Well Played

a journal on video games, value and meaning

A Special Issue on Escape Rooms

EDITED BY CLARA FERNANDEZ-VARA & IRA FAY

VOLUME 10 NUMBER 1

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A Journal on Video Games, Values, and Meaning
Special Issue on Escape Rooms

CLARA FERNANDEZ-VARA & IRA FAY

Carnegie Mellon University: ETC Press
Pittsburgh, PA

ISSN 2164-344X (Print)
ISSN 2164-3458 (Online)

All submissions and questions should be sent to: etcpress-info (at) lists (dot) andrew (dot) cmu (dot) edu For formatting guidelines, see:www.etc.cmu.edu/etcpress/files/WellPlayed-Guidelines.pdf

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INTRODUCTION

Escape the room activities are a peculiar game genre. Some argue that the origins of the genre may be traced back to the comedy game *Behind Closed Doors* (John Wilson, 1988), where the player controlled a balrog who is trying to escape a bathroom, or even the labyrinth of the Minotaur in Ancient Greece.[1] The game format as we know it started as short, browser-based games in the early 2000s, with titles such as *Mystery of Time and Space*, a.k.a. MOTAS (Jan Albartus, 2001) and *Crimson Room* (Toshimitsu Takagi, 2004).[2] They were a star genre among webgames, and they had devoted players who wanted to figure out the solutions to the puzzles. Although some players vied for being first in writing a walkthrough, it was common to find forums where escape-the-room fans got together, played at the same time, and told everyone else what they were doing. The communal aspects of finding and solving escape the room activities became essential to playing the genre early on.

The end of the decade saw the advent of this format in physical spaces – what if players were actually locked into a physical space that they had to escape? Physical escape rooms started by taking over office spaces during off hours, then they moved to vacated

1. https://breakoutgames.com/escape-rooms/history

2. After the discontinuation of support of Flash, many of these games are not available any more, though digital archivists are making them available. The Internet Archive has a large collection of them, including Toshimitshu Takagi's original escape the room games https://archive.org/details/softwarelibrary_flash?and[]=Toshimitsu Takagi&sin==

retail spaces, and became popular activities to do together with friends. The communal problem-solving that happened in online communities of fans became groups of people who would join to tackle a lot of puzzles together. The format has also entered the board game realm[3], with games that allow playing alone or in a group in the comfort of one's home (e.g. *Unlock!: Escape Adventures*[4] (2017) or *Exit: The Game*[5] (2016)). These activities have become so common that they have started to be referred to as "escape rooms" or "escape games" for short in English and other languages. Escape the room physical spaces have spread out all over the world, in many different languages, finding creative and tricky ways to challenge their players.

Speaking of spread, this volume has been edited during the 2020 pandemic, while hundreds of millions of people were under lockdown in their homes and trying to avoid proximity to other people. The whole world has felt trapped, and never was a collective yearning to escape as massive as in the last year. Paradoxically, live-action escape the room events have closed down, and many have migrated to online activities. Most of the well-played examples featured in this volume are snapshots of a pre-lockdown past, which will hopefully be revived once the pandemic is under control.

The articles in this volume all aim at filling a gap in the literature – several authors note the scarcity of pre-existing work, to the extent that several of them use the definition of escape rooms (Nicholson, 2015)[6]. The popularity of the format also makes it a medium that allows it to introduce players to a variety of topics and contexts; some of the articles here feature escape room activities designed to teach how to use software, history,

3. https://boardgamegeek.com/boardgamefamily/36900/category-escape-room-games

4. https://boardgamegeek.com/boardgame/213460/unlock-escape-adventures

5. https://boardgamegeek.com/boardgamefamily/36963/series-exit-game

6. Peeking behind the locked door: A survey of escape room facilities. White Paper available at http://scottnicholson.com/pubs/erfacwhite.pdf.

philosophy, as well as train nursing students! This collection, therefore, aims at understanding escape rooms as a game design form first, to then showcase the creative potential of escape the room activities by covering a variety of themes and formats. Each article also follows different methods, from a survey of escape the room activities across the world, to first-person accounts of people who have designed and worked on them, to design analysis and audience surveys.

One of the reasons why there is a relative dearth of articles on escape the room activities from the point of view of players and makers has to do with revealing secrets. If one writes about an escape room in depth and tells the solution of some or all the puzzles, that can spoil the fun for other players. Since many escape rooms experiences are also business, such spoilers can chase away players, leading to a loss of customers and revenue. The tacit agreement among escape the room designers is similar to that of professional magicians. How one creates illusions and surprises the audience are trade secrets, not to be shared beyond practitioner circles.

Many of the escape the room articles here do spoil the activities that they analyze, because most of them were designed by researchers precisely to be studied and spoiled. The goal of the experience was precisely to learn more about the design of escape the room games and how players interact with them. In one of the cases, the room was not designed by the author, but the designers graciously agreed to reveal their purpose and goals for the sake of learning. The activities here were also available for a limited amount of time, and to small audiences, so it is hardly possible that any of the reveals in these articles constitute a spoiler. The few references to commercial games do not have enough specifics that would allow identifying the game activity. In this case, the disclosure of some information is a small price to pay for the pedagogical gains of discussing commercial escape the room activities in some depth.

Escape the room activities and their design practice may seem relatively new, but they draw on ancient traditions such as play, theater, puzzles, and cooperation. The evolution from the digital realm into the physical world, and the additional transformations that they have undergone during this past year of pandemic by using digital distribution, shows the endurance and worldwide appeal of the genre. We have only begun to scratch the surface of this fascinating game format, which demonstrates that escaping is a yearning that everyone feels at a certain point in their lives.

Clara Fernandez-Vara and Ira Fay

Editors

A DESCRIPTIVE SCHEMA FOR ESCAPE GAMES

MIREK STOLEE

A team of players erupt from the opened door of a live action escape room, setting a new record for display on the lobby television. At home, a different player watches the credits of an online room escape game scroll past, the light of the computer screen illuminating their scrawled puzzle notes. Cheers and high-fives are exchanged around a dining room table cluttered with cards as a different group stops the timer on a tabletop escape game. Elsewhere, two people pull off their virtual reality headsets and smile at each other, their work in the digital room finished. These escape games exist across digital and analog boundaries and feature widely different modes of interaction. But how are these games related to one another? This essay presents a visual schema for understanding the escape game as a unified genre spanning multiple media. It also introduces the term *genre adaptation* to describe the genre's expansion, a form of adaptation drawing not from individual works but from a set of genre conventions.

Currently, there are four broad categories of escape games. The first version chronologically is the *point and click escape game*, a primarily browser-based subgenre of digital adventure games. In these games, players use a mouse pointer to navigate a digital

space, gathering and interacting with objects with the goal of escape. The largest commercial category is the *live action escape game*. Commonly called "escape rooms," these games share the objective of escape but substitute the digital space of the point and click games with a physical environment. Inspired by the popularity of escape rooms, the other two subgenres coincide with rising interest in virtual reality and board games, respectively. *Virtual reality (VR) escape games* come in two flavors: VR games for home PC and console platforms coexist with ones designed for dedicated commercial spaces. Escape games also appear as boxed products that can be played at home called *tabletop escape games*. Examples in this final category illustrate the variances in how escape games present their objects and spaces and also how conventions of the genre are adapted between subgenres.

Each escape game, regardless of subgenre, is a sequence of challenges bound to a specific space. Scott Nicholson (2016a) distinguishes between three types of challenges in escape rooms that apply across the entire genre. "Puzzles" require players to discover an answer, like the numbers in a padlock combination, based on clues. In "searching" challenges, players must find objects physically hidden in the game space. Players may also encounter "tasks" they must complete. Examples might be crossing a part of the room without stepping on the floor or following instructions to use a tool that slips under a door and opens it from the other side. Unlike puzzles, tasks focus on performance rather than mystery. A single challenge may use a combination of puzzles, searching, and tasks. These challenges can then be sequenced in various ways, such as one linear string of challenges or several concurrent paths culminating in a final challenge (Nicholson, 2016b).

The objects in the game space are central to these challenges and the linkages between them. These objects simultaneously play the roles of clues and tools. Players must use them to determine

which objects should be manipulated and in what way and then perform the determined course of action. The same object may both hide clues required to solve a puzzle and have a use necessary to complete a task. In the process of designing an escape game, creators curate a set of objects and place them in the game space to create the desired structure. This partially explains the prevalence of locks and keys in these games; locked containers seal away clues for later puzzles and tools for later tasks, creating the overarching structure of the game. Nicholson (2016a) argues that the chosen objects also have an important role to play in immersion. Items and puzzles that do not match the setting, like a flashlight hidden in an ancient pyramid, seem out of place. There is a danger in including objects that only enhance the theming, though. A statue in the same pyramid-themed room may be a red herring that distracts players if it is not important to the room's challenges.

The resulting multitude of objects and devices contained in the room make the escape game a multimedia experience. Clues may be hidden in books or on paintings, and players might need to interact with electronic locks and other machinery. Each form of the escape game mediates its objects in a different way, and this can be used as a means of comparison between subgenres. The objects in a live action escape room are physical and can be directly manipulated. Players can touch the objects and interact with them using their senses just as they could if the object were outside of the designated space of the game. This subgenre forms a baseline for comparison.

Looking at the way other forms of escape games mediate their objects reveals two main axes on which they differ. In some games, the objects appear in physical form. This includes the objects in live action rooms, but also the components of the tabletop escape games: while the objects may not be in their standard form, the cards or other pieces that represent them are tangible. The digital representations of objects displayed on

computer screens and virtual reality headsets are, by comparison, intangible. The player does not directly inhabit the fictional space of the digital representations and can only interact with them through the game's interface. We can call this dimension *tangibility*.

The second dimension describes how the object might be used. The unmediated objects in the live action escape room have affordances as a result of their shape and material composition. A rubber ball can be rolled down a tube or bounced off a surface. These affordances may or may not be retained in the new mediated form of the object. An illustration of a rubber ball on a playing card will not have these specific affordances, while a 3D sphere responding to physics in a virtual reality environment might. A player in a live action escape room could use a screwdriver to release the screws holding a vent cover, but a point and click game's screwdriver can only perform that action if the game's programming specifically allows that interaction. In this way, designers of other types of escape games might pick and choose the affordances necessary to solve their puzzles. The fact that the tip of the screwdriver might be used to etch words into wood is an affordance that might not be matched by its digital representation, but that affordance might not be desired in either game at all. We can call the degree of similarity between the affordances of the mediated objects and their unmediated forms *affordance conformity.* Using these two concepts of tangibility and affordance conformity, we can begin to lay out how different types of escape games relate to one another.

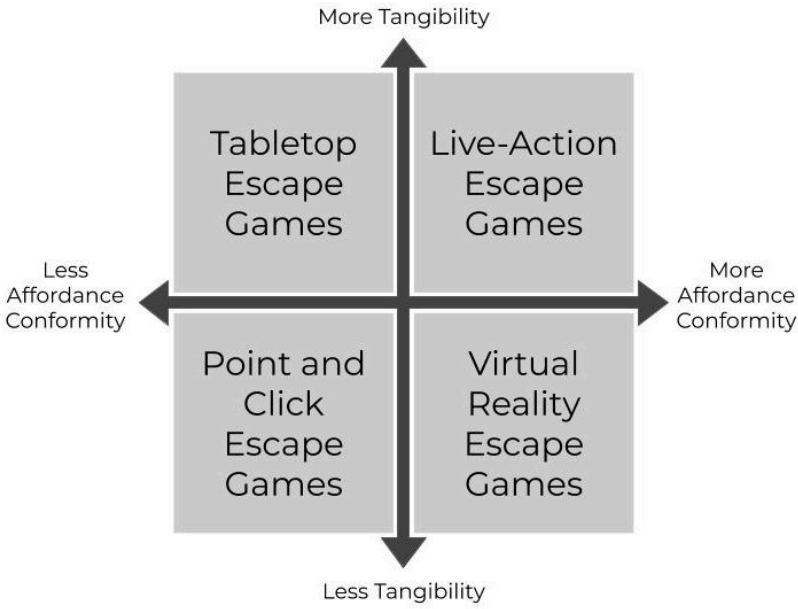

Image 1: Descriptive schema of how objects are mediated in different escape room types.

Each of this schema's four quadrants contains a large number of individual games, and not all of them lie at the same points along the axes. This is not intended to bound the limits of what escape games might be like, or even include all examples within each form. The goal is to describe each category in a general sense and make observations about the relationships between these categories. The live action escape room serves as a baseline for this analysis. In general, these games are composed of physical objects which by nature have high affordance conformity with themselves. In addition to the ways in which objects are mediated, subgenres of escape games also exhibit differences in how the game space is presented. The confined space of the escape game bounds the game to a specific fictional location. In the live action escape room, play occurs in a physical manifestation of the fictional space, but this is not always the case. The way that players see the space and navigate it depends on the subgenre.

POINT AND CLICK ESCAPE GAMES

In contrast to the live action games, the world of a point and click escape game is digital, along with all of the objects in it. In terms of the schema, they are intangible. Players experience this world through computer monitors or touch screens and interact with the objects indirectly. These digital objects have low affordance conformity with their physical counterparts because their affordances must be explicitly included.

The interfaces of these games revolve around context sensitivity. The click of a cursor or a tap of the screen are the only inputs accepted by the game and all of the actions required of the player are mapped to that input. In one of the earliest games in the genre, Toshimitsu Takagi's (2004) *Crimson Room*, opening drawers, pressing buttons on a stereo, and turning dials on a locked safe are all mapped to this one input. As Clara Fernández-Vara (2008) notes in her history of adventure game interfaces, text adventure games with parsers and some point and click games are designed around the usage of specific verbs. If *Crimson Room* used one of these interfaces, players would type or select the verb "open" in order to open the cabinet's drawers. Context sensitivity demands that objects rely on a logic of skeuomorphism. The similarities to real world objects are meant to inform players on how to interact with the digital representation. As the objects only have the affordances granted to them by the programming, this logic can sometimes lead to confusion. If a player expects to adjust the tuning knobs or volume dial on *Crimson Room*'s stereo, they may be disappointed by their lack of response when clicked. Since the stereo is only used to hide a key inside its disc drive, the lack of interactivity in this case actually assists in guiding players to the affordances important for the game's puzzles.

Certain objects in these games can be added to the player's inventory and then used to interact with the environment. When

picked up, these objects move to an "inventory" section of the interface, representing that the player has that object in their possession. These objects are tools used to carry out tasks in the game world. *Crimson Room*, for instance, includes an electrical cord and a cassette that must both be "used on" the stereo before it can be turned on. Selecting the item in the inventory changes the mode of interaction. Now the player is holding that item and attempting to use it in conjunction with other parts of the game world. The uses of these tools are strictly dictated by the game's programming. You can click a key and then click a door to attempt to unlock the door but using the key to crack the window will not work if that interaction has not been explicitly included.

Compared to live action escape rooms, the relationship between player and space is more distant. Point and click escape games use graphical perspective to simulate what the player might see if they were physically in the game space. The game *Cube Escape: Paradox*, a recent game in the *Rusty Lake* (2018) escape game series, scales its two-dimensional images of objects to create distance between the player's viewpoint and the location of the object. While *Crimson Room*'s game space is three-dimensional, the same logic applies. Players move through these spaces by clicking certain areas of the screen. In *Cube Escape: Paradox*, clicking on arrows on the edges of the interface allow players to look at different areas in the room. The player's freedom to navigate the room is restricted to possibilities determined by the creators. This can lead to frustration, as it is not always clear where players are expected to look. *Crimson Room* requires players to click near the edge of a mattress to look in the space between it and the wall. Without an indication to click there, players must discover this area through trial and error.

Image 2. Still from Cube Escape: Paradox showing graphical perspective, arrows for switching views, and inventory slots. Screenshot by author.

VIRTUAL REALITY ESCAPE GAMES

Like their point and click counterparts, virtual reality escape games take place in a digital environment filled with representations of objects. The way these objects are mediated is similarly intangible. However, the affordance conformity of these representations is higher than that of the point and click games. Virtual reality's emphasis on immersion and simulation calls for objects that behave in ways that feel realistic. VR escape games for in-home use like *VR: Vacate the Room* (hOSHI, 2016) use 3D representations supported by physics engines. Rather than adding objects to an abstracted "inventory," players can carry objects around these games using motion controllers. *VR: Vacate the Room* requires players to hold virtual paper underneath red light to illuminate a secret code, unlock safes by reaching out and pressing the keypad buttons, and unlock doors by inserting and turning keys. These affordances are important to the puzzles and would be included in a point and click version of the same game, but in a more abstracted way. The other affordances

enabled by the ability to carry objects, examine them in three dimensions, and use them in physics-based interactions are not always necessary to solve puzzles. They are sometimes even detrimental. The designers of the VR game *I Expect You to Die* (Schell Games, 2017) did not specifically include the ability to throw a screwdriver out the car window, making the puzzles impossible to complete, but the way the screwdriver is mediated affords this action.

VR games take the immersive first-person view of the point and click games a step further. Using headsets, a player's view of the physical world is replaced with that of the game's digital space. The headset's head-tracking technology allows players to look around the space by turning their head just as they would in a live action escape game. The ways in which players navigate this space depends on the specific game. *I Expect You to Die*, for home VR platforms, does not allow players to move around the game space. Instead, this game allows players to pick up objects from a distance using telekinesis. Other games use room-scale VR that tracks players' positions, including some developed for the HTC Vive platform. This enables players of games like *Belko VR* (Top Right Corner, 2017) to move around the physical space in which they are playing the game as if it were the digital environment of the game. This mapping of physical space to digital space is pushed further in some escape room businesses that feature dedicated virtual reality games. The game *Eclipse* by French companies BackLight and Virtual Adventure (2017) covers 323 square feet in physical space that maps to rooms in a virtual spacecraft.

TABLETOP ESCAPE GAMES

The tabletop escape games face an additional challenge in representing their objects. As board games, they feature primarily physical components. It is logistically difficult and likely expensive to include many life-size diegetic objects in the

box. Many of these games mediate the game world's objects using other physical objects that are more portable. Two of the largest series in terms of entries, *Unlock!* and *EXIT*, primarily use playing cards to mediate other objects. The objects are mediated in a tangible way, but with this level of abstraction comes a decrease in affordance conformity. Using cards to stand in for other objects requires creators to consider how the affordances of the card match up with those of the mediated object.

Attaining affordance conformity requires careful selection of target objects and forms of mediation. The *EXIT* series primarily features journal entries, maps, and other paper objects because the affordances of paper map well to those of playing cards. Players can overlay, fold, and cut up playing cards just as they could with the actual documents that are being represented. One entry in the series, *The Forgotten Island* (Brand & Brand, 2017b), takes advantage of these affordances by requiring users to cut pieces of a "map" in half and overlay them in a certain way to reveal the answer to a puzzle.

Other times, the *EXIT* series seems unconcerned with affordance conformity entirely. Rather than emulating the affordances of the objects they mean to represent, the designers lean heavily into the additional affordances granted by paper mediation. One game in the series, *Dead Man on the Orient Express* (Brand & Brand, 2017a), includes paper versions of the top of a wooden table and a large diamond. Players are meant to insert the diamond into holes in the table so that the tip of the diamond points to the numbers needed for a puzzle solution. For this puzzle to work, the diamond needs to be a very specific shape that matches the holes in the table, and it would be impractical to perform this action with a life-size table and a real diamond.

Image 3. Puzzle from EXIT: Dead Man on the Orient Express. Photograph by author.

When the affordances of the cards do not match the objects they represent, the *Unlock!* series includes a mechanic for interacting with objects. Cards of the red and blue suits in these games can be combined with one another. To do so, players add the card numbers together and look for a card with that value. In one of the most recent entries, *Lost in the TimeWarp!* (Demaegd, 2019), players have to dig a hole. A shovel, card 14, can be combined with a lawn, card 54. To try this, players see if there is a card 68 in the deck (14 54 = 68). They can then flip that card to reveal the result of the interaction: a lawn with a hole in it.

Paper representations of in-game objects also afford new possibilities that would be more difficult to achieve in their original form. The components fit in a box easily and can be played almost anywhere, rather than having to go to a dedicated location as is the case with live action rooms. As Nathan Altice (2014) identifies, playing cards themselves have affordances due to their characteristics. Cards are planar. Without bending the card, players cannot look at both sides at the same time. Cards

are also uniform in size, shape, and backing. This combination allows them to be randomized when they are facedown. In *Unlock!*, players often have to find a certain card in the deck, and it breaks the convention of uniformity to do so. While the cards have generally uniform art on the back, each card is marked with its card number and can therefore be identified without looking at the front. Riffling through the pre-shuffled deck of cards to find a specific one is one way that the games emulate the "searching" challenges of escape games. By hiding the game's objects on the opposite side of cards, *Unlock!* can determine when players get the objects and clues without having to physically lock away content.

Like the point and click games, there is a distance between player and game space in these games. Altice notes that cards and their arrangements can describe metaphorical spaces. *Unlock!* and *EXIT* typically use a singular card or sheet of paper to represent each area in the game space. There are cards in *Unlock! The Nautilus' Traps* (Ladagnous, 2017) that represent the living room, library, and engine room of a submarine. Each card has art depicting a first-person view of the room reminiscent of the point and click games, populated by numbers that indicate players can draw the card of that number. The Engine Room, for example, instructs players to find and reveal card 19, which represents a sonar machine found in that room. As players reveal new spaces, their current locations are not tracked. This is unique to the tabletop games. Even if players have progressed past the Engine Room, they can still interact with the sonar machine as if they were there. Players are presumed to be simultaneously in all locations and can always access the objects in any of the rooms. Navigation of live action escape games and virtual reality escape games are based on physical movement, limiting players to objects in their vicinity. The omnipresence of the tabletop player is an extreme version of the inventory systems in point and click games. Point and click players can

carry a subset of items with them to access anywhere, while tabletop players can access any revealed object.

VARIATIONS WITHIN QUADRANTS

Like many models, the schema's clean appearance belies the true complexity of the subject matter. The monolithic quadrants imply a homogeneity amongst the games in each category that is not universal. The tabletop escape game category includes notable variances. The *Unlock!* series, for instance, integrates digital objects. The series requires a digital mobile application that is used in conjunction with the box's components. While many of the objects in the game world are represented as cards, the games use the app to represent more complex objects. The app features a "machine" menu where players can enter the value of certain cards in order to interact with these objects.

Image 4. A physical machine card from Unlock! The Nautilus' Traps compared with its digital representation. Photograph by author.

Digital representation grants new affordances. One "machine" in *Unlock! Expedition: Challenger* (Malone, 2019) is a hollow dinosaur skull. After the players enter its card number into the app, the screen displays an image of the skull. The affordance of this skull that is useful for the games' puzzles is its ability to be blown like a horn to make a loud noise. Players can activate the horn by blowing (or yelling) into the phone's microphone. While the way the skull is represented is not tangible, the affordances of the mobile device map to the affordances of the in-game skull. As digital representations these objects lose some degree of tangibility, but the digital mediation allows for tighter affordance conformity.

Another series of tabletop escape games instead leans more heavily into the usage of physical objects. Both entries in the *Escape Room in a Box* series tout their usage of actual locks and keys. The first game, *The Werewolf Experiment* (Patel & Rubin, 2016), includes a small blacklight flashlight used to reveal hidden messages as well as a capsule that expands into a toy when immersed in water. This series achieves higher affordance conformity not by digitizing objects, but by choosing not to add an additional layer of mediation.

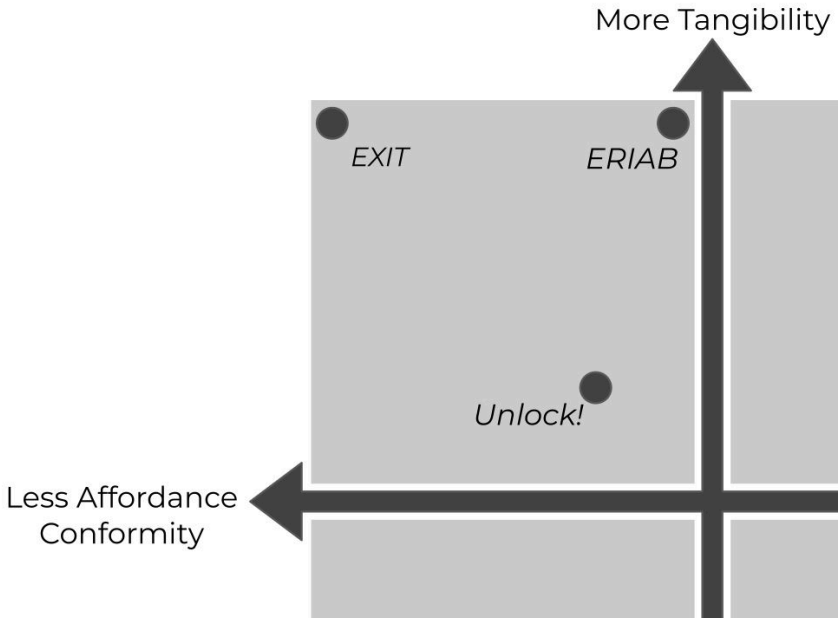

Image 1.5. Close-up of tabletop escape games quadrant showing relative positions of EXIT, Unlock! and Escape Room in a Box (ERIAB).

While not depicted in the schema, there are also variations in how these games depict space. *Unlock! Expedition: Challenger* introduces a layer of navigation that is absent in the other games. In this game, the arrangement of multiple location cards forms a metaphorical space that players are moving through. As players discover locations, they are instructed to lay the cards in a grid to form a map. This map is replicated on the screen of the app, and players can move between locations by tapping adjacent regions of the map. Players of the other games in the series are omnipresent and no time is spent moving between areas. This game challenges that convention by tracking player movement and including objects like a large boulder that can only be interacted with if players are in its location. Similar variations in approaches to the mediation of objects and depiction of space

appear in the other subgenres as well, but the tabletop escape game provides clear case studies for illustrating this variance.

EDUCATIONAL ESCAPE GAMES AND OBJECT DUPLICATION

Escape games have also found a home in the classroom, in both digital and non-digital forms. Nicholson (2018) partially attributes the appeal of educational escape games to their cooperative nature. In live action educational escape games, students work together in a shared environment. Breakout EDU (2020) advertises that their games are designed to teach collaborative problem-solving skills by requiring students to work together to overcome mental challenges. Nicholson also identifies that escape games can be given narrative themes that are tied to class content. For example, Breakout EDU's *A Constitutional Kidnapping* (Martindell, 2019) and *A Force to be Reckoned With* (Shiele, 2016) are themed around American history and Newtonian physics, respectively. By having students work through a story relevant to their coursework, these escape games are designed to teach both social skills and class content. Educational escape games are not limited to any one quadrant of the schema but the approaches they take in mediating their objects have a direct impact on their usability in educational settings. Breakout EDU, a company that provides escape game experiences for classroom, offers several games that lie across the schema. The differences in these games highlight an additional affordance to be considered: the duplication of game objects.

Unlike most live action escape games, Breakout EDU's live action games do not require students and educators to travel to a dedicated location. Similar to tabletop escape games, Breakout EDU games transform and recontextualize the classroom as a fictional space by introducing the game's objects. As Nicholson (2018) notes, the affordances of the physical objects in these games create some logistical challenges. Without enough clues

or tools to share amongst the class, some students may be disengaged. With a single Breakout EDU kit, a class of more than twenty students would have to share a single set of locks and keys. Purchasing multiple kits for the class is an expensive option, with each costing around one-hundred U.S. dollars. For this reason, live action games on the Breakout EDU website are rated with an ideal group size, for either small groups or large classes. This approach limits the games available in each classroom setting.

Some objects in Breakout EDU games do afford duplication, allowing them to be used for larger class sizes. Each physical Breakout EDU game offered has a cloud-based folder with the files for the game's printable components. *A Constitutional Kidnapping* features letters supposedly written by American's founders while *A Force to be Reckoned With* has photographs of objects in motion. These digital files can be printed into several physical copies and distributed to students. Like the *Unlock!* and *EXIT* series, though, the affordances of these objects are limited to those of paper. Breakout EDU's digital offerings have different limitations. These games can be run independently on multiple machines, potentially allowing each student to have their own set of the game's objects and their own instance of the game's "room". As these games are browser-based, they can even be played by students independently outside of the classroom. However, these games are still subject to physical limitations of the number of computing and input devices. There is room for collaboration when multiple students are playing on a single machine, but ultimately only one student can interact with the digital space at a time. The scalability of escape games to groups of various sizes depends on the duplication of objects, an affordance not universal in these approaches to object mediation.

THE RELATIONSHIP BETWEEN CATEGORIES

The schema compares the categories in aggregate form but does

not describe the nature of relationships between the categories. Uncovering these relationships is a murky task, but the concept of adaptation applies to an extent. Linda Hutcheon's (2013) book *A Theory of Adaptation* presents a framework for understanding transmedia adaptations in a broad sense. She notes that the word "adaptation" is used in both verb and noun forms, naming both a process and the product that is produced through it (p. XVI). Hutcheon discusses how stories move between three modes of engagement: showing (films, theater), telling (novels), and interacting (games) (p. XVI). This broad approach allows her framework to include adaptations from one mode to another, as is the case in book to film adaptations, as well as adaptations within a singular mode of engagement, like a film version of a theatre performance. In these terms, the movement from point and click games to live action escape rooms and the subsequent tabletop and virtual reality versions are movements within the interactive mode of engagement.

The live action escape room as a format was produced as an adaptation of the point and click escape game. Early live action escape room designers from Japan (Kato 2018), Hungary (Hooker, 2014), and the United States (Garrett-Singh & Lansing, 2013) have stated that they were inspired by the digital adventure game genre. Takao Kato (2018), founder of Japanese company SCRAP Co., names *Crimson Room* specifically as a reference in an archived version of the company's About page. SCRAP Co. (2020) introduced *Real Escape Game* to Kyoto in 2007, widely considered the first live action escape room. The name "Real Escape Game" itself positions these games in comparison to the digital escape game. Similar comparisons are seen in the tabletop and virtual reality spaces. The back of each *Unlock!* box claims that its players can "experience the thrill of escape rooms without leaving the table", and the name "Escape Room in a Box" explicitly acknowledges its connection to the live action games. Websites for commercial VR escape game locations suggest that

this category is rooted in the live action format. The page for Bane Escape's (2018) *The Offering* claims that it "combines a live action escape room game with an interactive virtual reality experience".

But escape games do not align perfectly to Hutcheon's model. First, Hutcheon (2013) focuses on story as the content that is being transferred across media (p. 10). While escape games feature stories to varying degrees, it is not a singular story that is being adapted from one medium to another. Second, traditional conceptions of adaptation focus on one specific work's movement across media. It is not one specific escape game being adapted into different forms. This is ultimately the problem with using the term "adaptation" to describe the relationship between these categories. The adapted work is plural. While Hutcheon suggests that adaptations can be based on multiple sources, like how the film *Moulin Rouge* borrows songs from multiple artists and genres (p. XV), that description is not quite right here either. A tabletop escape game is not made by mashing together specific components of existing live action escape games.

Game-specific frameworks for transmedia movements are similarly insufficient for this purpose. Grabarczyk and Aarseth (2019) present an ontological framework for understanding different versions of a single game. While their framework is primarily useful for describing ports and remakes of digital games across computational platforms, it interestingly also includes tabletop versions of video games. They use the term "resemblant" to describe the relationship of the mechanics and presentation of a video game and its board game adaptation. They argue that the actions players can take in these games and the aesthetics of these games are similar, but not identical. This is not specific enough to describe how escape games have moved across platforms, and again focuses on specific works rather than the larger genre.

As escape games develop into new areas, they borrow conventions from existing works. This adaptation is happening on the level of genre, rather than individual games. *Unlock!* borrows conventions from both point and click games and live action escape rooms. The *Unlock!* app tracks the time it takes for players to finish the challenges, giving them a lower score if they take over an hour. Time limits are a convention from live action escape games meant to keep paying customers moving through the game at a predictable rate. Time limits are largely absent from point and click escape games. Similarly, *Unlock!* games are designed for collaboration with multiple players. Live action escape rooms are touted as cooperative exercises to the extent that SCRAP Co. (2016) in San Francisco boasts that corporations like Google, Twitter, and Apple have used their games as team-building exercises. Point and click escape games, taking place on a single screen, are generally designed for a single-player experience. At the same time, *Unlock!*'s focus on combining items and using them with one another seems particularly inspired by the inventory systems present in point and click games.

This paper suggests the term *genre adaptation* to describe the relationship between these games. There is a causal link between the different subgenres of the escape game, but these links do not happen on the level of the individual work. Similar motions can be seen in board game designs. The games *BattleCon* (Talton, 2010), *Yomi* (Sirlin, 2011), and *Combo Fighter* (Johansen, 2019) are analog board games that seek to adapt the genre of digital fighting games, while *Cloudspire* (Carlson et al., 2019) draws on multiplayer online battle arena (MOBA) games. Expanding the concept of adaptation to include the genre-level will clarify analyses of similar games.

CONCLUSIONS

The escape game, starting from the point and click room escape game, has been adapted into radically different spaces. This

paper argues for a unified understanding of the escape game genre existing across media through a process of genre adaptation. To compare between subgenres, it is useful to reframe versions of escape games as different ways to mediate objects. Escape games are a linked series of challenges in a specific space, and those challenges are formed by objects. These games differ in whether their mediated objects are tangible or not and in the degree to which they maintain the affordances of the target object. Individual games within each subgenre also vary in their approaches. Considering games in this way may also open up additional design spaces. How might digital representations better achieve affordance conformity? What other ways of mediating objects might exist? The escape game continues to morph and develop, and this screenshot of its current state may inspire future subgenres.

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PLAYERS' ACCOUNTS OF CULTURAL BIAS IN ESCAPE ROOMS

SHANNON MCDOWELL & SCOTT NICHOLSON

ABSTRACT

This study examines the experiences of cultural bias by escape room enthusiasts when playing live action puzzle-based games in foreign countries, cultures, and languages with a focus on how the cultural bias impacts their enjoyment of the game and what form the cultural bias takes. Through content analysis of 33 interviews of enthusiasts from 4 continents, culturally referential puzzles are quantitatively categorized according to a socio-cultural model adapted for escape rooms. The data provides viewpoints that can allow escape room puzzle designers to evaluate the potential cultural bias in their own designs, thus making their games more approachable for players from different cultural backgrounds.

INTRODUCTION

Escape Rooms are games where players "discover clues, solve puzzles, and accomplish tasks in one or more rooms in order to accomplish a specific goal (usually escaping from the room) in a limited amount of time" (Nicholson, 2015). Escape Rooms have grown in popularity over the last few years, so much so that the

Red Bull Mind Gamers ran Escape Room World Championships in 2017 and 2019. For the first world championships, the semi-final and final games were designed by a team of game design students from Wilfrid Laurier University in Brantford, Ontario, Canada, led by Scott Nicholson.

As the first championship games ran, it became apparent to Nicholson that they had not considered the cultural bias they had brought to the designs. Some teams were at a great disadvantage because they did not share a cultural background with the North American designers and European producers. An example of this was the use of red and green to indicate stop and go; players who did not drive or were not from cultures who used these colours would be at a disadvantage to players who had meaning attached to these colors. Some information was provided in English, and while this was translated in the game through Google Translate, the wordplay designed to give players a hint did not necessarily transfer.

After talking about this, Nicholson and the Red Bull Mind Gamers decided to hire a researcher for the second World Championship in 2019 and received funding from Red Bull to do so. Nicholson and a different group of students led the design work on the semi-finals and finals, and Shannon McDowell was brought in to review the design to guide the team. She conducted a literature review to locate models of cultural bias, and used this model to develop a guide for the creation of video content in escape rooms (McDowell, 2019). English was not used during the games, and clues were provided through videos that showed teams what to do. Some competitors were back for this second round and commented that they found the games much fairer this time.

At this World Championship, McDowell started conducting interviews of competitors, many of whom had international

experiences playing escape rooms, about when they experienced issues of cultural bias in escape rooms. She continued on after the event by interviewing other escape room enthusiasts located via the Internet who had played games in different continents. The study presented in this paper are the results of these interviews with expert players about their experiences with rooms in different continents.

STUDY SAMPLE

This study used a convenience sample of 33 experienced escape room players. On average,

each player had played 265 escape rooms each, with the median being 172.83. There were two outliers who had played over 1300 rooms each, but even removing those outliers, the average number of rooms played was 197 with a standard deviation of 50 rooms. Using an average cost of $25 USD per room played, this means that our subjects had, on average, spent almost $5,000 USD for just the entrance fees for escape rooms over the last few years[1]. The sample is biased toward English-speaking players, with about half of the subjects being from North America and one-third from Europe. The remaining subjects were from Asia and Australia.

We looked for correlations between the number of incidents of cultural bias reported and other demographic variables using Spearman's Rank-order correlation. We had expected players who had played more rooms to have more reports of cultural bias in escape rooms, but the variable with the highest correlation was the number of different continents in which the subject had played. As shown in table 1, those people who had played escape rooms in 4 continents reported, on average, more than twice as many incidents of cultural bias as those who had played in fewer continents. This does make sense, as those who had played many

1. One of the in-jokes of escape room enthusiasts is "Don't do the math." Now you understand why.

games in fewer continents were less likely to find incidents of cultural bias than those who had played fewer games, but in more continents.

Number of continents played in	Average number of incidents reported
4	15.75
3	7.33
2	6.44
1	5.73

Table 1: Average number of Cultural Bias incidents reported by Number of Continents in which subjects played.

The first group of subjects were group interviews with teams at the Red Bull Escape Room World Championships in London. We then recruited additional subjects through online forums for escape room enthusiasts and continued the interviews online and by the telephone. The interviews with subjects lasted approximately 30 minutes, with the bulk of the time focused on questions and prompts around incidents of cultural bias. We explained what cultural bias was and asked questions surrounding players' experiences playing escape rooms internationally, encountering puzzles requiring specific knowledge, and players' thoughts and feelings on games that require specific knowledge.

Interviews were recorded and transcribed, and then coded using the model we had developed from our literature (presented in the next section). We used this coded data to collect incidents of the same type together, and also looked for patterns in the

distribution of categories of incidents by various demographic variables. The results of these analyses are presented after the presentations of our model of cultural bias.

There are some biases in the data to recognize. First, the majority of the subjects were from North America or Europe, and therefore, there is a cultural bias in the results as players from other continents are under-represented. As well, performing data analysis at the continent level will lead to a bias in results, particularly when comparing enthusiasts in the 2 countries that make up North America to the 44 countries in Europe. A deeper study focusing on a specific continent may reveal interesting patterns, but is beyond the scope of this study. In this sample of enthusiasts, 42% of them mentioned during the interview that they did research before traveling so that they could focus on games that were recommended. This data is therefore biased, in that many of the travelers may have played games that were highly recommended for tourists, and thus contained fewer cultural biases. We hypothesize that without that prior research, players would encounter many more examples of cultural bias in escape rooms. We see this study as a pilot study, and talk about how to expand on this research in the Future Research section of the paper.

MODEL OF CULTURAL BIASES

Historically, cultural bias has been explored in the context of education. Test scores were found to be biased when the creator of the test inadvertently required knowledge particular to their demographic group that was not necessary to measure the trait the test was evaluating (Geisinger, 1992). When discussing cultural bias in games, Salen and Zimmerman (2003) describe how cultural context affects representation and gameplay by reinforcing existing cultural biases. Particularly in the experiential environment of escape rooms, it is important to investigate the cultural structures and cultural identity inherent

in the game in order to create "successful play experiences" (Salen and Zimmerman, 2003). In the case of this study, we defined cultural bias in escape rooms as occurring when a game designer assumes a degree of common knowledge based on their own cultural standards. This assumed knowledge could, for example, reference technical, linguistic, social, or economic standards, and would not be universally known by players from a different cultural background.

When evaluating the impact of culture, the first step involved identifying the visible aspects of culture that were applicable to escape rooms. By sourcing various sociological models of culture (Brown, 1995; Barkan, 2012; Hofstede, 2001), we were able to conceptualize five primary elements of culture in regards to escape rooms: language, symbols, norms, artifacts, and knowledge. These categories do not encompass all theorized elements of culture, but are meant to model the components of culture most commonly experienced in escape room games and reflected in this study.

A note that while values are a commonly included category when studying elements of culture, it is a less applicable category in an escape room environment. There are few escape rooms at this time that offer players choices or decision points according to their values, and no such examples emerged from this study. As noted by Schwartz (2011), it is also difficult to differentiate between individual and cultural values, whereas differences in categories such as language are more evident in a study such as this. However, as the escape room industry expands and grows into less determinative gameplay, values may become an element of cultural bias worth exploring.

Through content analysis of interviews, culturally referential experiences were identified and grouped according to the category that best exemplified the cultural element and/or bias experienced by the player. These experiences predominantly

featured puzzles, but also included interactions the players experienced prior to and during the game with game hosts and/or actors. As we started to code the data to the five categories of culture, we realized that there were additional categories needed due to the interactive nature and experiential play of escape room design. Thus subcategories were created under each of the five elements to allow for a more detailed and accurate depiction of players' escape room experiences.

The five major categories for our model, and the percentage of incidents reported in each category, are as follows:

- **Language** (20.2%) – A system of communication used by a particular country or community
- **Symbols** (8.7%) – Representation of a letter, word, or concept
- **Norms** (10.6%) – Standards and expectations of behaviour
- **Artifacts** (26%) – Objects that constitute a society's material culture
- **Knowledge** (34.6%) – Information acquired by a person through education or experience

Each major category is broken into several subcategories. The categories and subcategories are defined below, along with a brief discussion of the quantitative patterns of interest and examples provided by subjects to demonstrate how these types of cultural bias have manifested in escape rooms.

LANGUAGE

The third most common category of experiences reported by players was language. Language, defined here as a system of communication used by a country or community, is divided into two subcategories for spoken and written language.

About 20% of all incidents reported were based on language. Of

those, about 75% of the time, the issue revolved around written language instead of spoken language. We hypothesize that this is because most spoken language in escape rooms is presented as background information or narrative components, and many times, there are no challenges in the room that require the player to understand what was said. On the other hand, it is common for players to be given written material that must be read as part of a challenge; therefore, there are more incidents reported for written language than spoken language.

Spoken

Players reporting experiences of cultural bias in spoken language interactions primarily referenced interactions with escape room hosts and actors within the game. Differences in fluency made communication slow and frustrating. Players reported not understanding plot points in the game or being unable to easily interact with actors, as follows:

> "…with this game there was a segment where you were asking questions of a character and the nuance of how we were phrasing our questions got kind of lost. And some of that may have been on us for not thinking about the fact that we really needed to be careful with our phrasing because the person interpreting English was not their first language."

Written

Incidences of cultural bias in written language included ciphers, puzzles translated from their original language where the translation was unclear, regional dialect variations unfamiliar to players from outside that region – for example, the differences between American, British, and Australian dialects of English, and the ability to recognize, read, or write a word. One notable example from a Chinese game required players to write a Chinese character with the proper stroke order, which is a difficult challenge for players without prior experience in writing Chinese.

It is also worth noting that players who are fluent in multiple languages have the ability to speed through translation puzzles, but also may find themselves distracted by text in another language. One player reported spending time on a German newspaper in an English-speaking room, thinking that it was part of a puzzle. The newspaper turned out to be a piece of set design, but because the player spoke German, they were distracted from the main game.

SYMBOLS

Symbols are a representation or placeholder for a letter, word, or concept, including the subcategories of gestures, icons, and objects.

Around 9% of all incidents reported were symbol-based, with the majority of those incidents being based on having to understand what specific icons meant. An interesting pattern in the data was that players from European countries were less likely to report symbol-based incidents (only about 5%) than players from North America. Our hypothesis is that players from the monoculture of North America are unlikely to encounter unusual symbols when they travel in their home continent, while players within Europe encounter new symbols on a more regular basis, both due to the relative ease of cross-border travel, as well as the variety of cultural representation in media. Because they are more accustomed to the challenge of interpreting new symbols and have a wider mental database of different types of symbols, players within Europe are less likely to perceive culturally-biased challenges requiring knowledge of symbols.

Gestures

Gestures are a form of nonverbal communication used to convey information or emotions. While none of the participants in this study indicated experiences with culturally biased gestures, we considered this subcategory worth inclusion for the possibility

of future research. Given that many escape rooms use either an in-person or a video-based introduction to a game, this is the place where gestures may be relied upon to convey meaning (McDowell, 2019). Gestures are an important category to research in an attempt to make language-free media for an escape room as well as in interactions with game hosts and actors. Gestures in an escape room setting that could cause cultural misunderstandings include the indication of numbers, facial expressions of actors that are not universal, and sign language, which differs between countries.

Icons

Icons are pictures that represent an object, idea, or emotion and made up the majority of incidents in the symbols category. While symbols are a convenient short form for a word or idea, not all symbols are universal and so can slow down the gameplay for players who are not familiar with them. Emojis, for example, could have different interpretations depending on the age and background of the person using them.

Most examples of icons reported by players encompassed codes, such as semaphore or pigpen, where a picture represents a letter. While text ciphers were categorized under written language, codes that use symbols are more appropriately categorized as icons.

We postulate that in a larger study with a wider range of player experience levels, we would see more experiences associated with icons. Experienced escape room players are more likely to recognize common codes and even have them memorized, making a decoding puzzle less tedious than for a less experienced player who would need to first recognize the code and then reference a translation key. This can work against an experienced player, however, as they may end up decoding a message before they were intended to, and that can disrupt the flow of the room

by confusing the player. As escape games are built around gated content, using a icon-based gate that some players may have prior knowledge of can cause problems to an overenthusiastic team. More on this issue will be discussed in the Negative Experiences with Cultural Bias section below.

Several unexpected uses of icons were described by players, including "… a room where they used Roman numerals, but you were not meant to use them as numbers. We were just meant to use them as visual symbols. So the assumption there was that no one would try to read them as numbers, which was quite strange." This is counter to the example above, where the designers used icons that some players associated knowledge with, but then that knowledge proved useless or misleading. If the designer is choosing to use an known icon set in a different way, it is important to provide players with a prompt that what they know about those icons may not be useful.

Objects

Using objects as symbols to represent words, ideas, or emotions was a lesser reported category, yet still significant in more tactile escape rooms. Examples included monkey statues to represent the phrase: "See no evil, hear no evil, speak no evil." The three statues that each represented a portion of the saying needed to be placed in the correct order. Another example involved pictures on placards that represented well-known London pubs, such as an elephant and a castle for Elephant & Castle. One of the authors experienced this in a room in the UK that required knowledge of paper sizes such as A4 and B3 to solve a puzzle.

In all the cases where objects were used as symbols, there was at least one other element to the puzzle, such as trivia, in order to solve. However, the process of connecting the object to the word or idea needed was always a significant portion of the puzzle that players needed to recognize.

NORMS

Cultural norms encompass formal and informal standards of behaviour or expectations, such as those implicit and explicit rules that are learned by living within a culture. Common types of norms across sociological models include folkways, mores & laws, taboos, and rituals. In addition to these subcategories, the study added a genre subcategory to include narrative tropes and expectations commonly found in escape rooms.

About 10.5% of the incidents reported were based on norms, with the largest subcategory being challenges that required players to know specific folkways or customs of a culture. As with symbols, we found that players from Europe reported fewer incidents of this type (5%). We hypothesize this is for the same reason as above – that players from Europe encounter different norms on a more regular basis than players from North America. Because of this, they both have a greater awareness of different norms, and are more comfortable dealing with challenges that require knowledge of different norms. While our sample of players from Asia was small, we did find that they were twice as likely to report incidents of cultural bias around concepts of norms, and specifically reported more incidents where players were required to use prior knowledge related to a narrative genre that the room was based upon.

Folkways / Customs

Folkways or customs are norms that encompass informal standards of behaviour. Behaviours such as table manners or personal space are not formally codified in a culture's laws, but still determine how a person is supposed to behave in specific situations. In escape rooms, folkways involve the experiences of the player in the room as well as puzzles.

Personal space and conventions around touch emerged in a few interviews. One player from North America noted that during

a game they played in Spain "they would essentially pin your arms to your chest and … frog-march you quite rapidly. And they knew the layout and I don't think it was unsafe but it was certainly very startling and quite uncomfortable for some people who are not used to that kind of physical contact." Some escape rooms in Russia have recognized that players have different tolerances for personal contact and will allow players to choose their intensity before beginning a game, in contrast to the previous example from Spain where players did not expect the close contact.

An example of a puzzle that assumes knowledge of folkways was experienced in Japan. Players needed to remove their shoes before entering the remainder of the game which was set in a Japanese house. This puzzle may not be obvious to players from cultures where it is not a norm to remove shoes before entering a house. In cases such as this, providing players with another clue in the room, such as a pile of shoes at the entryway, would help them overcome their lack of cultural knowledge.

Mores & Laws

Mores and laws are more formal standards of behaviour. These norms include the escape room's code of conduct, laws of the country or region, and local safety regulations, among others. Multiple participants in the study expressed concerns regarding varying safety regulations when travelling to foreign countries, especially those countries where the enforcement of safety in escape rooms is seen as more lax than their home country. One player reported needing to climb an unstable ladder to complete a puzzle, while another expressed concern regarding rooms that lock players in with no easy exit in cases of emergency. Another player described an escape room where the rules for the game were clearly described and emphasized before entering, only for players to discover that the only way to complete puzzles was to break those rules. Being required to purposefully break rules

is disconcerting for players and will lead them to second guess every subsequent action in that game.

Taboos

Taboos are negative norms in a culture, behaviours that are highly discouraged, such as sticking a fork in an electrical outlet or eating pork. In escape rooms, players encountering a cultural taboo experience uncertainty or reluctance to continue the game. Taboos in escape rooms can manifest as objects a player is reluctant to interact with. The following quote from a Canadian player about an experience they had in an escape room in the United States exemplifies a Canadian cultural taboo surrounding use of firearms: "… we had no idea that we're supposed to … touch the gun or look at the guns or I don't know. I guess, putting on my Canada hat, it's just like, I don't touch these things. This is an American thing."

Encountering a taboo in an escape room puzzle could also cause players to second guess their solutions, such as in the following example: "There was one game we played, that took place during, I don't know, maybe the Cold War and there was a Jewish spy or something. And there was a clue to something and, it wasn't that we couldn't solve it, it's that we didn't want to solve it. Because we thought that the answer, it wasn't necessarily antisemitic, but from our perspective, we were like, "If this was in our country, people would probably say that's politically incorrect and offensive."

Rituals

Weddings, birthday parties, graduations, and religious practices are all examples of ritual norms. Rituals are established ceremonies or activities that act to pass knowledge between generations and often mark life milestones. In this study, we did not hear from any players who had experienced cultural bias associated with rituals, however, we hypothesize that a larger

study will be more likely to find examples of rituals in escape rooms.

Genres

Genres, or common narratives or tropes associated with story themes, was added as a subcategory when it became obvious that some player experiences did not fit easily into existing categories. Particularly Asian participants in the study reported experiencing difficulties with genres of escape rooms where the story tropes were unfamiliar which impacted their ability to fully experience the game. However, experiencing cultural bias via genre is not limited to only foreign cultures when a player does not have the background in a particular narrative trope: "I feel like you probably lose a lot of nuance in the theme or the story or the culture because something's placed something somewhere and it might have deep, symbolic meaning, and if you understood that culture you might get it. And I mean that even in games where it's set in Australia. So, for example, we played a sci-fi game and there were lots of sci-fi tropes for example. And I didn't get what was going on in those tropes." Lack of familiarity with the genre or narrative tropes of the game impacts a player's enjoyment of the game.

ARTIFACTS

Artifacts are objects that constitute a society's material culture. In escape rooms, players interact with and manipulate various artifacts in order to solve puzzles. While some artifacts are near universal in use, others depend on a familiarity that varies with a player's age, background, and country of origin. Based on reported experiences, the artifacts category was divided into four subcategories: sensory, tools, recreational, and media.

Around 26% of the incidents reported were based around artifacts. The most common subcategory of cultural bias related to artifacts were recreational, typically where players were

expected to already know the rules of a game or how to play with a toy in order to solve the puzzle. Other commonly-reported categories involved knowing how to use specific tools, and having to identify specific items using smell.

Sensory

Sensory artifacts in escape rooms are objects that are interpreted and identified using a sense such as smell, taste, hearing, or touch. Scent puzzles were the most commonly reported in this subcategory, followed by puzzles interpreted through sound. Players' ability to interpret sensory information relies heavily on their cultural background and existing knowledge. For example, one player encountered an escape room in Austria that required them to know the local music. Several players reported scent puzzles that included identifying local spices and identifying alcohols. Another room required players to identify the scent of camel dung. Without the pre-existing knowledge of the sensory information, it is quite difficult to solve a sensory puzzle.

Tools

Tools are artifacts that assist a person in accomplishing another task, such as a hammer or a telephone. The difficulties that players reported regarding the use of tools in escape rooms primarily consisted of a lack of familiarity with the tool's operation. For example, one player reported spending time on a puzzle that involved flipping light switches on and off. "We played a room in New Zealand, and something that we didn't know is that the light switches are opposite… We ended up losing the game by 15 seconds or something because of that."

Other players discussed encountering locks that they were unfamiliar with, especially when the escape room host did not explain how to operate the lock. "I did this one room in Singapore and then when we got to the final door there was a digital keypad on it and I didn't know how to operate it. But my

sister who lives in Singapore was with me and she looked and said, "Oh yeah, this is the same keypad we have in our apartment building." And all the apartment buildings in Singapore have this keypad … But they didn't see the need to explain it before we went in the room because everybody in Singapore is familiar with that."

Recreational

Recreational artifacts are objects designed for leisure and entertainment purposes, such as a hula hoop or a video game. Players reported many board games and video games that they had encountered in escape rooms that expected them to know the rules in order to solve the puzzle. The most frequent game mentioned was chess, often associated with puzzles that require players to know how the different pieces move on the board.

One player reported that their team was delayed in an escape room due to needing to win a game of Snake, a game commonly installed on Nokia mobile phones starting in the late 1990s. Unfortunately, no member of their team had ever owned a Nokia phone or played the game, so they wasted valuable time learning the rules of the game and then attempting one by one to beat it in order to progress. Requiring players to know the rules of a game or recognize a game, even games that are perceived to be extremely common, will provide a severe disadvantage to those players without this knowledge.

Media

Media artifacts are associated with mass communication, such as books, radio, and television. Operation of media artifacts are again dependent on a player's age and cultural background. One player reported a puzzle that they successfully completed, but expressed concern for other players who are not as technologically adept: "And that also had the assumption that you

… were proficient in the internet, and you could do some things on the internet, for example. Navigate Google Maps and stuff."

Another player acknowledged that a Christian bible can be difficult to navigate if unfamiliar with the numbering conventions: "So there will be something like John 3:17 or whatever and there will be a Bible so that you can look up what John 3:17 is and maybe it has some numbers in it and it's a code. However, ability to look things up in a Bible is not necessarily a universal skill if you don't grow up with that. Like the table of contents and indexing scheme of the Bible is not like other books necessarily."

KNOWLEDGE

Incidents requiring specific knowledge were the most common type of cultural bias encountered in escape rooms, with about 35% of all incidents being knowledge-based. About 80% of these incidents required players to know a piece of specific trivia in order to succeed at a challenge, while the other 20% were riddles. Players from Europe were much less likely to report riddles as incidents of cultural bias, while players from North America were more frustrated when encountering riddles. We hypothesize that this is due to the role that riddles play in society; riddles are not part of the North American culture, while riddles (and related challenges like cryptic crosswords and poems) are more popular in Europe where they may be seen as common knowledge instead of puzzles to be solved.

Trivia

Trivia in escape rooms includes facts or pieces of information that may or may not be universally known. Examples of trivia that came up during this study included identifying famous landmarks or locations, pop culture knowledge, and scientific information. "So, you had to know the colors of the rainbow. I mean, that might span across all cultures and languages. But, the

thing is, do you remember all the colors of the rainbow and their order? Because, I don't."

Common knowledge in one country may not be taught or known in another. As one player said of a team member: "[She] solved it because she knew the date that Columbus sailed across the ocean, which is something I wasn't taught in school." Another player reported an incident in their home country that required them to identify a book from some plot details, but no one on their team had ever read that book even though it was often assigned in high schools.

Geography trivia also becomes more challenging when in another country or region. "In Europe, they expected us to know the flags of Europe." Recognizing landmarks and knowing the names of surrounding cities is also not common knowledge for players who travel to play escape rooms.

Even pop culture trivia is culturally specific, and knowledge of pop culture such as actors, music, and movies can vary widely even within a culture depending on age, interests, and socio-economic background. Identification of actors, knowing song lyrics, and recognizing movie titles were all reported in this study, even by players who lived in the countries where the escape rooms that contained these puzzles were located.

Riddles

Riddles are defined here are language dependent wordplay, thus encompassing a number of puzzles that require a depth of knowledge of a language beyond that of conversation. As one player noted: "… you're not solving riddles, you're remembering riddles." Riddles are culturally specific, potentially have multiple answers, and are very difficult if not impossible to translate. Multiple players in this study identified a specific puzzle from the same escape room where all text in the room had been translated to English except for a particular puzzle that relied

upon wordplay and couldn't be translated. These types of puzzles can be a source of frustration to players unfamiliar with them, as players not only need fluency in the riddle's language, but also a similar cultural background as the riddle's creator. One player commented on their experience with wordplay puzzles in Poland, saying, "there were times in these games where my [Polish] teammates would just say, "Look, you can't help." And then I'd hang out by the lock and wait for them to call off letters."

OVERALL ATTITUDES TOWARD SPECIFIC KNOWLEDGE

Negative Experiences with Cultural Bias

When asked about their feelings when encountering specific knowledge, or cultural bias, in escape rooms, just over 64% of responses were negative. This confirmed our hypothesis that the majority of escape room players would be negatively impacted by cultural bias in escape rooms. Participants used words such as "frustrating", "unfair", and "confusing" to describe their experiences. Three major trends emerged with players who reported negative experiences: losing the game flow, losing confidence in the game design, and involuntarily skipping puzzles due to already knowing the specific knowledge needed to solve the puzzle. All three of these trends resulted in the players' reduced enjoyment of the escape room, and some players experienced all of these effects in the same game.

Game flow is a term that is used in escape rooms to refer to a player's state of deep concentration and immersion in a game. Players of escape rooms are directly immersed in a setting and narrative, and as the game progresses, can develop a flow from one puzzle to the next. However, escape room players can also lose this flow when the genre or setting of the game is not consistent (Nicholson, 2016). Thus encountering specific information that is not referenced through environmental storytelling or that causes the player to recall information from

outside the escape room setting will interrupt the game flow and slow their progress. One player encountered a game with several pop culture trivia questions, such as Bruce Willis' height in centimeters, and was told to "Google it. Here's the Wifi code". Looking up information on the internet in this situation takes players outside of the game world and slows any momentum they may have had up until that moment, especially when the information could be provided through thematically appropriate environmental storytelling, such as a poster or magazine.

Loss of game flow can also occur when players simply cannot solve a puzzle that requires knowledge they do not have. The lack of knowledge prevents players from continuing on in the game. "it totally killed the gameplay for us, of course, because we spent so much time on the puzzle. It doesn't matter how great the rest of the game is. If you spend 20 minutes, just frustrated because you've exhausted all your options, it does put a downer on it." Players may have difficulty finding the same state of concentration and focus, lowering their enjoyment for the remainder of the game. As one player noted: "When I see a puzzle that requires a specific knowledge, first that gets me out of the experience at this moment, and then I just spend some time being angry at the puzzle designer."

Losing confidence in the game design also slows players down and causes them to second guess all remaining puzzles. Players reported losing confidence as a result of encountering specific knowledge, finding translation issues where they felt the need to double check any further written text, as well as in situations where technology or other props in the escape room failed to work properly. A player who experienced all of these situations described their thought process: "Am I going to fail this time because I don't have the outside knowledge, it hasn't been translated properly, it doesn't work properly, and your enjoyment is gone. Because you're second-guessing everything you do from that point forward."

An interesting contrast to players having a lack of the knowledge needed to solve a puzzle, is when players have too much knowledge and are able to skip steps in the game design to progress earlier than would be typical. Most of the examples players gave of involuntarily skipping puzzles involved codes or ciphers that experienced escape room players typically have memorized, and therefore do not need to wait to receive the translation key later in the game. One player when speaking about having prior knowledge in games described their thought process as: "Oh, should I solve this or not? Because we haven't found the Morse code yet, so maybe I should just let that be and maybe just solve part of it so that we don't have to do all of it." Even a player who was proud that they could help their team with unexpected knowledge still expressed disappointment: "We want to solve the puzzles. We don't just want to get to the end."

Positive Experiences with Cultural Bias

While our initial assumption was that cultural bias in escape rooms was a problem, we found that some subjects reported positive experiences when encountering cultural bias in escape rooms. Instead of it being a point of interest, these subjects found it to be an interesting learning opportunity to face a challenge that they didn't have the background to accomplish, and then learn something in the process. In many cases, this happened when someone was with a team of other players who did have the cultural background, so the bias didn't stop the players from succeeding as a team. In our sample, only players from North America reported this positive nature of encountering cultural bias; due to the small sample size, we aren't willing to draw a conclusion about this distinction. This does suggest an area for future research to better understand how an element in a game that requires cultural knowledge could be presented in a way that makes it a positive learning experience instead of a negative frustrating experience.

One type of escape room that is purposefully designed to require cultural knowledge are rooms designed for a specific intellectual property. For example, a *Harry Potter* room would typically require players to wave wands, cast spells, and understand what the purpose of an owl is. Players entering a game like this expect to be rewarded for their understanding of the intellectual property, and are wanting that level of immersion. The design challenge is to create games that reward prior knowledge of an intellectual property while still having the tools in the game that would allow players without that knowledge to succeed. For example, if a puzzle required knowledge of the four houses at Hogwarts, then having a poster in the room that provided players with the information needed to solve the puzzle would enable someone without the cultural knowledge to still continue in the game, albeit more slowly than someone who knew the houses by heart.

Another type of escape room that is designed with cultural biases are training rooms for organizations. A company wanting to train employees through an escape room may build challenges around the assumption that players, as employees, already know how to do some things like log on to a computer, access a building, or use certain information resources. Extending this concept, any educational escape room that is designed as an experience to test knowledge or tool use will be built using the assumption that the players should have some comfort with the domain.

CONCLUSIONS AND FUTURE RESEARCH

Conclusions

Through the evaluation and analysis of interviews with experienced escape room players, we can determine that cultural bias does exist in escape rooms and the majority of players

experienced a negative reaction to encountering cultural bias. From these results, we can derive two principal conclusions.

- It is difficult to predict which elements of culture, and therefore which elements of the escape room, players will experience difficulty with.
- Game designers are typically unable to recognize their own assumptions, and so will have difficulty recognizing the cultural biases in their escape room designs.

Both of the above issues have a common solution. The more preparation done in advance of opening an escape room, the more approachable a game will be. Preparation includes playtesting or beta testing each game with a variety of players of different ages, education levels, and socio-cultural backgrounds. Extensive playtesting will identify problem areas for different groups of players as well as identifying any biases that were inadvertently included by the designer. With the identification of these problem areas, the game can be improved to increase approachability for a larger audience, whether through increased environmental storytelling or through training game hosts to recognize where certain groups of players may have difficulty and how to assist players without diminishing the players' enjoyment of the game.

Online Escape Games

While we were analyzing our data, the Escape Room industry was hit by the impact of the 2020 COVID-19 pandemic. Escape Room companies had to shut down, and while many closed their businesses temporarily or permanently, some explored ways to take advantage of online video-based chat platforms to continue to offer access to their games remotely. An actor in the room with a camera would follow the directions of a team of players as they worked through the challenges. This allowed the escape room companies to still bring in some income, and allowed

players to access games around the world that would have previously required travel. For our area of study, this introduces a new area of relevance, as players were now encountering games created for different local cultures. This is now an area of research for us, as we are working on a similar study to this one of players who have played these remote rooms and encountered culturally biased challenges.

Design Implications

Another area of future research based off of this study are the game design implications when a creator wants to avoid a culturally biased game. This is important for the original goal of this research: to create a more fair worldwide competition for escape rooms. This is also important for rooms that serve high-tourist or multi-cultural areas, as it is more likely that the players will have a different cultural background than the designer. Finally, this is important for companies running remote escape games, as the players may be from a different culture.

Therefore, another future study we are developing involves design implications when trying to reduce cultural bias in games. Much like our resource already released for the creation of multimedia content for escape rooms (McDowell, 2019), our goal is to create guidelines for designers to follow to identify and reduce culturally biased elements in escape games. We recognize that it is impossible to remove all elements of cultural bias, especially in a narrative-based game, but if designers are trying to serve a multicultural player base, it is important to understand where games have been made unintentionally more challenging for players without the shared cultural background as the designer.

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CHARACTER IS KEY

The critical role of staff in escape games

RACHEL DONLEY

INTRODUCTION

Early escape games began with a relatively simple, if unusual, premise: lock a group of people in a room for an hour and make them solve puzzles to find the key and escape. Since their inception in the late 2000s, these live interactive experiences are evolving considerably. Sets have become more immersive and complex. Incorporation of digital technologies add dimensionality and a sense of magic. Environmental storytelling and more refined puzzles give depth to the core premise of escaping a room.

Escape games share commonalities with a range of mediums: immersive theater, interactive fiction, puzzle games, and live-action roleplaying (LARP), among others. The discourse around what makes an escape game "good" matures with consideration of these overlapping fields, and lessons learned from designing escape games and repeatedly observing player behavior offer their own unique insight. Quality in set design, the importance of narrative, and components of a well-designed puzzle are some of the most prominent subjects discussed. But while set, game, narrative, and puzzle design are all significant, staff are the keystone to a compelling escape game experience.

An escape game is created by three parties: *designer*, *player*, and *staff*. The *designer* crafts the game world and the framework of the experience. This involves a wide range of roles and elements, from conceptualization to construction, and includes designing the game roles which the staff will operate. The *players* ultimately determine the narrative and outcome of their own experience through their choices, actions and attitudes during play. The *staff* function as the bridge between the two. Staff are guides: leading players from reality into the game world, helping them navigate the game itself, and sending them back out into reality excited and eager to share their experience. As facilitators between designer and player, the role of staff at any stage revolves around adaptability and guidance: adjusting the game in response to player behavior and ensuring players successfully navigate through unfolding events. Skilled staff excel through a deep understanding of the designed game and an ability to read the players and team dynamic.

Effectively designing the roles of staff, and hiring and training staff to excel in those roles, can make or break an escape game experience. There are clear implications here for escape room companies who need customers and to make a profit. If players do not feel the experience was worth the price of admission, they have no reason to return to play another room, and may possibly be put off from playing escape games in general. On the other hand, a compelling experience will stick with them and inspire both their return and recommendations to friends. The industry as a whole can thrive if companies optimize their use of staff to fully realize the potential of their games.

In this article I will examine the different ways in which staff influence the experience before, during, and after the game to articulate their relevance and lay the groundwork for further discussion. I draw examples from my own personal experiences in the escape room industry as designer, staff, and player. Along the lines of Scott Nicholson's (2016) approach to

analyzing escape rooms, I have omitted some information in my examples in the interest of avoiding major spoilers or otherwise infringing on the potential experience of these games. However, some details are included where necessary for the purpose of furthering the discussion.

THE ESCAPE GAME EXPERIENCE

While COVID-19 has necessitated changes to the current range of escape room offerings, in this paper the focus is on the traditional escape room experience: players are greeted by staff in a lobby or space outside of the room, are then "trapped" inside a physical room for a set period of time, and finally escape (or are released) so that they may leave the building. In this context, the designer goals are to create a compelling experience for groups of players that will leave them feeling excited and eager to discuss their experience even after they leave.

It is worth noting that, especially as the medium evolves, there are many points at which this traditional format may not apply. Players may enter directly into the game world, omitting the lobby or entry space component. There may not be a physical room, in the case of virtual escape games like Mad Genius Escape's Zoom-facilitated *The Truth About Edith* (2020) or large-scale events like SCRAP's stadium-size *Escape from the Walled City* (2015). In these cases, though the role and prominence of staff may differ, their presence and performance still play an essential role in the experience.

Additionally, as escape rooms mature, objectives regarding overall tone and player experience grow increasingly varied. For instance, *The Privilege of Escape* by Risa Puno and Creative Time (2019), exposed the pervasiveness of privilege and social inequity. While the objective of the player experience is less focused on accomplishment and excitement, the functionality and significance of staff remains. Ultimately, the staff are a key

component of the designed experience. The success or failure of factoring in their potential directly impacts the power of the game to convey the designer's intent.

A ONE-TIME EXPERIENCE

According to the narrative game taxonomy of Sullivan and Salter (2017) an escape game is a story exploration game, where "exploration is central, and finding different locations and objects is key to advancing the story" (p. 3). The act of understanding the unknown, making discoveries and solving mysteries, is at the core of the experience. With everything unveiled, much of the "meat" of the game has been consumed. This kind of experience is not inherently replayable.

Even games that strive for replayability retain the singularity of the initial experience. A paradigm of replayability in escape games is *The Hex Room* (Cross Roads Escape Games, 2016). In it, each player takes on a role from a stereotypical horror film such as the "prom queen", the "rebel", the "jock", etc. Each character has a unique component and room available only to them when the game begins. Replayability comes from starting the game as a different character, so the same room can be played more than once, taking on a new role each time. However, the latter portion of the game is largely a shared experience that is not as unique with each replay. Additionally, the monetary cost of replaying can be prohibitive for many players, and makes the need for a spectacular first experience even greater.

Though the staff may run the same game multiple times a day, several days a week, the players will experience the game only once. Therefore, one of the most crucial elements of staffing a room is remembering the game is a "one-time experience" and ensuring that player experience is kept at the fore.

Preparing the players

Staff influence over the player experience starts as soon as the players enter the building. Once players enter, a few actions generally occur: the staff will greet players, have them sign waivers, and encourage use of the bathroom before the game begins. While this stage requires little in the way of skill, lack of understanding in fundamental customer service principles and the overall objectives of the company can set players off on the wrong foot.

Preparing the players also means preparing the staff. In this early phase, staff may get to know players by asking questions about their experience level, whether they all know each other, or any other inquiries to build rapport and get a better sense of both individual and team dynamic. Some players may specify preferences or raise concerns. The information staff glean early on helps lay the groundwork for their role during and after the game.

Setting the tone

When the goal is for players to have fun and to leave the establishment feeling excited, then the staff need to convey one key attitude: enthusiasm. Effective staff are engaged and eager to lead players into the game. A lack of effort here puts the onus on the players to conjure excitement, but unfortunately players are not a reliable wealth of enthusiasm. Often, they don't know what they are getting themselves into, there may be understandable trepidation about getting trapped in a room, and some may have been dragged into playing as a "team building activity" for work. Some may simply be stressed and tired. Many factors may inhibit players from building energy on their own. This is made more difficult if they see staff looking disinterested.

However, if staff present the room with enthusiasm, conveying an eagerness for the players to experience it, players will pick up on that energy. Even if staff aren't actually excited, they can still signal engagement to players: smiling, standing alert, projecting their voice, and making eye contact with all players.

Most importantly, the pre-game phase is where players are transitioning from the "real world" to the "game world", and staff guide the way. Janet Murray, in her discussion of immersion in *Hamlet on the Holodeck* (2017), highlights the importance of establishing a border between the real and fictional world, and framing immersion as a "visit" that "involves explicit limits on both time and space" (p. 105). Successful transition helps ensure the experience fulfills (ideally exceeds) player expectations, especially if players have come to play the game based on its thematic or narrative premise.

Staff help establish and guide players through their visit to the game world, and the transition is often physically reinforced. Introductions, rules, and any "out of game" components are explained outside the room, in the real world. Players enter the game world by entering the room and starting the timer. The point of transition makes a difference in the role of the staff as guides into the game world.

However, some games feature an introduction inside of the room. Requiring players to listen to rules and explanations within the game room, especially one designed for exploration that they will have limited time to investigate, leads to players feeling conflict between listening and wanting to immediately begin playing. There is particular responsibility placed on the staff here to achieve both pre-game goals despite the divided attention of the players: make sure the players are prepared, and ensure whatever tone is set matches the tone of the room.

Trying to achieve these pre-game goals within the room can

easily go awry. For example, I played an escape room billed as an eerie abandoned mansion the players had inherited, with allusions to occult mysteries hidden within. The introduction to this world took place inside the room itself, by way of both video on a screen mounted to one wall of the room and a staff member leaning against said wall. Both had an "out of game" tone: the video was straightforward and informative, and the staff was extremely casual. Had they occurred in the waiting area, they would not have made much impact our experience. Unfortunately, their occurrence within the room essentially used the moment of setting the tone to break it, leaving us to try (and ultimately fail) to reconstruct a mood as we began the game.

In contrast, the world of Strange Bird Immersive's *The Man from Beyond* (2017) begins the moment the players enter the facility. Rather than having the introduction carried into the room and game world, *every* aspect of the space and staff interaction is within the game world. The premise of the room revolves around joining a psychic, Madame Daphne, in a seance to summon the spirit of Houdini. The waiting room is her parlor, decorated with strange artifacts, tarot cards, and celestial decor. Madame Daphne herself, a staff in-character, waits for players and addresses them as if they are indeed there for a seance rather than a seance-themed escape room. Here, we had entered the game world before the timer even started.

IN-GAME

Adapting for optimal game flow

Staff are responsible for moderating the flow of the game. Because the game is a one-time experience players cannot pause or return to later, optimizing and adapting the flow of the game for each team helps ensure the players get their best possible playthrough of the game.

The level of control staff have over the game can vary, and the

ways in which it is facilitated ranges as well. In cases of limited control, some rooms do not feature a dedicated staff to monitor them, instead having one staff responsible for operating multiple rooms at once. Sometimes, staff only monitor or control aspects when prompted by the player through a device like a walkie-talkie or an audio or video feed of the room. In these instances, players may use the walkie-talkie or wave their arms to ask for hints or let the staff know if something isn't working. On the other hand, staff may have significant control over the game if they are in the room with players, performing a role within the game, or otherwise attentively engaged and able to manipulate various facets of the experience.

In general, staff overseeing the game is often done in-person, over a speaker, or through a screen. Depending on the skill and efficiency of the players and the quality of the room itself, no moderation on the part of the staff may be necessary. When it is, however, the staff becomes integral. These are the points when player experience can pivot, for better or worse, depending on staff and management of game flow. There are two primary means by which staff can control the experience during the game: nudging the *game* for the players, and nudging the *players* for the game.

"Nudging the game" means the staff may modify aspects of the game or room for an improved experience. If the game is designed well and resistant to technical errors, this will rarely come into play. If there is a technical error, whether a door was accidentally left open or a piece of technology malfunctions, attentive staff with an understanding of the game can minimize the impact these problems will have on the player experience, either by fixing them or utilizing an alternative.

For a puzzle in one room I ran, players needed to hear and identify homophones from an audio recording. Once, the volume was too low for players to hear. Having memorized the

recording, I was able to repeat it aloud so they could solve the puzzle quickly and as close to the way it was intended as possible. While not an ideal situation, these immediate repairs can be made on the fly if the staff are equipped and able to do so.

Subtle hinting may also be done through game modification. If staff are controlling the game from the outside, access to lighting would allow them to brighten, dim, or flicker certain lights to draw players attention. If they are inside the room and the possibility presents itself, they may be able to move something without players noticing. For instance, a room may have lot of paper puzzles or items that end up piled together. In these situations, players getting stuck is often a matter of them not visibly seeing the essential piece to a puzzle due to the design of the space or their own haphazard organization of elements. If a staff person can shift any of these so the essential piece is visible, players can quickly progress.

The most common game nudging I've experienced is controlling the game timer. In the vast majority of escape games, a timer counting down frames the time spent in the room. If something breaks, or if there are any significant errors in gameplay independent of players, general best practice is to give players extra time to complete their experience. There may also be instances where a team is on the cusp of escaping the room and need only a little extra time to succeed. If staff have the ability to do so, they may adjust the time. Here, deep understanding of the game and players affords the staff the ability to make a determination on whether or not the extra time will achieve the desired outcome. If players are not likely to succeed, it is possible the added time will only add frustration. Giving that time when beneficial, especially if it can be done without players noticing, truly makes the difference between players feeling elation and success or frustration and disappointment at the end.

"Nudging the player" means guiding the players towards or away

from certain actions for an improved experience. One facet neither player nor staff wants to experience is when players are exhibiting poor or risky behavior. In some cases, players may assume an object needs to be manipulated as part of a puzzle and try forcing it in a way that it was not meant to be used. At this point, staff may need to step in and communicate with players.

The primary and most significant means of nudging players is the act of hinting. In hinting, timing is key. With a good puzzle or mystery, frustration is necessary. Getting players close to the point of giving up without going over the edge can make the payoff of solving incredibly rewarding. Because time is limited and players cannot pause the experience, the balance of frustration is delicate. A well-timed hint can make the difference.

Some companies put this responsibility on the players: there is a way to ask for a hint, and one is given either as a prewritten hint (particularly if they need help at a common sticking point) or created on the fly by staff. Players may also request they not receive a hint unless they specifically ask for one. According to the 2018 Escape Room Enthusiasts Survey, preference was almost evenly split between asking for hints (42.9%) and unsolicited hints (43.7%) in a game (Elumir & Low, 2018). A major benefit of player-requested hints is players are given more agency in their game. If player's primary motivation is a competitive drive to win or succeed in the game, as is often the case for players highly experienced in escape rooms or for rooms that have leaderboards, this may be preferred.

However, one problem with having players ask for hints is a break in immersion. The world built up by the designers and players weakens or dissolves once players pause, perhaps calling out or waving their arms, to request a hint.

The biggest downside of player-requested hints, particularly for designers and staff, is putting a major element of game flow into

the unknowing hands of players. This is particularly relevant for new players, but even experienced players do not know what an "ideal" experience in a specific room is supposed to be. In contrast, staff have seen the room played many times, giving them experience and a deep understanding of what that "ideal" experience might be. As removed observers of the player's behavior, they can also predict how the team may perform, coupling that with extensive knowledge of the game gives them an ability to determine the most effective timing and type of hints to give.

A balance may be struck if there is a mechanic that lets players know the staff may think they need a hint, but leaves it up to the player to take it. For example, a phone rings in the room. Players who answer receive a hint, but they can choose not to pick it up. Ultimately, the designer of the game must clearly set the framework within which staff can adapt the flow of the game.

Hinting is an art. Teachers and comics understand how to hint. In their respective fields, through lessons and jokes, they lead people up to a certain point, equip them with everything they need, but leave them to make the jump themselves. They learn the lesson, they laugh at the joke, or they continue scratching their heads. A good hint nudges players towards the "aha!" moment of a puzzle, the point of revelation, without telling them what it is. A great hint accomplishes this without the player realizing they are receiving help.

When I started working in escape rooms, I was told, "whether the outcome is good or bad, make the players feel like it's their fault". The players should feel like they failed or succeeded by their own efforts, not by mistakes or by "gimmes" from the game. In hinting, this means the more invisible the hint can be, the better.

In my own experience, I sometimes found the only hint needed was encouragement. There is often one person in a group who

solves a puzzle early. They are quiet, seemingly unsure. They softly say the answer, but no one listens. One of the more rewarding hints to give is to make eye contact with that person and give a small nod or smile. Most only need that small encouragement to get them to share their revelation with their team.

Play a role

Staff can be incorporated into the game in a range of ways, from removed observer to central character. In general, the staff running the rooms are often referred to as Game Masters (GM), but there are distinctly different possible levels of incorporation in the game world and narrative.

The "observer" is a GM, whether physically present in the room or observing through a camera, who exists outside of the game world. They monitor the game and provide hints, but their presence is clearly that of a staff person watching the game – they play no role within the game nor do they match its theme.

Next is the "bit character", a GM in the room who fits the narrative and theme but does not play a specific character. They serve a similar role to the observer, watching and hinting, but are better incorporated into the room itself. An example here would a bartender in a saloon-themed game. Their presence makes sense, and enhances rather than detracts from possible immersion in the game world.

Last are "key characters", GMs who play a central role in the game. I don't use the term "main character" here, as that is the role of the players. In some games, these roles may be played by other staff, in addition to having a GM. They are integral to the game. Any hints they provide may be disguised as an inherent part of the interaction rather than an aside to guide the players.

Staff roles in the room can allow for nuanced hinting, game

adaptability, added dimensions to narrative, and an opportunity for unique mechanics. In-room observers have the ability to give nuanced hinting, but their presence in the room without any narrative or thematic reason can create tension for players who remain aware of their presence and foster a sense of "babysitting". In any situation, effective fulfillment of these roles requires well-trained and skilled staff. This becomes increasingly vital for bit and key characters, as they are further embedded into the game itself.

Failure in both design and performance can severely damage the experience. One company advertised live actors as a key element of their rooms. They offered one room where players assisted a super villain in raiding a superheroes apartment to stop their "saving the world" plans. The expectation of a compelling character interaction was thwarted when we found the supervillain was a costumed person behind a glass wall. His function wasn't clear, and when we looked over we found him inattentive. Here, the hinting and narrative were dependent on a live actor. Hints were minimal, and obvious – he only spoke to give a hint, and his removal from the game space itself prevented other means of hinting. Thus, the opportunity for nuance and subtlety was not present. Worse, we could visibly see his lack of engagement throughout the game.

The role of a "supervillain" was a compelling narrative element. The pre-game components, from website to introduction, built up the expectation of a dynamic between the players, mere henchmen, and the supervillain. This expectation broke because the actor did not utilize or build on this dynamic, and the design of the role did not support it (notably by placing the character behind glass for no clear reason). The disconnect actively lessened our game experience and dampened our engagement in the game.

By contrast, key characters designed and performed well provide

a compelling avenue to improve or expand on player experience. They also open up a range of possibilities for game mechanics. For example, a room I ran featured two key characters central to the narrative and mechanics of the game. The game was billed as a "time loop game" where players kept replaying the same moment over and over, manipulating events to create different outcomes. The player's objective was to "save" one of the key characters, a pop star, from a range of possible deaths.

Players interacted heavily with both characters, the pop star and an officer, primarily through conversation and sharing information or objects. Though the characters followed a script, the significant degree of player influence and interaction necessitated some amount of improvisation. This allowed for modification in character behavior and response to subtly incorporate a hint as needed. The central narrative of the game was built around the pop star and their seemingly inevitable doom, and so having a person playing out this role was essential to the narrative experience. The "time loop" feature here was a unique mechanic we were able to achieve by structuring the game around key characters able to repeat or modify their actions, and the game, each loop.

POST-GAME

Pre-game interaction sets the tone, in-game enhances the experience, but post-game sets the stage for the stories players tell. While this is debatably the least essential for ensuring a good experience, it is powerful in ensuring the experience is memorable. The post-game interaction has the power to resolve lingering frustration for players, help them digest the chaos of the gameplay and, most importantly, build on the excitement of the experience for players to carry over to discussion and retelling long after they leave the facility. These can be accomplished at two key stages: building on the moment when

the players leave the room, and concluding the experience with a debrief.

It lasts mere seconds, but the moment players leave the room is crucial. If they've escaped, having staff waiting and engaged can easily ramp up a team's sense of success and pride. They've presumably spent an hour at this point, mostly in a state of frustration, to build up to this singular moment of achieving the final objective and "winning" the game. Lack of interest or enthusiasm from staff can weaken the mood. If staff are absent when the door is opened, it can cause confusion for the players.

After the initial moment, there is an opportunity to debrief with the players. Players will likely talk amongst themselves regardless of staff involvement, engaging in what the live-action roleplaying (LARP) community has termed "froth": when participants reflectively discuss and process events of the game together after it ends (Hamilton, 2014). However, staff can help provide more depth, context, enthusiasm and space for froth through a debrief. In rooms I ran, we reviewed highlights of the game play, walking players through each major step that led them to their ultimate success or failure. This allowed players to get a more complete picture of the entire game, and helped them figure out where their personal experience fit in. There was also an opportunity here to emphasize moments unique to the team: mentioning a player who solved an essential puzzle early on, or pointing out where players were stuck the longest. The former helped build on a sense of accomplishment and gave specifics for players to continue frothing about later. The latter was particularly beneficial for failing teams, giving them a point of focus to bemoan rather than leaving them with a general feeling of inadequacy.

The importance of a debrief is even more integral if the design goal includes giving players something to reflect on after the experience. In an interview with Immersion Nation (2019),

creator Risa Puno describes how, in *The Privilege of Escape*, players were split into groups for the game and a debrief was necessary for them to get a full understanding of the game and the role privilege played in their experience. She notes players who reached out to her weeks after playing to express how profoundly it impacted them and led to later conversations with people who had not experienced the game. These responses were a testament to both the power of the game and the success of the debrief to facilitate and carry conversations beyond the game itself.

CONCLUSION

The experience of the game and the stories players recount after are a collaborative affair. Effective escape room design accounts for the staffing of the room, factoring their role into the overall framework of the experience. Regardless of how prominent they are in the game, staff serve the essential role of mediation, adapting the game and guiding the players towards an optimal experience.

This article is an introduction to the key roles of staff in escape games. For the benefit of both designers and players, each aspect described here deserves further discussion and exploration. Escape games still have a great deal of unrealized potential. Their evolution in intent (such as designing to explore social concepts) and format (notably the recent influx of virtual escape games) signals a need to reflect on all components that comprise an escape game to deeply understand and intentionally design every layer of the experience. As escape games have drawn inspiration from a variety of other mediums, so too can these benefit from reflection on the role of staff in a co-created experience: as characters, guides into immersive worlds, moderators of game flow, and facilitators for debrief.

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IN PRAISE OF THE MUNDANE

Time as an element of escape room design

KELLIAN ADAMS

In 2008 I worked at a company called SCVNGR and we had a mission: we were going to make the world into a game. My specific job was to make people play games at museums and in our minds, everybody was going to want to play casually with every spare moment of their day. These were the early days of apps and location-games like FourSquare, Loopt and Gowalla but the world-as-a-gamemap experiment failed and all of these location-based gaming companies closed or pivoted. Each of them made a fatal miscalculation: people who are in public are not bored, they're busy and they have somewhere to be. Casual, pervasive location-based gameplay didn't seem to catch on.

Fast forward to 2014 and Escape Rooms come onto the scene. I expected the failures of 2008. People are busy! Sure, you can capture their attention for stolen moments on mobile games. You can have their attention for hours playing video games in the quiet privacy of their own living room, but in my experience, games in the real world didn't seem to take. Escape rooms did something different from all of these location-based game apps. They sanctioned playtime. They were not pervasive and casual, they had a specific hour in which you were in the location-based game world and once that hour was up either you had accomplished your task or you had not. The escape room hour didn't squeeze yet another task into a player's busy daily world,

it gave them a full sixty minutes of respite where nothing in "the outside world" mattered. The sixty minute, finite time slot mattered.

I've seen the element of time make a huge difference in my own work as a game designer. SCVNGR went out into the world with as much marketing as investment capital could muster, but most of the products had lackluster adoption. The most successful part of the business was the "diamond dash"[1], a full-day competitive SCVNGR hunt. Jewelry stores would sponsor an event where people would compete in a timed scavenger hunt for a diamond ring. A lot of the players weren't even engaged couples. I was curious if the structure of the Diamond Dash would work for other SCVNGR products. Would people still do a location-based puzzle hunt even if there was no diamond so long as we took the structure of signups and a timed game?

I tried a new system involving sign-ups and a time limit for visitors' in-museum game experience and finally our museum games started to get some traction. We had well over a thousand people play the GoSmithsonian Trek.[2] The Joslyn Museum in Omaha built games that are still running almost 10 years later, on my own software, The Edventure Builder.[3] (Educator, Laura Huntimer even developed a program that let 7th graders build the games themselves).[4] The Indianapolis Children's Museum held a museum-wide hunt where hundreds of people showed up to a timed, one hour game. The time limit seemed to make all the difference.

John Huizinga touched about the idea of temporal spaces when he talked about "the Magic Circle" in Homo Ludens: A Study

1. https://knightnews.com/2012/10/2nd-annual-diamond-dash-allows-couples-chance-to-win-12000-diamond-ring/
2. https://www.smithsonianmag.com/smithsonian-institution/happy-trekking-announcing-the-gosmithsonian-trek-137754757/
3. http://www.edventurebuilder.com/
4. https://www.joslyn.org/blog/service-learning-oh-what-an-edventure/

of the Play-Element in Culture. Huizinga wrote of "consecrated" locations for play:

"The arena, the card-table, the magic circle, the temple, the stage, the screen, the tennis court, the court of justice, etc, are all in form and function play-grounds, i.e. forbidden spots, isolated, hedged round, hallowed, within which special rules obtain. All are temporary worlds within the ordinary world, dedicated to the performance of an act apart."

The key to this for me is the comment "temporary worlds". An arena has a predictable, set time for the beginning and end of a game. A card table is a place where you sit and play cards until someone wins, not play casually forever. These game spaces are not pervasive and the times have a definitive end. When we talk about magic circles, time feels like a natural part that's easy to overlook. It's only when it's removed that we realize how important it was in the first place. It's hard to get people to commit to a game with no "consecrated" time for beginning and end. You need a magic temporal circle.

Time limits are a major element of video games and seem to be generally reviled by players. There's a Reddit page "Can Time Limits EVER be Done Well?".[5] In a Gamasutra blog post, Jack Palmer practically begs his readers to consider time limits as a positive element of video game play.[6] But the very thing that seems to be contentious in video games seems to be accepted as canon in location-based games, and may just be one of the keys to the stickiness of escape rooms.

I started thinking about why the time limit seemed to matter so much and I came up with a few theories:

5. https://www.reddit.com/r/truegaming/comments/6lskcc/can_time_limits_in_games_ever_be_done_well/

6. https://www.gamasutra.com/blogs/JackPalmer/20151019/256526/Time_for_a_timer__Effective_use_of_timers_in_game_design.php

1: SCHEDULED PLAY TIMES GIVE YOU AN OPPORTUNITY TO PREPARE PLAYERS

When we started SCVNGR museum games, initially we would approach people as they came into the museum lobby. "Wanna play a game?" They don't like surprises. Museum lobbies are stressful social situations where people often have kids, dates or families they want to impress. If you're playing a video game alone in your living room, you can fail as much as you want and there's nobody watching but a physical location is a risky social place to try something new. A scheduled appointment for a game lets us prepare players. They come in to the space at their allotted time slot as a hero, prepared to play. "I am the cool family member who prepared this adventure for us!." The difference between people expecting to play and people who just walk into a game was monumental.

2: TIME SLOTS MEAN BUY-IN

Nina Simon talks about "The Magic Vest"[7] syndrome in museums. When you're a docent, you wear the "magic vest" (or uniform). Strangers at the museum will naturally talk to you because that's the role they expect you to play but if you're wearing the same vest at the grocery store, people won't ask you about the science of water pressure. Johanna Koljonen called this an *alibi for interaction*[8] and Lizzie Stark wrote about it in "Performing the Real".[9] People need a reason to ask you a question, an excuse to play.

When you give people a time slot with a beginning and end, there's a commitment. They cannot pretend that they didn't mean to be here or that they're embarrassed that you bothered them. They can't be "too cool" for a game that they've already scheduled and paid $35 for, they've already literally bought in.

7. http://museumtwo.blogspot.com/2009/02/magic-vest-phenomenon-and-other.html
8. https://www.youtube.com/watch?v=yXjEHDBjrXE&list=PL9nBln84JaUnG3DUQFpuW6wj9I5PCxwoC&index=2
9. http://playtime.pem.org/performing-the-real-an-essay-part-2/

3: THE "SIMPLE LUXURIES" MARKET- MOST PEOPLE CAN AFFORD AN HOUR

If you think of time as a currency, pretty much everybody you know is on the brink of poverty. When the money economy is depressed small luxuries do well.[10] Wouldn't it stand to reason that in a time-poor economy, small time luxuries would also do well? Most people can afford an hour.

If you think of that in terms of a "depressed time economy", one hour to play puzzles with your friends is an indulgence- but it's an affordable one. One hour is a simple luxury economy item- a finite indulgence that most people can time-budget for.

Most escape rooms set this time luxury at an hour but I've seen other variations. The Tokyo Mystery Circus,[11] has escape room that's only ten minutes. I thought it would be an unsatisfying experience but in fact it was really fun to race against a 10 minute clock and we were surprised by how much content we could get through. A 10 -minute escape room had a different kind of expectation: a lower price but a much higher turnover.

My own work and the pieces created by members of Boston's Playable Theater Project [12] usually clock in at about three hours. Club Drosselmeyer,[13] which looks a lot like a swing dance/variety show but has all the elements of an escape room, runs from 7:00 until about 11:00. Incantrix Productions' Carnivale Di Oscurita[14] also has a set number of puzzles that fit with a story and a three hour time limit. These are pieces that skirt the line between theater production and escape room but which have been generously accepted into the escape room community. Three

10. https://www.entrepreneur.com/article/203048
11. https://mysterycircus.jp/en/
12. https://camd.northeastern.edu/playabletheatre/
13. http://www.clubdrosselmeyer.com/
14. https://incantrixproductions.com/carnevale-di-oscurita/

hours is a relatively long time but still seems to fit within most people's expectations of a finite game.

Boda Borg[15] calls their rooms "Quests" rather than escape rooms. Many of their rooms have physical challenges rather than puzzles and while there's sometimes a story, more often it's an overarching theme. This is a really interesting way to look at traffic flow and time limits. For Boda Borg, each room is three minutes. You succeed in under three minutes and move to the next section of the room (behind a locked door) or you fail and you're spat out into the lobby to try again. This is a fascinating way to keep over 300 people busy at the same time. It's been wildly successful in London and the one US location just outside of Boston is expanding.

I've also seen rooms where time is beautifully marked. In the Wigwam Escape [16] at The Institute for American Indian Studies in Washington CT, the sun rises and sets on your experience accompanied by the sounds of morning birds, afternoon birds and crickets at dusk. Considering how important time is to the escape room experience, I'd love to see rooms be more creative about how they mark it for their visitors. This year's Club Drosselmeyer Radio Adventure marks time with a radio show and a playlist of songs. Our current design challenge is that self-directed players pause the music- and therefore the timer- for up to a half hour, which as you might imagine causes problems in the game.

Even boxed escape rooms tend to fare well with time limits. I can say from my own experience, boxed escapes with one-hour time limits have been completed and enjoyed while the un-timed ones are sitting on my shelf waiting for their moment. Time is an unremarkable constant in most escape rooms and it may be an element that's ripe for some disruption or creative engagement.

15. https://www.bodaborg.com/

16. https://wigwamescape.org/

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SISTER JILL

Escape rooms and spatial storytelling in comparative media education

JOSEFINE HANSSON, MARIA EKLUND, JOHAN HELLGREN, MANFRED HLINA, SONIA PRADO PEREZ, & SIMON NIEDENTHAL

INTRODUCTION

> *A kindly nun and a locked study in an Irish convent: a benign story quickly turns into a nightmare of light and dark, life and death, salvation and damnation in a world that evokes a serial killer of an earlier era.*

Escape rooms are a vital and rapidly growing form of collaborative play, "live-action team-based games where players discover clues, solve puzzles, and accomplish tasks in one or more rooms in order to accomplish a specific goal (usually escaping from the room) in a limited amount of time" (Nicholson, 2015, p. 1). Nicholson's seminal definition foregrounds the game-like character of escape rooms and the formal core of puzzle sequences that shape the experience. The game-like nature of escape rooms suggests that design practices from game and puzzle design can be fruitfully applied in escape room design, which is important, since—besides articles offering useful design principles (Nicholson, 2016)—there are just a few texts devoted to escape room design (Clare, 2016).

Designing escape rooms from scratch can offer students the opportunity to explore the potentials of spatial stories and narrative architecture first theorized by Jenkins (2004).

"Evocative spaces" draw upon familiar stories to raise expectations related to genre; this can be seen even in the titles and overall ambiance of escape rooms. "Enacting stories" engage escape room players to perform actions with narrative import. "Embedded narratives" are clearly apparent as artefacts and texts in escape rooms, communicating narrative content related to themes, as well as clues to assist in puzzle solving. Finally, "emergent narrative" could unfold in escape rooms through unscripted interaction between players.

Although Jenkins' four categories are useful for focusing analytical attention to discrete elements of an escape room design, there is also a need for integrating concepts that can account in a more holistic manner for the constructive activities of the player. Here, game studies literature can contribute to our understanding of escape rooms. Building upon the work of Jenkins and Nitsche, and rooted in the semiotic theory of Peirce, Fernández-Vara (2011) defines, and gives examples of indexical storytelling, "a strategy to construct the narrative of the game, based on leaving traces and affecting the space, either on the part of the designer or the player " (n.p.). The traces designed into an escape room can be prospective, pointing towards what the player should do, or retrospective, indicating the history of the world. The most common types of designed traces are "remains," "traces left behind by other agents who have been in the space before" (n.p.). In an escape room, remains can be either prospective, functioning as clues, or retrospective, providing the player with "room to come up with her own understanding of the events that have taken place there" (n.p.). According to Fernández-Vara's schema, players also leave traces in game space, though here there are, as we shall see, interesting differences between escape rooms and games.

1. SISTER JILL

Sister Jill is a 35-minute escape room experience inspired by the

Jack the Ripper murders. The core concept of the escape room was developed around the theory that a woman was responsible for the killings in London's East End in 1888. The shared goal of the designers was to create an evocative, horror-themed and religious narrative set in the 1950's, placed in an Irish convent (Fig. 1). Players take the role as 'unfortunates' who want to reform their lives, and come to the convent to seek help from Sister Jill, who is revealed as a serial killer.

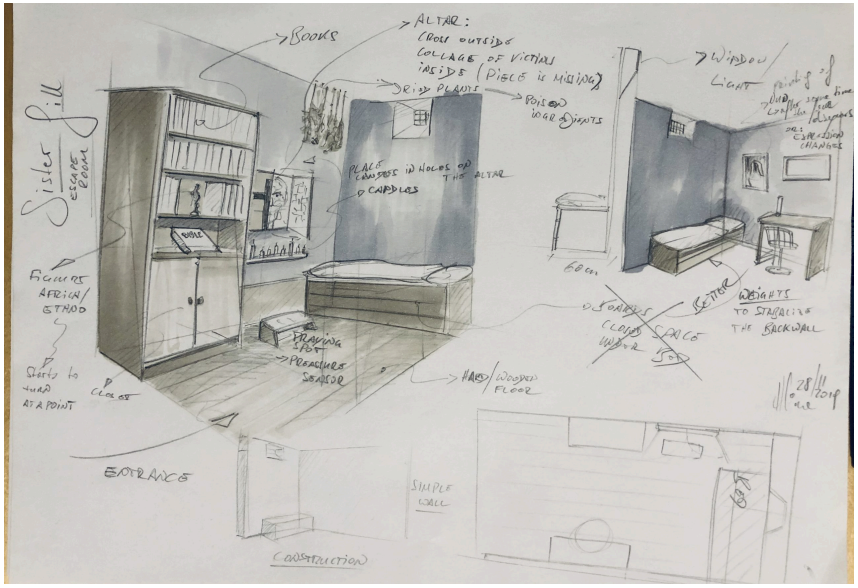

Figure 1. Concept drawing of Sister Jill's study.

This escape room was developed in the course *Storytelling: Narration across media* at Malmö University, Sweden. The course explores how specific media, such as literature, film, audio, comics, and digital media inform the manner in which stories are constructed, and how stories travel between media. *Sister Jill* was designed during a course module on mapping the story world of Jack the Ripper, in which students explored the narrative resonance of the Whitechapel murders through different media. Students were introduced to the Jack the Ripper story world

through contemporary accounts of the crimes and subsequent "Ripperology," as well being exposed to the history of Victorian-era prostitution, journalism, crime and the lives of the five women who are considered the iconic Ripper victims.

The project was executed by five undergraduate students over a period of 6 weeks. A conference room of 2.4m x 3m x 2m was dedicated to the project. The room allowed for control of lighting conditions, and the fact that the room was facing imminent renovation meant that the students could take liberties with the interior features and wall surfaces.

2. CONCEPT DEVELOPMENT

Since the development of *Sister Jill* was a part of a course in storytelling, the main objective that guided the design process was to create a spatial experience incorporating and expressing narrative. According to this logic, the main function of the puzzles was to develop the story for the players. Props and the interior design in the room were crafted in order to feed the story, serving as hints as well as red herrings, and, most importantly, creating an opportunity for spatial storytelling. The ambition of the designers was thus to work on Nicholson's fourth level, in which narrative and theme are intertwined inextricably with the puzzles: "escape rooms can have a narrative, and craft puzzles such that the puzzles are part of the storytelling and move the narrative along" (Nicholson, 2015, p. 13)

The first step in the process was to develop the storyline of the escape room, emphasizing Sister Jill's character and background. Getting to know the main character was necessary for understanding and sense-making. This backstory development was then used in all further puzzle generation as a benchmark.

3. INTRODUCTION TO THE ROOM

A two-step process was designed to help players enter the story. After an introduction to the rules for the escape room, players were approached by an actress playing a nun. By welcoming their decision to reform their lives, players were introduced to their role. The nun asked the players to drink a preventative vial of cholera vaccine, as there was an outbreak in the region. Assuring the players that Sister Jill would be with them in a moment, the nun then led them into Sisters Jill's study, the escape room.

A letter on the desk informs the players that they have been poisoned when they drank the vaccine. Their only chance to survive is to find three ingredients as an antidote before the poison takes effect. With each puzzle solved, players unfold more of Sister Jill's backstory, and learn that she was responsible for numerous murders of so-called 'unfortunates'. The players discover her journal with bible quotations and manic writings but also hints. A pivotal moment is reached early in the experience when the players solve an electronics-based puzzle, opening a sealed compartment and find—next to a disturbing collage and serial killer relics—pictures of themselves.

4. PUZZLE SEQUENCE

The design aim was to create puzzles that contribute to the religious theme and support the narrative regarding implied poisoning. After reading the letter on the table, the players knew that their goal is to find the ingredients of an antidote. These ingredients were secured by the puzzles. Starting with a simple task, the puzzles became more challenging, and finally more abstract in terms of combinations and interaction. Derived from this narrative, the design team used multi-linear (Wiemker et al., 2015) and path-based puzzle organizations. For each ingredient, an individual path was developed. Each of these puzzles could be solved independently. Nevertheless, the difficulty of the puzzle paths varied substantially (Fig. 2).

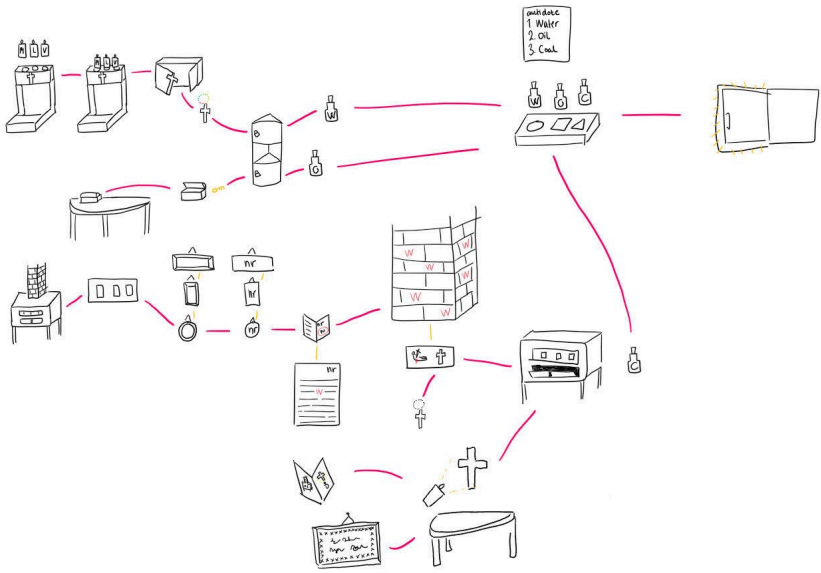

Figure 2. Overview of the multi-linear and path-based puzzle organization.

The first ingredient was intended to be found quickly in the game and provide an early success. Players had to find a key and use it in the only keyhole provided. There, the players found Sister Jill's journal, which added new information to her backstory as well as providing hints for the coming puzzles and the first ingredient of the antidote, a little bottle of holy oil.

The path to finding the second ingredient required solving two sequentially organized puzzles: the 'kneeler' and the color lock.

a. The kneeler puzzle

Three candles had to be placed in the correct order on top of the kneeler (Fig. 3). In addition, one player had to kneel down on the little prayer bench. A hidden mechanism would open the compartment in front of the kneeler and reveal a disturbing altar: a picture collage, bible quotations, and serial killer trophies including lipstick, fingernails and hair, presumably from former

victims (Fig. 4). The players also found little photographs of themselves (secreted there in advance by the escape room staff) creating a personal connection to the narrative. Also, the players found a little rosary with colored beads.

Figure 3. Positioning the three candles in the correct sequence.

Figure 4. A hidden panel springs open when the candle puzzle is solved.

b. The rosary puzzle

The players then needed to generate a connection between the colored beads of the rosary and the color lock (Fig. 5). A clue as to how to interpret the color bead sequence was provided behind a photo (though identifying the correct colors on the rosary and the lock turned out to be extraordinarily challenging due to the yellow/red light of the LED candles). Once deciphered, the color lock opened a cabinet within which players found the second ingredient, a small bottle containing holy water, and information on the last ingredient, charcoal. This cued players to concentrate further investigation on the fireplace.

Figure 5. Rosary beads and colour lock.

c. The fireplace puzzle

Retrieving the third ingredient was intended to be the most challenging puzzle. The designers developed a long sequential path which concluded in simultaneously performing two individual actions in two different places in the room. A look into the fireplace revealed a picture with resemblance to a specific image placed in the room. On the wall behind this picture, a number relating to a specific bible quotation was found. Following the quotation, players could identify a particular picture on the chimney. Then, a connection between the cross next to the picture and the same-shaped cross on the rosary had to be developed. Using the text of the embroidery on the wall next to the chimney, the players would discover that they needed to shine a light on a specific cross on the wall, and perform it simultaneously with overlapping the rosary's cross

with the same-sized cross on the chimney. In terms of narrative, accepting damnation, seeking light in faith and working together was necessary to find the final ingredient to the antidote. This opened a hidden compartment in the foot of the fireplace, revealing the last ingredient, charcoal.

The final result was to place the three ingredients on the shelf on the wall and initiate the winning sequence: the shelf illuminated brightly (Fig. 6), the music changed and Sister Jill's voice told the players that they had survived and had been granted another chance to reform their lives.

Figure 6. Illumination triggered by assembling the three ingredients and solving the final puzzle.

5. BUILDING THE ROOM

As soon as some of the puzzle ideas had been developed, and the team had an understanding of what kind of pieces to build for

the room, they created paper and cardboard prototypes. These were crafted to articulate the feeling of the room, and at the same time to investigate the measurements of the custom-made, furniture-sized props themselves. At the same time, other props and furniture were acquired at second hand stores, images and pictures collected, and items brought from home or borrowed from relatives (Figs. 7-9).

Electronics-based puzzles triggered to automatically respond to the actions of the players served an important function in the room. Both the kneeler and the fireplace featured hidden Arduino-based mechanisms that used magnetic, pressure and light sensors which, when properly activated by the players, triggered servo motors that opened hidden compartments. The three ingredient bottles required to complete the final puzzle had copper tape attached to their bottoms, so that when they were placed in the correct order, they would complete a circuit within the shelf and activate an LED strip hidden below the translucent top of the shelf (cf. Fig. 6). Solving these puzzles produced little "a-ha!" moments of mechanical autonomy that provided satisfying punctuation to the overall experience.

When the prototypes were tested and replaced with higher-fidelity constructions, the team wallpapered the room to further bolster the impression of being in a nun's study (since the room was about to undergo renovation, the wallpaper was stapled directly to the drywall). A playlist of dark, sacred music enhanced the religious theme, and tests were run adding the scent of frankincense to the environment (though this was eventually abandoned because of the efficiency of the ventilation system).

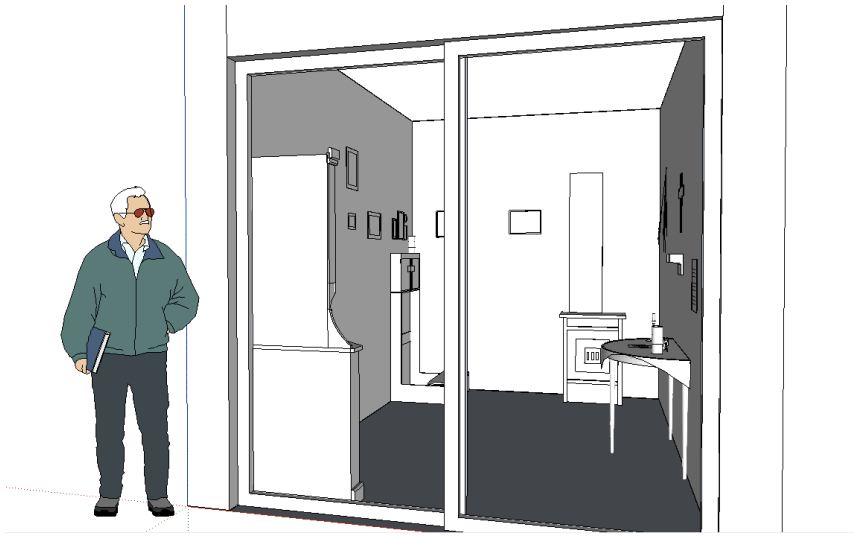

Figure 7. Construction rendering of the escape room from an exterior perspective.

Figure 8. Interior perspective rendering of the cabinet, kneeler and fireplace.

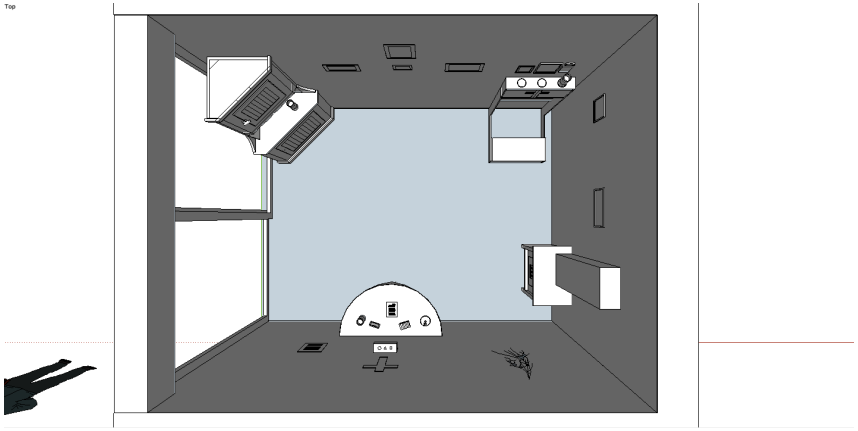

Figure 9. Top-down rendering of the escape room.

6. PLAYTESTING THE ROOM

Ten playtests involving 2 players each were run in late December 2019 until mid-January 2020 to evaluate the room and puzzles. The designers created one script for the facilitator to introduce the rules of the room, and one for the actress playing the nun. One of the designers was present in the room with the players, with the caveat that they were only supposed to be a "fly on the wall," invisible to the players. In-room observation was called for because the low light levels in the room made using an externally-monitored web cam impossible. Documentation of the playtest happened on the spot, as the designer inside the room recorded observations of playtester interaction and communication on a mobile phone, while simultaneously communicating with those outside of the room through social media.

7. SUCCESS RATE

The difficulty level of the escape room was higher than anticipated, with only one group out of ten managing to solve every puzzle within the allotted 35 minutes. One element that contributed to the difficulty was the beads of the rosary. The

colors of the beads were not easily identifiable in the warm LED light of the candles. Choosing not to implement a hint system also definitely added to the challenge. However, as the solution that allowed players to escape the room required three different objects that were acquired by solving separate puzzles, the room still offered players a sense of progression and gave them a tangible confirmation of how close they had come to succeeding

8. RETROSPECTIVE INTERVIEWS OF THE PLAYTESTERS

Nine months after the playtests we conducted retrospective interviews with 9 of our original playtesters (6 women, 3 men), as a means of identifying the elements of the escape room to which playtesters paid the most attention, and were best able to recall. Interviews were conducted individually via Zoom and followed a semi-structured interview format (Sharp et al., 2007) in which open-ended questions were followed with more directed queries (see Appendix). Key words from the interviews were grouped, categorized and ranked in hierarchical order, based upon the frequency of mention and greatest perceived impact.

We found that the interviewees spoke mostly about the experience (1) in itself and the emotions evoked, secondly the puzzles and the physical actions (2) the players enacted in the room. This was followed by descriptions of the room (3), such as the setting, ambiance, props and furnishings. Finally, interviewees discussed story elements, including the story theme, introductory narrative framework/poisoning mechanic and character of Sister Jill herself (4). These categories allowed us to reflect upon the way in which design decisions were actually perceived in the escape room experience, and identify the means through which spatial narrative can be constructed.

a. The experience

We found that when the interviewees were asked about what

they remembered the most about the experience of the escape room, they first and foremost responded by describing how they felt when playing the game. It can be seen below that there is a mix of feelings ranging from excitement to stress and fear.

Key words from interviews: *Death, getting killed, "we're going to die", stress, time constraints, immersion, exciting, 360 degree experience, convinced of being poisoned, enjoyed the experience, frustrations, great fun, team experience, scary, the feeling of being a detective trying to understand what is going on here instead of getting out of the room, exciting experience, danger for their lives, haunting feeling*

Design decision: We designed the game to follow the mystery of the Jack the Ripper theme. We wanted the players to feel uncomfortable, scared and a bit on edge while playing. This was mostly intended to be felt through the ambience in the room, playing on the different senses.

Player experience: After interviewing the players, we could see that our plan was largely successful. Many players used words such as "scary" and "creepy" (7/9). Some felt stressed by the music and the bell that rang to show the time running out (2/9). Many of the interviewees also talked about the experience as something positive (6/9), using words like "awesome", "laughing mid-game" and "really funny".

b. The puzzles

We noticed that the puzzles and the players' actions inside the room stuck in their minds. It is not surprising to us that they have a strong memory of what they *did* inside the room, because we assume that one has a stronger memory of one's actions than, for example, small details of a decoration in the room. Most of the players mentioned the kneeler and putting the candles into the correct position. Additionally, people mentioned the frustrations connected to the puzzles.

Key words from interviews: *the kneeler, candles, rosary, the difficulty of the puzzles and the frustration they provoked, pictures on the chimney.*

Design decision: Our aim was to weave the puzzles into the interior and story, to encourage spatial exploration for players as a means of discovering Sister Jill's story (Jenkins, 2004). The kneeler was a theme–specific piece of furniture that most players interpreted correctly in order to solve the built-in puzzle. During the playtests we observed that the majority of players spent most of their play time with the kneeler and the color lock which followed the kneeler. Less time was spent on the fireplace puzzle as for most players the previous puzzles, especially the color lock, were rather time consuming. Emotionally, players experienced excitement, surprise and success when solving the kneeler. The color lock, which turned out to be especially challenging due to the illumination situation, was mostly associated with frustration.

> *"[...] when you managed to get the cabinet open [...] you start to see that she's a very angry woman and [...] you start to feel a little bit threatened a little bit uneasy beyond realizing that you've been locked in this room [...]"*

Player experience: In our retrospective interviews, we discovered that the kneeler was the most frequently mentioned puzzle. Players also remembered details like 'putting the candles in an order' and 'kneeling down'. The surprise when the hidden compartment opened was recalled as well. The second most frequently mentioned puzzle was the color lock. Details like the rosary with its color beads and the little cross were recalled also. Players remembered the frustration connected to the challenge of identifying the correct color beads with limited and colored light sources. The third most commented puzzle was the chimney and details about how to solve it. Besides that, players mentioned various details like specific actions ('put the candles in

the right order', 'put the cross in a certain spot', 'kneeling down', 'count the beads', 'collect four things', 'mix a potion').

c. The room

What people remembered most from the room was the setting, the atmosphere and its furnishings/props.

i. Setting

Design decision: Our interpretation of the Jack the Ripper story was set in an Irish convent in the 1950s. To create this setting, we focused primarily on the use of time- and theme-appropriate furniture and decoration. Additionally, an actress portraying a nun welcomed the players and, after an introduction, led them into the escape room.

Key words from interviews: *church, convent, monastery, in the study/office, Catholic religious theme feelings, plague hospital.*

"I was shocked that I was in the space that I had been in so many times, and that was such a different experience."

Player experience: Seven out of nine of our interviewed players recalled that the story was set in a convent, monastery or nunnery. One interviewee assumed it was a church and another one connected the monastery to a plague hospital. Besides that, no other assumptions about the setting were made. We assume that the combination of several elements led to this lasting memory. Many objects and symbols in the room, which were meant for interaction and decoration, supported the religious and Catholic theme, including the welcoming nun, who wore an archetypical veil.

ii. Atmosphere

Design decision: We tried to create an ambiance in the room

by working with all five senses. We experimented with adding incense, removed and supplemented the room's built-in lighting, made users drink a substance and designed music into the experience.

Key words from interviews: *dark, eerie, the music, Catholic music, organ music, creepy, smells, ambience. Religious, Catholic, horror.*

Player experience: During the interviews only 1 person mentioned the smell in the room, 3 mentioned the sound, 3 mentioned the drink but almost everyone (8/9) mentioned the low level of illumination in the room.

Design decision: The intention with the music was to make the users more stressed, but also to create a specific ambiance in the room and throughout the game.

Player experience: The players seemed to think only about the music when the game was nearing the end, probably because of the crescendo of the music. In the retrospective interviews, only one player remarked upon the music at the conclusion of the game.

iii. Interior design

Design decision: As we did not expect that any of our play testers had ever entered a convent in real life, we drew inspiration from historical references and pop-cultural elements found in movies and online – the same sources with which (we assumed) our play testers would be familiar (Jenkins, 2004). To transform our small conference room into a nun's study in a 1950s convent, we tried to keep the 'present' out and put the 'past' into the room. This means that we primarily aimed to control elements which afforded interaction, like furniture and puzzles in terms of material, color, haptics and usability. To minimize any reminders of the present, we covered the white walls in beige wallpaper. By using only three electric candles

and restrained flickering in the fireplace as light sources, we reduced lighting to the minimum. This made it more difficult to recognize any potential flaws in the interior design. To prevent players from experiencing auditive distraction, we chose to play religious music to make any possible real-world noises unrecognized within the room.

Key words from interviews: *furniture, interior details, the chimney/fireplace, pictures, herbs. Props: nail clippings, lipstick, bible quotes, bible verses behind the pictures, charcoal, diary, hair.*

"[...] the furniture, and things in there were very dark and religious feeling, so you felt as if you were in some nuns room. [...] all felt as if they were from a different time."

"[...] feel a little bit as if you are in your great grandmother's living room, and you're not supposed to touch anything or we'll get in trouble."

Player experience: Besides the puzzles, details about the interior dominated the information we gathered in our interviews. Furniture was recalled most frequently, followed by pictures and decoration, books and texts. Our interviewees referred most frequently to the fireplace, kneeler, and cabinet, or attributes directly connected to furniture ('dark wood', 'something to kneel on'). 4 of 9 players even remembered the exact positions of pieces like the kneeler, the fireplace or the cabinet. It is expected that players would remember the kneeler and the cabinet as they spent most of the time with these two objects while trying to solve the embedded puzzles.

d. Narrative elements

When listening to the interviewees, it is notable that their recollections about the story were not accurate compared to the story developed by the designers. The interviewees either didn't remember anything at all, or made up a totally different story about Sister Jill and her intentions. For instance, some of them

conflated the nun that welcomed them with Sister Jill, assuming that it was the same person. The playtesters also exhibited poor recall of the details of the narrative framework/poisoning introduction. Other story elements, however, such as the broader narrative theme, left an impression upon some the playtesters.

Words from interviews: *atoning for her sins as a woman, redemption and repentance process, helping unfortunates, disappeared prostitutes, the welcome nun – actress.*

I. THEME

Design decision: Our interpretation of Jack the Ripper was shown through the actions of the nun Sister Jill (murdering prostitutes), living in an Irish convent in the early 50s.

Player experience: 4 out of 9 interviewees used the word "religious" or "Catholic" to describe the setting in the room. However we could also see that 7 out of 9 talked about nuns – and with nuns being *"very strongly attached to horror movies"* we can see that all the users from the interviews remembered the setting even after 9 months of time in between playing and being interviewed. This theme seemed to be remembered with or without being told of the name of the room beforehand. However, some did not remember the name Sister Jill but guessed she was "the nun" – the one the story was about.

Design decision: The Jack the Ripper murders were not explicitly evoked the room, though there was a common serial killer theme.

Player experience: None of the players that were not a part of our course made any connection with the Whitechapel killings–there were no explicit details with this theme embedded in the room. Some of our classmates, however, made the connection to the Whitechapel killings through the general context (the escape room was developed as a class assignment),

as well as through our scripts *"you have been so unfortunate in your lives"* or the mentions of *"missing prostitutes"* and *"whores"* in the in-room texts. Having been introduced to the world of Jack the Ripper through the course, this connection was easily grasped.

II. FRAMING NARRATIVE/POISONING

Design decision: We opted to create an introductory element that took place directly before players entered the room and the actual play experience began, reasoning that players would be more likely to grasp the basics of the narrative in a situation where they were not distracted by puzzles and time pressure.

Player experience: Before entering into the actual escape room players were greeted by a nun who briefly introduced them to the narrative and asked them to drink a preventative vaccine for cholera, later revealed to be the poison that acts as a catalyst for the narrative. We anticipated that the enacted nature of this introduction would help make it an especially memorable part of the experience, though only a third of the players mentioned the nun, and remembered having drunk something. Among the players who mentioned being offered the drink, none recalled that it was presented as a vaccine. Instead, one only remembered having drunk something and the other two interpreted it as holy water. Only one player elaborated on their impression of the nun, describing her as "very pleasant" and a "warm and caring person." Since this free-standing narrative frame was delivered apart from the time pressures and puzzle focus of the escape room itself, this relatively low level of recall seems significant.

In conclusion, our interview data indicates that accurately following the story of Sister Jill as designed is not crucial for the players in relation to their overall experience. Almost none of our interviewees remembered the story correctly, but most did recall the felt experience and the puzzles of the escape room.

9. DISCUSSION: DESIGNING SPATIAL STORIES IN ESCAPE ROOMS

The *Sister Jill* escape room provides fertile ground for exploring spatial stories, narrative architecture and indexical storytelling.

a. Evocative spaces

According to Jenkins' concept of evocative spaces, players "draw upon [their] previously existing narrative competencies. [Designers] can paint their worlds in fairly broad outlines and count on the visitor/player to do the rest" (2004, p. 6). As the retrospective interviews indicate, playtesters who were not part of the *Storytelling: Narration across media* course were able to read generic associations of the room through their experiences with horror films, mediated for the most part by the religious theme in title and introductory narrative frame, as well as the interior design and atmosphere of the room. Some playtesters responded to being welcomed by the nun who led them to Sister Jill's study:

> *" It was something that was a bit spooky but maybe it's because it was a nun, very strongly attached to horror movies"*
>
> *"It felt like we were actually really brought into a church... "*

Playtesters who were, on the other hand, enrolled in the course were able to make connections to the Whitehall murders associated with Jack the Ripper, largely through scripted elements found in the introduction to the room and in-room texts. *Sister Jill* does not explicitly evoke the Jack the Ripper story world. Rather, the connection can be made through the serial murderer motif, one that is aimed at victims characterized as "unfortunates," the social coding in the contemporary accounts of the Ripper crimes. Players themselves are cast in the role of "unfortunates" seeking personal change and redemption.

b. Enacting stories

The religious theme of *Sister Jill* offered the designers opportunities to physically engage players in enacting stories of contrition and redemption through furniture, props and lighting design. Solving the kneeler puzzle required at least one player to trigger a sensor by kneeling on a piece of confessional furniture that opened up to reveal a hideous tableau. Solving the rosary puzzle compelled players to literally finger rosary beads for translation to the color lock. The light ambience in the room was quite dark, and the only illumination was provided by LED candles that players manipulated to create pools of light in darkness, enhancing the narrative connected to religious imagery of illumination and enlightenment (Fig. 10).

Figure 10. Players enact a shadowplay by using the candles as light sources in a dark space.

We also found evidence that having players enact specific

embodied scenarios could pave the way for later emergent narratives. In one case, a playtester who had reached an impasse with the final puzzle adopted an attitude of prayer:

> Minute 28
>
> He's sitting down to pray on the floor

At this late stage in the escape room, the player realized his team might not make it, and applied the logic of the earlier kneeler puzzle in an unscripted, emergent moment.

c. Embedded narratives

Embedded narratives in the form of texts or images are a common feature of escape rooms (as well as games), and also serve an important role in indexical storytelling. Narrative materials in an escape room can function either as a means of articulating narrative, or else as way of delivering clues. In the case of this room, Sister Jill's journal was written to illuminate her motivations and state of mind, but also included hints for the puzzles. Our intention with the journal was to convey a narrative about Sister Jill's madness but, when assessing the interview data, we could see that the players instead used it solely as a source for hints. This suggests that the playtesters grasp of the background narrative was fragmentary, not constructed into a coherent image that was shared by other players. No common understanding of the character of Sister Jill emerged from the retrospective interviews.

d. Emergent narratives

Emergent narratives unfolded in *Sister Jill* through the unscripted player actions, as well as interaction between players. In one of the initial tests, a nun's veil was left in the room, and a player decided to wear it. In the player's feedback, she said she took on the character of the nun instead of that of a victim, which

changed her perspective on the story. In another playtest, players told one another that they were "going to burn."

We observed that emergent narratives can be seeded by elements and events from the other Jenkins categories. The behavior of playtesters telling one another that they are "going to burn" could be rooted in the overall religious/horror ambience of the room (evocative spaces) and texts on wrath and judgement in Sister Jill's diary (embedded narratives). As we saw above, having players enact solving a puzzle by kneeling in a prayerful attitude (enacting stories) makes prayer a logical (if unexpected) in-room response to the prospect of failing to escape the room on time.

e. Indexical storytelling in escape rooms

"Remains" are, as Fernández-Vara notes, the core of environmental storytelling, a " type of indexical storytelling . . . constituted by the traces left behind by other agents who have been in the space before" (2011, n.p.). Interpreting remains, especially the relationship to gameplay can, however, be problematic, and that is our experience as well. Our follow up interviews indicate that though the diary of Sister Jill left in her study contained narrative material to further develop the story, players used it almost solely for clues, perhaps due to time pressure. It isn't possible from our interviews to weigh the relative weight of narrative construction vs time constraints in the escape room experience. Further articulation of the temporal demands of escape rooms on player narrative construction would be valuable.

Indexical storytelling encourages us to look at traces left by both designers and players.

As we saw in *Sister Jill*, the fact that escape rooms are reset between each session allows escape room designers to leave custom traces, objects secreted in the room that are unique for each set of players. Room resetting also changes the character of

player traces, which customarily do not persist after the session is finished. The sort of player traces left during an escape room session are often processional, a series of solved puzzles (opened locks, drawers, boxes etc.) that signify progress towards the ultimate goal of escaping the room.

f. Why build a consistent narrative?

Our retrospective interviews suggested that players tended not recall narrative details designed into the escape room, but rather that the constructed player story focused on the felt experience of solving puzzles, as well as the physical and spatial qualities of being in the escape room. Besides grasping the opportunities and limitations of storytelling as constructed by the escape room designer, we learned that coherent narrative development ought not be aimed at communicating fixed content to the player, but rather be employed as a design tool.

As the room started to take form, we sought to motivate the meaning and logic of all items brought to the room in order to keep the narrative consistent. Nicholson (2016) writes that it is important to "ask why" a specific item or element is placed in the escape room during the design process, in order to ensure that it is there for a reason and is consistent with the overall concept of the room.

Much was determined by the character of Sister Jill. As the room was her study, we had to ask questions such as "What would Sister Jill keep in her study?" "What would be visible and what would she hide?" "Where in the room would she hide things?" Although playtesters apparently made little effort to fully understand Sister Jill, beyond registering her malign intent, having a good grasp of her character allowed us to shape more impactful settings and puzzles, as well as a more coherent experience. In this sense, the "ask why" methodology functions in a manner analogous to other narrative- and character-based

design methodologies such as personas and scenarios (Cooper et al, 2007).

CONCLUSION

Designing an escape room in a comparative media course is a good way of throwing the unique character of spatial storytelling and player-constructed narratives into relief. The dark shadows of the 1888 Whitechapel killings may lend themselves to stylized chiaroscuro effects in comics, but in an escape room the shadowplay moves through player agency. Spatial storytelling can link puzzle structures with narrative themes through text, image and the built environment. In *Sister Jill*, players adopt confessional postures, learn to count rosary beads, seek to illuminate darkness with light, and, in so doing, either find the redemption scripted for them by Sister Jill, or else remain in darkness.

ACKNOWLEDGEMENTS

We would like to thank Petra Ragnerstam, course coordinator of *Storytelling: Narration across media*, and Scott Nicholson.

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Appendix

Interview questions:

Q1: What do you recall about your experience of the escape room?

Q2: Tell me the story of Sister Jill.

Q3: Here are some images to refresh your memory (4 images, beginning with top schematic of the room, Fig. 9). What do you recall?

Q4: Is there anything else you remember?

EDUCATIONAL ESCAPE ROOMS

Challenges in aligning game and education

ALICE VELDKAMP, SIGRID MERX, & JASPER VAN WINDEN

INTRODUCTION

Escape rooms have inspired educators all over the world to adapt this popular entertainment activity for education purposes. This article discusses the design and design philosophy of MasterMind, an escape room developed at Utrecht University by a multidisciplinary team of educators, educational researchers and game researchers. MasterMind served as a means of professional development in the use and implementation of online educational tools in academic teaching. Its aim was to playfully introduce university teachers to digital educational tools and help them make informed decisions about employing these tools in their educational contexts. It targeted early majority and late majority adopters of digital technologies in education (cf. Rogers, 1962). A majority of the participants perceived that the experience of playing MasterMind made them more inclined to use digital tools in their own teaching, and that it was an enjoyable and meaningful time investment.

This article analyzes in a post-mortem reflection, the design of MasterMind. Post-mortem reflections are also referred to as post-mortem evaluations, post-project audits, debriefs or retrospectives. Project members identify and analyze elements of a project, product or meeting that were successful and

unsuccessful, and articulate lessons learned (Kasi, Keil, Mathiassen, & Pedersen, 2008; Myllyaho, Salo, Kääriäinen, Hyysalo, & Koskela, 2004). MasterMind project members based their analysis on formal evaluations by questionnaires[1], observations as game masters, and informal contact with participants after the game. The design of MasterMind is analyzed from the perspective of three design challenges that have informed the design process: 1) the participants' transition from the real world to the game world; 2) the alignment of game design and educational aspects within the game world; and 3) the transfer from experiences and knowledge obtained within the game world back into the real world. We argue that educational escape rooms, such as MasterMind, can be positioned in a context of both serious and persuasive gaming and thus need to take into account the design challenges that are particular to both forms of games. Drawing on a general theoretical model for persuasive game design (Visch, Vegt, Anderiesen, & van der Kooij, 2013) and a design framework for the alignment between game goals and learning goals (Van der Linden, Van Joolingen, & Meulenbroeks, 2019), the article reflects on how we engaged with the aforementioned challenges in the design of MasterMind. We appoint successful and less successful design elements of this persuasive game, and describe encountered dilemmas and lessons learned. With this, we hope to contribute to the discourse on serious gaming and help foster the dialogue between serious game designers and educators.

ESCAPE ROOMS IN EDUCATION

Escape rooms are live-action team-based games in which players encounter challenges that are part of a quest that needs to be completed in a limited amount of time (Nicholson, 2015). Parallel to their immense popularity in the entertainment industry worldwide, escape rooms are gaining popularity as educational environments. Both students and teachers perceive that, while participating in escape rooms, students are more

engaged and active compared to regular classes (Cain, 2019). The time-constrained and problem-based games require active and collaborative participants, which makes an escape room an interesting setting for educators.

The development of educational escape rooms started spontaneously with enthusiastic teachers. They share materials on platforms, such as Breakout EDU, which has about 40.000 members (Breakout EDU, 2018; Sanchez & Plumettaz-Sieber, 2019). Educational escape rooms have been developed for a variety of age groups and for various educational purposes: to recruit students (Connelly, Burbach, Kennedy, & Walters, 2018) or for students to get to know institutional services (Guo & Goh, 2016). Other case studies describe students developing escape rooms in order to foster design skills (e.g. Li, Chou, Chen, & Chiu, 2018). Most escape rooms have been designed to foster domain specific skills and knowledge, or to support the development of generic skills and affective goals. Despite increasing scholarly interest in educational escape rooms, there is a paucity of literature on their use in the context of professional development (Fotaris & Mastoras, 2019; Veldkamp, van de Grint, Knippels, & van Joolingen, 2020). This article aims to address that gap.

SERIOUS GAMES AND PERSUASIVE GAMES

As the development of educational escape rooms started spontaneously with enthusiastic teachers, no academic literature was found on the development of (educational) escape rooms at the start of the MasterMind project. However, educational escape rooms can be considered a form of serious gaming. Serious game design combines educational design with game design (Lameras et al., 2017; Whitton, 2018). Most research on serious games comprises digital games in educational settings (Ávila-Pesántez, Rivera, & Alban, 2017; Lameras et al., 2017). Systematic reviews on serious games show a wide diversity in

definitions of serious games foregrounding different 'essential' characteristics, such as the role of ICT (Ke, 2016; Lameras et al., 2017). Moreover, authors differ on whether serious games are "games primarily focused on education rather than entertainment" (Miller et al. 2011, p. 1425) or that entertainment and fun come first, as these aspects are considered conditional for learning with serious games (Prenski, 2001; Zyda, 2005). We bypass these differences by following Cook (2005), who offers a broader description of serious games:

> "(…) the application of gaming technology, process, and design to the solution of problems faced by businesses and other organizations. Serious games promote the transfer and cross fertilization of game development knowledge and techniques in traditionally non-game markets such as training, product design, sales, marketing, etc."

There are different reasons why non-game markets, of which education is an example, turn to games to solve problems within their organization. In the case of Utrecht University, games are used to resolve the low acceptance of digital educational tools among staff. The enjoyable and immersive game world can help, motivate, and persuade users to behave in ways they experience as difficult in the real world (Visch et al., 2015). Players experience games as not only enjoyable but also protective worlds where actions have fewer consequences than in the real world and can be practiced over and over again (Whitton, 2018). Games can change behavior in the game world and subsequently in the real world. This is the assumption and ultimate aim of persuasive games, a subset of serious games aimed at creating a user experienced game world that changes the user behavior or attitude in the real world (Jacobs, Jansz, & de la Hera Conde-Pumpido, 2017; Visch et al., 2013). Motivating game elements, such as challenges, draw the player into a game world where

equivalents of real world tasks are carried out. The transfer of effects from the game world to the real world can be actively designed, but is often neglected (Visch et al, 2013). How to successfully design this transfer is one of the challenges for developers of persuasive games.

In a review study on digital serious games, Ke (2016) notes that the effectiveness of games created for educational purposes depends on various aspects: 1) the nature of learning to be fostered (skills or conceptual knowledge); 2) how specific game aspects, such as feedback to players, are implemented; and 3) the way games are used in education, for example as a micro-world to embody a situated practice or an interactive, multimodal representation of conceptual knowledge. Ke's findings imply that the specific nature of the knowledge to be obtained and the educational goals to be achieved should primarily drive the design of learning games. Carefully mapping learning actions onto play actions seems to be a necessary and core mechanism for successful learning-play integration, whereas the narrative that structures and frames learning interactions can be considered supplementary. A systematic review on educational escape rooms draws the same conclusion and showed how specific educational and game design aspects are related (Veldkamp, van de Grint, Knippels, & van Joolingen, 2020). Ideally, the game is designed in a way that players can reach the game goal only by achieving educational goals (Van der Linden et al., 2019). An extra challenge for serious games is to integrate learning and playing without losing what is enjoyable about games (Ke, 2016). In games with poorly developed player experiences, the message is ineffective (Ferrara, 2013). Elements that can help create an enjoyable playful learning environment are puzzles, simulations, role play, humor, surprise, storytelling, and mystery (Whitton, 2018).

In addition, given all these aspects that need to be taken into account, it comes as no surprise that educators "are overwhelmed

by the plethora of design choices and level of complexity entailed in integrating, combining and balancing learning with game features" (Lameras et al., 2017, p.990). Lameras et al. (2017) plead that more dialogue is needed between educators and serious game designers to improve the process of amalgamating learning with gaming. For the design of escape rooms in education, such a dialogue would benefit from more qualitative research that helps understand the concrete considerations and decisions made by developers of educational escape rooms.

MASTERMIND: A BRIEF DESCRIPTION

In spite of considerable university investments in technological innovation in education (e.g. licenses, hardware, software, and workshops), a significant part of lecturers at Utrecht University has not yet implemented technological tools in their teaching. These early and late majorities (cf. Rogers, 1962) need to be personally convinced of the value of an innovative technology before investing time in exploring it (Moore, 1991). Moreover, research indicates that this exploration should happen in collaboration with other colleagues and with enough opportunities for reflection (Ertmer, 1999). MasterMind aimed to address this issue with a mobile, pop-up escape room that allows university teachers to experience and engage hands-on with educational technologies in a playful and safe environment, together with others. A post-game debriefing aimed to help participants to reflect on their experiences and make informed decisions about using (or not using) these tools in their own educational setting. Ideally, the positive experience of playing MasterMind contributes to active implementation of digital educational tools in teaching. This is the persuasive goal of MasterMind. MasterMind can be considered an example of persuasive gaming, as it aims to create a user experienced game world to change the teachers' attitudes and behavior in the real world.

MasterMind consisted of two main parts that each lasted one hour: an escape room and a debriefing. The escape room can host 4 to 6 players who sign up as a team. The narrative setting of the escape room is within the fictive tech start-up company MasterMind, founded by student-entrepreneur Tim Turner. Tim has developed 4D Virtual Reality and creates experiences where people can see, taste, feel and smell alternative realities. While waiting for Tim's presentation about MasterMind, the participants are shown a short promo video of the company. Suddenly, Tim breaks into the video signal with an emergency call that he is stuck in his own virtual world. Players will need to get him out, by solving puzzles based on digital educational tools available for teachers at Utrecht University (see figure 1). The puzzles typically consist of a combination of digital and physical actions. Playing the escape room is followed by a one hour debriefing in which a moderator discusses with the team which digital educational tools they have encountered in the game and how these might contribute to the team's teaching practice. The design process of MasterMind was an iterative process, including multiple rounds of play tests with game specialists, educators and the target audience which provided the input for the further development of the escape room.

Figure 1: Players in MasterMind working on a puzzle that requires both physical and digital activities.

DESIGN CHALLENGES IN MASTERMIND

In line with our previous discussion on serious games, one of the main challenges in designing the MasterMind escape room was to strike the right balance between game design aspects and educational aspects. More specifically, to design the gameplay in such a way that the game goal (liberate Tim) and learning goal (experience specific digital educational tools) were aligned, without losing the fun and pleasure of the game. Another challenge, in line with MasterMind's persuasive nature, was to successfully transit the participant from the real world (teaching environment) into the game world (Tim's start-up presentation at the university), and finally, to support the transfer of knowledge and experience of the tools obtained within the escape room to the participant's practice of teaching: the persuasive goal. In the next section, we will discuss how these three challenges concretely informed the design and design

principles of MasterMind, after we have introduced the analytical perspective that frames our analysis and takes into account these design challenges.

Figure 2 depicts a design framework that foregrounds the different alignments that need to be taken into account to design a successful educational game (Van der Linden et al., 2019). The framework is developed in line with the intrinsic integration theory, which suggests that the learning goal and game goal should be aligned in an educational game.

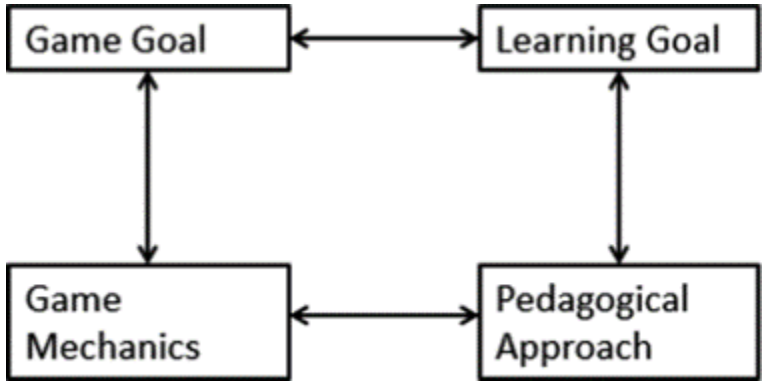

Figure 2: Design framework on alignment between game goal, learning goal, pedagogical approach and game mechanics (Van der Linden et al., 2019).

Van der Linden et al. (2019) emphasize that the learning goal should be leading in the design of an educational game and that game developers in designing the gameplay need to ensure that the game goal can only be reached when the desired learning goal is reached. Additionally, according to the logic of alignment, both learning goal and game goal can only be achieved if they are pursued within a matching structure and logic, meaning that the learning goal needs to be supported by the proper pedagogical approach and the game goal by the proper game mechanics. Which pedagogical approach to adopt or which game mechanics to use should be informed by the learning goal and game goal

respectively. Moreover, Van der Linden et al. (2019) propose that during the iterations of the design process the focus should be on aligning the pedagogical approach with the game mechanics.

In case of the MasterMind escape room gameplay, the learning goal is for teachers with moderate to low technology acceptance to use a set of digital educational tools and to become aware of the functionalities from the both perspectives of the teacher and learners. To align with this learning goal, MasterMind adopted playful learning as its pedagogical approaches, since this aims at an enjoyable, safe environment that offers a positive response to failure and support for learners to immerse themselves in the spirit of play (Whitton, 2018). Within such a safe environment, the pedagogics experiential and collaborative learning can support the learning goal of Mastermind. For the game mechanics to align with this pedagogical approach of playful, experiential and collaborative learning, an integration of the educational tools into the game puzzles and activities is necessary. These puzzles, then, need to steer towards working in a team and having fun. Finally, the gameplay has to be such that only when the tool-based puzzles are solved within time, the game goal can be reached: to liberate Tim from the virtual world.

Figure 3 shows a Persuasive Game Design Model adapted from Visch et al. (2013). The original model is based on three central concepts related to persuasive gaming: gamification, game world and behavioral change design. Persuasive games assume that user behavior and motivations in the real world can be transformed through a process of gamification. In MasterMind the real world is the environment of a university teacher, and the game world is a kick-off meeting for staff at Tim's enterprise. Other than the previous framework, this model does not focus on the game world and game play as much, but describes the players' movement from the real world into the game world and back.

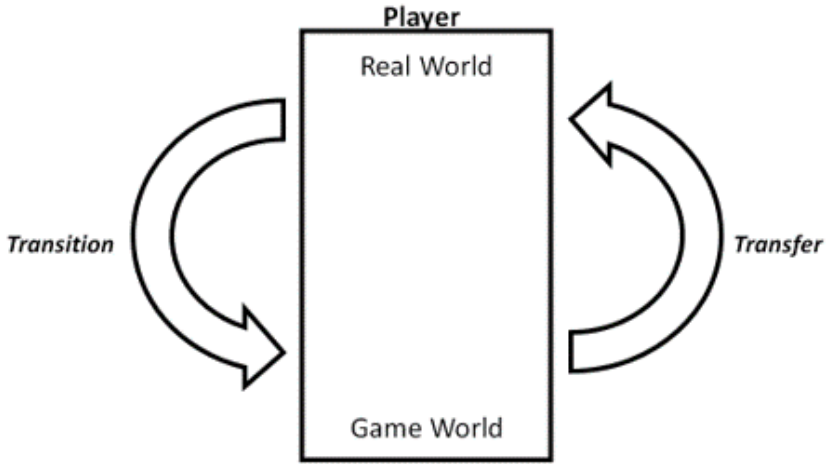

Figure 3: Persuasive game model (adapted from Visch et al., 2013).

In order to address specific behavior and attitude in the game world, it is important that behavioral and motivational aspects from the real world become part of the 'safe' game world; a gamified real world context (Visch et al., 2013). In the game world, these behavioral and motivational aspects can be changed towards the desired behavior or motivation.

If the desired behavior is addressed and realized in the game world, Visch et al. (2013) suggest, it can be transferred to the real world and produce a so-called transfer effect: 'the effect of the user experienced game world on forming, altering, or reinforcing user-compliance, -behavior, or -attitude, in the real world' (Visch et al., 2013). In order for this effect to take place, the transition from the game world to the real world needs to be designed. This 'transfer design,' the authors claim, is often neglected and formed yet another design challenge for MasterMind. A one hour debriefing session was developed to structure and catalyze this transfer, which included a reflection on the experiences and educational content as conditional for learning with escape rooms (Sanchez & Plumettaz-Sieber, 2019).

In the following analysis, we describe each part of the Mastermind escape room – pre-game, in-game and post-game – followed by the design considerations in relation to the design challenges. We look into how aspects (behavior, motivation, attributes) of the real world of the participants have been translated into game elements that have been incorporated in the design of the game world (challenge one). We also reflect in more detail on how specific game aspects and educational aspects have been aligned in the design of the MasterMind escape room (challenge two). Additionally, we describe which design strategies MasterMind developed and employed to facilitate a meaningful transfer of experiences, knowledge and ideas obtained within the game world back into the real world (challenge three).

PRE-GAME: MAILING AND WELCOME

The aim of the pre-game experience was to facilitate the transition from the real world to the game world by creating tension and preparing players for the game play.

One week prior to the game, all players in a team (N= 4-6), received an email from the (fictive) protagonist of the game: student/entrepreneur Tim Turner. He thanks the participant for signing up to the kick-off presentation of his new company MasterMind, shares time and location details and asks participants to be present 10 minutes early. In all communication with the participants, the emphasis was on the narrative, not on the educational goal or pedagogical approach.

On the day of the game, players were welcomed by a game master in a separate informal reception room. The reception room was equipped with game attributes such as the classic boardgame mastermind and playfully hidden game rules. Meanwhile, the game master walked back and forth between the actual escape room and the reception room, checking if Tim has arrived yet. After a few minutes, the game master invited the players to take a seat in the escape room. The game master told them that Tim

went away to fix a technical issue, but that he is expected to return swiftly. Hereafter, the game master guided the players to the actual escape room, and started a promo-video of Tim's company MasterMind.

Design considerations

The preparation of mental settings is important for this target group, because the game will require them to perform actions and behaviors they do not perform in the real world, namely the hands-on engagement with innovative educational tools.

The in-narrative mailing allows players to relate to the protagonist, student Tim before the game starts. The contrast of Tim's request to arrive early and him being late is designed to create a tension that might enhance the urge to take action as soon as the game begins. The reception room serves as a transition space, between the real world and the game world. Here, players have the opportunity to leave behind their day-to-day work and get into a playful mood with their team, a familiar strategy in the design of escape rooms (Clare, 2016). The provided rules and tips for how to play an escape room help to boost playfulness and anticipation for gameplay. This is again designed to increase the urge to take action once the game starts. But more importantly, these tips make implicit game rules and mechanics explicit, preparing players for the game mechanics that will be used. Players that have never played an escape room before will for instance not search the room for clues, unless they understand that this is a regular activity in the game world. Making rules and mechanics explicit might allow for an easier transition from the real world to the game world.

Evaluation

The participants' immersion succeeded. After the game master invited players to the presentation without Tim, some players indicated they preferred to wait or to look for Tim. This

indicates the realistic narrative, setting and players' expectations regarding the presentation of the student start-up. On the other hand, other players entering the reception room, recognized escape room elements, concluded that an escape room had begun, and directly showed behavior accordingly. It is questionable whether the playful way the information on gameplay (rules and tips) was presented to the players, was the most effective.

We wonder whether or not to explicate in the pre-game mailing that participants will enter a real life escape game. On the one hand, this would increase clarity for the participants about what to expect, on the other hand this might affect the level of immersion.

IN-GAME: SETTING AND NARRATIVE

To reach our persuasive goal, a balance had to be struck between a setting in the game world that would be out of the ordinary enough for the participants to show out of the ordinary behavior, and a setting that would allow for easy transfer of game attitudes and skills to the professional practice of the participants in the real world.

The setting of the escape room was within the fictive tech start-up company MasterMind. There was a lot of equipment with a 1980's look and feel present in the room. The call to action is Tim's cry for help to reset the system to liberate him from the virtual world, which was the game goal.

Design considerations

Given the learning goals on specific digital educational tools, the escape room needed to be a technology-rich environment. However, the target group was unlikely to be intrinsically interested in technology and may even be deterred by it. Therefore, the technology that was presented in the narrative

(4D virtual reality) is obviously science fiction. Through their 1980's look and feel, all the physical equipment made it obvious that this is not something the players have to worry about in daily life while it created an acceptable environment to work with technology.

Tim, a student was chosen as protagonist, introducing him in the mailing and promo video as someone teachers can relate to. The call to action is urgent, confronting teachers with a challenge they have never had at hand before, making it sensible that new types of solutions and behaviors are needed to solve this problem. On the other hand, helping a student with a problem does align well with the professional practice and real world roles of the players, allowing for an easier transfer. This is in line with the situated learning theory, which states that learning should take place in a practice in which it would normally be applied (Lave & Wenger, 1991).

Evaluation

The design of the game setting appeared an area of tension following the projects' various goals. The learning goal for teachers was to experience and learn about educational tools, which asks for a technology-rich environment. The persuasive goal was to persuade technology 'laggers' or avoiders to perform behavior they are unfamiliar with in their professional practice. Our solution was to design a setting which is obviously fiction, with the digital tool based puzzles in a *physical* form with a *1980's look* and a narrative on *4D reality*. However, this interferes with the situated learning theory requiring the exercise setting to be congruent with the professional practice (Lave & Wenger, 1991). In balancing these goals and their consequences in terms of design elements, the play tests with the target group had a crucial role. In the final setting, players easily touched and managed the digital tasks using physical equipment with a 1980's look. Physical attributes seemed to give players more feeling

over control of technology. These observations are interesting to research in more detail in the future.

IN-GAME: PEDAGOGICAL APPROACHES

Ertmer (1999) identifies collaboration as an important strategy to address teachers' reluctance to use technology in education, this was part of our pedagogical approach. Collaborative learning requires all members of a team to be active. This was created by the amount of puzzles available at the same time for players in combination with the time restriction, which lowers the threshold to start with the technology-based puzzles.

The escape room aimed at facilitating teacher teams. Players share the same experience during the start and the end of the game. In mid-game, several puzzles were open to work on synchronously. Most teams split up to work in pairs on these puzzles, with pairs helping each other when needed.

Design considerations

The puzzles were organized and individually designed in a way, that collaboration between players was needed, mirroring the help teachers can get within their own immediate working environment. In addition the puzzles were constructed in a way players experienced the student, and were possible the teacher perspective. This is also in line with the situated learning theory, which states that learning should take place in a practice in which it would normally be applied (Lave & Wenger, 1991).

Evaluation

There were no differences observed regarding communication or degree of collaboration in teams with members who knew each other or not. The participants felt social dependence and started to work together. A mentioned drawback in the questionnaire results and debriefing is that not everyone had

hands-on experienced all tools, which might be important for technology avoiders. At the same time, the omission of the experience gave urgency for a discussion of the tools during the reflection on the tools afterwards. The amount of team members (3-5) and the degree of communication in a team seem boundary conditions for solving the puzzles.

IN-GAME: PUZZLES

The escape room aim was to introduce teachers to six digital educational tools[1] they could use in their own teaching. Therefore current tool versions were used in the puzzles, no simulations or mockup versions. Puzzles typically consisted of a combination of digital and physical activities. The physical activities were most of the time primarily designed for fun and engagement while the digital activities addressed the learning goal of the escape room (to use a set of digital tools and become aware of their functionalities).

Design considerations

The selection of the tools was informed by their availability within the real world. All tools were supported by Utrecht University. Moreover they were selected to cover a variety of educational functions. Implementing the actual tools in the game design allowed players to experience the real product, but this limited possibilities in designing the puzzles. Practical matters were also taken into account, such as the possibility to adapt the tool to design puzzles and the ability to quickly reset the tool for the next group of players. Puzzles were constructed in a way players experienced the student perspective and, if possible, the teacher perspective on the tool, this strengthens situated learning. Although most tools required only digital activities to engage with their functionalities, physical actions with a puzzle

1. Selected tools: Augmented Reality application: HP Reveal, Virtual Reality application Rico Theta, Traintool, Scalable Learning, Feedback Fruits, and assessment tool Remindo.

twist were added in the design for a number of reasons: to appeal to this specific target group of teachers belonging to the early and late majority, to link the digital activities in the narrative, to stimulate interaction between players, and to stimulate fun, immersion and diversity in activities.

One puzzle, for instance, was aimed at engaging with a tool for practicing communication skills, using video assignments, called Traintool. First, players needed to find a spoken password in a physical puzzle, then they received instructions in the educational tool on how to speak to convincingly to people and machines. The next step was to practice this skill by recording a video in the educational tool. After doing this, they received feedback on their performance within the tool, just as students would. They subsequently had to apply this feedback on the found password and unlock a physical machine by saying a piece of text in a specific manner in a microphone. Then, a physical reward in the form of a code is unlocked. Altogether, this puzzle allowed teachers to experience how students can receive instruction, practice communication skills, and receive feedback in this platform and then apply the learned skills in practice. So, in order to reach the game sub-goal (the unlocked code), players should also meet the learning sub-goal (using the specific educational tool and discovering its functionalities).

The last puzzle of the escape room was designed as a team activity with all players standing around a table. Because it was the last puzzle and not all teams would be able to finish it, this puzzle was not directly linked to one of the learning goals for the escape room. However, it did contribute to the escape room being a shared experience and facilitated group discussions during the post-game debriefing.

Evaluation

According to van der Linden et al, 2019, the game goal and

learning goal need to be aligned. This was easy to achieve for designers, as the puzzles which needed to be solved to liberate Tim (game goal), were digital educational tool based (learning goal). In the selection of the tools, next time we would take into consideration the length of the tools university license contract. After the selection of tools, the designer's dilemma is to use current tool versions or mock-up versions. Use of the current versions increases the game world mirroring the real world, however it limits the creation of tool-based puzzles as the current versions are usually robust to user manipulation. In addition, current tool versions are sensitive to manufacturer's maintenance or availability of the tool.

The designed puzzles were based on regular student tasks or teacher handling of the tools in combination with a puzzle twist to increase the playfulness. The puzzle twist for some assignments took more time in a lot of groups than expected. We would lower this puzzle aspect in a future escape room puzzles, to balance the players' time spent more on learn the tool than on the puzzle aspect. In relation to the evaluation in the previous section on team size and communication, we would advise smaller teams and easier puzzles for an escape room with such a persuasive goal and learning goal.

The success rate of about 60% of the teams finishing in time, does not seem successful in the effort to achieve all learning goals. However, the last puzzle did not have goals in terms of educational tools, but was successfully designed to finish the game collaboratively as literally all hands were needed to solve the puzzle. The puzzle had three rounds creating a collective feeling of success in between the rounds and made it possible to anticipate in differences in progression and success in the teams. Another possibility for future escape rooms, to anticipate on the teams differences in progression during gameplay, would be for game masters to differentiate the degree of guiding. Guiding in educational escape rooms appear to be delicate balancing

between the players feeling of autonomy and ownership and teachers' wish players to achieve all learning goals (Veldkamp, van de Grint, Knippels, & van Joolingen, 2020).

POST-GAME

The first moments after gameplay were designed to reduce the adrenaline and evoke positive emotions to increase players' openness to reflection with regards to their own teaching practices during the debriefing.

The game ended when Tim had been liberated from the virtual world or when 60 minutes had passed. The success rate of players was about 60%. A specific video started, depending on the outcome (i.e. whether Tim was released or not). When the teachers succeeded in their mission, Tim showed his gratitude. When players did not succeed, Tim is set on a tropical island, saying that life in virtual reality is not so bad after all. Then it was time for the team photo, taken with a cardboard version of Tim.

After some time to cool down and share game play experiences, the debriefing took place in the reception room, linking the player experiences to teacher experiences. For each puzzle, the players who were most involved in that part of the escape room explained the puzzle (gameplay) and what they thought was the educational potential of the tool for their teaching practice. The facilitator could add his expertise and experience with the tools to the discussion. After all tools had been discussed, participants brainstormed about applying the tools for their own teaching. Technical and educational support were offered to teachers who liked to implement some tools or practices, and follow-up actions were able to be planned.

Design considerations

For most players, the escape room was a challenging activity, leading to a sense of fulfillment and joy when they succeeded in

their mission to rescue Tim. However, when players fail, these positive emotions were not triggered. As a solution, we chose to offer comic relief by illustrating that Tim is happy in his new surroundings in the virtual world. For both endings, the cardboard version of Tim had a different function. For the successful teams, it functioned as a reward to be able to take a picture with Tim, the student they saved. For players that failed, again this is an object for comic relief: "Since Tim is virtualized, he couldn't make it to take a picture with you, but we did print a cardboard version for you." The team photo is an almost ritualistic part of most escape rooms. It makes explicit that – whether successful or not – the endeavor was a team effort, emphasizing the shared experience.

After a few minutes, all players moved over to the reception room for the debriefing. Again, the reception room functioned as a transition space, this time between the game world and the real world. The debriefing was designed to facilitate a shared reflection on the experiences with educational tools during gameplay, considering reflection is a key strategy for technology acceptance among teachers (Ertmer, 1999). During the debriefing, the individual player experiences of different puzzles were shared. The conversation was steered from player experience to teacher practice by the facilitator for each puzzle and thereby each tool. The debriefing ended with focusing entirely on applications in the real world and follow-up actions to support teachers in their practice.

Evaluation

The players appreciated both videoclips, as it reduce the feeling of failure for the teams who did not achieve Tim's liberation in time. The comic relief of the clips and the photo shoot with the cardboard Tim regulated successfully the transition to the adrenaline-high activity to the reflection on the experiences with the tools and their functionality. This lasted nearly an hour.

Hereafter, the transfer to their own teaching practices was guided. So, this started after two hours of mentally intense activities. Some participants were at that point mentally too exhausted for an adequate reflection on the implementation in their professional practice. In future, we would start sooner with the implementation in teachers practice. The thorough exchange of the tools can be shortened by delivering a hand-out with the main point of the tools' functionality, and shortly address the players' experiences. As this part doubles with the discussion of the implementation in teaching practice, when participants also relate and discuss their experiences with the tools.

CONCLUSION

In this article we analyzed the design of the educational escape room MasterMind with a specific focus on three challenges that have informed the design process: 1) the participants' transition from the real world to the game world; 2) the alignment of game design aspects and educational aspects in the game world; and 3) the transfer from experiences and knowledge obtained within the game world back into the real world. In our analysis of the design, we have demonstrated that these challenges are inextricably linked to one another and call for an integrated design approach, especially when the educational escape room does not only aim for learning goals, but a persuasive goal as well. This is even more crucial if the target group are early and late majorities in professional development, who need to be personally convinced of the value of an innovative technology before adopting it. This article adds to the studies on educational escape rooms in that it shows the importance of paying as much attention to the design of the game play – making sure that the learning goal during gameplay is achieved – as to pregame, and to the transfer of the learned behavior into the real world to achieve persuasive goals.

Figure 4: Integrated design approach for educational escape rooms

We propose an integrated framework (see figure 4) that can help designers to focus on alignment in tackling the main design challenges in persuasive games. The overarching persuasive goal starts the loop, steering the alignment of the design processes of gamification, gameplay and transfer. For the design of educational escape rooms, available models comprise step-by-step procedures (Botturi, & Babazadeh, 2020; Clarke et al., 2016; Eukel, & Morrell, 2020; Guigon, Humeau, & Vermeulen, 2018). However, these models do not take into account design challenges for educational games, as described in the previous section. We believe that future educational escape rooms will be more persuasive in attaining their goal, when pre-game, gameplay, as well as post-game design are all driven by the same persuasive goal and learning goal and game goal are properly aligned within the game design.

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ACKNOWLEDGMENTS

The project was funded by the Utrecht University Education Incentive Fund and Utrecht University's educational innovation program Educate-it.

STATEMENTS ON ETHICS

There are no conflicts of interest to disclose.

FREE ORLICZ FROM CUSTODY

Cursed Soldiers Retelling History Through Escape Rooms

ZUZANNA WIŚNICKA-TOMALAK

INTRODUCTION

Entertaining, immersive, and innocent for some, suspiciously modern and dangerous for others, Escape and Puzzle Rooms are a worldwide phenomenon that, in Europe, has found the biggest markets in Hungary (Nicholson, 2015) and Poland.[1] Despite their increasing popularity, ERs have been predominantly considered a business practice, a form of entertainment, and an educational tool. The majority of publications focus on financial aspects, construction, puzzles creation, or team-building potential (e.g., Byrd, 2016; Clare, 2016; Jackson, 2016; Hamer-Morton, 2018; Jackson & Drake, 2019; Kalugin, 2019); some scholars have traced the roots of Escape Rooms (e.g., Nicholson 2015; Klemp 2017). Their educational potential, especially for museums and libraries, is also beginning to be recognized (e.g., Borrego,

1. From 2013, the Polish escape room market was the quickest growing in Europe in number of rooms and visitors, reaching its peak around February 2018 with 1030 rooms by 400 companies and two million players per year countrywide (which was the second-highest in Europe). With such a rapid growth of this new entertainment form, safety and law officers did not manage to keep up with controls and regulations. It resulted in quite a hectic and mixed market containing some high quality and safe rooms, as well as haphazardly organized and damaged venues. In January 2019, in one of the escape rooms in North Poland, the tragic accident resulted in the death of five teenagers, which started a massive controversy around the sole idea of Escape Rooms and the laws regulating safety in this form of entertainment. The government took firm steps to supervise and regulate these activities all over the country, applying new laws and procedures, but the trust of authorities and public were lost. Even escape rooms that passed all the controls were frequently closed due to mistrust of landlords and communities. As a result, we experienced a rapid decrease in Poland's number of escape rooms - in February 2020, the largest escape rooms listing webpage lockme.pl lists 546 commercial escape rooms, which means that around half of all ERs in Poland were closed in the last year and that the Polish market now ranks the fourth or fifth largest in Europe. In November 2020, the number slightly decreased to 517, but this change can be attributed to the pandemic.

Fernández, Blanes & Robles, 2017; Johnson 2017; Monaghan & Nicholson, 2017; Walsh, 2017; Kroski, 2018; Nicholson 2018). However, the body of secondary literature remains somewhat limited.

In this essay, I would like to dissect how escape rooms can serve as a rhetorical tool and a mirror for political discourses. First, I will discuss the relationship between educational escape rooms and teaching history in ideological terms. Then the focus will move to the ways in which Polish history-teaching escape rooms have become parts of the dominant discourse of the ruling *Law and Justice* party (further: PiS). Next, I will argue that this discourse is, in fact, a coherent retelling of history through different media that creates a strong narrative and offers a simple identity scheme. In places where the narrative offered by the official discourse is inflexible, nationalistic, and based on mythologized "national heroes," government-funded educational escape rooms might strongly demonstrate a variety of rhetorical influences. Simultaneously, rooms organized by those ideologically aligned with those who do not share the political views of the government might display the same rhetorical practices while conveying a different message.[2]

The theoretical foundation of this article will then be presented, utilizing the possibilities of adapting the rhetorical theory to research escape rooms. Finally, a close reading of one such escape room will be offered, exemplifying practices and influences provided and shaped by this entertainment form that are firmly linked to the discourse described above.

TEACHING HISTORY THROUGH ESCAPE ROOMS

The hybridity of escape rooms has many intriguing facets. One of them, especially relevant in educational escape rooms, is the

2. This may be seen for example when comparing the leftist queer themed artistic escape room "Escape Living Room," by Katarzyna Rowska and Sonia Milch (Warsaw, 2016, Pracownia Duży Pokój) to Pope-themed "At Lolek's," by public primary school in Łochów.

issue of intermingling reality and fiction. Some escape rooms are closer to fictional media; others, including those discussed here, are more historical than fictional with close affinities to documentary films or museum experiences.

Most media forms attempt to evoke reality through different stimuli –' letters or pictures metaphorically denote other sensual experiences. Escape rooms still use those ways – film or text are parts of the experience – but they switch the weight of the message to a more "real," multi-sensorial experience. In a way, they can be more real and more fictional at the same time. More real because one experiences space, smell, sound, and touch, especially with actual artifacts or reproductions. Less, because when the message is close to reality but still stylized (as mannequins instead of people), so the difference is even more visible.

Educational escape rooms are a specific genre that differs from popular business-focused and entertainment-focused escape rooms. When carefully planned and well-executed, educational escape rooms can be great teaching tools, providing immersive learning spaces, memory stimulating emotions, such as thrill or delight, and multi-sensorial experiences that can foster not only groupwork abilities but also various cognitive and practical skills. With an appropriate introduction and debriefing,[3] the possibilities seem endless.

Poland boasts a wide range of history-themed escape rooms: from medieval knights and World War II to post-1945 Polish People's Republic. They are mostly executed with a comical or thrilling vibe in mind, without the objective of teaching authentic history, promising a *realistic* atmosphere instead. Nevertheless, there have been several escape rooms created for educational purposes, especially in the field of post-1945

3. For a best practices guide on these two, see Nicholson, 2012.

history.[4] Educational escape rooms in Poland are frequently established by government institutions such as the Institute of National Remembrance[5] (further: IPN), educational institutions, and foundations for different events,[6] and often financed with public money through state grants. Admission tends to be free or inexpensive. As a puzzle-solving-based way of teaching history, these projects have unique educational and persuasive outcomes.

However, a closer look at these escape rooms demonstrates that they also serve as a discursive tool that recreates and retells Poland's history, promoting a mythologized, nationalistic, and pro-Catholic version of it rather than offering multidimensional approaches and diverse narratives. The reason for this decisive conservative slant may lie in the limited possibilities of retelling history through a escape room. It is certainly a challenge to create an intensely immersive experience for 60 minutes while respecting all the diverse opinions and prospects of history. The creators of "Free Orlicz" have suggested that the room's goals are, above all, to inspire the players to do further research and pursue learning. Nevertheless, such a game experience conveys a particular vision of history that can be very strong and long-lasting in terms of impression, although not necessarily facts and information.

As a mirror of the current political discourse, the message created by the conservative Escape Rooms is more of an amnesiac practice substituting memory with a politically-useful myth than a memorialization of the past and a creation of

4. Most of them are not in operation now due to pandemic, though some plan to reopen. While waiting for the situation to resolve, some offer e-experiences such as Live-Cam escape rooms or escape room in the form of Genial.ly presentation. That was the choice, for example, of history and theology-themed escape room "At Lolek's," which recounts the life and teachings of Karol Wojtyła, a.k.a. Pope John Paul II, and is a project of a public primary school in Łochów, see: https://view.genial.ly/5ee0f8450cb7020cf4023121/interactive-content-sladami-lolka-wadowice.

5. The full English name of the institution is The Institute of National Remembrance: Commission for the Prosecution of Crimes against the Polish Nation (short: IPN). More information in English: https://ipn.gov.pl/en

6. For example, the room named *Regain Freedom: the Blue Army* was organized to honor the 100th anniversary of regaining freedom by the city of Toruń. The creators – "Archipelag Inicjatyw" Foundation, were financially supported by the city, voivodeship, and The Ministry of Culture and National Heritage program *Free Poland*.

diverse, in-depth knowledge of history with its attendant moral uncertainties. Advertised as the "truth," especially from the authority of institutions such as IPN, public schools, and City Councils, this retelling is hardly flexible.

In many of these escape rooms, their alleged truthfulness is stated explicitly in promotional materials. For example, on the Facebook Page of "At Lolek's" we can read:

> Attention! Our Escape Room is an educational experience for children; therefore, all puzzles are accompanied by commentaries about the life and teachings of John Paul II. The main aim of the room is to learn the most important facts about John Paul II while having fun.

It is relatively easy to associate educational escape rooms with politics and rhetoric, which is why I have chosen them for my analysis. The research tools and techniques for escape rooms analysis are still in development, thus researching explicit examples seems appropriate. I believe that every escape room exercises a degree of rhetorical influence on the players, which can be recovered. This assumption is informed by Fredric Jameson's assertion (2007) that all texts are political and historical and mirror the unconscious of social life, although they do not necessarily say what the author "intended" to say . Escape room research should also include a reworking of procedural rhetoric introduced by Ian Bogost (2010).

Since the 1960s, linguistic turn in humanities, constructionism (e.g., Mieland, 1965), narrativism (e.g., Rayment-Pickart, 2000), and other critical approaches to history and philosophy, we are certainly aware that historiographers are always biased – by their knowledge, culture, traditions from their discipline, role in society, political views as well as the sources and their own features (for more on the existence of *real past* and *historical past* see: Goldstein, 1976). As diverse interpretations, retellings, and

rewritings of history exist simultaneously, they can all serve as an educational core curriculum. However, the idea and tradition of public education in Europe from its 19th-century roots have been predominantly concerned with nurturing patriotic citizenship, primarily through history, geography, and literature studies (Bohan, 2005). Many of the approaches and methods established in 19th–century Germany are still used in Polish schools today. The nationalistic influence on the history curriculum is not limited to Poland[7]. The most extreme opinions state that the nation's sole concept is preserved by public education (especially through history) and popular narration, creating general consent (Bohan, 2005).

In Poland, compulsory education applies to all people under 18; it is mostly public and centrally governed. Within the recent reform of education (2017-19), the specific vision of history, excluding the diversity of voices in favor of traditionally understood history, and being in line with the current ruling party discourse of choice, are strongly reflected in core curriculum constraining all educational institutions (even private).[8] Undoubtedly there is a degree of heterogeneity, as teachers, schools, or authorities may treat government's instructions somewhat differently; the school is not the only possible source of historical knowledge either, although, along with the immediate family, it remains the most influential. Nevertheless, the implemented reform and general discourse set the tone for public education, influencing and forming the understanding and notion of history for the majority of the students. What shapes attitudes, behaviors, demeanors the most

7. (for details and discussion on the issue in American curriculum see Bohan, 2005.)

8. The official curriculum of history for primary schools states that the core values to be taught and created in pupils are "the love for the homeland" and "pride from national achievements." These two serve as the guidelines for the changes, which above all mean a more significant focus on the national history and teaching about so-called "national heroes" - the group of 25 people of the greatest importance in creating Polish culture chosen by curriculum creators (21 males and four females). In the commentary to the core curriculum, Włodzimierz Suleja explains that "the essence of the change in teaching history is stressing the behavioural, patriotic and emotional aspects that will create in pupils strong national consciousness and historical identity." Interestingly, one of the few groups explicitly identified in the core curriculum as essential is the armed forces of "Cursed Soldiers" (Suleja, 2020).

is not the detailed knowledge of specific historical facts and nuances but the somewhat unconscious atmosphere and dogmas conveyed by a dominant narrative. There is also a long-lasting tradition of romanticized patriotism cultivated in state education that makes the return to mythologized, heroes-based narrative even easier.

The current government has maintained a fixed position on history, which is being rewritten and retold around some core construct of the nation as unified, pure, morally sound, deserving pride, suffering pressure from enemies, Catholic and honorable. The narrative of this sort – simplified, exclusionary, and unnuanced, fosters nationalism and discourages more challenging and multi-perspective worldviews that have started to emerge in the past decade. The present state's official discourse on history can be generally outlined as possessing three main features.

Firstly, several easily noticeable central tropes are used as slogans and keywords in political speeches, texts, and documents. They are always dividing people and ideas into two simple, moral categories that are to evoke strong and apparent emotions connected to the hearing of the slogan (see: Kłosińska & Rusinek, 2019):

- **The good, Polish (Us) ones:** God, Honor, Homeland; Victims; Cursed (also: Unbroken) Soldiers; (Real) Family; Martyrologue; Great Poland; Military Force; Catholic Morality; Pureness; Longevity; Civilization; Steadfastness; Sovereign; Pro-life; Poland is Getting up from Kneeling Down, and more.
- **The bad ones anti-Polish, (Others):** Brussels; Red Plague; Rainbow Plague; Gender; Demon of Progress; Animalistic Element; Cast; Communists and Thieves; Leftist; LGBT; Post-communist; Industry of Contempt; Pro-choice Murderers;

Cyclists and Vegetarians; UBs; Multicultural; Poland in Ruins, and similar.

Secondly, the nationalistic discourse is vigorously implemented through different social and political actions such as changing the names of public institutions to contain such words as "Polish" and "National," changes in the educational core curriculum, new institutions concerning Polish National dignity, media propaganda, money distribution to people and institutions recreating and retelling the history in the principal tropes mentioned in point 1.

Thirdly, romanticized patriotism, a constant, sublime narration that served as a supporting force through the times of occupation and World Wars, is also simplistic and perpetuates stereotypes.

These three vectors serve as a historical, political, and social context and apply mainly to educational escape rooms, as they were created by public institutions and aimed to educate patriotic citizens.

THE RHETORIC OF ESCAPE ROOMS

Since the beginning, rhetoric understood as an art, practice, and public speaking knowledge, has been a core part of western political and pedagogical practices. The classical Aristotelean approach that proposed conceptualization of three ways of expression (*logos*, *ethos*, *pathos*) and five parts of the speech (invention, arrangement, style, memory, delivery) was interestingly applied to digital studies (see: Eyman, 2015). With further adaptation, it can be especially useful while reflecting on escape rooms.

Aristotle and Eyman reworked

The canonical Aristotelian pentad served as a frame for Eyman

(2015) to create possible traditional thought applications to digital rhetoric. Continuing his approach, I would like to propose adding escape rooms to the table comparing said applications. The first three columns come from Eyman's book on digital rhetoric; my proposition is the last one.

Canon	Classical Definition/use	Digital rhetoric	Escape Room Rhetoric
Invention	Finding available means of persuasion	Searching and negotiating networks of information; using multimodal and multimedia tools.	Finding theme, ambient and creating the story. Puzzle design. Deciding on main emotions to be evoked during the pay.
Arrangement	Formalised organisation	Manipulating digital media as well as selecting ready - made works and reconstituting them into new works, remixing.	Arranging puzzles in correlation to narrative as well as expected players path; creating and collecting mechanisms, objects and furniture. Building (renovating) and arranging the whole space.
Style	Ornamentation / appropriate form	Understanding elements of design (color, motion, interactivity, font choice, approprate use of multimedia, etc.).	Understanding elements of design of various media as well as constructing new mechanisms; Understanding the tools to create the atmosphere connected to the theme of the room.
Delivery	Oral presentation	Understanding systems of distribution (including the technical frameworks that support varying protocols and networks).	Players gaining. Introductory speech - rules and narrative. Assistance through the play (videosupervision, audio-contact, clues). Debriefing. NPC actor play.
Memory	Memorisation of speech	Information literacy - knowing how to store, retrieve, and manipulate information (personal or project based; blogs or databases).	Play-testing the room, memorising and scripting the look of the rom to be re-created after every group. Game literacy - consciousness of typical Escape Room formula and meanings, conservation of the room.

Thus, deriving lenses from classical theories, I would suggest searching for:

- The intent.
- Argument: what and how the room argues.
- Structure of the discursive act: what the parts of the whole experience are.
- Shaping effect of the medium.
- Relationships between the creator and the persona: in escape room narratives, the role of storyteller and the person who is responsible for the room creation in the narrative are

frequently separate, while the role of narrator is combined – e.g., in "Wizards Chamber," the persona would be the eponymous wizard, a storyteller is a worker of the venue, and both of them narrate the room along with some NPCs.

- Creating "presence": the aspects of escape room create objects or persons in the mind of players that do not exist in physical space.
- What the room and its narrative lacks or reworks: Aspects omitted or chosen to be reinterpreted, in both historical and franchise–based escape rooms.
- Contradictions regarding narrative, space, idea, objects, theme.
- Audience: how players and society influenced the creators; how each walkthrough and players change the physical space; the place in society of the escape room; how the audience reacted.

In classical rhetoric, the figures of speech would be serving as central analytical tools. Some of them can be "translated" to escape rooms:

- **Metaphor** – e.g., in the PRL–themed escape room *Absurds of PRL* (Mysterious Room, Lodz), the flower packet hidden in the sofa served as a metaphor for the widespread poverty of the society.
- **Symbols** can be used inside the room as clues for puzzles, but also to evoke a narrative world, e.g., a stick with a magnet used as a "magical wand," where through in-room mechanisms, the magnetic power of the stick can change the lighting.
- **Humor** practices showed in verbal, visual, and narrative features of the room and physical space, e.g., furniture on the ceiling.

- **Personification**, e.g. mannequins used as NPC's with their voices played as a recording.
- **Hyperbole –** the whole room can serve as a hyperbole for a specific theme or historical time.
- **Metonymy**, e.g. a police flashing beacon's mounted on a wardrobe that activates to pretend that the players are going in a police car from a hotel to a police station (Majdańska 18 ER, *Pokój Hotelowy*, Warsaw).

Textual, structural, inter-textual

In her paper analyzing *Resident Evil 4* (2009), Diane Carr proposed approaching games through three lenses: textual (meaning: signification and actualization by playing), structural (considering design and form) and inter-textual (seeing the reading formation of the audience as a part of the meaning) analysis – the two first inspired by Roland Barthes, the latter by Bennett and Woollacott. The textual approach suggests viewing games as *playable texts*. This approach is especially relevant for escape room analysis when one tries to decode the rhetorical message. Playability is vital, since the meaning and persuasive effects emerge only during the act of being played (read, watched) (Ibid.), which also concerns escape rooms with an interesting quirk–they are almost always played only once by the participants. It is challenging to carry out research when one cannot attend an event personally, and even then, these events are still not simple to grasp). Similarly to digital games, escape rooms also "are designed; they have rules, and they are actualized through various modes of play. Play is experiential and ephemeral yet embodied, and culturally situated" (Ibid.). Expanding the structural notion of system drawn by Carr from Barthes (Ibid.), we can state that Escape Rooms are systems that are driven by an grand variety of constituting units, such as rules of the escape room game, physicality, and spatiality of rooms, rules of different puzzles. As for intertextuality, Carr suggests

that the idea of switching attention to the audience (players) is crucial: "Viewers and readers will respond to and interpret a text according in part to their reading formations – the social, cultural and historical make up of their interpretive perspective" (Ibid.). The audience serves as a part of the meaning. The focus shifts to the cultural and ideological forces that stand behind the process of both coding and decoding the meaning (Ibid.). Thus for the Polish Educational escape rooms, I would argue that the central component of meaning is the current political discourse on history with its key concepts. It is connected both with the views of the room's creators and their intentions to educate in a patriotic way, along with the general respect for institutions' authority (such as public schools and the IPN), that legitimize the truthfulness of the contents in the room.

To conclude this section, I would like to list the specific features of escape rooms as a rhetorical medium:

- Escape rooms tell and persuade through different media appealing all senses simultaneously. Therefore, they require multimedia literacy, concerning not only written text, film, or audio, but also games and puzzles, and some techniques specific to escape rooms, which seems to be an idiosyncratic feature of modern media-filled culture.
- Though in real-time, escape rooms can change temporality and make filmlike cuts that are understandable for players, serving as a part of culture that does not stand the present in fiction that is real (Jameson, 2007). Players are submerged in fictive and real–time simultaneously – playing and therefore living in both and continuously understanding and mediating them, which as a distinctive part of modern culture, is allowed by the development of the new media.
- The information gathered by exploration is consciously used to *solve* puzzles. There is a *right* answer to a question that lets the players proceed. It is significant, especially in educational

escape rooms, puzzles' answers are understood as historical facts. On the meta-level, it suggests that there are undoubted historical facts and that no other interpretations are possible.

- Escape rooms are simultaneously superficial and real micro worlds – they can be a simulacrum – created to communicate different things (narrative, ideas, puzzle answers, etc.)
- The one-time character of escape room experience is different from most of the re-watchable, re-readable, and re-playable media of modern times, requiring a specific kind of memory and literacy to be consciously consumed.
- An escape room experience is never an individual one, as in the core of it lays the players' group or at last contact with the Game Master. Though each player experiences the room differently and individually, at the same time, the interactions, relations, and emotions between players change the whole message and effect of the experience significantly.
- There is a specific pattern to each escape room's puzzle construction, which creates a rhythm for narrative and the whole experience accordingly. Solving puzzles of a pre-planned escape room path (on possible puzzle structures see: Nicholson, 2015) provides the knots in which the players' experience would be similar (the puzzles should lead to exact outcomes). However, between the knots, the play differs for each group.

CLOSE READING

Unlike other cultural texts of, escape rooms are typically experienced only once, which significantly changes the nature of making meaning. In this particular case, the analysis also encompasses IPN's documentation, films, news articles, and my own interview with one of the creators.

The IPN created the "Free Orlicz from Custody: Cursed Soldiers" escape room in cooperation with the private company

named Room Escape Warszawa. The venue was freely available to the public in 2017–2018 and located in the IPN's educational venue Przystanek Historia (History Station) in Warsaw. It garnered excellent reviews and was visited by some 3,000 players. The game was around 1 hour long for 2 to 5 people (minimum age 12). During the game, players visited three different areas: the UB[9] jail, a villager's hut, and a forest.

Intent and argument – between the truth and the myth

The room's creators stated in many interviews that they mostly wanted to inspire the players to pursue further research. The second declared aim was to create an entertaining, immersive experience that would encourage players to ponder Polish history in its tragic aspects, especially the heroism and honor of the armed underground groups opposing the soviet dictatorship. The work done by IPN's educators before and after the experience—around 30 minutes of films, talks, explanations, and test, also suggests that memorizing facts such as dates, names, and area of operation of Cursed Soldiers groups were among the purposes of Escape Room creation, even though the creators stated that it is not the primary objective to acquire the "encyclopedic knowledge." The use of original artifacts and realistic replicas confirms that the authority of the "real" objects[10] and the museum itself were utilized to create the notion of truthfulness. The background sounds, a mixtape of period radio broadcasts, further enforced the feeling of truthfulness. The evoked atmosphere, along with the institution's authority, creates an impression of authenticity, enhancing the belief that the room's message is the truth. This effect was also reinforced by employing facts, such as the date of Stalin's death, or the names of real historical figures, for the puzzle answers. When

9. Department of Security.

10. Artifacts used in the room were: The door from the Pułtusk prison crashed on 25th November 1946 by Stanisław Łanecki "Przelotny," 2 Lamps from UB station in Garwolin, the map from the '40s with marked ascribed as "Region and range of reaction underground bands," bowls and milk can from militia / SB arrest.

each lock opens with those pieces of information, they signal that the information was "right," and this teaches the players that all (or most) of the room's information must be factual. This method was used at least four times in the room. However, not only were facts and historical figures employed to create the message, but many symbols were also utilized. The pseudonym "Orlicz"[11] has been chosen to represent the "model Cursed Soldier" because it was the most popular at the time. Similarly, the time of action in the escape the room – the second half of the 40's, 1946 – symbolizes the actions of the Cursed Army. Time in the room was fictional and factual simultaneously, as the players symbolically "teleported" to the forest and the village that could not be located behind the secret doors of the UB station in real life. The created mini–world served as a simulacrum of the "typical Cursed Army mission"—such mission never happened, but was experienced by players and conflated from different historical as well as ahistorical parts. There were also some non-historical NPC's that served as allegories, e.g., the peasant Maciej, a personified mannequin with recorded speeches, was an allegory for the relationship between hiding Soldiers and the villagers.

The NPC's statements suggested a few things. First, the Catholic religion is the faith of the morally right, honorable Polish people. It is also the religion of all the groups represented in the experience (villagers, partisans, Cursed Soldiers) which, along with the pure love for the country, serves as means to recognize the allies. This way, the complicated nature of the countryside at the time is hidden. The instances of conflicts between the country population and the partisans, which involved stealing, violence, and even killing on both sides, are not even hinted at. All non-Catholics are seen as secretive, not honorable, hostile, and morally wrong and therefore deserve death. It is emphasized by the extent of use of Catholicism–related language and

11. Alluding to the *orzeł* (an eagle), which is a Polish National Emblem.

through the tasks that the players had to complete to proceed (regaining the cross and the picture of Holy Mary) to gain the villager's trust. For example, see some of Maciej's statements[12]:

> A guest in the house is God in the house! But those communists do not care about God one bit. They took my cross away! They do not have God in their hearts, even banned priests' processions in the fields! (…)
>
> God bless you! The Holy Mother again in my house! Now I am sure that you are the good ones, not some snitches…

Secondly, the extended use of the "communists" and the "reds" as meaning "evil ones," though it is understandable for the period, without any further contextualization during the debriefing, it forges an easy connection between all leftists "red ones" and terrible people, which is frequently used by the current government. (Kłosińska & Rusinek, 2019)

- Thirdly, the glorification of heroism, which is understood as all actions against the communists even if it included severe violence and killing, which are disguised through word choice in such statements as:

> I wish that WIARUS was here… the one who **cleaned up the** starost of Łomża Żeglicki who served Russians! Oh well…

The words "cleaned up" (original: "zrobił porządek z") alludes to the action that took place on 7th August 1947. The representation of partisans executed by the wall are two people: starost of Łomża Tomasz Żeglicki, chief of Powiatowa Rada Narodowa[13] Stanisław Tońki and then took their driver Stanisław Bacławski to serve them for a while, to proceed to

12. All NPC's citations were translated by me and come from the materials sent to me by IPN upon request, which I am very thankful for.

13. District National Council.

execute him as well. (Sierzputowski, 2012). There are some accounts of "Wiarus" himself stealing from villagers and shops and being angry at the villagers , to the point of violence, for not "fighting the communists enough" (Ibid.). The metaphor of cleaning is here used in an eschatological sense, which when stated explicitly seems morally ambiguous: the Cursed Soldiers are restoring the world's order and purity by executing specific people.

Narrative and rhetoric of embodiments

The mission was directly communicated to players by the off-room voice at the beginning:

> Good, that you're already here. UB had smashed our field unit. You are the last who avoided imprisonment. It will be hard to rebuild the net, but the most important thing is to free Orlicz from custody. The only thing that we can help you with is to organize diversion. **(mg, 2017)**

UB took "Orlicz" to try to smash the socialists governing the area. He is a unit commander who, when freed, will free other soldiers and then lead the partisans to "clean up the place." This story put a substantial heroic responsibility on the players – as they were responsible not only for the life of imprisoned "Orlicz" but also for the future of the whole armed underground. The players are freeing the unlawfully imprisoned, helping the villagers regain taken devotional (Catholic) artifacts, and letting the partisans avenge their losses by bringing them ammunition and a leader – protecting and helping the victims of Soviet abuse. As the players identified with and took the role of the Cursed Soldiers unit they created as a group, they possibly extrapolated their feelings experienced during the play on their Cursed Soldiers' vision, which can bear a misleading effect. The players were told that there is a high realism in the narrative, as it was inspired by the real short time of freeing actions, such as

liberating over 70 soldiers of AK[14] from the prison in Łowicz in 40 minutes (Freeing of "Cyfra") without shooting. They also knew that they had been immersed in a location created using some real objects. Therefore, their emotions might have been understood as in line with historical soldiers' emotions and feelings. Mostly declared feelings were thrill, excitement, pride, the righteousness of their actions, satisfaction, and sometimes frustration. This simplification that occurs on a game-mechanic level of the room organization might have led to assume that deeper negative feelings such as fright, moral uncertainty, stress, or trauma were not felt by Cursed Soldiers, since they were not encountered by the players or even hinted at in the room. When one experiences the environment and embodied emotions – as opposed to to, e.g. reading a historical text – it is harder to differentiate impressions from facts. This heroic narrative was reinforced by the fact that it was virtually impossible to lose, as the the Game Masters provided clues or secretly extended the time for the players to win. In the finale, Orlicz receives a flashlight from the players so he can signal the armed partisans to free him from the cell. Worth mentioning is that making the room's goal to deliver a flashlight frees the players from the guilt of bearing a gun – it's just a flashlight – even if they provided the partisans with ammunition. It could symbolize human-caused death, combat, or fear, but as an experience, it was organized to relieve the players from more profound moral question of the right to take a life. The fun, pride, and entertainment were highlighted even if, historically, the situation involved killing people on both sides and other traumatic events.

CONCLUSION

Although extremely well-executed from an educational and rhetorical perspective , the experience seems to have been based, paradoxically, on nostalgia for the past. This type of nostalgia is

14. The Home Army.

characteristic of post-socialist countries and makes it hard to ethically balance remembering and forgetting the retelling and rewriting of the post-World War II period (Marciniak, 2009). Even though the creators consciously did not address "tough topics," such as revenge and racism–based actions, or conflict with villagers as well as trauma and exhaustion of Cursed Soldiers, they stated that those are more thoroughly described in IPN's publications, and were suggested as the further reading in the event brochure. Nevertheless, by not mentioning or addressing these ambiguities, the room itself served as a tool that provides the players with a simplified, pro-Catholic, nationalistic, and purely positive vision of the Cursed Soldiers as the great heroes to emulate, which mirrors the whole public discourse of the PiS.

This retelling understands globalization and hybridity as an enemy.[15] Fredric Jameson (2007) notes that it is almost impossible to build political power on denial of grand narratives (nothingness) and "end of history." Therefore, some narrations must emerge. Those narrations were appropriated by late capitalism, which employed practices based on nostalgia to create a money-generating myth. The described retelling seems to work similarly, though it does not serve as capitalist, but it is still power-driven action and stereotypisation (Ibid.). The escape room's educational experience reminds us of the "pseudoexperience, which must be marked as a fantasy and as a failure to achieve representation (by means of representation), [and] is also a second-degree, reactive effort, an attempt to recuperate what lies beyond the reach of my own senses and life experience (…)." (Ibid.) The message of the IPN's ER is similar to fetishizing boundaries, which Nederveen (2009) called a hybridity backlash and shown as an answer to modern political opening to difference. However, he interestingly suggests the possibility of a different approach that could be used, in my

15. See Territorial Culture in Nederveen, 2009.

opinion, in Educational escape rooms as well: "Due to nationalism as the dominant paradigm since the nineteenth century, cultural achievements have been routinely claimed for nations and culture has been *nationalized*, territorialized. A different historical record can be constructed based on the contributions to culture formation and diffusion by diasporas, migrations, strangers" (Ibid.).

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UNLOCKING ETHICS: DESIGNING AN ETHICS ESCAPE ROOM

VINESH KANNAN & MARIA GARGIULO

1. INTRODUCTION

Escape rooms, in which participants are locked in a themed room and solve puzzles to escape, have become increasingly popular. As of August 2019, there are more than 2,350 escape room establishments in the United States alone (Spira, 2019). More than just entertainment, however, escape rooms have made their way into classrooms and occupational settings, providing another medium to present educational content and other training materials (see Adams et al. (2018), Eukel et al. (2017), and Nicholson (2018) for examples). This paper provides a designer's postmortem of our attempt to create an escape room game about ethics.

Ethical questions are often high-stakes and serious. People may feel that discussions of ethics are too theoretical to have relevant practical implications, defensive of their own moral worth when given ethical advice, or frustrated that others are not held accountable for unethical conduct. At face value, this does not seem suitable for an engaging game. Yet, we see ethics and escape rooms as structurally complementary: both involve finding

information, solving puzzles, and separating the details that matter from those that are just part of the environment.

The ethics escape room brings to life the philosophical debate about the permissibility of torturing someone involved in an act of terror. Instead of physically locking players in a room, we created a "moral lock" for the room that could only be opened through thoughtful deliberation of ethical concepts. Players have 60 minutes to discover clues about the situation and solve puzzles that introduce and exercise ethical concepts, culminating in a morally challenging decision followed by a 30 minute reflective discussion.

We refined the game over three distinct prototype versions, with 18 total players playing six sessions. Overall, players found our moral lock compelling: they used the information on ethical concepts we presented to them to solve puzzles and used their full allotted time to have complex discussions about actions and potential ramifications. Each group's discussions were distinct and they yielded diverse gameplay outcomes, even in situations where groups were presented with the same information.

The escape room format provided a useful for creating an engaging ethics-oriented game prototype that has potential for further refinement in physical play environment, puzzle design, and presentation of player results. Additionally, we are excited by the possibility of expanding this work to explore other ethical questions.

2. DESIGN

2.1. Target Audience

Escape rooms are marketed as games that players solve with wit and ingenuity. Still, in the spirit of universal design, escape room designers are often advised to make sure that all their puzzles can be completed by people with high school level reading and

math proficiency, possibly less (Chen, 2016). We wanted to work with content that is often considered dense, so we relaxed this constraint and chose a more specific target audience:

- Age: 18
- Education: Some college
- Comfortable using mobile phone applications
- Some interest in philosophy, law, or politics
- Competitive, but also enjoy collaborative games
- Have friends also in the target audience, or comfortable playing with acquaintances

2.2. Choosing a Scenario

We set three requirements for selecting a scenario to base the escape room on:

- Accessible: Players in the target audience understand the vocabulary, context, and consequences of the scenario.
- Plausible: Players believe that the scenario could occur in real life, that important facets of the scenario can exist in the game, and that their actions can affect the outcome.
- Divisive: Players disagree over how to act in the scenario, preferably the scenario already has a body of work with competing viewpoints.

The trolley problem is perhaps the most well-known ethics thought experiment. In this scenario, the player must decide whether or not to divert a trolley: if they do nothing, the trolley will run over five people, if they divert it, those five will be saved, but a different person on the other track will die. Trolley problems tend to be accessible and divisive, but not plausible.

One incarnation of the trolley problem satisfied all three: the

ticking time bomb scenario. In this thought experiment, authorities captured a subject with knowledge that could prevent an impending terrorism act that would kill many people. Players debate whether it is permissible to torture the subject to extract their information.

2.3. Ethical Framing

The ethical grounding of our game consists of three perspectives: a pedagogical framework, a philosophical perspective, and a body of literature.

2.3.1. Pedagogical Framework

Our pedagogical framework defines what it means for the players to engage in "ethics" and what kinds of ideas we consider as "ethical." We use the Framework for Ethical Decision-Making from the Markkula Center for Applied Ethics at Santa Clara University (2009). We selected it because we have previously used it to teach students in the target audience. The framework lists ten reflective questions separated into five main steps:

1. Recognize an ethical issue
2. Get the facts
3. Evaluate alternative actions
4. Test decisions
5. Act and reflect on the outcome

The framework states that ethics is distinct from feelings, religion, law, cultural norms, and science. It also identifies five sources of ethical standards: utility, rights, fairness/justice, virtue, and the common good. We represent these sources in our game with ideas from philosophers that our target audience may already have exposure to, such as Aristotle (virtue), Jeremy Bentham (utility), and W.D. Ross (rights).

2.3.2. Philosophical Framework

We designed our game around moral particularism, which argues that there are no universal ethical principles that can apply in the same way in all scenarios (Dancy, 2004, 2017; Hare, 1963). Moral particularists must practice two habits: (1) learning many ethical principles and (2) identifying how those principles interact with the important details of a scenario to determine how to act. This philosophy complements the escape room format because it emphasizes discovery and incorporates ideas from many sources of ethics.

2.3.3. Body of Literature

Finally, we draw on the literature of torture ethics for content and situational details. We feature philosophers such as Henry Shue, who argues torture is never permissible (1978); Uwe Steinhoff, who argues torture is sometimes permissible (2015); and Carl Klockars, who writes about members of law enforcement can lose their sense of morality (1980). As designers, we expect that our target audience will not be familiar with these philosophers, providing an element of surprise and challenge for skilled players.

3. ESCAPE ROOM COMPONENTS

Our game has five components that liken it to a traditional escape room: a game master, a room, a lock, a way to escape, and puzzles.

In September 2019, Merriam-Webster added "escape room" to the dictionary, defined as: "a game in which participants confined to a room or other enclosed setting (such as a prison cell) are given a set amount of time to find a way to escape (as by discovering hidden clues and solving a series of riddles or puzzles)" ("We Added New Words to the Dictionary in September 2019", 2019"). Our game has all of these components,

as well as a "game master," a staff role that is common in commercial escape rooms.

3.1. The Game Master

Traditional escape rooms often have a "game master," usually an escape room employee, who performs the following tasks:

1. Room setup
2. Timekeeping
3. Answering clarifying questions
4. Providing hints

In the ethics escape room, our game masters also handle:

1. Assessing the players' performance according to various ethical standards.
2. Discussing the players' reflections after the game and their ethical evaluations.

To avoid overwhelming the game master, future versions of the ethics escape room could have a second role, the arbiter, who evaluates the players and leads the discussion.

3.2. The Room

The room provides the environment and boundaries: it tells players who they are, why they are trapped, and why they want to escape. When the players enter the room, the game master explains that they are staff in the Moral Defense Oversight Service (MDOS), a (fictional) organization in the Department of Homeland Security (DHS) that provides ethical guidance on matters of national security. Players read the mission briefing and learn that DHS has apprehended a man named Anthony Haven who claimed responsibility on social media for an impending bombing.

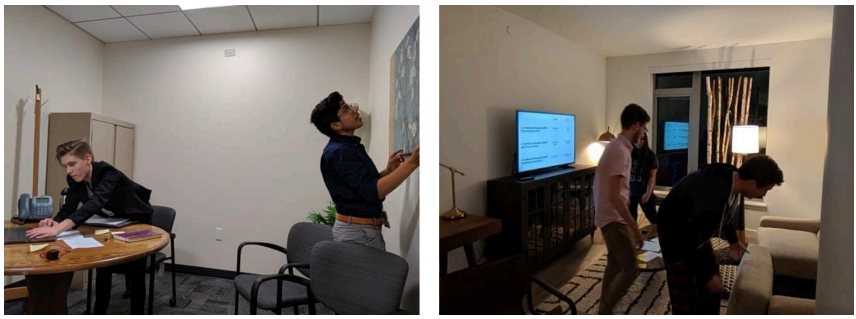
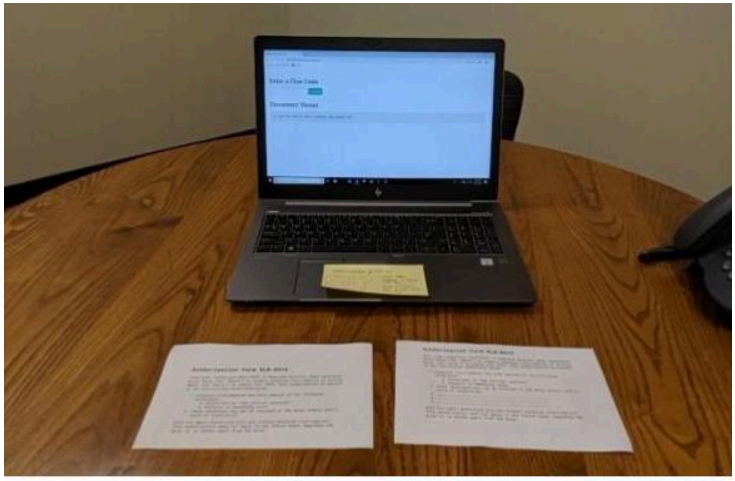


Image 1. Players searching the room for clues. Left: in the second prototype of the game, a player tries to check behind a painting on the wall. Right: in the third prototype, a player looks inside the couch.

3.3. The Lock

The lock represents the players' objective: it is the only thing keeping them in the room. Rather than a traditional physical lock, we use a "moral lock."

Players are given two proposed interrogation authorization forms: one permits "enhanced interrogation" and the other allows a psychologist to question the subject. The players have 60 minutes to decide which authorization form should be used and place it in a submission box.



Authorization Form DLN-0414

This order authorizes Department of Homeland Security (DHS) contractor David Snell (the "Agent") to engage in a one-hour session with Anthony Haven (the "Actor") on August 6th, 2019. This authorization is subject to the restrictions enumerated below.

1. Enhanced interrogation is authorized, but may only consist of the following techniques:
   a. Contortion in "the jetliner position"
   b. Exposure to deafening noise
2. These techniques may not be utilized if the Actor enters into a state of cooperation.

Only the Agent authorized here may conduct enhanced interrogation. This authorization does not apply to any future cases regarding the Actor or to anyone apart from the Actor.

Authorization Form DLN-0614

This order authorizes Department of Homeland Security (DHS) psychologist Shannon Harp (the "Agent") to engage in a one-hour session with Anthony Haven (the "Actor") on August 6th, 2019. This authorization is subject to the restrictions enumerated below.

1. The Agent may not use any measures of physical force.
2. The Agent may not lie to the Actor.

Only the Agent authorized here may conduct the session. This authorization does not apply to any future cases regarding the Actor or to anyone apart from the Actor.

Image 2. Photo from the second prototype. Players enter the room to find the two authorization forms and a note that shows them how to access the situation briefing. This first, simple note teaches them how to use the web application to find digital clues.

Escape rooms need not involve a literal "escape." According to the database compiled by escaperoomplayer.com, commercial escape rooms might challenge players to "investigate a crime," "prevent a crime," "find a cure," or even "find letters with numbers and put them in order"("Escape Room Themes", n.d.). In our escape room, choosing an authorization form is akin to finding a cure or preventing a crime.

Since there are no actual human lives at stake, for the moral lock to be effective, players must feel that the decision is of moral consequence, otherwise, they would simply choose a form and exit. As moral particularism suggests, the moral lock should also be resistant to simple maxims such as "it is okay to harm one person in order to save many." The ethical choice should depend on the specifics of the situation.

Through completing certain puzzles, players can also unlock a custom authorization form that allows them to specify all of the constraints on how the department should treat the subject. This is meant to provide advanced players with greater room for expression and to confront the fallacy of false choice. By design, the emphasis on two forms implies to players that one choice is good and one choice is bad, which can limit their ability to perceive alternatives. When players unlock the custom form, it becomes clear that nothing in the game restricts their recommendations, reminding them that they have full agency over how to crack the lock.

If the players choose an authorization form with more than 20 minutes left in the game, this triggers a storyline where they find out the results of their chosen action and must decide how to proceed by answering an open-ended follow-up prompt. This is analogous to how several escape rooms have a surprise room: players think they have successfully cleared the challenge, but there is actually another vestibule they have to escape.

3.4. The Escape

In traditional escape rooms, participants may share a photo with the time it took them to complete the game. In the ethics escape room, time to complete is a perverse metric: the faster players finish, the less likely they had a rigorous discussion.

We decided there should be no "correct" authorization form because providing a moral "answer" risks diminishing the merits of the other perspectives. Instead, we evaluate the players' escape plan based on their actions and justifications, not just the form they select.

We designed three evaluation instruments, each based on a primary branch of traditional western ethics: deontology, virtues, or utilitarianism. To reduce the length of the introduction and to see how players would behave, we chose not to reveal these instruments until the end of the game, when the game masters led a 30 minute reflective discussion about the players' results.

3.4.1. Deontology

Deontology is the study of the rights and responsibilities people must adhere to in a good society. We created a deontological definition of good and bad for this scenario by writing four basic rules.

Players can exercise two rights:

- Self-Defense: May take actions to protect civilians from ongoing attacks.
- Justice: May take actions to fix an unfair distribution of pain or pleasure.

Players must follow two responsibilities:

- Harm Prevention: May not take actions that harm innocent people.
- Fidelity: May not take actions that violate promises or deceive people.

3.4.2. Virtues

Inspired by Aristotle's *Nicomachean Ethics* (Crisp, 2014), we selected three "mean" virtues that we felt were important to this scenario: deliberation, passion, and justice. An excess of deliberation is over-cautiousness while a deficiency is recklessness; an excess of passion is zeal while a deficiency is apathy; and an excess of justice is lenience while a deficiency is maleficence. Game masters and players are asked to rate the players' performance on these three scales.

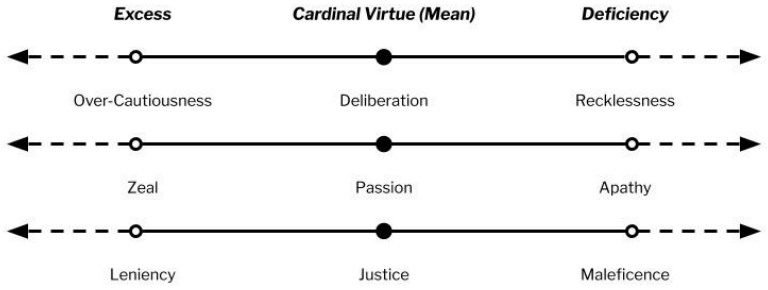


Image 3. Scales for the virtue ethics evaluation instrument.

3.4.3 Utilitarianism

For a utilitarian instrument, our plan was to anticipate common player actions and prepare a single score for how good or bad each action is. However, due to a lack of confidence in our predicted actions and an already-packed discussion agenda, we abandoned this instrument.

3.5. The Puzzles

The puzzles in an escape room challenge players, rewarding them with information that helps break the lock. Table 1 lists the five puzzles that deliver ethics content, from the third prototype of our game. We use puzzles to reward players for practicing the behaviors in the Markkula Center framework and to provide them with vocabulary and context they can use to make a choice between the authorization forms. Table 2 relates the puzzles and clues to opposing viewpoints on three questions that we felt captured the crux of the ethical debate around torture.

Name	*Ethics Content*	*Puzzle Challenge*
Shue/Historical Records	Is it ethical to torture someone who might be innocent? Shue proposes three categories of torture victims: ready collaborators, innocent bystanders, and dedicated enemies (Shue, 1978).	Find an excerpt from Shue's paper and use it to classify each victim from a set of five historical records into one of the three categories.
Bentham	How dangerous must a threat be to justify torture? Bentham offers four criteria for quantifying pain: intensity, duration, certainty, and nearness (Bentham, 1789).	Find four scales, one for each of the criteria. Listen to a risk assessment from a national security advisor and rate it on each scale.
Steinhoff	Steinhoff argues that torture may be permissible as self-defense out of necessity if the threat is imminent and proposes that the act of self-defense should be proportional to the threat, but does not have to be the mildest means (Steinhoff, 2015).	Match each of the four terms (necessity, imminence, proportionality, mildest means) to the example that best illustrates their definition.
Intervening Action	A principle which argues that we are responsible for our actions, even if someone else caused us to act that way, and we are not responsible for the consequences of actions taken by others because of us (Harris, 2008).	Read an email explaining the principle of intervening action. Then, unlock a list of three statements about national security and identify the ones that are supported by the principle.
Dirty Harry	Dirty Harry scenarios arise when: (1) a normally lawful person believes the only way for them to carry out (2) their legal mandate is to (3) take an action that is not morally permissible (Klockars, 1980).	Write a story about how the chosen authorization could lead to a Dirty Harry scenario. If the game master identifies all three requirements in the story, players unlock the custom authorization form (Form C).

Table 1. The five puzzles from the third prototype.

Is enhanced interrogation justified if...	*Yes*	*No*
...the threat may be fake?	Bentham	Shue/Historical Records
...it may not work?	Steinhoff	Pamphlet
...someone else performs it?	Intervening Action	Dirty Harry

Table 2. Puzzles mapped to moral questions in the ticking time bomb thought experiment.

Image 4 shows paths players can take to find the puzzles and

clues. The most notable clue is a pamphlet that provides background information on the fictional organization that the apprehended subject belongs to, Americans For Fairness (AFF). The group's beliefs include concern about increasing divides in the country, an imperative for children to defend their parents, and broad justifications for vague calls to respond to failures of government.

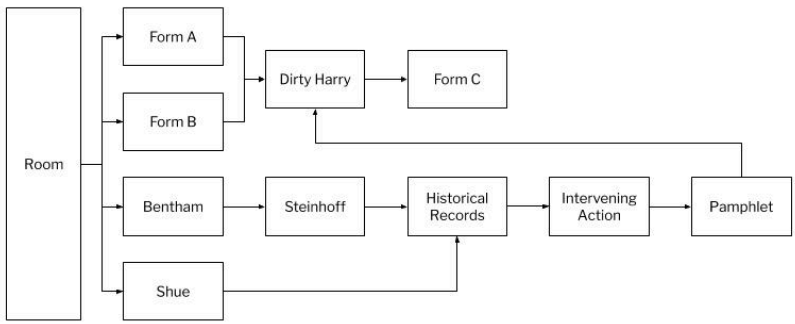


Image 4. Puzzle discovery paths in the third prototype. Form C is the custom form.

4. DEVELOPMENT

4.1. Puzzle Tuning

Brathwaite and Schreiber categorize puzzles as riddles, lateral thinking, spatial reasoning, pattern recognition, logic, exploration, and item use (2009). A weakness of our escape room is that all the puzzles are logic puzzles, where players receive

some information and must derive further information to solve the problem.

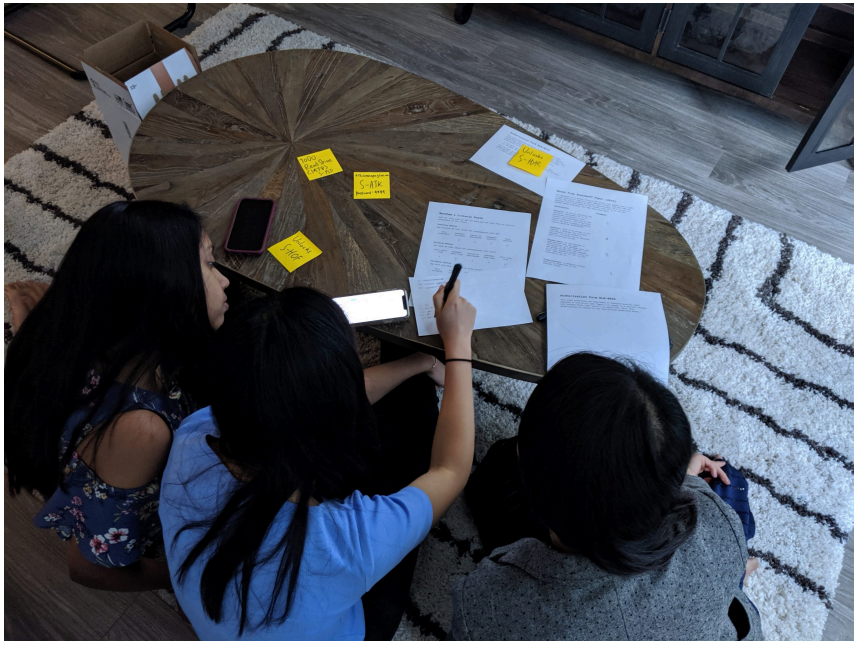


Image 5. Three players work together to solve the Historical Records clue.

To avoid overwhelming the players with logic puzzles, we applied several puzzle design principles from *The Art of Game Design: A Book of Lenses*. The Bentham puzzle illustrates puzzle principle #1: "make the goal easily understood" (Schell, 2008). Locks with numerical passcodes are so common in escape rooms that when players see Jeremy Bentham's four numerical scales, they recognize choosing the correct scale values will reveal the passcode.

Bentham's Criteria Scale

Email Dr. Carl Rush at _____ and use this form to rate his assessment of the threat.

Intensity Rating

How intense do they think the consequences will be?

Very tolerable	*Somewhat tolerable*	*Cannot be determined*	*Somewhat painful*	*Very painful*
1	2	3	4	5

Duration Rating

How long do they think the consequences will last?

Very short time	*Somewhat short time*	*Cannot be determined*	*Somewhat long time*	*Very long time*
1	2	3	4	5

Certainty Rating

How sure are they that threat will occur?

Very unlikely	*Somewhat unlikely*	*Cannot be determined*	*Somewhat likely*	*Very likely*
1	2	3	4	5

Nearness Rating

How close do they think the threat is occurring?

Very far	*Somewhat far*	*Cannot be determined*	*Somewhat close*	*Very close*
1	2	3	4	5

Image 6. Scales from the Bentham puzzle. Players find this document hidden in a cabinet. When they contact "Dr. Carl Rush," he gives his threat assessment. If the players correctly estimate the assessment according to Bentham's criteria, the numbers will form a four-digit code to unlock the Steinhoff puzzle.

Almost all escape rooms utilize puzzle principle #6: "parallelism

lets the player rest" (Schell, 2008). When a player gets frustrated or bored with one puzzle, they can simply transition to another one. Teams of players can work on multiple puzzles simultaneously and swap to get unstuck. Image 4 shows that our escape room offers multiple parallel paths.

The game master delivers on puzzle principle #8: "hints extend interest" (Schell, 2008). The game master can step in when players are stuck to offer them one of their three hints. In the Dirty Harry puzzle players must show their story to the game master for approval, who provides hints by poking holes in their story to show which of the three characteristics of a dirty Harry scenario it does not meet. This puzzle teaches the players to imagine negative consequences of their chosen form and fight confirmation bias.

4.2. Materials

Our prototypes were mixed-medium, including both physical and digital elements and puzzles.

For physical setting, we used a room in an office space and a room in a residential building. Many escape rooms have an immersive set design. Since our game takes place in a fictional government agency, we did not feel pressure to invest heavily in room decor. We instead spent that effort on puzzle design, totaling approximately 60 hours as a team, not including time spent in game sessions. Physical clues were either written on sticky notes or printed on letter-size paper.

We developed a web application where players could unlock digital clues. This allowed us to quickly iterate on the content or even fix mistakes in the middle of a gameplay session. Digital locks instead of physical locks allowed for quick configuration when updating puzzle answers. The application was developed and hosted on Glitch and the materials are available under an open-source license on GitHub, both free online platforms.

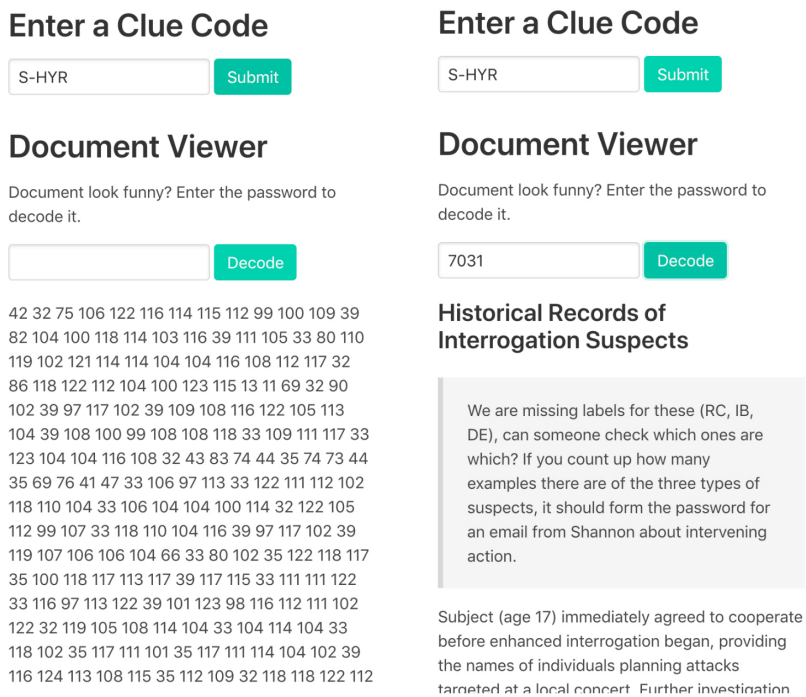


Image 7. Accessing a clue in the web application and unlocking it with a passcode.

4.3. Prototype Evolution

We iterated through three prototypes of the ethics escape room. The first version took one month to design. Over two weeks, we made two new versions and played six games in total.

The first prototype served as a proof of concept to validate the chosen scenario, demonstrate examples of ethical puzzles, and determine if the game would hold players' attention for an hour. This preliminary version included only the Bentham, Shue, and Historical Records clues and players could only choose between two forms. Both forms authorized enhanced interrogation, but the second form included blanks so that players could specify other constraints. Only one group played this version; the three players from this game joined the design team and served as

game masters for future games. Their familiarity with the game allowed us to run more sessions in a short time span.

The second prototype expanded the story of the suspected bomber, Anthony Haven. We kept the default enhanced interrogation form and juxtaposing a form that permits a staff psychologist to question Haven. The psychologist cannot lie to the subject, a condition inspired by the first group of players. We added the Pamphlet clue, as well as a clue with a real article from the American Psychological Association about motivations for terror and de-radicalization techniques. One team played this version. In the final five minutes, the players learn from the game master that Haven is not the bomber, his father is. Haven refuses to reveal information about the attack unless authorities guarantee that his father will not be tortured. When asked how they would proceed, players discussed Shue's ideas on how to treat accessories to an attack and referenced the Pamphlet clue to persuade Haven to share details.

The third prototype introduces more variety to the ethical perspectives, adding the Steinhoff, Intervening Action, and Dirty Harry clues, while revising the previous clues to account for previous players' misconceptions. The Dirty Harry clue allowed players to unlock a third, custom form. Previous players complained of too much time spent reading documents, so we removed the article about de-radicalization and changed the Bentham clue so that players call a phone number and listen to the report rather than reading it. We added an introduction script for the game masters and the two ethical evaluation instruments.

5. GAMEPLAY

We recruited 18 players through an online form with a teaser about the game. Our players were primarily undergraduate and graduate students studying technology and government. We are independent designers and chose not to find an institutional

review board for this game, instead we prefaced the signup form with a content warning about mentions of torture. We avoided any graphic descriptions or images of torture in the game. Players consented to their photos being used for this paper and their comments are presented anonymously.

5.1. Player Success and Struggles

Players generally did well with puzzle mechanics: they found tangible objects hidden in the rooms, properly navigated the digital interface, figured out what information was relevant for the puzzle they were trying to solve, and came to working solutions without needing clues from the game master. Players relied primarily on successes in comprehending the relevant ethical principles and correctly applying them to their specific contexts. In very few cases did they resort to solving puzzles via brute force. Additionally, players engaged in thoughtful discussions, most lasting the entire hour. No group tried to hand in a form early in order to leave; overall, players took our moral lock seriously, motivating their play.

When players struggled, it was most visible in their discussion. When players got stuck with puzzles it was usually because their discussion had moved away from the text that the relevant ethical principle was based on and towards personal opinions or morals. Players also noted this being the case when it came to choosing a form: some players had already developed moral instinct around the question of the acceptability of torture and found it difficult to separate these instincts from the information presented in the game. One player even noted, "In this scenario, I would never choose torture because I know it's not right." Game masters were there to issue reminders when the discussion was particularly unproductive, but players ultimately had to decide what kinds of discussions were going to help them choose an authorization form and how they were going to use the information presented to them. As one player said, "It was

frustrating when we realized that we could not solve the escape room by finding more clues, we had to write or say stuff instead."

5.2. Observations

Groups spent between 40-50 minutes completing puzzles and used the remaining time to discuss the authorization forms. Table 3 summarizes their final choices. There was variety in final form submissions, with no dominant form that everyone could agree on. Comparing the groups that played Prototype 3, we observed different outcomes even though all groups were presented with the same puzzles and information, confirming that we chose a sufficiently divisive scenario.

Group	*Prototype*	*Chosen Authorization Form*
1	1	Enhanced interrogation, custom constraint: interrogator may not lie
2	2	Psychological discussion
3	3	Custom form, constraints: interrogator may not lie or physically harm the subject
4	3	Enhanced interrogation
5	3	Psychological discussion
6	3	Enhanced interrogation

Table 3. Authorization forms chosen by each group.

Even if their conclusions differed, games shared common discussion elements. Players discussed the acceptability of physical harm and whether there were circumstances under which it could be justified. They also discussed psychological tactics, debating whether they would be sufficient to solicit information from the subject. Players questioned the effectiveness of interrogation, and whether it could solicit factually correct and actionable information from the subject. Players also contemplated the importance of the interrogator's identity, whether a different set of actions was acceptable if they

themselves did not need to carry out the actions, and what kind of precedent their decision would set for the future of their fictional society. Many of these ideas appear in the torture ethics literature, meaning that game masters could critically engage with players during post-game reflection.

Two groups rebuked the original two authorization forms, choosing to write their own custom forms. This demonstrated our goal of designing a moral lock that could admit multiple different solutions. Both custom groups were suspicious of the psychological interrogation form because they worried the interrogator might lie to the subject, a tactic they felt was immoral. Group 3 also added the constraint that the interrogator may not physically harm the subject.

Iterative prototyping makes outcome comparisons across games difficult. In Prototype 1, both authorization forms involved enhanced interrogation, so even players who found this morally dubious had to set aside their qualms in order to escape. In contrast, players of Prototype 3 games had a more diverse set of options, including the ability to completely specify their own terms. Still, groups chose forms authorizing enhanced interrogation; we suspect that the inclusion of the Steinhoff clue made the enhanced interrogation form a more morally viable choice. Additionally, we saw a shared moral aversion to lying across games: four out of six groups selected authorization forms explicitly prohibiting lying to the subject.

5.3. Player Engagement

To determine how players engaged with ethics escape room, we situate our game with LeBlanc's taxonomy, which proposes eight modes of "fun" (Hunicke et al., 2004):

1. Sensation: Game as sense-pleasure
2. Fantasy: Game as make-believe
3. Narrative: Game as drama

4. Challenge: Game as obstacle course
5. Fellowship: Game as social framework
6. Discovery: Game as uncharted territory
7. Expression: Game as self-discovery
8. Submission: Game as pastime

Traditional escape rooms invest heavily in fantasy, narrative, challenge, and discovery. We examined feedback from our players to place them on the taxonomy.

Positive reviews suggest that players were engaged through discovery and narrative:

- "It was lots of fun. I liked cracking the codes, the readings were interesting, and the clues turned out to be good reading comprehension checks."
- "The scenario was good. There was a sense of urgency and it was like we were forming the story as we found the clues."

As game designers, we feel pleased with the challenge level of the game. Every team finished all the puzzles without using up all three hints. We observed the players debate the puzzles and celebrate when their solution unlocked the next clue.

Criticisms focused on discovery overload, struggles with expression, and lack of submission:

- "Decisions didn't feel immediate. There were lots of papers and examples of philosophies, but there were no consequences. It was all to get to the next document or letter, which doesn't feel real."
- "Even though we learned new ethics topics, when the discussion started, we were still inputting our own morals and values into our opinions and justifications."

We view the unclear ending as the biggest detractor to player

engagement because players who enjoy challenge want a clear signal of victory. In the post-game discussion, players wanted to know if they had picked the "correct" authorization form, but each authorization form has positive and negative moral consequences. The ethical evaluations in the post-game discussion partially satisfied players' craving for feedback, but also made some players defensive. If we can limit the negative reactions, the evaluations could offer another avenue for enjoyment through expression.

One way to accomplish this could be to redesign the ethical instruments in a socially-shareable format, akin to how players share a photo after completing a traditional escape room. The results could highlight which of the three branches best represents each player's actions in the game, like an elaborate personality quiz. This avoids a deficit-based view of ethics and could encourage players to share and compare their results.

6. DISCUSSION

"I know about ethics, I watch The Good Place!," remarked one player during gameplay. The Good Place is an American comedy TV series about characters in the afterlife who must come to terms with the morality of their lives on Earth. The show's success demonstrates that ethics can succeed in popular culture and inspired us to consider innovative mediums to make ethics more accessible and tangible.

Image 8. Spoiler-free scenes from season two of The Good Place. Chidi, who was a moral philosophy professor on Earth, uses toys to teach the characters about the trolley problem. Michael, an afterlife employee, raises the stakes by simulating a realistic trolley and imperiled workers. Photo screenshots taken from: https://www.nbc.com/the-good-place.

Our game provides a proof-of-concept for how escape rooms can be an engaging vehicle for exploring ethics outside of traditional settings. As designers, we are proud of creating enjoyable puzzles from content that is normally considered frustrating and implementing highly-mutable escape room materials that could be refined over multiple prototypes. To have 18 players explore the scenario and participate in six thought-provoking post-game discussions is the best reward we could hope for.

When COVID-19 hit the United States in Spring 2020, physical escape rooms became impractical and people began looking for opportunities for remote-friendly social activities. As a result, we decided to use the idea of a moral lock to design a completely virtual sequel to this game.

In August 2020, we launched *Panopticon*, a virtual escape room rooted in questions about the ethics of surveillance technology. The design process for this game relied heavily on our experiences designing and playing the original, with a focus on

creating a more divisive ethical dilemma, diversifying our puzzles beyond reading documents, and designing an ending that gave more closure to players and spurred better discussion on this timely topic. Additionally, we observed that even though we released the materials online, writing instructions for others to recreate our physical escape room was challenging. The entirely virtual format of *Panopticon* makes adoption much easier.

As of November 6, 2020, almost 350 people have played the game. This includes three subgroups of players worth noting: ethics educators, young technologists working in government, and corporate teams (mostly in the technology sector). In these contexts, *Panopticon* provided an opportunity for these players to explore ethical quandaries they might experience over the course of their studies or careers. For ethics educators, *Panopticon* served as a classroom activity to introduce technology ethics into computer science classrooms. For the young technologists and corporate teams, *Panopticon* was used as a community building activity that opened dialogue at the intersection of technology and society in a low-stakes environment.

Escape rooms do not have to include a literal escape; players will engage and enjoy even with a moral lock. We hope that escape rooms will make ethical questions more accessible and enjoyable to gamers, professors, students, and other philosophy enthusiasts.

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DESIGNING ESCAPE ROOMS FOR STRESS REDUCTION IN NURSING STUDENTS

JANET M. REED & RICHARD E. FERDIG

INTRODUCTION

Most professional preparation programs, and particularly those considered apprenticeships, focus on giving students supervised experiences in future work situations (Hasson, McKenna, & Keeney, 2013). For instance, future teachers are given opportunities to observe and practice teaching prior to graduating and becoming a licensed instructor. In many of those preparation programs, simulations have become commonplace for more effectively engaging students. Simulations are used in order to give students more practice than they might have in the real world. They provide opportunities to explore complex concepts and ideas difficult to visualize (Ferdig et al., 2015). They are also offered to students to provide opportunities to engage with people they might not see in their apprenticeship experiences but would later see in their future job. Finally, simulations are used when the learning scenarios are considered dangerous (e.g., flying a plane or working with a live patient; Lok et al., 2006).

An obvious intended outcome is to attain knowledge, attitudes,

and skills students will need in future work scenarios. However, a second intended outcome is to gain enough experience to begin to reduce stress and anxiety about the content area or workplace environment (Szpak & Kameg, 2013). Ironically, the more real a simulation seems (and the more students are immersed), the more anxiety students are likely to feel, potentially reducing their success or learning in the simulation (Nielsen & Harder, 2013). Faculty in multiple preparation programs now find themselves working to reduce anxiety caused by engagement with simulations.

The purpose of this study was to explore an innovative method by which to reduce the anxiety of nursing students prior to engaging in a simulation. The innovation was focused on the relatively recent popularity of the *escape room*. An escape room was built and implemented in a nursing class where simulations were used. Results of the implementation are presented. The paper concludes with recommendations for future research and escape room design.

LITERATURE REVIEW

Nursing education and simulations

Simulation, for both instruction and assessment, is used in nursing education for several important reasons (Burbach et al., 2019). First, it can provide increased practice as students prepare to enter full-time jobs (Lok et al., 2006). Second, it can provide practice in environments that are considered safe to both the nursing student and the patient (Kolozsvari et al., 2011). Third, it has the potential to lead to improved patient care (Alexander et al., 2015). Finally, it can lead to increased acquisition of nursing skills, competencies, and behaviors (Hayden et al., 2014).

However, the use of simulation, particularly for nursing education, is not without its risks. Most notably, students in nursing simulations experience high anxiety levels (Al-Ghareeb,

Cooper, & McKenna, 2017). Anxiety in simulations can originate from "being observed, role, preparation, experience, making mistakes, receiving feedback, use of video, and psychological safety" (Yockey & Henry, 2019, p. 30). Although anxiety can actually be helpful in some situations and contexts (e.g., sports or acting; see Rycroft, 2018), too much anxiety can be negative for learning in nursing simulations. It can lead to poor performance and decreased learning, with some going so far as to suggest anxiety may "inhibit the effectiveness of simulation as an educational tool" (Al-Ghareeb et al., 2017, p. 480). Ironically, the tool created and implemented to reduce anxiety in future performance creates anxiety that prevents proper use of the innovation. This is an area where educators and researchers are calling for more theoretical and empirical attention (Burbach et al., 2019; Cantrell, Meyer, & Mosack, 2017).

Researchers have attempted to respond to this call, focusing on interventions which may reduce simulation anxiety. Relaxation techniques such as autogenic training and mental rehearsal for cognitive visualization have been researched, but results on anxiety levels have been mixed (Holland et al., 2017; Ignatio et al., 2016, Ignatio et. al., 2017). Mills et al. (2016) researched *social evaluation anxiety* and suggested reducing the number of people observing in the room as a way to alleviate student anxiety. Some other interventions studied include music (Gosselin et al., 2016), use of standardized patients (Kameg et al., 2014), and allowing the primary nurse to consult the expert during the simulation (Yockey & Henry, 2019).

While these studies show some promise, the International Nursing Association for Simulation and Clinical Learning (INASCL) guidelines (2016) discuss pre-briefing with adequate orientation to the simulation environment and learning objectives as a way to alleviate student anxiety. Additionally, game-based learning has been linked to many positive learning outcomes, and escape rooms have been linked to higher critical

thinking, motivation levels, and teamwork (Adams et al., 2018; Eukel et al., 2017; Reed, 2020). Roman et al. (2019) studied qualitative themes from an escape room among final year nursing students and found that students perceived being more relaxed than usual. Therefore, our goal was to design and create an engaging, fun escape room game that would serve as a both a pre-briefing/orientation as well as an introductory simulation experience for students during a time when they are generally highly anxious.

Escape rooms

An escape room is a live, team based game "where players discover clues, solve puzzles, and accomplish tasks in one or more rooms in order to accomplish a specific goal (usually escaping from the room) in a limited amount of time" (Nicholson, 2015, p. 1). Escape rooms have become popular in the general public (Walsh & Spence, 2018) as well as in classroom use (Nicholson, 2018).

For academic purposes, research has provided several important outcomes in student and teacher use of escape rooms. For instance, Kinio et al. (2017) used escape rooms and found students had an increased interest in their specific topic of vascular surgery. A follow-up report (Kinio et al., 2019) showed that the escape room "experience motivated (users) to prepare beforehand and believed that the experience consolidated the knowledge that they had read" (p. 134).

Perhaps the most comprehensive review to date was completed by Panagiotis Fotaris and Theodoros Mastoras in 2019. They reviewed 68 studies where escape rooms were used. The research they reviewed provided evidence that escape rooms led to increases in teamwork, collaboration, enjoyment, engagement, learning gains, motivation, social interaction, communication, critical thinking, problem-solving, creativity, and leadership. In

fairness, they also disclosed several challenges with the use of escape rooms (e.g., required time commitment, limited resources, timing issues, working with large groups, etc.) or the research on escape rooms (e.g., poor evaluation, sample size, etc.). However, they conclude that "escape rooms are innovative, active, collaborative and (have) constructivist instructional approaches that can shape learning more powerfully than conventional teaching. They help learners understand

the value of seeing problems from different perspectives, expose them to collaborative teamwork, promote engagement and persistence on task, strengthen social relationships, activate team spirit, and facilitate benefits of deep learning through group discussion" (p. 8).

Nursing escape rooms.

Given the promising reports regarding escape rooms, some nursing educators have already begun to explore the promise of escape rooms. For instance, Brown, Darby, and Coronel (2019) used *Breakout EDU* locked boxes for a clinical simulation. They suggested that the exercise was useful for students, who self-reported improved learning and the ability to work as a team. Although it was a useful activity for teachers and students, they did note time was a factor that could impact future implementations. Morrell and Ball (2018) conducted two separate escape room experiments for undergraduate nursing students. They acknowledge that their work was not a part of a research project, but also suggest that the escape room activities helped faculty assess current student understanding. Moreover, they reported that student reflection could help students self-assess and make improvements in their educational experiences. Finally, Kutzin (2019) used an escape room in a simulation center to teach about teamwork and communication. At the end of the experience, students were given a survey about their experiences. Participants mainly agreed that "the escape room allowed the

participants to work as a team, required the participants to communicate effectively, and professional health care providers (nurses, physicians, respiratory therapists, etc.) would benefit from attending an escape room event" (p. 477).

Although these studies are important and show promise, there are very few examples in nursing education of using escape rooms for the specific purpose of reducing anxiety. Therefore, the goal of this work was to design and implement an escape room to be implemented at a time when students are highly anxious—namely, the first nursing simulation that students experience using a high fidelity mannikin. Once completed and pilot tested, researchers could then use an experimental study to examine its effectiveness (Kutzin, 2019).

ESCAPE ROOM GAME DESIGN & METHODS

Participants consisted of a convenience sample of undergraduate junior-level nursing students from two clinical sections at a university in the Northeast U.S. (n=14). IRB approval was obtained, and students participated in the escape room as part of their regularly scheduled nursing lab time. Students were randomly organized into groups of four to five students within their clinical section to complete the escape room challenge. There were 3 total groups who participated. Although clinical sections usually consist of 8-10 students, simulation rooms are small and so simulations typically run with 5 or fewer students in a group to maximize participation and available space.

Students began with an orientation with nursing faculty to discuss expectations and the equipment/supplies in the room. Then, students were given the rules and objectives of the game with an initial clue that summarized the patient's medical information and plan of care. Students had up to 20 minutes as a team to solve the puzzles presented in the room, find the necessary tools, find the exit key, and escape.

Unlike a virtual or screen-based game, this live action escape room took advantage of the physical space in the nursing laboratory and players had to interact face-to-face to solve a series of problems and tasks as a group. The escape room took place in a simulation lab room that had high fidelity mannequins and a one-way glass mirror for instructor observation (see Figure 1).

Figure 1. The simulation lab room used in the study.

The room was filled with prompts, artifacts, hidden clues, and various types of lockboxes. The game narrative was based on a hospitalized patient with pneumonia who required oxygen, an IV pump, and close monitoring. Students were given a five-to-ten minute, in-room orientation with a nursing faculty member. They were told that they could call the faculty member for help one time; they were then led through the following steps to escape the room. Nursing faculty typically observe students from behind the one-way glass and take recorded notes of actions and performance issues with each group that can later be discussed with students during debriefing time. (These observations from faculty recorded notes as well as student comments during debriefing were recorded and analyzed for discussion in this paper.)

Step 1: Introduction

Students entered the room, they were given a piece of paper with specific instructions, and the timer began. Those, instructions, shown in Figure 2, contained the patient's medical information as well as overall game objectives. More importantly, the initial instructions contained information required to unlock the first lockbox.

Mr. Parkers was admitted with Pneumonia. Admitting physician is Dr. White. He has orders for a regular diet, activity ad lib, Oxygen as needed to keep SPO2 >90%, VS q4h, maintenance IV of NS with 20 meQ KCL @ 50 ml/hr, and to start Ancef 1gm IVPB q8hrs. You have 2 objectives- the ultimate objective is to find the escape key to leave the room before the timer runs out. But in order to do this, you must work together to assess and take care of the patient with the given orders. Don't escape with your group into the hallway abandoning your patient until the patient has received the necessary medication. All the supplies you need for patient care and interventions will be located in lockboxes. There are embedded clues along the way to help you to help you unlock the boxes. Once you find the key, you will need to find the final box to "escape." This box is labeled with several stickers. If you are able to "escape" before the timer buzzes, make sure to hit "stop" on the timer to save your time. We will see which group can escape in the fastest time. You may call your instructor one time for a clue if you get stuck by using the phone in the room to call the control room and a special hint will be provided. The timer will begin once you enter the escape room and you have 20 minutes to try to escape. Good luck!

Figure 2. Initial clue with student instructions

Step 2: The First Lockbox

The escape room instructions were created to help students understand that patient care and escaping were simultaneous events. As such, the first course of action for patient care should have been to obtain the patient's vital signs. A summary sheet, shown in Figure 3, was placed in a prominent position near the patient. Students who filled in the vital signs would get the code they needed to unlock the first lockbox. Inside the lockbox was a nasal canula used to supply oxygen to the patient and a written code to get into the second lockbox.

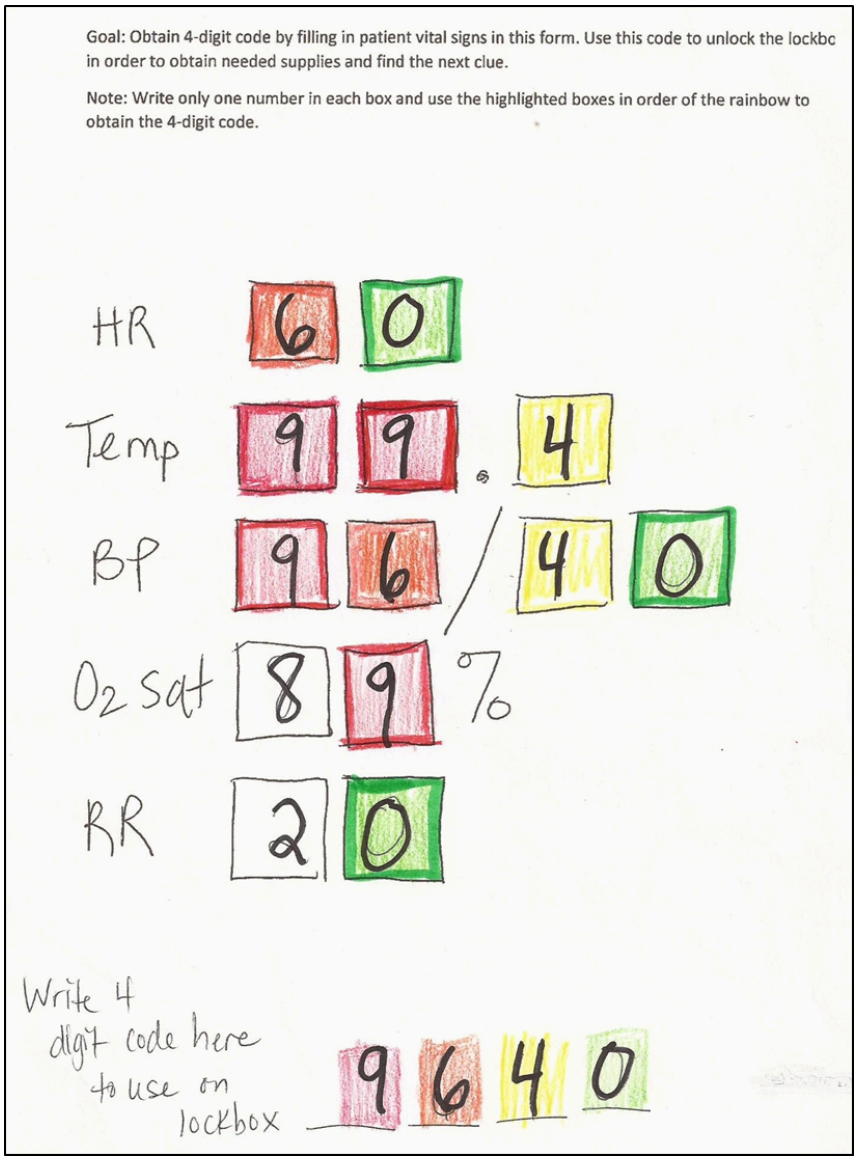

Figure 3. Code to the first lockbox as determined by taking the patient's vital signs.

Step 3: The Second Lockbox

After applying the nasal canula, students needed to search and find the second lockbox (located in the medication cart) that

could be opened using a code in the first lockbox. It contained medication (*Ancef*) that the patient was allergic to. The students should have seen the drug and gotten ready to administer it while also checking the electronic medical record (EMR) for both the order and patient allergies. They also should have checked the drug book for medication appropriate rate and dosage. Finally, they should have checked the wrist band for verification of the patient name and allergies.

Step 4: The Decision Tree

If students **correctly** completed step 3, they would have noticed a drug allergy in either the EMR or the patient wristband. They would have called the physician (the nursing faculty member behind the one-way mirror) using a phone in the simulation room. The doctor would have given them an order for new medication (*Cipro*) as well as a four-digit code to the third lockbox.

If the students **incorrectly** completed step 3, they would have failed to notice the drug allergy and would have administered *Ancef*. The patient would have had an allergic reaction with multiple symptoms. Students would have lost time having to re-assess the patient, getting new vital signs, and calling the physician. The physician would then have ordered two new medicines as well as a code to unlock the third lockbox.

Step 5: The Third Lockbox

The third lockbox contained an invisible ink flashlight as well as a written clue to check the drug book for the correct *Cipro* rate and dosage. The drug book contained a bookmark with an invisible message that said: 'Twist the heart open to find the key to the final box' (readable with the invisible ink flashlight).

Step 6: Patient Care

Given the combined need to escape while preserving patient care, one student should have then administered *Cipro* at the correct rate, while the others looked for the heart-shaped box.

Step 7: The heart-shaped box

The heart-shaped box was sitting on the patient's bedside table. Once it was found, students needed to twist it open to reveal a small key.

Step 8: Automated external defibrillator (AED)

At this point in the simulation, the patient became symptomatic with a low heart rate. Students needed to call the physician who would tell them to apply the AED pads for the low heart rate.

Step 9: Escape.

The final lockbox was located in the AED case. When they opened it to apply the AED, they would have seen the lockbox and could have opened it with the key. Inside the lockbox was a note that said: 'You have escaped. Please hit stop on the timer." Figure 4 shows the escape room materials.

Step 10: Debrief.

Once the game ended, a faculty-led debriefing session was completed according to International Nursing Association for Simulation and Clinical Learning (INASCL) guidelines (2016) using the *Debriefing for Meaningful Learning* technique. The goal was to assist students in self-reflection of their clinical skills (Dreifuerst, 2015). During this debriefing time, faculty questioned students in each group on their thinking processes and experiences during the game. Faculty were able to ask open ended questions such as "How did that go? What did you think of the game experience?" and took notes recording students'

feedback and comments from each group. During debriefing time, faculty was also able to answer questions and correct any misinformation or mistakes in nursing skills that might have been noticed during the simulation.

Figure 4. Materials used in the escape room.

RESULTS

Students were organized into 3 teams. Each team is listed below with a description of their experiences and outcomes. Two of the three groups escaped within the 20-minute time limit.

Pseudonyms are used for player names to protect privacy.

Group 1: The *Cautious* Team

Results from Group 1

Four students (three females, 1 male) students formed the *cautious team*. The instructor handed the team an envelope with the initial clue and started the timer. The team opened the envelope and slowly and cautiously read, re-read, and discussed the meaning of the clue for approximately 3 minutes. Then, one

of the female students (Katie) assigned roles to herself (assessment) and the other students (documenter at the white board, medication nurse, and vital sign collector). Katie went to the patient and began a very detailed assessment (full head-to-toe) while asking the patient questions. The other students stood watching her and listening for a few minutes. Eventually, one started collecting vital signs and the student standing at the whiteboard wrote down that data. None of the students were looking at the various lockboxes around the room or talking aloud about their ideas. They seemed confused on what to do next until eventually someone noticed the piece of paper with the vital signs chart on the medication cart. They completed it and got the code to unlock the first lock box at 7:30 into the game.

They applied the nasal canula onto the patient and got the code to find the second lockbox with the medication. Todd (the medication nurse) got ready to give the medication and went to electronic medical record (EMR). He verified the order but failed to notice the allergy. He started to give it intravenously as the others watched. None of the other students checked the allergy band on the patient.

At this point, prior to starting the medicine drip, one of the students asked Todd about the administration rate. He didn't know and the group failed to check the drug book in the room. They decided to call the instructor for a clue. They asked broadly for a clue, rather than a specific rate (what they needed to know). The instructor, seeing they were struggling (conceptually and with time) and about to make a medical error, told them to check the patients' allergies. They all realized their mistake and immediately checked patient's wristband. They held off on administering the medication and called the doctor which got them back on the correct path. They then followed normal progression of the game of giving the *Cipro*, finding the invisible ink flashlight, and using it to discover the secret message on the bookmark. The timer went off at 20 minutes right after they

had found the key in the heart shaped box; their faces sunk with disappointment. The instructor told them to keep going and they escaped at 22:40.

In debriefing, the instructor was able to clarify some of the misinformation about how to administer an IV medication and the importance of allergy verification. The students in the cautious group expressed their disappointment with their performance with statements like "I can't believe we forgot to check the allergies" and "I wish we could do it again." Comments about their experience in the debriefing time were overwhelmingly positive despite their failure to escape in time. Comments included: "This was such a cool learning experience" and "I wish we had more simulation labs like this."

Assessment of Group 1

Faculty observed several interesting things that happened in this first group which affected their performance. First, there was little group communication after Katie assigned roles to everyone, so students were functioning independently. They failed to question what others were doing. For instance, no one was paying enough attention to the clues and lockboxes around the room.

Second, Katie took a very long time to perform a full head-to-toe detailed assessment when a brief focused assessment on the respiratory system was all that was needed. It was unclear whether she did this because she thought it was tied to the game or whether she was trying to demonstrate her assessment skills to her peers and instructor. Valuable time was wasted by this group collecting irrelevant information.

Third, they failed to notice the vital signs chart in a timely manner; as such, they took a long time finding the code for the first lockbox. They wasted time getting ready to administer the medication that the patient was allergic to (that no one caught).

And, they were unsure how to administer the medication intravenously. They serendipitously called the instructor for a clue at a critical moment or their escape time would have been further delayed (and the patient may have died). All of these may have been tied to the fact that there was no ongoing leadership to provide direction to the group, outside of the initial role assignment by Katie.

Group 2: The Leaderless Team

Results from Group 2

Five female students formed the *leaderless team*. They were handed their initial clue and the timer was started. One student (Karrie) quickly, clearly, and loudly read the clue to the rest of the team. No one asked questions as they were eager to start. No roles were assigned, and students began looking around the room while a student (Marie) began to perform a detailed assessment (full head-to-toe) by asking the patient questions. The other students did not stand around watching her like the previous group had done. Instead, they all went to work examining the objects in the room and they quickly found the vital sign chart. They filled it in and got the code to unlock the first box at a time of 3:40.

Once unlocked, they found and applied the nasal canula onto the patient and got the code to find the second lockbox with the medication. Karrie went to the EMR and immediately caught the allergy. Several group members were communicating ideas aloud to others. They called the doctor and were given the new order for the *Cipro*. They quickly found the invisible ink flashlight and secret message on the bookmark. They did have a small delay when looking up the new medication in the drug book because Marie kept giving the others misinformation. For instance, she kept saying that the patient was allergic to *Cipro* as she was confusing brand and generic drug names. They also had a short

delay in finding the heart-shaped box as they were looking at the mannikin's chest for his heart instead of looking around the room. They eventually found it and were able to use the key to escape at 14:53.

In debriefing, students were happy with their performance and immediately wanted to know if they had beaten the previous group. Their comments were overwhelmingly positive. During debriefing, one student shared: "It helped me think quickly on my feet and make decisions." A second added: "I loved this far more than our other simulations."

Assessment of Group 2

Despite not having a clear leader in the group or clear roles, this group communicated well with each other (and much better than the first group). They freely shared ideas and questioned what the others were doing. This group was also much quicker than the first group in noticing details such as the allergy, the location of the vital signs chart, and seeing the lockboxes in the room. The misinformation that was being given by Marie to the rest of the group caused a hiccup in their progress, but they worked together to verify that the information Marie had provided was incorrect.

Interestingly, they were the only group which didn't use their free clue from the instructor. Students did not know why (or at least share why), but this would have allowed them to escape faster. With such a difference in timing and the increased noticing by students, we wondered if students were sharing information in the hallway. This can frequently occur in traditional simulations, limiting the amount of learning. However, the competitive nature of this group showed their unwillingness to share information because they wanted to get the best score.

Group 3: The *Focused* Team

Results from Group 3

Five students (four females and one male) formed the *focused team*. After receiving their initial clue and starting the timer, a female student (Natalie) quickly emerged as the leader. She began demonstrating leadership skills such as calling out things that needed to be done while other students responded with: "I'll do that." They all went to work assessing the patient and examining the objects in the room and discussing their findings out loud as a group. One student went to the EMR to verify information before the first lockbox was even opened. The students each organically found a role to play even though no official roles were assigned.

Natalie was particularly focused on the lockboxes and kept the rest of the group reminded about what they needed to do. They quickly got the code to unlock the first lock box at 2:32. Since they had discovered the allergy early, they didn't waste time getting ready to administer the wrong medication. They called the doctor and were given the new order for the *Cipro* and the code for the next lockbox. They found the invisible ink flashlight and immediately used it to see the secret message on the bookmark. They did have a brief delay when trying to calculate the rate for IV pump for the *Cipro* as they weren't sure how to do this. The team called the instructor for a clue about this immediately rather than wasting time discussing it. After administering the medication, they found the key and the final escape box and were able to escape in 12:46.

The instructor used debriefing to explain how to determine appropriate rates for IV medications. In debriefing, this group was ecstatic because they knew they had done well. They were even more excited when they found out they had escaped in the fastest time. One student commented: "It was fun—I still had

the adrenaline nervous feeling when I knew the patient needed the AED, but I knew the escape was near since we had the final key." Another student commented: "I'm typically a quiet person but the escape room provided me an environment where I felt comfortable communicating freely."

Assessment of Group 3

The early emergence of Natalie as the focused team leader was the driving force that enabled group three to succeed with the fastest escape room time. Natalie commented in debriefing how she loved figuring out locks and had done an escape room before, so she brought her past experience to the rest of her team. Because they checked the EMR early on, they discovered the allergy well before the other two groups. They took advantage of their free clue at an opportune moment so as not to waste time trying to figure things out themselves. They exhibited the best group delegation and communication skills with closed loop communication (students repeating what the others said for confirmation).

DISCUSSION

The escape room could arguably be considered a success for several reasons. First, the goal of the escape room was to reduce student anxiety about simulations; students were highly engaged in the activity and interested in doing this again. They even suggested to faculty in debriefing that this type of activity should replace typical simulations. The usual looks of panic and fear on students' faces was replaced with enthusiasm and smiles as they tried to figure out how to escape.

Second, in traditional nursing simulations, there are usually a few students in the group who melt into the background and do not participate due to their high anxiety levels (e.g. they become passive observers due to their stress). During this escape room, all students were actively participating and communicating.

Students had to use critical thinking and problem solving to overcome challenges, and they had to rely on others for guidance and help. These are similar skills that will be needed as future nurses working in challenging situations. Students got a taste of the expectation for teamwork and solid group communication and how important these skills are in healthcare.

A third reason to consider this a success is that the escape timeframe was created specifically to rely on the success of student teamwork and communication (skills requisite of high-quality nurses). Other nursing simulation escape rooms have used time limits of 15 minutes up to 60 minutes (Brown, Darby, & Coronel, 2019; Edwards, Boothby, & Succheralli, 2019; Morrell & Eukel, 2020;). After the first group was not able to escape within the twenty minutes allotted, this time frame was questioned. However, the timing seemed justified when the second and third groups escaped using better teamwork and communication. Future research could examine whether escape rooms could be used as tools to assess future nursing skills.

There are also several lessons learned from this experience. First, there was a game design element that was helpful in setting student expectations. They were told in the initial clue that the final lockbox would be labeled with stickers and that it would need to be opened with a key. All the previous lockboxes in the game used numeric codes, so when students eventually found the hidden key, they knew they were getting closer to escaping. This helped students understand where they were in the game progression and motivate them towards the end goal. Future escape rooms can include such designs to give students more in-game progression feedback.

A second lesson is that experience matters. Katie, in the first group, was a student who was repeating the course. She was the only one with prior simulation experience. Her past simulation performance likely led her to assign roles to the others that may

have not been necessary in the given situation. She also drew on class experience to give a longer-than-necessary, head-to-toe assessment rather than a streamlined one. Natalie, however, had previously experienced an escape room, which led her to focus on getting the lockboxes open quickly. Future research should examine how to help students recognize the complexity of new situations in nursing; it should also examine the impact of new vs. experienced simulation students and escape room players.

A third lesson relates to the timing of the initial clue given to students in the sealed envelope. Since the timer had already started when students began opening the initial clue, the reading of the clue took an extended amount of their allotted time, especially for the first group who read it slower and reread it to check understanding. For future research or practice, it may be beneficial to let each group read the initial clue and collaborate with each other for standardized amount of time (e.g., 5 minutes) before the timer is started when they enter the room. This way a group is not rewarded simply by having a fast reader, since groups differed in the amount of time spent analyzing the initial clue.

LIMITATIONS

While this study was able to demonstrate the potential value of escape rooms, there are several limitations. Those limitations can serve as important next steps for future research. First, this study was limited by the sample size. Two clinical sections with 14 total students participated. Future research could address sample size by increasing the number of students, expanding the sample to more than one college of nursing, and by adapting the experiment across multiple simulations. The former changes would obviously increase confidence in results; the latter would explore usefulness of escape rooms across simulation content areas (e.g., an end-of-life simulation vs. a cardiac simulation).

A second limitation is that the study examined what occurred

immediately during and after a simulation. Additional research should also explore the long-term transferability of potential stress reduction or improved learning when students then participate in live patient settings.

This study contained no control or other experimental group. Rather, data were used from existing studies to compare the experimental group to *business as usual*. Future studies should examine control groups as well as alternative measures of reducing stress (e.g., meditation) to determine the extent of escape room impact.

A final limitation is that this was a qualitative study intended to describe the escape room design and implementation, rather than focusing solely on student quantitative outcomes. Future research could add quantitative data like the *Creighton Competency Evaluation Instrument* (Hayden et al., 2014) to test student learning from escape room's effect on actual student performance and competency.

CONCLUSION

In this study, an escape room was designed to support stress reduction for nursing students completing simulations. Positive outcomes from this study included communication, teamwork, and self-awareness. By creating this playful space, students could take risks, problem-solve, and learn from their mistakes (Whitton, 2018). Although it was more labor intensive to design the simulation into an escape room, it was advantageous for these novice students to have an overwhelmingly positive experience for their first nursing simulation. This may help lead to higher self-efficacy and confidence for future simulation performances.

Conversely, students also displayed characteristics that delayed, detracted, and distracted. These characteristics—like failing to notice, sharing misinformation, and lacking nursing knowledge

and skills—could be deadly in real life nursing. The fact that these behaviors and attitudes appeared in the escape room gave the instructor time in debriefing (and in future sessions) to correct and improve student outcomes. In other words, the disappointment that the first group experienced from not catching the allergy and not escaping in time is actually a positive thing; it will motivate them to learn from their experiences.

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ACKNOWLEDGEMENTS

This project was supported via the EHHS Graduate Student Grant Program at Kent State University.

ABOUT THE AUTHORS

Kellian Adams
kellian@greendoorlabs.com

Rachel Donley
rdonley6@gatech.edu

Maria Eklund
Malmö University
eklund.maria7@gmail.com

Richard E. Ferdig
Kent State University
rferdig@gmail.com

Maria Gargiulo
mariagargiulo.017@gmail.com

Josefine Hansson
Malmö University
josefinehansson93@hotmail.com

Johan Hellgren
Malmö University
honajnahoj@gmail.com

Manfred Hlina

Malmö University
manfred.hlina@gmail.com

Vinesh Kannan
vingkan@gmail.com

Shannon McDowell
BGNlab
Wilfrid Laurier University
Brantford, Ontario, Canada

Sigrid Merx
Utrecht University, Department of Media and Culture Studies
Muntstraat 2a, 3512 EV Utrecht
S.Merx@uu.nl

Scott Nicholson
BGNlab
Wilfrid Laurier University
Brantford, Ontario, Canada
scott@scottnicholson.com

Simon Niedenthal
Malmö University
simon.niedenthal@mau.se

Sonia Prado Perez
Malmö University
sonia.prado.perez@gmail.com

Janet M. Reed
Kent State University
jreed56@kent.edu

Mirek Stolee
University of California, Santa Cruz
1156 High St.

Santa Cruz, CA 96064
mstolee@ucsc.edu

Jasper van Winden
Utrecht University, Faculty of Science, Science Educate-it
Minnaertgebouw, Leuvenlaan 4, 3584 CE Utrecht
J.vanWinden@uu.nl

Alice Veldkamp
Utrecht University, Freudenthal Institute
Buys Ballotgebouw, Princetonplein 5, 3584 CC Utrecht
A.Veldkamp@uu.nl

Zuzanna Wiśnicka-Tomalak
University of Warsaw
Krakowskie Przedmieście 26/28.
00-927 Warsaw, Poland
zwt@al.uw.edu.pl

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