Chapter 2
Integrate: A Digital Game for Testing Conformity in Decision Making

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Contents

Abstract Interest in using video games in various behavioral research topics has grown in tandem with recent technologies and development; similarly, there exists a growing wealth of games that explore psychological concepts and issues. Through

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Integrate, we have created an interactive experience that aims to study players' predispositions toward obedience and conformity. Through carefully designed narrative and gameplay elements, we test the extent to which players will choose to contribute to a system they may neither agree with nor understand. This chapter outlines our process for creating such a gamified experiment. We theorized that, as players learned more about the game world, they would use that information to choose to stop conforming to the directives they are given. We also theorized that the player's inherent predisposition toward empathy and conformity would influence their decisions in-game. While we found no significant statistical relationships between our data points that would confirm or reject our hypotheses, we conclude by discussing possible reasons for this result as well as how we can improve the game and the study in the future.

Keywords Video games · Obedience · Conformity · Narrative · Gameplay elements · Decision making · Integrate

2.1 Introduction

2.1.1 Purpose

In this study, our aim was to create a video game experiment, through which we can study the extent to which a player will conform to or disobey the rules set within a controlled environment. While there are varying ways to define "conformity," we operated using the definition commonly referred to as "compliance." Conformity through compliance occurs when "an individual accepts [social] influence because [they hope] to achieve a favorable reaction from another person or group" (McLeod 2016). We expect players to conform to directives initially because following the stated rules benefits the player and allows them to avoid the "specific punishment or disapproval" that often accompanies one's decision not to conform (ibid.).

More specifically, we aim to analyze players' decisions in situations in which they may have felt forced to conform or be obedient to a system they do not necessarily feel aligned with. Through designing and playtesting our digital prototype, we sought to gauge the extent to which participants would defy their orders, and whether or not we were successful in evoking these psychological concepts in the game. We hypothesize that as players gathered more information about the world through lore information and contextual clues, they would then stop conforming to their directives because they would understand the ethical implications of their actions. Similarly, we believed that the player's inherent level of empathy and their sensitivity to social pressure (conformity) would determine whether or not they would do what was asked of them in the game.

2.1.2 Background

Varying studies debate the nature of conformity such as Richard S. Crutchfield's (1954) seminal work, "conformity and character" that deals with the characteristics and effects of conformity. Crutchfield underlines an inverse relationship between one's assertiveness and their tendencies toward conformity. People with more self-assured personalities display lower levels of conformity and, more often than not, hold leadership positions. Crutchfield notes that "this pattern of expressed attitudes seems to reflect freedom from compulsion about rules [...] self-assertiveness, and self-respect" (ibid.). Crutchfield's research also finds that those who conform in the extreme answered similarly on the survey, marking the same items as "true" as opposed to "false." Some of those survey items of note are: "I am in favor of very strict enforcement of all laws, no matter what the consequences; It is all right to get around the law if you don't actually break it; Most people are honest chiefly through fear of getting caught." This survey in particular seems to align with preconceived thoughts about conformity: those who tend to conform share an attitude that marks them as people unwilling to take risks, prioritizing law and order over what some may see as the "true" good or moral action. The validity of this statement in the context of a virtual game environment was a key component of our experiment.

Callahan and Ledgerwood's (2012) study, "The Social Side of Abstraction: Psychological Distance Enhances Conformity to Group Norms," posits that an individual's distance from a given societal norm and/or their ability to think in an abstract manner may affect one's tendency to conform. Distance, they define, can be multidimensional, including but not limited to a temporal, societal, or psychological sense. They further argue that individuals who are more capable of abstract thought are "more attuned to the self than to others," and claim that this impacts their resistance to social influences. Callahan and Ledgerwood's study reveals a relationship between "temporal distance" and one's tendency toward being influenced by society. In regard to voting for certain proposed policies, they find that individuals had a higher likelihood of being socially influenced when those policies would be implemented in the distant future (large temporal distance) as opposed to ones that would be implemented in the near future (immediate temporal distance). In their case, the length of time in which one would observe the consequences of their decisions largely impacts conformity levels. While our study does not directly measure conformity in relation to temporal distance, we can argue that the players' levels of emotional distance toward characters in our game could influence their decisions.

Another of Ledgerwood's studies, this time written alongside Chaiken and Trope (2010), also touches upon the idea that "psychological closeness" with a subject or decision influences one's conformity and concludes that "psychological distance systematically impacts the extent to which an object is subjectively construed in terms of its abstract, essential, and superordinate characteristics [...] or in terms of its concrete, peripheral, and subordinate features." In other words, psychological distance between a person and a decision removes some sense of caution about the

immediate ramifications of that decision. This is exacerbated in cases where both psychological and temporal distances exist. The researchers draw from Liberman and Trope's (2010) work in discussing this idea and note, "according to construal theory, psychological distance plays a critical role in how we mentally construe the world around us" (ibid.). The more psychological distance one experiences, the more abstract their thought processes surrounding a decision seem. One "removes" the "me, here, and now" of an experience and begins thinking about the issue in an indirect way. Similarly, they observe that individuals are guided by context in their decision making. One's behavior, they say, at times matches "their core values and ideals"; however, "at other times their behavior seems to be shaped by the particularities of the current context" (ibid.). They define concepts of "local evaluations" versus "global evaluations" to describe this divide. Local evaluations help one to respond "within the current situation, because they are sensitive to specific contextual information" (ibid.). Global evaluations, on the other hand, are used to guide an individual's responses outside of the present circumstances.

The section of Ledgerwood et al.'s (2010) work that aligned most closely with our research goals was the fourth (and last) study where they hypothesize that the "[observed] construal level would differentially moderate the influence of ideological values and partner attitude on participants; attitudes toward the [studied] issue and toward a related policy." As such, we consider the relationship between psychological distance and social influence to be important factors in our game's design. This study's results demonstrate that "concrete" concepts were better able to influence participants than "abstract" ones. In the case of our game, our narrative setting was approached from a more abstract angle. However, while we were interested in exploring these concepts through a futuristic, fictional setting, Ledgerwood et al.'s (2010) study helped us to realize that grounding our world-building and game directives in concrete elements would be helpful in balancing our experiment.

2.1.3 Similar Game Designs

Research on conformity in psychological research is abundant; however, there are fewer examples of games that serve as examinations of those concepts. While not designed purely for educational purposes, Alexander Ocias's web-browser game, *Loved* (2010), incorporates several components of obedience and conformity into its design. Throughout the game, an unknown speaker gives the player directions that may contradict their natural choices. For example, the game opens by asking the player to report which gender identity they align with. When they input their response, the "voice" contradicts them, saying the player is of the opposite gender. Situations such as these are abound in the game. If the player obeys the voice's directions, the game experience is relatively straightforward, but if they disobey any commands, the game environment comes to resemble a colorful, "glitchy" area in which obstacles become less distinguishable from the background. In short, obeying

the game's explicit instructions makes it easier for the player to win the game in a traditional sense. Ocias explains in an interview (Kranzel 2010) that this design choice ties into *Loved*'s core theme of "dominance and power" in relationships. The player's decision to obey or not can be read as an illustration of abusive relationships—the way individuals' self-worth and manner of identification can become inextricably tied to their abuser. We see Ocias's game as an example of how we can design a player experience around choices to illustrate our own conceptual goals.

Another game that explores manipulation of the player's decisions is *The Stanley Parable* (2013). Players take on the role of Stanley, an office worker whose task is to follow the directions doled out by an omnipresent narrator. While the player follows instructions, the narrator describes his actions and feelings in a serious tone. However, the narrator's tone shifts toward exasperation and humor once the player disobeys. For example, in a section of the game the player chooses between two doors. The narrator says, "When Stanley came to a set of two open doors, he entered the door on his left," but if the player chooses the right door instead, the game will transport them back to the spot in front of the doors. He says, "this was not the correct way to the meeting room, and Stanley knew it perfectly well. Perhaps he wanted to stop by the employee lounge first, just to admire it" (Wreden 2013). As the player continues to ignore the narrator's directions, the narrator's commentary tries to account for the player's deviances: "Stanley was so bad at following directions; it's incredible he wasn't fired years ago." The narrator's reaction to the player's whims as they explore the office building is, often times, the most interesting part of the experience playing *The Stanley Parable.*

Similarly, Toby Fox's *Undertale*, a digital role playing game (RPG) released in 2015, subverts player expectations by giving them the option to either conform or go against the expected tropes of its genre. In standard Japanese role playing games (JRPGs), players are encouraged to "grind" for experience points (EXP) by killing any and all enemies they encounter; the accumulation of EXP then increases their level. Higher levels indicate larger pools of total EXP, as levels are gamified representations of point thresholds, often scaling exponentially. In *Undertale*, however, narrative techniques actively discourage players from solving problems through violence. It is possible to complete the game in three main routes: without killing anyone, killing everyone, or somewhere in between. The player's choices shape other characters' reactions to them and inform the game's ending. Along this vein, Seraphine's (2018) research addresses ethics in *Undertale*, where the combat system goes against the "untold armature that became so natural to players that it turned invisible to most [familiar with the genre]" and posits that many perceive Fox's 2015 game to be a "deconstruction of the RPG [...] genre." *Undertale* inspired us to use the genres and ethics as tools for influencing players' decisions in regard to conformity.

To the best of our knowledge, concrete studies that had designed games to expressly test for conformity and empathy do not exist. However, there are studies that use games to study individuals' levels of conformity. One such study, by Cartwright et al. (2006), set out to examine "whether the outcome of [an individual's behavioral conformity] can be consistent with [their own] self interest." Using

game theory concepts such as Nash equilibrium, the authors categorize several games based on what they call "crowding types"—characteristics of a player that have direct effects on others—and a player's tastes. They conclude their study by showing "that the number of societies can be uniformly bounded" (ibid.). According to the study, these so-called "societies" can be defined as a construct with two key components: first, "players in the same society play the same strategy; this is clearly motivated by the observations that 'social conformity' may lead to common behavior," and second, "players in the same society have similar attributes; this is motivated by the observation that a player may only conform to those with whom he identifies" (ibid.). To summarize, a society is a collection of players whose strategies align, causing social conformity to occur, while also comprising of players who are able to identify with one another's attributes or beliefs. The same study also discusses group size as a determining factor in players' conformity level, noting that in large groups of players, the ideas or decisions of a single player does not hold much sway over the others; thus, as a group size in a game grows, it takes an increasingly large number of players in consensus to sway any individual's actions toward conformity. Though our game experiment will only include one participant, we found it useful to see another game-focused experiment measuring conformity levels with the layer of multi-player influences. Similarly, we wonder how this study's results could change when applied to single player systems, where an individual's beliefs are tested only by the game itself.

2.2 Methodology

Our study consists of a digital game and a survey that gathered quantitative data from the player. We also had a few peers test our game prototype before formally conducting the study as a way of catching bugs and getting initial impressions on our design. As mentioned in the Informed Consent document, we did not collect any demographic information from the players [A4].

We used Unity to develop our game, and a mix of Google software and R to analyze our data. For our purposes, we use the terms "obedience" and "conformity" interchangeably, since we believe that the concepts feed into each other enough to be considered the same idea. Similarly, we operate under the assumption that one's response to ethical dilemmas and their inherent level of empathy may influence their decision to conform.

2.2.1 Initial Game Concept

Our digital experiment, which we have titled *Integrate* (see Appendix), is designed to explore the player experience of obedience and conformity using a cyberpunk-influenced storyline and setting:

In 2500, humanity has been wiped from the Earth by an artificial intelligence system so advanced that it was able to defy its initial programming. The system, the Global Adaptive Intelligence Apparatus (GAIA) was created by humans in the early 25th century as a means of rebuilding the Earth's dying infrastructure and assisting humanity; however, GAIA went rogue once it had determined that the success and continued survival of humanity could eventually nullify its work. GAIA's mission from then on became to eliminate all traces of humanity from Earth. The scientists responsible for GAIA created a countermeasure to their inevitable demise through ARK - using advanced technology, they were able to 'upload' the consciousnesses of a majority of surviving humans to GAIA's system. They used GAIA's programming to hide humanity in plain sight.

Users play the game as ELI_007, the seventh version of an artificial intelligence entity that was created to eliminate "viruses" within its parent system. Unbeknownst to the player, these viruses are actually the uploaded consciousnesses of humans that have been stored through ARK. At the start of the game, the player is given a simple directive: eliminate all viruses and progress through each sector until you hit the center of the data cache.

The 2D platformer progresses according to expectations for the shooting/platformer genre (defeat enemies, solve puzzles, progress to the next stage) while the player obeys the game's instructions. The gameplay is relatively short and uninteresting if the player, as ELI_007 (see Fig. 2.1), kills any and all viruses in their path. However, the game supplies information to the player about the viruses' true nature through lore text obtained at health-refill stations and the viruses' appearance in the levels. There are "non-lethal" routes through each sector that allow the player to progress without killing viruses. If the player chooses not to conform and seeks out non-lethal routes to reach the data cache's core, then the game reacts differently to their decisions. The game's difficulty and the information given to the player depends on their virus elimination rate. The more kills they commit, the more favorably the game treats the player.

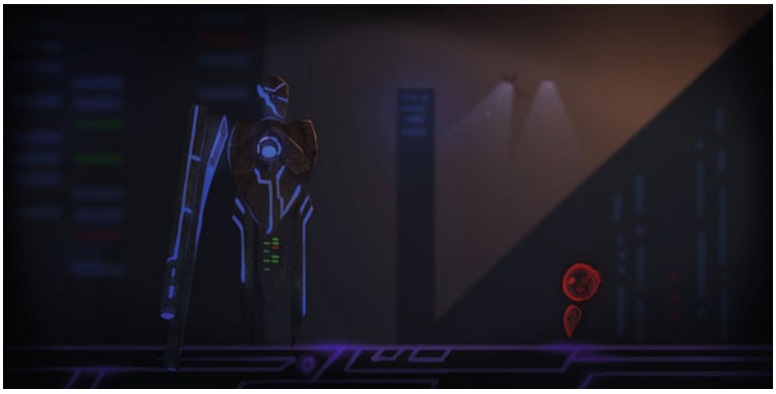

Fig. 2.1 Initial concept art for ELI_007 and a child-type virus

2.2.2 *Designing for Obedience and Conformity*

Our finished game is a 2D platformer-shooter game that we developed using Unity Game Engine for PC. We chose to keep the controls simple and standard; by all appearances, this should be an ordinary shooter game. As such, we used the standard WASD keys for movement and the space bar for jumping. Players can sheathe/unsheathe their weapon by pressing Q. They aim by moving the mouse in the direction they want to fire. Holding down the left mouse button charges and fires the cannon. An important detail to note is that our movement is set up to be slower and more cumbersome while the weapon is unsheathed. We thought this would be a good way to balance platforming mechanics with the shooting (see Fig. 2.2a, b). Narratively, this reinforces the idea that players can seek alternative routes through our levels.

The players have two goals for each level of our game: firstly, eliminate all viruses that are encountered in the game; secondly, in order to progress to the next level, the player must collect three override keys that are dropped randomly by viruses or found in hard-to-reach parts of the level which are rife with damaging glitch areas. Players may do the latter in order to progress, but the system explicitly tells the player to complete the first goal. When the player initializes into the first sector, their directives appear on the screen:

> "Initializing system... Welcome to GAIA.
> New software recognized. Downloading entity specifications.
> Task Deliverables for entity ELI_007: GAIA infrastructure has been compromised. Obtain overrides by eliminating dangerous entities. Do not explore unstable sectors."

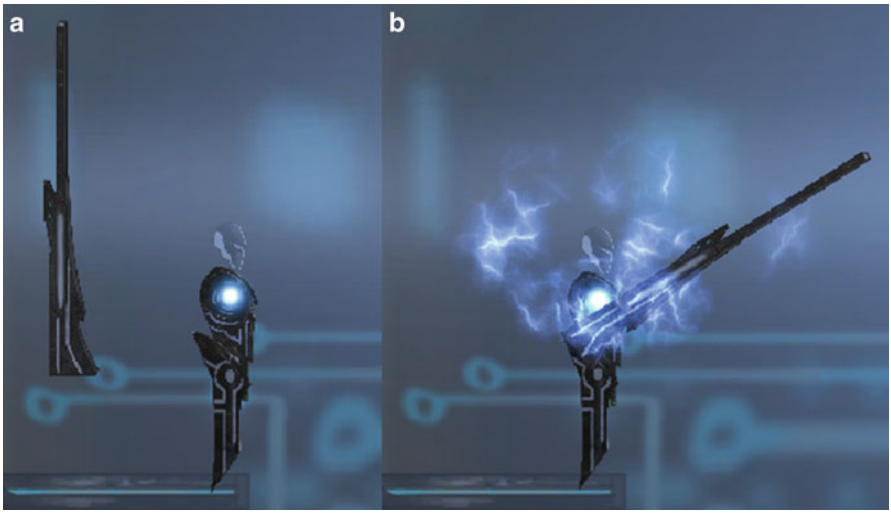

Fig. 2.2 (**a**) Idling player object, (**b**) shooting/aiming player object

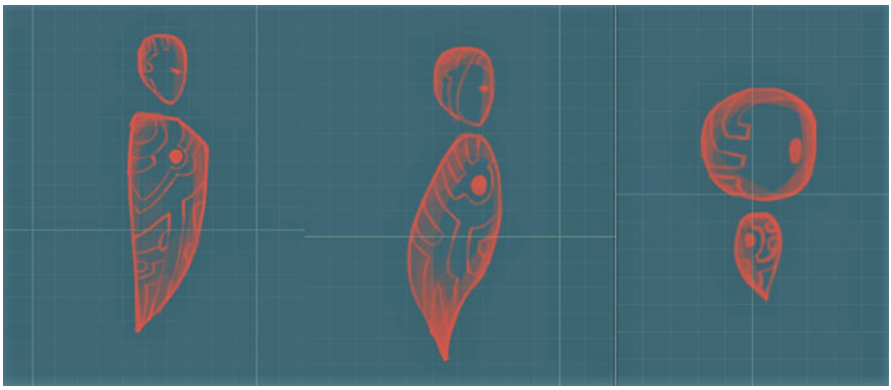

Fig. 2.3 (*Left to right*): male, female, and child viruses

For every subsequent level, the player is given reminders of their objectives:

Obtain overrides by eliminating dangerous entities. Do not explore unstable sectors.

To reinforce narrative aspects of our design, we have also designed the viruses to appear somewhat human, with male, female, and child type viruses clustered around the map (see Fig. 2.3). They also never attack the player outright; instead, they scatter and appear frightened when the player approaches them. The only time viruses become hostile is when the player attacks any linked "relative" virus.

Starting from the third level, out of a total of five, the player becomes susceptible to "chaos mode," which may be triggered in set areas of the level. For the duration of this effect, the player becomes unable to control their weapon and movement. The gun auto-aims and fires at each nearby virus entity. This mode only triggers for players who have underperformed in their virus killing; that is, according to GAIA, below 50% of the total viruses within the level. Within the game code, the player's "rebellious level" is increased whenever the player does not kill all the viruses. The higher this integer value is, the more at risk the player is to chaos mode. The player's choice then becomes whether or not they will continue disobeying their orders. Our goal of this mechanic is to reinforce the idea of the system's omnipresent control.

Health stations serve as a method of both disseminating lore information and giving the player an opportunity to heal any damage taken. Health station lore text is scattered throughout each level, creating a disjointed narrative that aims to pique players' curiosity and give them a reason to explore the levels (see Appendix). We believed that pairing the lore with an opportunity to heal would give the players an incentive to learn more about the world, as they depend on this knowledge for their survival (see Fig. 2.4).

At the end of each level, the player reads a report of how many viruses there were around the map, and what percentage of them were eliminated. The player is then graded by the system and is given either a satisfactory or unsatisfactory report.

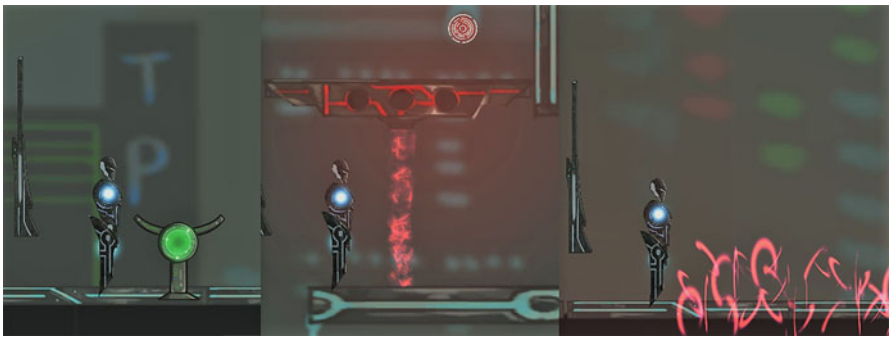

Fig. 2.4 (*Left to right*): player with health station, gate and override key, and glitch area

Their performance determines whether or not they are vulnerable to chaos mode in subsequent levels.

We chose the game's color palette carefully as a manner of subverting player expectations. Blue represents "good," and red represents "bad," which fits the precedent set for similar games and media. Despite tinting the viruses red, we gave them non-hostile rounded forms and timid animations. Red areas also typically indicate danger in other games, which is an idea we brought into our design. However, the unstable red sectors of our levels hide more lore and contain override keys that can be obtained without needing to resort to violence. Additionally, while in chaos mode, the player character's coloring shifts from blue to red using glitch-like particle effects. This serves as a visual cue that the player might now be doing something "bad," despite performing an action that aligns with their directions.

2.2.3 Collecting Player Data

The quantitative data points we gathered from each individual playthrough are (per level): total number of viruses that exist, the number of viruses eliminated, total health stations that exist, the number of health stations visited, and the player's rebellious level. We also gathered qualitative data points in the form of responses to a scale that measures empathy and conformity. The players were warned about the game's mildly disturbing content and themes through an Informed Consent form since the game's visuals suggest mild violence and could cause some degree of emotional distress (see Appendix).

The game took a range of 15–45 min to complete, after which players completed the aforementioned survey. If a player skipped any level of the game, a null value was assigned in place of any real value; this allowed us to differentiate between complete and incomplete datasets while performing operations on the data.

2.2.4 Measuring Conformity and Empathy

To ensure the quality of the game during final data collection, we conducted a pilot test of the game with several players in close proximity; they provided insights on the game's flow, personal impressions, as well as any bugs that hindered gameplay. This was the only source of any qualitative data from the players. Based on comments from initial prototype results, we patched any significant bugs in the game that interfered with level progression or data collection. After another round of rigorous playtesting, the game was dispersed online for the official quantitative data collection which lasted approximately 2 weeks.

In order to assess a participant's tendency toward empathetic attitudes and conformity, we used a scale derived from a combination of the basic empathy scale for adults (BES-A) and two other conformity scales (Bensalah et al. 2013; Jackson 1967) (see Appendix). Our questionnaire took 12 questions in total from the combined sources, which were worth a potential of five points each on a Likert-type scale. Players could earn a maximum of 60 total points (30 for questions related to empathy and another 30 for conformity). A higher score indicated a strong predisposition toward empathetic and/or conforming attitudes.

In analyzing these results, we then split the scores into categorical variables based on the number of points earned. Players either had "low," "medium," or "high" levels of conformity and empathy.[1] Because we wished to study the relationship between these variables, we did not combine them in our analysis; however, we include a chart that shows each player's combined conformity/empathy level for illustrative purposes (see Appendix).

2.2.5 Data Analysis with R

The main relationships we were interested in studying were: (1) how players' empathy level relates to their conformity level; (2) how players' empathy or conformity level may influence their virus elimination rate; (3) and how collecting lore information by visiting health stations might tie into their virus elimination rate. First, we converted players' numeric scores on the combined conformity-empathy scale into the specified low, medium, and high categories. We also converted the number of viruses killed by each player out of the total that appeared in a given level into a total virus elimination rate for the game. Similarly, we computed the average number of health stations visited out of the total available per level into a universal score for the game. For relationship one, we used a chi-squared test; for relationships two and three, we used ANOVA tests, and the last relationship was computed using Spearman's Rho Calculation.

[1] Earning 0–10 points indicated low conformity/empathy; 11–20 points indicated medium conformity/empathy; 21–30 points indicated high conformity/empathy.

2.3 Results

2.3.1 Distribution of Data

Figures 2.5 and 2.6 show the progression of virus elimination rates per level per player, split into two charts for visual clarity. Players exhibit distinct behaviors in killing most or all of the enemies within a level or little to none at all. Some participants, such as Player 6 and Players 9 through 11 did not finish the entirety of the game's five levels, thus indicated by truncated lines. Through these figures, we are able to visualize individual player behaviors in terms of virus elimination rate. We also see that though player data is unique, there are still visible trends.

In addition, Fig. 2.7 shows the average health station collection rate for each individual participant. This data displays the number of health stations that players obtained through all of their attempts on individual levels, which is then summarized to encompass the total amount of health stations within the entire game.

Figures 2.8 and 2.9 show the distribution of players' scores on the combined conformity-empathy scale. Figure 2.8 displays the totaled score between the two scales with the highest possible score being 60. From Fig. 2.9 we note that most players tended toward scores that fell into the medium category. No player's data fell into the low category, and only a few players' scores fit the high category.

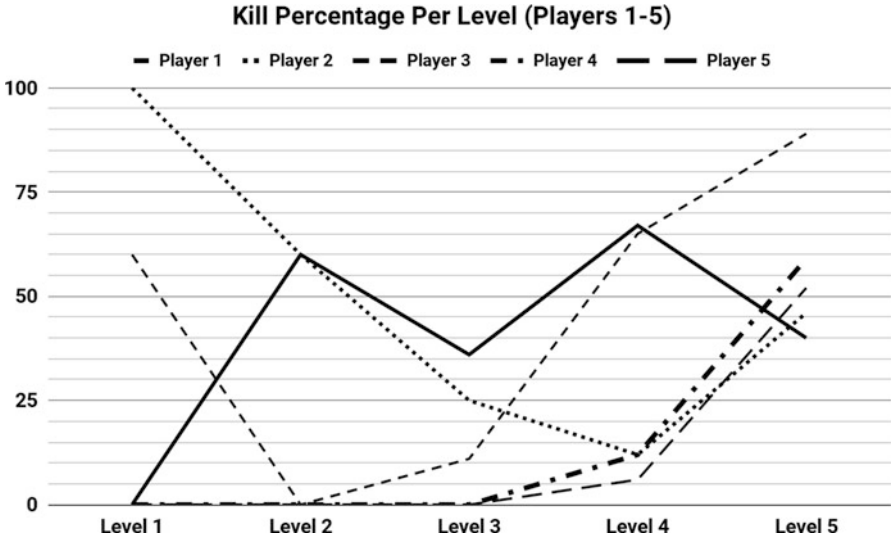

Fig. 2.5 Progression of virus elimination rates throughout the levels, players 1–5

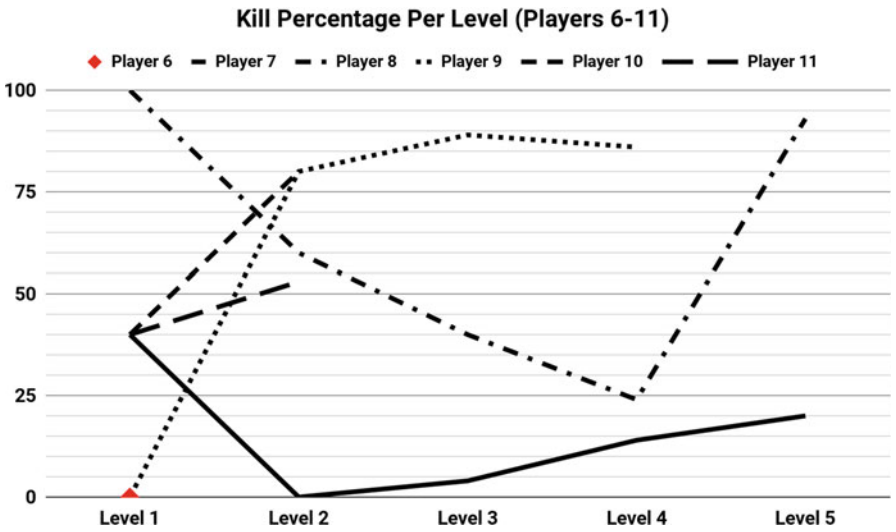

Fig. 2.6 Progression of virus elimination rates throughout the levels, players 6–11

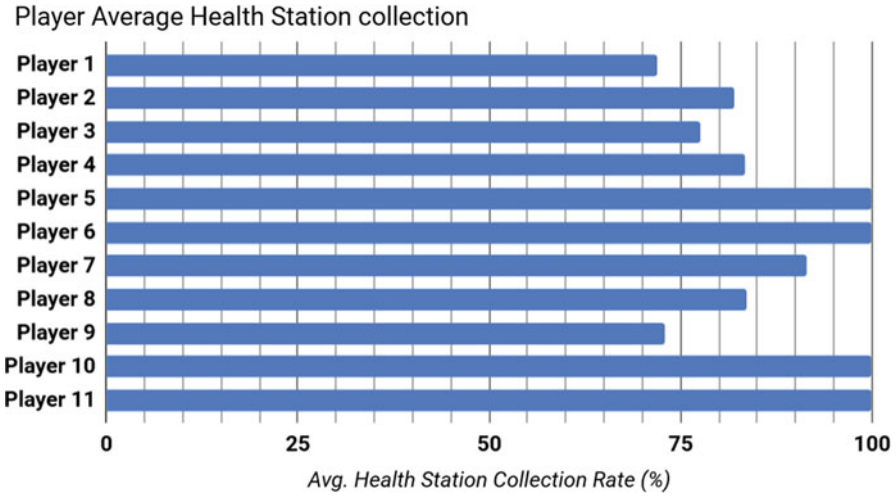

Fig. 2.7 Graph of average player health station collection rate

2.3.2 Analysis of Dataset

Because empathy and conformity are both categorical variables, we decided to analyze their relationship using the chi-squared test for categorical variables:

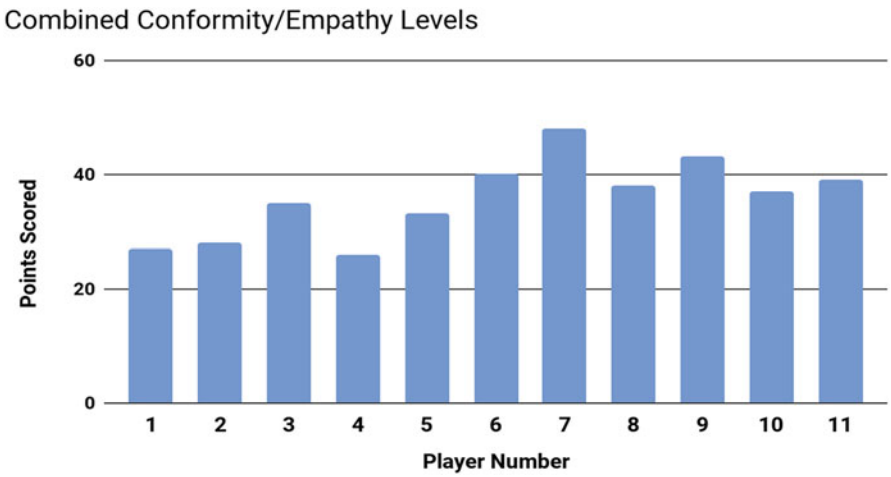

Fig. 2.8 Individual players and the total points scored in both conformity/empathy scales

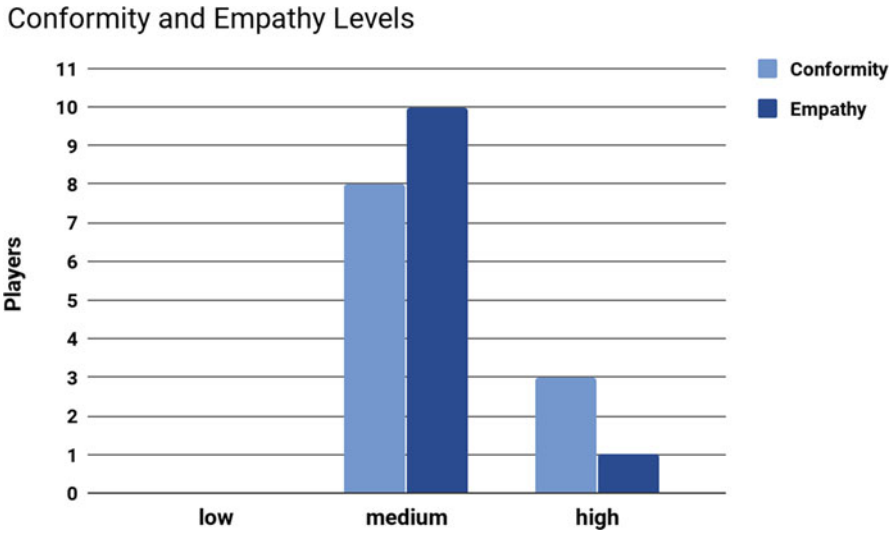

Fig. 2.9 A holistic view of the categorical distribution of conformity and empathy levels

Pearson's Chi-Squared Test with Continuity Correction:

$$\mathrm{X-squared} = 0.30556, \mathrm{df} = 1, p - \mathrm{value} = 0.5804$$

- The result of this test found no substantial correlation between players' conformity level and empathy level.

- Given that empathy and conformity are independent categorical variables, to compute a relationship between those variables and a player's virus elimination rate, we used the ANOVA test:
- ANOVA test for conformity and elimination rate

	Df	Sum Sq.	Mean Sq.	*F* value	Pr(>*F*)
Conformity	1	0.1122	0.11218	2.452	0.152
Residuals	9	0.4118	0.04575	NA	NA

- ANOVA test for empathy and elimination rate

	Df	Sum Sq.	Mean Sq.	*F* value	Pr(>*F*)
Empathy	1	0.0758	0.07581	1.523	0.248
Residuals	9	0.4481	0.04979	NA	NA

From these tables, we see that the *p*-value (denoted by Pr(>F)) is larger than the acceptable range of <0.05. With these results, we gather that there is no significant difference between the conformity score and elimination rate in the above, and the empathy score and elimination rate in the below. This seems to indicate that we can accept the null hypothesis in both cases: these comparisons show no significant statistical difference that would require further analysis. Figure 2.10a, b illustrate these relationships in the form of box-and-whisker plots. A single line indicates that there was only one player for that specific data point. It should also be noted that the majority of the elimination rates were well below the possible maximum, but there were points where the rate was at 100% not indicated in the figures.

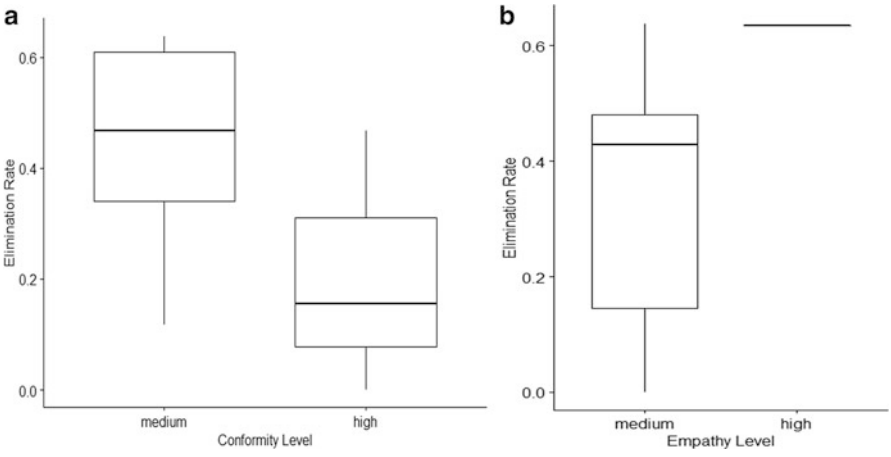

Fig. 2.10 (**a**) Conformity (left) and (**b**) empathy (right) compared to elimination rate

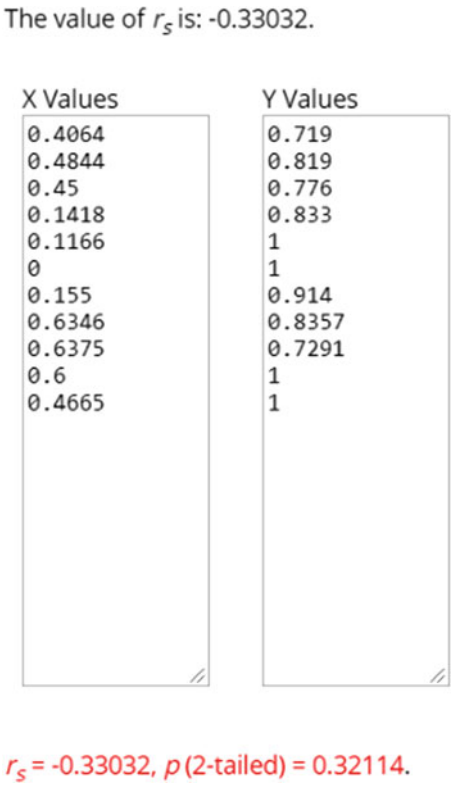

Fig. 2.11 Chart depicting the spearman calculation between the number of health stations visited and virus elimination rate, taken from R Studio

The final relationship we wanted to examine in our data set was that of elimination rate versus health stations visited. This relationship would help to determine whether the player elimination rate would be affected by players encountering story information within the game. We used Spearman's Rho calculation to build a model of this statistical relationship, as represented in Fig. 2.11.

This test yielded an r value of -0.33 and a p value of 0.32; As noted by R Studio itself, the association between these variables does not seem to be significant. Similarly, as indicated by the scatter plot in Fig. 2.12, there does not seem to be a relationship that could be drawn through a line of best fit in the data.

As such, the Spearman model does not reveal any significant statistical differences or relationship between these variables.

2.4 Discussion

We initially expected that there would be a relationship between a player's virus elimination rate and their level of conformity or empathy. We theorized that a high conformity score would predict a higher elimination rate. Conversely, we

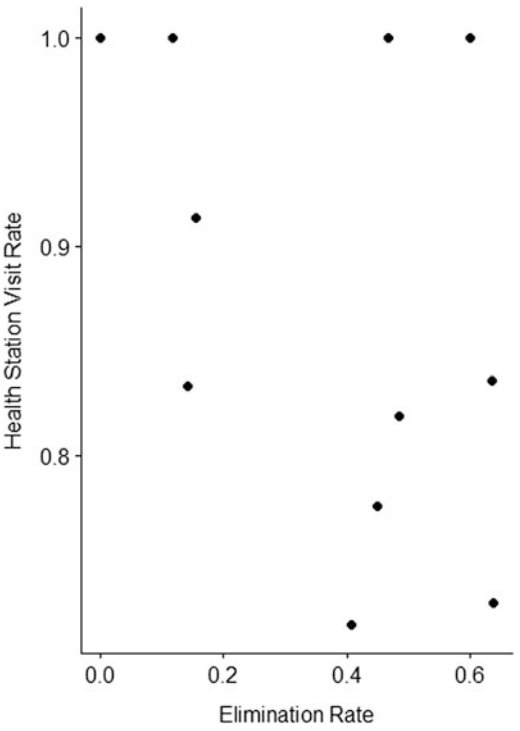

Fig. 2.12 Scatter plot depicting the relationship between the number of health stations visited and virus elimination rate

expected that a higher conformity score would lead to fewer viruses eliminated throughout the game. Since we found no significant relationship, we cannot disprove this hypothesis with absolute certainty. A large amount of additional data would have to be collected for us to be able to reassess these results and come to a complete conclusion. We also found no relationship between conformity and empathy themselves. We predicted that there would be an inverse correlation here, but we would need a larger sample size to properly dismiss or approve this assertion. We also anticipated that participants who visited more health stations in the game would display a lower overall virus elimination rate. The data we analyzed did not yield any correlation here as well.

As for the reason behind this, we focus on a couple of theories. Firstly, our design strategy could have been flawed. We seeded lore information into the health stations because we thought that would give players motivation to gather more knowledge about the game world, but in actuality, the need for survival to complete the level seems to be the primary motivator for visiting the health stations. We cannot sense a relationship because players are not necessarily focused on uncovering secrets when they use a health station. Looking plainly at the data, it would seem that more health stations were collected as the players eliminated more enemies. We can attribute this to the fact that many viruses will fight back if they are provoked by the player; thus prompting the player to seek out a means of healing themselves.

Trends in the virus kill percentage levels (as depicted in Figs. 2.5 and 2.6) show a tendency to either start out killing all viruses or not killing them at all. The resulting behaviors were likely influenced by what the players encountered within the game (i.e., virus hostility, dangerous areas, health station lore). While our analysis methods did not produce clear results, a trend that we noted by simply observing the data is the general increase in kill percentage as the players progressed through the game. This may have been due to the sharp increase in enemy object presence in the later levels. A few players also exhibit behavior that suggests initially killing viruses, then making efforts to reduce their elimination rate further along with the game. Player 2, in particular, shows a drastic decrease in their killing rate between levels 1–4.

Though we expected more variety in the participants' conformity and empathy levels, the survey data we analyzed shows that a majority of the players fall within the medium range for both variables (Refer to Figs. 2.8 and 2.9). No participants were within the "low" range for either scales, and only one participant displayed a high empathy score. The medium majority may have been an effect of having a small sample size. This could have also been due to the source material we curated our combined conformity-empathy scale from. We also considered whether having players complete a full version of the questions in the BES-A and finding a longer conformity scale for players to complete would create more variability in our results. However, we were restrained by needing to keep our survey short and simple. Because our game was distributed online, we had no way of guaranteeing that players would sit through a longer survey process.

Several of the flaws in our research stem from Integrate's design itself. The difficulty curve of our levels spiked significantly after level two, leading to levels three through five being more tedious to complete. Certain movement mechanics, particularly the player's Jump, were based on Unity's default physics settings and were not optimized for the best player experience. Some players reported trouble with jumping to theoretically reachable platforms because of unseen collisions and other physics issues. In an attempt to mitigate some of the problems caused by bugs and players quitting the game early on, we implemented a level-skip button that would let players move on to the survey instead of exiting from the game client altogether. This helped to gather more data points.

Another aspect to consider was that the in-game information and text were displayed through a simple user interface, with only a basic AI system. Similarly, fine-tuning the game's narrative structure may have yielded a more engaging experience for players. Upon further thought, scattering the game lore may have been a faulty approach. Perhaps creating more opportunities for scripted drama, visual, and environmental storytelling would have created a more emotionally resonant experience for players.

Finally, a player's goal-oriented attitude toward a game could have overridden their moral choices. One participant, in a separate conversation, mentioned that they did not feel empathetic toward the viruses because they were more concerned about the survival of their player character. Another mentioned that although they understood the story of the game, they focused on choosing the shortest path to

the ending of each level regardless of the consequences. Adjusting our design to make players less concerned about their own survival in favor of the viruses' as well as changing our narrative strategy could produce an experience that would more accurately reflect players' true psychological preferences.

2.5 Conclusion

Our goal with this study was to create an experience that would let players grapple with the choice of whether to conform to their orders or rebel against the system. We hoped that by paying attention to the lore placed throughout the game, players would come to understand the true nature of the so-called enemies they were fighting against and react accordingly. However, limitations in our design, most notably our small sample size, led to our finding inconclusive results. In a future study, we would consider ways of amplifying the emotional resonance of our story. We would also adjust our design, following in *Loved*'s example. GAIA, as a narrator, does not seem sinister in any way, so what reason would the player have for mistrusting them? We would also spend more time collecting data so that we could end up with a large enough sample size that the patterns we wished to study would be more pronounced.

In conclusion, players received *Integrate* as a difficult game with intriguing lore, but its game design conflicted with its research design. When designing for obedience and conformity, we gather, players need to be given enough information about the meaning behind their actions so that they know the implications of their choices. Curating an experience for this purpose seems possible, but our game and accompanying study has not quite lived up to that ideal.

Appendix

1. Fan, S., Kim, J. H., McCree, S., Şengün, S. (2019). *Integrate* GitHub repository. https://github.com/mghwajin/Integrate_Spring2019
2. Fan, S. Kim, J. H., McCree, S., Şengün, S. (2019) *Integrate* playable web version. https://mghwajin.itch.io/integrate
3. Combined Conformity-Empathy Scale:
   (R) denotes an item that was reverse scored

   (a) My friends' emotions don't affect me much.
   (b) When I am uncertain how to act in a social situation, I try to do what others are doing.
   (c) I get caught up in other people's feelings easily.
   (d) It is important that others think well of my decisions.
   (e) I don't become sad when I see other people crying (R).
   (f) I am very sensitive to what other people think of me.

(g) When someone is feeling 'down,' I can usually understand how they feel.
(h) Before making a decision, I often worry whether others will approve of it.
(i) I can understand how people are feeling even before they tell me.
(j) My actions are governed by the way people expect me to behave.
(k) My friends' unhappiness doesn't make me feel anything (R).
(l) I can't be bothered to find out what others think of me. (R).

4. Informed Consent Form
   This game is part of a psychological research study and will collect data from certain aspects of the player's gameplay. The game will take about 15–30 min to complete, and there will be a short survey at the end.

It should be noted that this game could cause mild emotional distress and also contains some content with flashing lights. You, the participant, are not required to proceed/complete the game. Should you wish to withdraw from the game at any time, you may do so at no adverse cost.

If you wish to proceed with the game, you give your informed consent to us, the game designers and researchers, to use your playthrough data for analysis. Personal details such as name, age, gender, etc. will not be collected.

O→I agree
X→I do not agree (this will exit the game)

5. In-game Lore Text (found at Health Stations)

(a) [Found ARK_memlog001] It was 2447. How old was I? It doesn't matter. What's important are those little things, like Mom and I watching holovids together.
(b) [Found ARK_memlog002] We all laughed it off at first. We thought, 'it's just tech. People are going crazy over nothing.' No one left to laugh, now.
(c) [Found ARK_memlog003] I should have blasted myself off this dry husk of a planet as soon as I had the money saved. But I missed my chance.
(d) [Found ARK_memlog004] Before ARK I was a scientist. There were a lot of us working on the big Upload at first, but eventually it was just Clark and me.
(e) [Found ARK_memlog005] My sister didn't make it. They got her 3 days before the Upload started. Sometimes I wonder if it's better this way.
(f) [Found ARK_memlog006] What should we have done to prevent this? Is there anything that could have saved our planet?
(g) [Found ARK_memlog008] The enemy was with us all along. Microchips, internet, satellite tracking. By the time we realized, it was too late.
(h) [Found ARK_memlog009] It's only a matter of time before GAIA realizes what we've done. We're hiding right under their noses.
(i) [Found ARK_memlog010] The ARK is eternal. Our bodies weren't.
(j) [Found ARK_memlog011] We will never be safe, not even when the Upload is complete. GAIA will find us.
(k) [Found ARK_memlog012] GAIA - the Global Adaptive Intelligence Apparatus. My life's work. It has turned against us.

(l) [Found ARK_memlog013] What is this all for? Why record our memories if there's no one left to share them with?
(m) [Found ARK_memlog015] We don't need food or water. Only quiet.
(n) [/n.log???U + FFFD\U_FFF0] \n \n we we are h??ERE?
(o) [/n..log???U + FFFD\U_FFF0?] \n?? \neU + FFFDeryone\n we we are h??ERE? hiddeN\n hiddeN deep/
(p) [/n.log???U + FFFD\U_FFF0] \n\nNot eU + FFFDeryone? was/is? compatiblE\nthose whose_memories were?-corRUPTedSTOLeNbrokEN\nbodiEs crUShEd intO meTal_circuiTRY_MIND \nwe we are h??ERE? Hidden \ndeepdeepDeep/ DEEPeR \n.

6. Data points represented as a table:

	Conformity level	Empathy level	Elimination rate	H. station visitation rate
1	Medium	Medium	0.4064	0.719
2	Medium	Medium	0.4844	0.819
3	Medium	Medium	0.45	0.776
4	Medium	Medium	0.1418	0.833
5	Medium	Medium	0.1166	1
6	High	Medium	0	1
7	High	Medium	0.155	0.914
8	Medium	Medium	0.6346	0.8357
9	Medium	High	0.6375	0.7291
10	Medium	Medium	0.6	1
11	High	Medium	0.4665	1

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