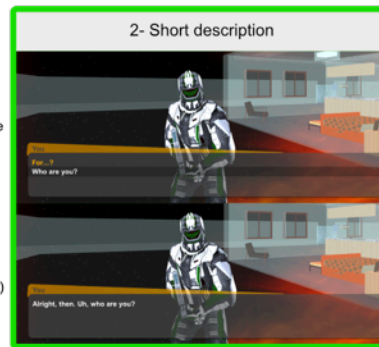
To properly demonstrate the consequences of an unclear



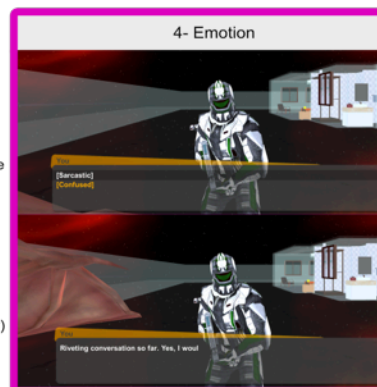
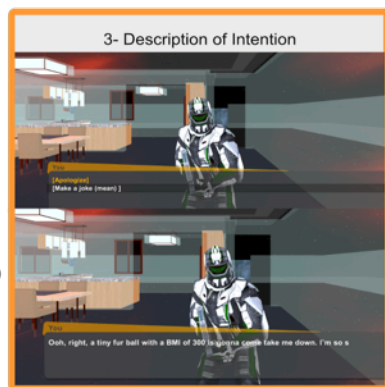
interaction style, each character would also have a quest that would be necessary to earn favor back in order to get the passphrase. The character personalities were also video game tropes. The cat, a sarcastic comic relief character, the dead solider a FPS (first-person shooter) player waiting for respawn, the girl a random NPC with little to no conversational depth, and the dragon an unpleasant NPC.

For manipulation of the variable, each of the quest-associated characters were assigned a condition. The door was given the wysiwyg condition by default, to make sure that the dialogue about the quest was as clear as possible. The female NPC was assigned the

wysiwyg condition, while the short description condition was assigned to the dead solider. The description of intention condition was given to the cat, and the emotion condition was assigned to the dragon. The dialogue and menu text was written by Gabriel M. Chouinard, an 11th-grade aspiring game designer. The character names and personalities were also created by Gabriel. The story and gameplay of the game were collaboratively designed by myself and Gabriel.



In-game variable conditions



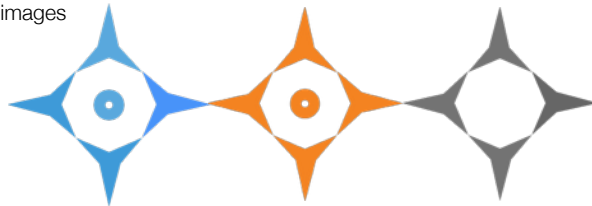
Formative Evaluation

After the pilot game was built, I went through 7 rounds of iterative design, each round changing slightly. Former classmates from the video game design course I took at Georgia Tech, and fellow HCI second-years played each version of the game and revealed bugs, errors, and issues with clarity. Issues included problems with camera angles (making it unclear who the speaker was), misplaced object colliders that forced the character to walk through walls, text scrolling too quickly for the reader to see, lagging, issues with the cursor not tracking correctly, and issues with the UI elements not layering correctly.

Between the first version and the last version, the major changes were:

- Added a visible player character rather than a first-person bodiless player
- Changed the mouse look script to make the camera use the center of the screen as the cursor
- Created custom cursor/reticle images in illustrator and imported them
- Created custom camera angle objects to make sure the camera pointed at the speaker at the correct times
- Changed the appearance of the UI and skybox so that it was more clear what was menu text vs subtitles and who was speaking, and text was more readable

Custom cursor/reticle images



Dialogue Menu Style Before and After



USER RESEARCH

Methods

Data collection was carried out via the internet, using Google Forms. Participants were recruited through social media (Facebook, Instagram, Twitter), and Amazon Mechanical Turk. Participants began the study by completing the Hexaco-60 Self-Administered Personality Assessment [13], (see Appendix A) which was modified to fit the Google Forms platform.

After completing this section, participants completed a short questionnaire about their gaming habits and preferences (frequency of gameplay, medium of gameplay, types of games played). Participants also answered questions about their in-game preferences and habits (for example, do players tend to try and collect all items in a game, do players make decisions in-game the way they themselves feel they would behave in the real world). Players were then directed to a web-hosted version of the Unity game developed for this project (see above). The game is currently hosted at: <http://hannahjgb.com/GlassHousesGamev7.html> Players were asked to play through the game, and then return to the survey to answer some follow-up questions. The follow-up questions focused on player preferences with regard to the dialogue interaction styles presented in the game. (See appendix D for full survey).

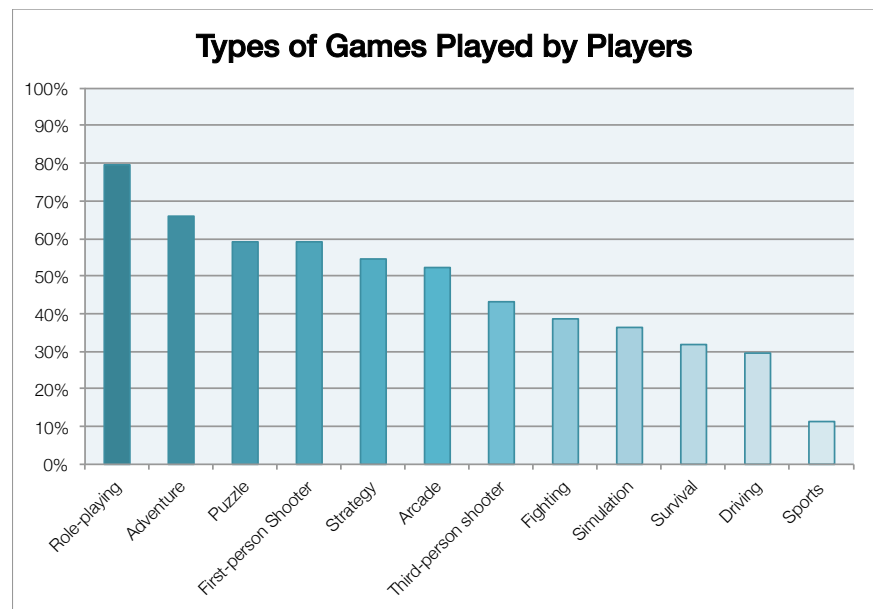
Participants

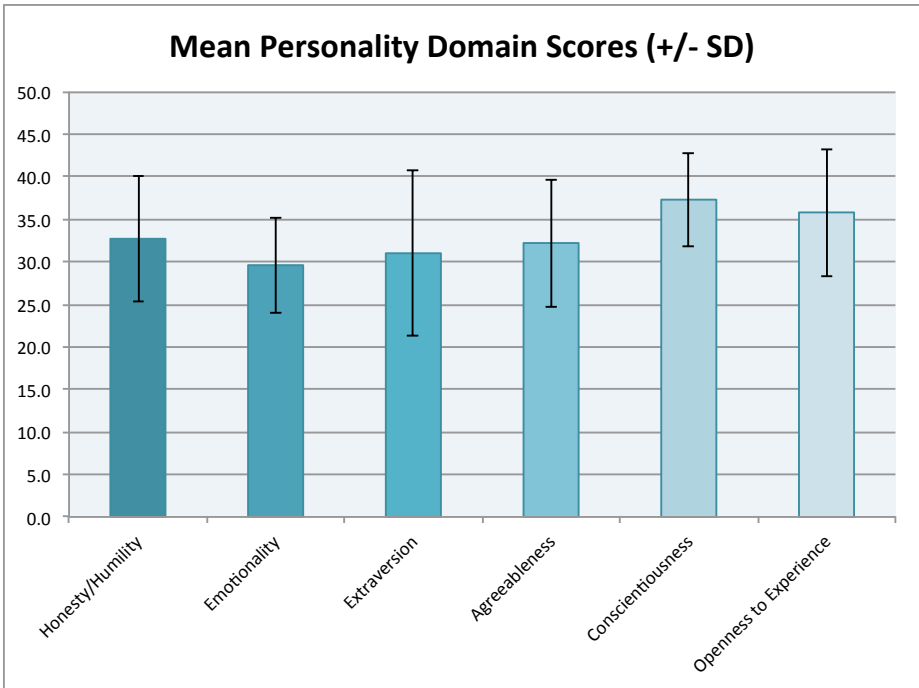
44 (31 male, 13 female) individuals participated in the online research study. The average age of participants was 29 years old (standard deviation 5.91). Ages ranged from 23 to 40 years. 73% of participants were full-time employees, while 9% were part-time employees and 16% were students.

Only 5 participants (11%) reported infrequent gameplay (less than once a month). A large majority of participants (80%) reported playing video games multiple times per week or more.

Pre-Game Results

Seventy-five percent of participants reported playing mobile games, while 32% reported playing games on a tablet. 80% and 66% reported playing games on laptop and console, respectively. Participants were asked to select all options that applied to them for this question. Players also reported playing a variety of types of video games from role-playing games to driving games. Results shown are percentage of participants who reported enjoying playing each type of game. Players were asked to check all that apply for this question. Participants were also asked to complete the Hexaco-60





personality questionnaire. Average scores on each domain on the scale are shown to the left, with error bars representing one standard deviation in each direction. Participants were also asked yes or no questions about their preferences and habits within video games. Results along with abbreviations are shown below (abbreviations will be used in correlation tables later).

Abbreviation	Survey Question	Percent of Participants Who Responded "Yes"
COMPLETIONIST	I try to collect all items, complete all quests, and fully complete the game.	66%
PERFECTIONIST	I try to make sure that I always make the correct choices in games.	59%
CORRECTIONIST	If I make a mistake in the game, I will go back to a previous save to make sure that I get it right	50%
CURIIOUS	I like to play the character in a game similarly to how I myself would behave.	61%
TRYALL	I like to play the character in a game differently to how I myself would behave.	39%
FRIENDLY	I like to be the bad guy in video games.	30%
EXPANSIONS	I try out everything in a game just to see what happens.	30%
BADGUY	I will play a game over and over again to try all of the different options.	14%
COMPETITOR	I don't like the NPCs in games to be mad at me.	27%
PLAYSSELF	I usually buy all of the add-ons for games.	52%
ROLEPLAY	I like to compete with my friends for higher scores.	23%

Correlations: Personality Domains and Frequency of Gameplay, Types of Games Enjoyed

Below are the results of correlations between player personality domain scores and the frequency of gaming, along with types of games played. Bold items are statistically significant at the .05 level.

	Frequency of Gameplay		Plays Role-playing Games		Plays puzzle games		Plays simulation games	
	R	p	R	p	R	p	R	p
Openness to Experience	-0.25	0.10	0.27	0.08	0.36	0.02	0.16	0.30
Conscientiousness	-0.13	0.41	0.34	0.02	0.13	0.40	0.09	0.56
Agreeableness	0.20	0.19	0.11	0.46	0.11	0.49	-0.13	0.40
Extraversion	0.07	0.65	0.15	0.33	0.07	0.67	-0.04	0.81
Emotionality	-0.37	0.01	0.11	0.48	0.05	0.73	0.06	0.71
Honesty/Humility	-0.09	0.56	0.07	0.67	0.27	0.08	-0.09	0.54

	Plays adventure games		Plays strategy games		Plays sports games		Plays fighting games	
	R	p	R	p	R	p	R	p
Openness to Experience	0.39	0.01	0.37	0.01	-0.12	0.42	0.04	0.79
Conscientiousness	0.22	0.14	0.06	0.71	-0.02	0.90	-0.10	0.51
Agreeableness	0.07	0.64	-0.11	0.46	0.03	0.86	-0.02	0.88
Extraversion	-0.10	0.51	0.09	0.56	-0.23	0.14	-0.42	0.00
Emotionality	-0.09	0.56	-0.13	0.39	-0.12	0.45	-0.17	0.28
Honesty/Humility	0.14	0.38	-0.21	0.16	-0.10	0.50	-0.05	0.73

	Plays first-person shooters		Plays third-person shooters		Plays survival games		Plays arcade games		Plays driving games	
	R	p	R	p	R	p	R	p	R	p
Openness to Experience	-0.28	0.06	-0.18	0.24	-0.01	0.93	0.19	0.21	0.21	0.18
Conscientiousness	0.10	0.53	0.18	0.24	0.11	0.49	0.25	0.10	0.23	0.13
Agreeableness	0.09	0.55	0.09	0.56	0.26	0.09	0.03	0.85	-0.03	0.83
Extraversion	0.01	0.95	-0.10	0.50	0.22	0.16	0.07	0.65	-0.09	0.55
Emotionality	-0.13	0.40	-0.24	0.12	-0.53	0.00	0.28	0.07	-0.04	0.81
Honesty/Humility	-0.21	0.18	-0.05	0.75	0.11	0.47	0.15	0.33	0.11	0.50

Correlations: Personality Domains and In-Game Behaviors and Preferences

Below are the results of correlations between player personality domain scores and the in-game behaviors and preferences. Bold items are statistically significant at the .05 level.

	COMPLETIONIST		PERFECTIONIST		CORRECTIONIST		CURIOUS	
	R	p	R	p	R	p	R	p
Openness to Experience	-0.01	0.96	-0.13	0.38	-0.02	0.92	0.10	0.53
Conscientiousness	0.32	0.03	0.02	0.90	0.33	0.03	0.30	0.05
Agreeableness	-0.04	0.78	-0.32	0.03	0.02	0.91	0.16	0.29
Extraversion	0.15	0.34	-0.13	0.41	-0.07	0.65	0.39	0.01
Emotionality	0.04	0.80	0.15	0.32	0.13	0.40	0.07	0.63
Honesty/Humility	0.08	0.59	-0.20	0.19	0.02	0.87	0.12	0.45

	TRYALL		FRIENDLY		EXPANSIONS		BADGUY	
	R	p	R	p	R	p	R	p
Openness to Experience	0.25	0.11	0.07	0.65	-0.10	0.54	-0.08	0.61
Conscientiousness	0.20	0.20	0.12	0.44	0.02	0.90	-0.28	0.07
Agreeableness	-0.32	0.03	-0.12	0.44	-0.01	0.97	0.06	0.70
Extraversion	-0.18	0.23	0.09	0.58	0.18	0.23	-0.35	0.02
Emotionality	0.13	0.41	0.14	0.36	-0.01	0.94	-0.16	0.29
Honesty/Humility	0.23	0.13	-0.12	0.42	-0.17	0.26	0.01	0.97

	COMPETITOR		PLAYSELF		ROLEPLAY	
	R	p	R	p	R	p
Openness to Experience	-0.11	0.46	0.21	0.18	-0.13	0.40
Conscientiousness	0.45	0.00	0.19	0.23	-0.17	0.27
Agreeableness	0.12	0.44	-0.11	0.50	-0.01	0.95
Extraversion	0.14	0.38	0.07	0.67	-0.13	0.39
Emotionality	0.29	0.06	0.39	0.01	-0.19	0.22
Honesty/Humility	-0.13	0.40	0.11	0.49	0.14	0.37

Post-Playtest Results

After playing through the game, participants were asked a few final questions about their experiences in the game and their preferences.

Below is a table of which NPC participants preferred talking to in the game. Characters varied in their personality (to represent a realistic game), and the interaction style presented. Players were not directly asked about the interaction styles until after this question was asked.

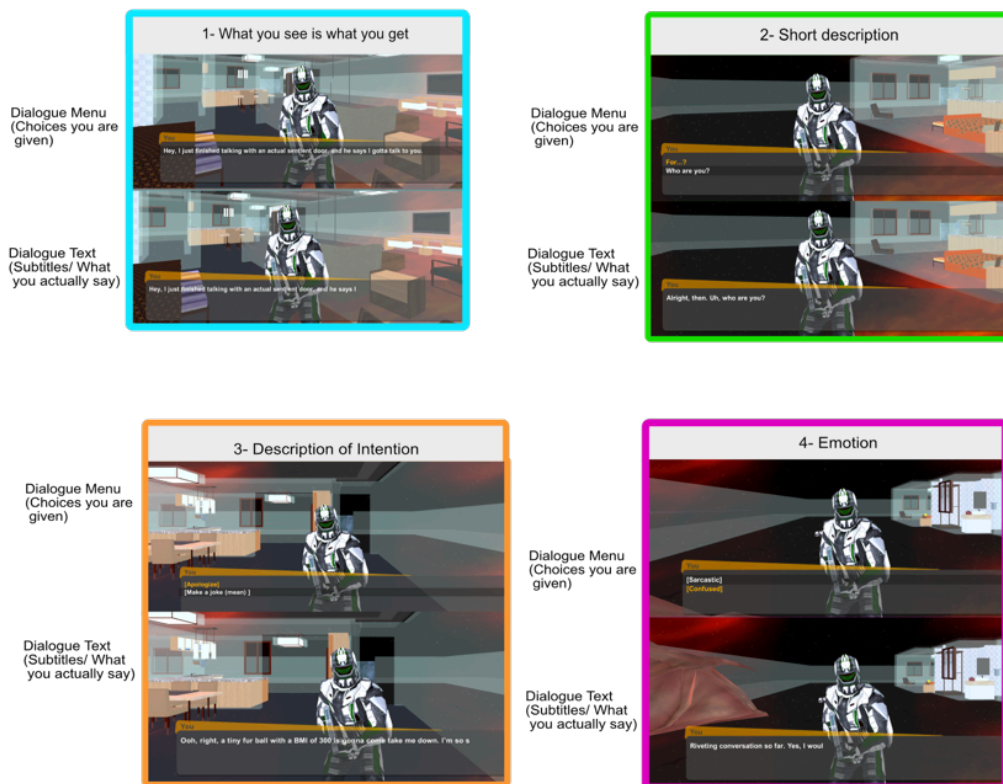
NPCs Players Preferred Talking To		
NPC	# of Ppts who preferred this NPC	% of Participants who preferred this NPC
the Cat	20	45%
the Solider	5	11%
the Gate/Door	10	23%
the Dragon	6	14%
the Girl	3	7%
TOTAL	44	100%

Participants were also asked (in free response) why they preferred talking to the character they listed. After going through the free responses, I was coded the qualitative data, and a few themes emerged: personality of the NPC, clarity of the dialogue, importance of the character to the plot, dialogue content, and appearance of the character. Some responses contained multiple reasons.

Reasons for Preferences		
Reason	# of Ppts who listed this reason	% of Participants who listed this reason
Personality	29	66%
Dialogue Clarity	4	9%
Plot Importance	7	16%
Dialogue Content	6	14%
Appearance	2	5%

Participants were then given this graphic as a reminder of the dialogue styles that were present in the game, and asked to rank the 4 dialogue styles from 1 to 4, 1 being the best and 4 being the worst. For correlation data analysis, responses were inverted.

Below are the percentages of participants who rated each interaction style either highly (1 or a 2) or lowly (3 or a 4).



	What you see is what you get	Short description	Description of intention	Emotion
% Rates Highly	45%	68%	59%	27%
% Rates Lowly	55%	32%	41%	73%

Correlations: Personality Domains and Rating Given to Interaction Style

For these correlations, the ratings given to each interaction style were inverted, so that a higher score (4) indicates that the player liked that interaction style more. Bold items are statistically significant at the .05 level.

	What you see is what you get		Short description		Description of intention		Emotion	
	R	p	R	p	R	p	R	p
Openness to Experience	-0.13	0.42	-0.06	0.68	0.11	0.47	0.10	0.53
Conscientiousness	-0.08	0.60	0.11	0.47	-0.14	0.37	0.13	0.40
Agreeableness	-0.09	0.56	-0.16	0.30	0.00	0.99	0.26	0.09
Extraversion	0.13	0.40	0.01	0.93	-0.23	0.14	0.06	0.68
Emotionality	-0.02	0.90	0.11	0.48	-0.10	0.50	0.03	0.87
Honesty/Humility	-0.01	0.94	-0.22	0.16	0.00	0.98	0.22	0.15

Discussion

While correlation analysis typically calls for $N > 100$ for reliable results, I was only able to obtain 44 participants. Results from this study should be used to inform future studies, rather than as solid evidence of correlation. For personality score descriptions, see Appendix C

With respect for my original research questions and hypotheses, using a 95% confidence interval I found that:

- There **is likely** a correlation between the types of games players preferred to play and their personality traits, as I found that:
 - Players who scored higher on conscientiousness were more likely to report enjoying RPG style games
 - Players who scored higher on openness to experience were more likely to report enjoying puzzle games, adventure games, and strategy games
 - Players who scored lower on emotionality were more likely to report enjoying survival games
 - Players who scored lower on extraversion were more likely to report enjoying fighting games
- There **is likely** a correlation between frequency of gameplay and personality traits, as I found that:
 - Players who scored lower on extraversion were more likely to report playing video games more frequently.
- Player personality traits **do likely** map fairly well to in-game habits and preferences, as I found that:
 - Players who scored higher on conscientiousness were more likely to report feeling the need to complete all missions and side quests in a game, returning to previous game saves and replaying sections in an effort to get things right, and enjoying competing with their friends.
 - Players who scored lower on agreeableness were more likely to report trying to make sure to make correct choices in games and more likely to report wanting to play a game over again to try all the options.
 - Players who scored higher on extraversion were more likely to report trying everything in a game just to see what happens, and less likely to report wanting to be the bad guy in a video game.
 - Players who scored higher on emotionality were more likely to report playing the character in a game the way they believe they personally would behave in real life.
- I **did not** find that players who scored higher on conscientiousness would prefer dialogue interaction styles that were clearer and allowed more agency/control, and did not find any mappings to preferences for interaction styles with personality traits.
- I did find that players in general tended to prefer the short description interaction style, and tended to dislike the emotion interaction style.

I also found that:

- About 53% of players reported that they liked making gameplay decisions that reflected decisions they would make in real life, while 23% reported liking to play their characters differently than they themselves would act.

I feel that these findings, while not strong enough to form conclusions about gamers as a whole, could be used in future gaming research as a guide to where to look. Future studies should look more in depth into the areas that did find some correlated data, and ask more questions, with more questions per variable for reliability. I would have liked to have used a longer and more in-depth personality test as well.

As far as the results for the user interface go, I would have liked to have had more levels of agency represented in the dialogue. Most players preferred the short description dialogue style. Future studies could look into ways to optimize this style, and even clarify a best practice of the length, and descriptiveness of the descriptions. They could even compare optimal short description lengths based on the subtitles or audio dialogue that will map to the menu text.

CONCLUSIONS

What I learned

This masters project was very challenging and rewarding for me in a variety of ways:

I had challenges of getting large amounts of data that would have been needed for good correlational data. For a masters project with limited time and resources, a smaller data set was all that could be managed.

I definitely learned that there is a difference in building a game for research purposes versus building a game for enjoyment purposes. The skills I had learned in my video game design class came in very handy. I utilized the skills I had learned in programming and Unity throughout the project, and I also utilized the game development best practices of focusing on the game mechanics and dynamics before building a story and plot. This saved me a lot of time, because I was able to make sure that my game met my needs before adding creative touches.

When I started this project, my work in Unity had been done as part of a team project, so it was a big hurdle to go from a supporting role on a team of programmers to the sole designer and creator of an entire project. I spent a lot of time in the beginning of the project taking courses on codecademy.com and watching countless tutorials on youtube to get familiar with Unity's deeper workings and become fluent enough to create a game that built my needs. I learned that when it comes down to it, I can tackle a project that is almost entirely new to me by figuring out what skills and knowledge I need, seeking them out and obtaining them, and putting them to use.

I also learned a lot about quantitative and qualitative data analysis, and how to tie a story together about a project through writing this paper, and through the process of presenting my work at the GUV Poster Session this Spring. I know these skills will be invaluable to me as I begin my career.

APPENDICES

Appendix A: Hexaco-60

HEXACO-PI-R

(SELF REPORT FORM)

© Kibeom Lee, Ph.D., & Michael C. Ashton, Ph.D.

DIRECTIONS

On the following pages you will find a series of statements about you. Please read each statement and decide how much you agree or disagree with that statement. Then write your response in the space next to the statement using the following scale:

5 = strongly agree

4 = agree

3 = neutral (neither agree nor disagree)

2 = disagree

1 = strongly disagree

Please answer every statement, even if you are not completely sure of your response.

Please provide the following information about yourself.

Sex (circle): Female Male

Age: _____ years

-
- 1 _____ I would be quite bored by a visit to an art gallery.
 - 2 _____ I plan ahead and organize things, to avoid scrambling at the last minute.
 - 3 _____ I rarely hold a grudge, even against people who have badly wronged me.
 - 4 _____ I feel reasonably satisfied with myself overall.
 - 5 _____ I would feel afraid if I had to travel in bad weather conditions.
 - 6 _____ I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.
 - 7 _____ I'm interested in learning about the history and politics of other countries.
 - 8 _____ I often push myself very hard when trying to achieve a goal.
 - 9 _____ People sometimes tell me that I am too critical of others.
 - 10 _____ I rarely express my opinions in group meetings.
 - 11 _____ I sometimes can't help worrying about little things.
 - 12 _____ If I knew that I could never get caught, I would be willing to steal a million dollars.
 - 13 _____ I would enjoy creating a work of art, such as a novel, a song, or a painting.
 - 14 _____ When working on something, I don't pay much attention to small details.
 - 15 _____ People sometimes tell me that I'm too stubborn.
 - 16 _____ I prefer jobs that involve active social interaction to those that involve working alone.
 - 17 _____ When I suffer from a painful experience, I need someone to make me feel comfortable.
 - 18 _____ Having a lot of money is not especially important to me.
 - 19 _____ I think that paying attention to radical ideas is a waste of time.
 - 20 _____ I make decisions based on the feeling of the moment rather than on careful thought.
 - 21 _____ People think of me as someone who has a quick temper.
 - 22 _____ On most days, I feel cheerful and optimistic.
 - 23 _____ I feel like crying when I see other people crying.
 - 24 _____ I think that I am entitled to more respect than the average person is.
 - 25 _____ If I had the opportunity, I would like to attend a classical music concert.
 - 26 _____ When working, I sometimes have difficulties due to being disorganized.

-
- 27 _____ My attitude toward people who have treated me badly is “forgive and forget”.
- 28 _____ I feel that I am an unpopular person.
- 29 _____ When it comes to physical danger, I am very fearful.
- 30 _____ If I want something from someone, I will laugh at that person's worst jokes.

Continued...

-
- 31 _____ I've never really enjoyed looking through an encyclopedia.
- 32 _____ I do only the minimum amount of work needed to get by.
- 33 _____ I tend to be lenient in judging other people.
- 34 _____ In social situations, I'm usually the one who makes the first move.
- 35 _____ I worry a lot less than most people do.
- 36 _____ I would never accept a bribe, even if it were very large.
- 37 _____ People have often told me that I have a good imagination.
- 38 _____ I always try to be accurate in my work, even at the expense of time.
- 39 _____ I am usually quite flexible in my opinions when people disagree with me.
- 40 _____ The first thing that I always do in a new place is to make friends.
- 41 _____ I can handle difficult situations without needing emotional support from anyone else.
- 42 _____ I would get a lot of pleasure from owning expensive luxury goods.
- 43 _____ I like people who have unconventional views.
- 44 _____ I make a lot of mistakes because I don't think before I act.
- 45 _____ Most people tend to get angry more quickly than I do.
- 46 _____ Most people are more upbeat and dynamic than I generally am.
- 47 _____ I feel strong emotions when someone close to me is going away for a long time.
- 48 _____ I want people to know that I am an important person of high status.
- 49 _____ I don't think of myself as the artistic or creative type.
- 50 _____ People often call me a perfectionist.
- 51 _____ Even when people make a lot of mistakes, I rarely say anything negative.
- 52 _____ I sometimes feel that I am a worthless person.
- 53 _____ Even in an emergency I wouldn't feel like panicking.
- 54 _____ I wouldn't pretend to like someone just to get that person to do favors for me.
- 55 _____ I find it boring to discuss philosophy.
- 56 _____ I prefer to do whatever comes to mind, rather than stick to a plan.
- 57 _____ When people tell me that I'm wrong, my first reaction is to argue with them.

-
- 58 _____ When I'm in a group of people, I'm often the one who speaks on behalf of the group.
- 59 _____ I remain unemotional even in situations where most people get very sentimental.
- 60 _____ I'd be tempted to use counterfeit money, if I were sure I could get away with it.

Appendix B: Hexaco-60 Scoring

Scoring Keys for the 60-Item Version

Honesty-Humility	
Sincerity	6, 30R, 54
Fairness	12R, 36, 60R
Greed-Avoidance	18, 42R
Modesty	24R, 48R
Emotionality	
Fearfulness	5, 29, 53R
Anxiety	11, 35R
Dependence	17, 41R
Sentimentality	23, 47, 59R
Extraversion	
Social Self-Esteem	4, 28R, 52R
Social Boldness	10R, 34, 58
Sociability	16, 40
Liveliness	22, 46R
Agreeableness	
Forgiveness	3, 27
Gentleness	9R, 33, 51
Flexibility	15R, 39, 57R
Patience	21R, 45
Conscientiousness	
Organization	2, 26R
Diligence	8, 32R
Perfectionism	14R, 38, 50
Prudence	20R, 44R, 56R
Openness to Experience	
Aesthetic Appreciation	1R, 25
Inquisitiveness	7, 31R
Creativity	13, 37, 49R
Unconventionality	19R, 43, 55R

Notes:

Items indicated with R are reverse-keyed items; for these items, responses should be reversed prior to computing scale scores: 5 1, 4 2, 3 3, 2 4, 1 5

Facet scale scores should be computed as means across all items in facet, after recoding of reverse-keyed items. Note that the facet scales of the 100- and 60-item versions of the HEXACO-PI-R are very short and are not intended to have high levels of internal-consistency reliability. They are recommended for use as predictors of conceptually related criterion variables and as indicators of the HEXACO personality factors. Factor scale scores should be computed as means across all items in factor. If orthogonal factor scale scores are desired, these can be calculated as varimax-rotated principal components of facet scales as calculated by a computer statistical package. (Note that a moderately large sample size (~250) may be needed to produce a stable component solution.)

Appendix C: Hexaco-60 Category Explanation

Domain-Level Scales

Honesty-Humility: Persons with very high scores on the Honesty-Humility scale avoid manipulating others for personal gain, feel little temptation to break rules, are uninterested in lavish wealth and luxuries, and feel no special entitlement to elevated social status. Conversely, persons with very low scores on this scale will flatter others to get what they want, are inclined to break rules for personal profit, are motivated by material gain, and feel a strong sense of self-importance.

Emotionality: Persons with very high scores on the Emotionality scale experience fear of physical dangers, experience anxiety in response to life's stresses, feel a need for emotional support from others, and feel empathy and sentimental attachments with others. Conversely, persons with very low scores on this scale are not deterred by the prospect of physical harm, feel little worry even in stressful situations, have little need to share their concerns with others, and feel emotionally detached from others.

eXtraversion: Persons with very high scores on the Extraversion scale feel positively about themselves, feel confident when leading or addressing groups of people, enjoy social gatherings and interactions, and experience positive feelings of enthusiasm and energy. Conversely, persons with very low scores on this scale consider themselves unpopular, feel awkward when they are the center of social attention, are indifferent to social activities, and feel less lively and optimistic than others do.

Agreeableness (versus Anger): Persons with very high scores on the Agreeableness scale forgive the wrongs that they suffered, are lenient in judging others, are willing to compromise and cooperate with others, and can easily control their temper. Conversely, persons with very low scores on this scale hold grudges against those who have harmed them, are rather critical of others' shortcomings, are stubborn in defending their point of view, and feel anger readily in response to mistreatment.

Conscientiousness: Persons with very high scores on the Conscientiousness scale organize their time and their physical surroundings, work in a disciplined way toward their goals, strive for accuracy and perfection in their tasks, and deliberate carefully when making decisions. Conversely, persons with very low scores on this scale tend to be unconcerned with orderly surroundings or schedules, avoid difficult tasks or challenging goals, are satisfied with work that contains some errors, and make decisions on impulse or with little reflection.

Openness to Experience: Persons with very high scores on the Openness to Experience scale become absorbed in the beauty of art and nature, are inquisitive about various domains of knowledge, use their imagination freely in everyday life, and take an interest in unusual ideas or people. Conversely, persons with very low scores on this scale are rather unimpressed by most works of art, feel little intellectual curiosity, avoid creative pursuits, and feel little attraction toward ideas that may seem radical or unconventional.

Appendix D: Study Survey (Administered Through Google Forms)

Glass Houses: Personality and Gaming

A game by Hannah Glazebrook, for the purposes of the Human-Computer Interaction Masters Project at Georgia Tech.

* Required

Instructions

Hi everyone!

Thanks for taking the time to participate in my Masters Research. To participate in this project, you need to:

- take a short personality assessment
- play a short (~15 minute) video game I have created for this project
- answer some questions about the game and your preferences.

If you would like to participate, please proceed to the next section to answer the personality questions.

No personal or identifying information will be collected. All responses are anonymous.

Personality Assessment

On the following pages you will find a series of statements about you. Please read each statement and decide how much you agree or disagree with that statement. Then write your response in the space next to the statement using the following scale:

- 5 = strongly agree
- 4 = agree
- 3 = neutral (neither agree nor disagree)
- 2 = disagree
- 1 = strongly disagree

Please answer every statement, even if you are not completely sure of your response.

1. **What is your gender?**

Mark only one oval.

- Male
- Female
- Prefer not to answer
- Other: _____

2. **What is your age (in years)?**

3. *

Mark only one oval per row.

	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)
I would be quite bored by a visit to an art gallery.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan ahead and organize things, to avoid scrambling at the last minute.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely hold a grudge, even against people who have badly wronged me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel reasonably satisfied with myself overall.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wouldn't feel afraid if I had to travel in bad weather conditions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm interested in learning about the history and politics of other countries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often push myself very hard when trying to achieve a goal.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People sometimes tell me that I am too critical of others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I rarely express my opinions in group meetings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes can't help worrying about the little things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I knew that I could never get caught, I would be willing to steal a million dollars.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would enjoy creating a work of art, such as a novel, a song, or a painting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working on something, I don't pay much attention to small details.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People sometimes tell me that I'm too stubborn.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer jobs that involve active social interaction to those that involve working alone.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

When I suffer from a painful experience, I need someone to make me feel comfortable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a lot of money is not especially important to me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that paying attention to radical ideas is a waste of time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make decisions based on the feeling of the moment rather than on careful thought.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People think of me as someone who has a quick temper.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On most days, I feel cheerful and optimistic.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel like crying when I see other people crying.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think that I am entitled to more respect than the average person is.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I had the opportunity, I would like to attend a classical music concert.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When working, I sometimes have difficulties due to being disorganized.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My attitude toward people who have treated me badly is "forgive and forget".	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that I am an unpopular person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When it comes to physical danger, I am very fearful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I want something from someone, I will laugh at that person's worst jokes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. *

Mark only one oval per row.

	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)
I've never really enjoyed looking through an encyclopedia.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I do only the minimum amount of work needed to get by.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tend to be lenient in judging other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

In social situations, I'm usually the one who makes the first move.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I worry a lot less than most people do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would never accept a bribe, even if it were very large.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People have often told me that I have a good imagination.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I always try to be accurate in my work, even at the expense of time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am usually quite flexible in my opinions when people disagree with me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The first thing that I always do in a new place is to make friends.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can handle difficult situations without needing emotional support from anyone else.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would get a lot of pleasure from owning expensive luxury goods.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like people who have unconventional views.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I make a lot of mistakes because I don't think before I act.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people tend to get angry more quickly than I do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most people are more upbeat and dynamic than I generally am.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel strong emotions when someone close to me is going away for a long time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want people to know that I am an important person of high status.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't think of myself as the artistic or creative type.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People often call me a perfectionist.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even when people make a lot of mistakes, I rarely say anything negative.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I sometimes feel that I am a worthless person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Even in an emergency, I	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

wouldn't feel like panicking.	—	—	—	—	—
I wouldn't pretend to like someone just to get that person to do favors for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it boring to discuss philosophy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I prefer to do whatever comes to mind, rather than stick to a plan.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When people tell me that I'm wrong, my first reaction is to argue with them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I'm in a group of people, I'm often the one who speaks on behalf of the group.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I remain unemotional, even in situations where most people get very sentimental.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'd be tempted to use counterfeit money, if I were sure I could get away with it.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Gaming Habits

Short questionnaire about gaming habits, preferences and experiences

5. What devices do you use to play video games?

Check all that apply.

- mobile device (phone)
- tablet device
- laptop computer
- console

6. How often do you play video games?

Mark only one oval.

- daily or almost daily
- a few times a week
- once a week
- a few times a month
- about once a month
- once every few months
- less than once every few months

7. What types of video games do you enjoy playing? (check all that apply)

Check all that apply.

- role-playing
- puzzle
- simulation
- first-person shooter
- third-person shooter
- adventure
- strategy
- sports
- fighting
- survival
- arcade
- driving
- Other: _____

8. What is your current occupation?

Mark only one oval.

- student
- full-time employee
- part-time employee
- unemployed
- retired
- decline to answer
- Other: _____

9. **Do any of the following statements apply to you when playing video games? (check all that apply)**

Check all that apply.

- I try to collect all items, complete all quests, and fully complete the game.
- I try to make sure that I always make the correct choices in games.
- If I make a mistake in the game, I will go back to a previous save to make sure that I get it right.
- I like to play the character in a game similarly to how I myself would behave.
- I like to play the character in a game differently to how I myself would behave.
- I like to be the bad guy in video games.
- I try out everything in a game just to see what happens.
- I will play a game over and over again to try all of the different options.
- I don't like the NPCs in games to be mad at me.
- I usually buy all of the add-ons for games.
- I like to compete with my friends for higher scores.

Video Game Time!

Alright, now that we've gotten that part out of the way, time to play a game.

Open this link in another browser window. Please use Firefox or Safari, as Google Chrome DOES NOT run Unity plug-ins.
You will need a plug-in to access the game.

To answer the final set of questions, you just need to talk to each of the characters at least once. Feel free to finish the game if you want, but it is optional.

RIGHT CLICK FOR FULL SCREEN MODE

Game Link: <http://hannahjgb.com/GlassHousesGamev7.html>

Post-Game Questionnaire

Just a few final questions before you go! Feel free to go back and play again if you need help answering the questions.

10. **Which of the characters did you prefer talking to?**

Mark only one oval.

- Marcus (the cat)
- Myron (the door/gate)
- Melissa (the dragon)
- Maxwell (the soldier)
- Melinda (the girl on the sofa)

11. Why did you prefer the above character interaction?

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.....

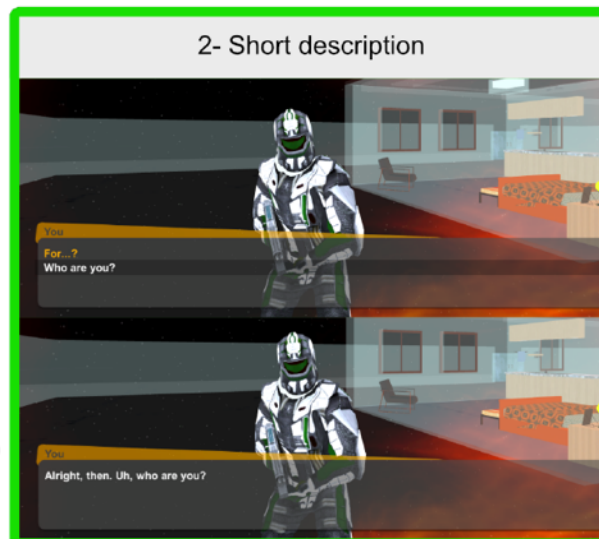
Interaction Styles

Dialogue Menu
(Choices you are given)

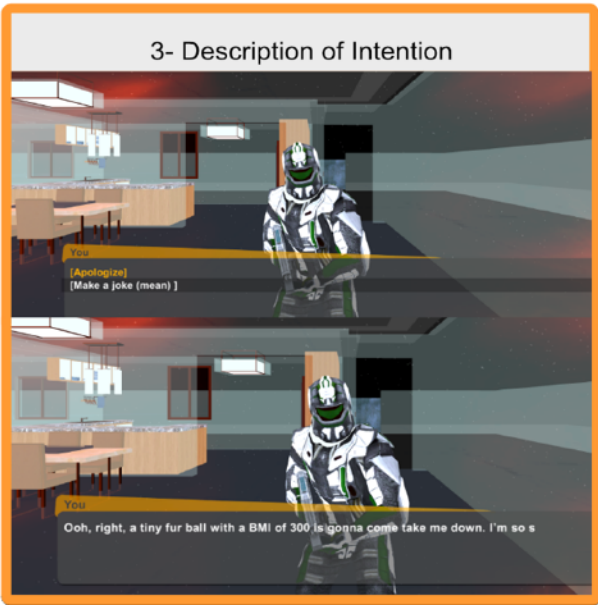


Dialogue Text
(Subtitles/ What you actually say)

Dialogue Menu
(Choices you are given)



Dialogue Text
(Subtitles/ What you actually say)



Dialogue Menu
(Choices you are given)

Dialogue Text
(Subtitles/ What you actually say)



Dialogue Menu
(Choices you are given)

Dialogue Text
(Subtitles/ What you actually say)

12. How much did you like each of the types of dialogue interaction? (Rank the options- lower is better) *

Mark only one oval per row.

	1 (Best)	2 (Better)	3 (Worse)	4 (Worst)
Option 1 (What you see is what you get)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option 2 (Short Descriptions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option 3 (Description of Intention)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Option 4 (Emotion)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Why do you think you prefer the interaction styles you prefer? Would you prefer a different dialogue interaction style? If so, what would that be?

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.....

14. Any other comments or suggestions?

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.....

.....

.....

.....

Completion Code

Th3C4kEiSAB4rreLR0LL

(If you were referred here through Mechanical Turk)

Appendix E: Video Game Link and Gameplay Video

Game Iterations are available at <http://hannahjgb.com>

Make sure to click the .html link instead of the .unity3d link to open each version

Gameplay video: <https://www.youtube.com/watch?v=AsOSDHgllJ8>

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