An Investigation of the Conveyed Plot in 360 Degree Video

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Abstract

Cinematic Virtual Reality (CRV) is becoming increasingly popular with both academics and professionals alike. However, there are many aspects of CVR that can be explored further. CVR has a lot in common with traditional film, but also differs from it in various ways. This segues into an investigation that aims to identify to what degree does an audience have of understanding the plot of a fictive story, with the two varies ways of viewing the experience as the controllable factor for comparison. Hereunder Comprehension and Empathy will be utilized as properties for accessing the audience level of understanding of the plot.
For this project, a pilot-test was conducted by having the audience self-report on their understanding of the story where one group watched the film through an HMD for the CVR experience and the other group watched the same film on a laptop (regular film). Conducting a test with a larger sampling size for future investigation is desired. However, a fictive dataset consisting of 30 participants is presented as an insight into how a future testing period might provide significant data.

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Contents

1. Introduction

1.1 Cinema and VR, a brief history

Film and Virtual Reality (VR) are becoming more and more closely connected, and innovation in head mounted displays (HMD) have increasingly gathered interest in the marked for not just VR games, but also in cinema. VR has been around since 1968, when Sutherland and his student Rob Sproull develop the first HMD called *"The Sword of Damocles*" (Barnard 2019).
However, in 1992 a milestone in VR technology comes to the light of day, when researchers from university of Illinois invented CAVE (Cruz-Neira , et al. 1992). CAVE was a new omni-directional cinema experience, where the audience could experience this innovation with 3D glasses. Images would then be projected inside the cinemas wall, floor, and ceiling for full omni-directional experiences (Cruz-Neira , et al. 1992).
Some innovation such as stereoscopic displays rendering 2D creating a perception of 3D as well as 6DOF systems, which is freedom of simulated movement in a virtual environment pushed further innovation into the medium (MotionSystems).
Nevertheless, it would take quite a few years before 360-degree technology became a more accessible medium. Reasons covering low resolution, too large and heavy headsets, nausea, and expensive standard price point meant that the VR landscape would remain idle for quite a time. However, a Kickstarter campaign to the Oculus new HMD would change that (Oculus 2016). Oculus promised more affordable HMDs with high resolution. This started a new trend of investments in the VR industry. Google started lunching Google Cardboard (Google Cardboard), which was a very cheap option for an HMD that sold over 10 million copies (Google 2017). Samsung in collaboration with Oculus released their own headset in 2015 called Samsung Gear (Samsung 2015).
These days, the companies are more interested VR and 360-degree video and investing a lot of resources into this field. While most of the content for VR headsets is computer generated (CG), 360-degree video is also become more of an area of interest. At the moment there is no ubiquitous term defining 360 videos, but it is, essentially, video content captured with cameras, that can be viewed with a headset and fully encompass the viewer, or just viewed on e.g., a mobile phone and rotation is performed by swiping or based on gyroscope movement.
Steadily increasing content started production in 360 films, e.g., National Geographic with documentaries about lions (Lion 360° | National Geographic 2017) or roller-coaster rides ([Extreme] 360° RollerCoaster at Seoul Grand Park 2015). The technology soon started to be utilized by major production studios as promotions pieces for their upcoming blockbusters (Pictures, IT: FLOAT - A Cinematic VR Experience 2017) (Pictures, The Conjuring 2 - Experience Enfield VR 360 [HD] 2016). By 2020, filmmakers have worked with the medium with outstanding results (Dove 2017) (Rodriguez and Reedus 2018).
In this paper, 360-degree video is going to be presented as Cinematic Virtual Reality (CVR) even through CVR is a broad term that has been used both conceptualize passive 360-degree entertainment as well as interactive cinematic experiences. Meaning the audience will not be able to actively affect the narrative, they will naturally experience the story as watching conventional television on a 2D television screen, but with the free possibility of head movement, while watching a fictional story. This allowing the audience to view story and the environment at their own leisure (MacQuarrie and Steed 2017).

1.2 My Objective

Following the investigation into CVR as a more accessible cinematic experience, it shares a lot of similarities with regular film; both can be non-interactive mediums where the audience experience a passive entertainment system. However, does this mean that the audience have the same experience? Evidently viewing a film through an HMD compared to watching a film on television, phone or laptop will have people experiencing a film differently. First, the freedom of head movement as well as the perception of the visual stimuli is a different experience in CVR. Nevertheless, that is also what interesting about this medium as an artform for further investment and improvement. Many people use this medium on a prosumer level, where people upload images, film-clips etc. on platforms such as Facebook, Youtube or Vimeo that support this medium and makes it publicly accessible (Reyna 2018).
However, choosing to produce a film in CVR might have an impact on how an audience understand the story and further investigations is warranted.
The objective of this project will be to compare regular film and the same film in CVR, to investigate how an audience understands the story. Since on the outlook of prior research in the field of VR, is heavily leaning towards VR is used with the purpose of the experience of VR itself; for its fun interactive entertainment and visual experience, but not used as much as an informative or storytelling medium as the cinematic film industry is well established for.
Here, it might be interesting to setup a film production – producing and filming a fictional film for both mediums. This is to investigate if there is an induced form of information projecting between utilizing one medium compared to another, by analyzing the audience understanding of a fictional story presented to them through both mediums.
However, it should be mentioned that 2D filmmaking has been around for over a century and is the preferred entertainment medium due to its well-established framework and rules that presents the audience with an array of experiences, as well as availability. Because of this, it is important to investigate traditional filmmaking as well in this project.
The objective will therefore be to create a production that reflect a traditional filmmaking production, since an established framework is needed to produce these scenes are needed. Since the goal is not to create a new framework for CVR, but to take what is already established and investigate the audience understanding of it, by testing then analyzing and discussing the results.
In order to measure the audience level of understanding of the story, the plot point of the story will be used to recognize if the audience understand the story. However, an optimal approach needs to be established, and it is not clear what tool to utilize.
One could be attention, which is the audience level of attention to something presented to them. Attention has certain properties of the users experience and behavior that might indicate the audience level of understanding when watching a single scene or a set of scenes. Additionally, this project will also use empathy as a tool for measuring the level of understanding, since empathy responses has been recognized to have a connection to the audience ability to recall the happening of a story (Archer and Finger 2018).

1.3 Problem statement

Following the exploration of the CVR and tradition film format, several interesting areas stood out warranting further investigation. As mentioned, examination of people's experiences when viewing a film in CVR and investigating the audience level of understanding of the story presented to them, is the main objective of this project. Furthermore, in order to reflect on this understanding of the plot points of the story, the same or similar film production needs to be produced as a traditional film for comparison. This led to a Final Problem Statement that will be the basis for the analysis:

"To what degree does an audience understand the plot of a CVR fictive film compared to the same film filmed traditionally?"

2 Analysis

To approach the problem statement, it is necessary to investigate concepts directly related to it. Here further investigation into CVR as well as some of its limitations compared to regular film viewing and production. Linking to this is storytelling and narrative in films, to see how to write a fictional story for the purpose of creating a platform for testing. Lastly, it is necessary to look into tools for assessing the audience understanding of a film – early research into this field have linked to attention studies and possibly empathy as properties that might be useful.

2.1 360-degree video and CVR

The medium of 360-degree video is fairly new media outlet. It is has gotten a lot of attention in resent years due to the increasing technological possibilities, as well as accessibility for consumers. Devices such as the Oculus Rift series, HTC Vive, Samsung Gear, PS4 VR Headset etc. are just a few examples of a growing industry that provides virtual reality (VR) Head Mounted Displays (HMD) that are affordable and easily usable with the correct PC, MAC and console generation. The Oculus series e.g., has an online software platform, where developers can publish their VR games, applications, and other VR experiences for consumers to purchase as well as help setup the Oculus Rift HMD for VR entertainment.

These immersive technologies give way to new form of cinematic experience, using an HMD transporting the user into another environment - a virtual environment (VE). One of these cinematic experiences is CVR which can both be viewed on a 2D screen surface where the user can manually scroll their head navigation with a mouse or with keyboard shortcuts, or can be viewed through a HMD where head rotation and elevation naturally rotate the view point accordantly. 360-degree video together with VR and Augmented Reality (AR) is considered as the latest innovation when it comes to digital medium and entertainment.

2.1.1 Limitations of 360-degree video

Film production is repeatedly divided into three different parts of the production, pre-production, production phase and postproduction (Bordwell and Thompson 2010).
A director has a lot of freedom when it comes to camera movement. There are however a couple rules that is often applied in the pre-production phase of a film production. Here the director and cinematographer will storyboard the film scene for scene in order to setup the scenes easier and quicker before filming (production). The scenes and the camera positioning have different course and effect depending on what visual frame that the director wants to portrait. Camera angles can also help setup meaning of a scene e.g., from a Birds-Eye-View a character can look weak (camera filming from a high angle and looking down), or from a Frogs-Perspective making the character appear strong (camera positioned at a low angle looking up on the action) (Bordwell and Thompson 2010).
In filmmaking, cinematographers can use the camera angle, movement of the camera, placement, lenses, focus and composition as main affective tools in order to create interesting images for the human eye to look at. Simultaneously, it is also in the filmmaker's interest to guide the audience Point of view/ Point of interest of the narrative. 360-degree video does not have this defined framework and operate differently due to the audience freedom of point of view throughout the video. This freedom may have the audience feel more engaged in the environment, but might limit the of information or emotional response the filmmaker wants to portrait through the medium. Dialog scenes additionally, can be a challenge in CVR. To give an example: if there is a dialog between two or more actors in the scene the camera will often be positioned in a 180-degree angle rule with varied camera angles of every actor, creating an imaginary axis of action running between them. This means that if the camera crosses this axis - it will break the 180-degree rule and doing so is said to have a negative impact on the audience overall enjoyment of the film (Kachkovski, et al. 2019). In CVR this rule cannot be relayed on, due to the overall nature of this medium.
However, due to the mediums increasingly availability and improvement as an entertainment technology, there are still many unknown development and framework matters that are not uniform. Meaning, information on directing, editing, or producing a full-dimensional film production does not have standardized setup.

Furthermore, limitations that needs to be enlightened are e.g., that the camera has a fixed position and therefore limited to the camera angles that have been filmed and edited and users can therefore not move out of that space.

Continuing the topic on cinematography, a set of limitation consists of framing the action (hide less than ideal objects in the environment), actors cannot be too close or too far away from the camera otherwise they lose their stereoscopic depth, hard to hide people from production in the shot e.g., the director, resulting that the director needs to rely heavily on single takes. A concept that corrections to everything that will appear on the screen is known as Mise-en-Scene and might prove challenging when filming in CVR. This concept needs further investigation.

2.2 Mise-en-Scene

Another challenge in 360-degree video is "Mise-en-scene" which is defined as *"Putting into a scene"* which is a method that corresponds to what and everything that appears in the frame (Bordwell and Thompson 2010). This Technique is what the director utilizes when setting the stage and it involves several aspects such as the setting, the costumes and makeup, the lighting and staging. And by controlling these factors, the director might utilize it to create a sense of realism in the scene from the characters to the setting, or maybe it might be in the director's interest to seek out supernatural or comically exaggerated impression (Bordwell and Thompson 2010). Whatever the case the usage of props, clothes and lighting all contribute to the Mise-en-scene, its everything that the audience sees and hears.
This is an interesting concept in CVR where everything is more or less in frame at all times, depending on the positioning of the camera. This creates both a challenge, due to the fact that it can be difficult to hide or edit out unwanted/unintentional objects or people in the mise-scene. But at the same time, it is up to the director to control these above-mentioned aspects depending on the intent of the film to make it look realistic. Planning is key here. Therefore, locational preparation and setup will need careful consideration and preparation. Considering that all the film-equipment and other unintentional objects and people cannot be present in the Mise-en-scene, which might lead to an unwanted dissonance from the happenings of the story, creating a disconnection from the audience. An approach to this issue, could be to hide distractors element in the post-production phase through editing, however, limiting the editing complications early is desirable. Storyboarding each scene, might be a necessary tool to utilize in order to visually prepare, and planning out these elements before filming if the intent is to create a realistic scenario.

2.3 Narrative

When investigating how to write and shape a story of any kind, the concept of writing an interesting and engaging understanding of the narrative is a term used shape a story. Narrative in itself is a very broad term used to explain how we tell and write a story. According to Ryan who explained that a narrative can be seen as *"a representation of physical or mental events involving common or related participants and ordered in a temporal sequence"* (Ryan 2001). And Genette simply defines it as "*The representation of a real or fictitious event or series of events. by language, and more specifically by written language"* (Genette and Levonas 1976). Another definition that is broadly used is by Toolan, who defines narrative as *"perceived sequence of nonrandomly connected events, i.e., of described states or conditions which undergo change"* (Toolan 2006). A common link between these definitions is that it seems to cover linked events or a sequence of event that caused occurring over time with characters undergoing change.
Continuing into this investigation of narrative and how it is linked to filmmaking. Here we can turn to Bordwell and Thomsen, they consider a narrative to be *"a chain of events linked by cause and effect and occurring in time and space"* (Bordwell and Thompson 2010). Furthermore, explaining that you usually will have a situation and then another situation occurs that change the stability of a character. E.g., the main character just arrived at home from work, it has been a hard day, but we establish that he/she is happy (First establishing event, setting up of situation and emotion of the

protagonist), then he/she receives an email from his/her boss writing that they have to fire him/her (Second event, changing the stability of the first event, and we see that our protagonist is now sad/ angry etc.) In this simple example we have established the linked events creating change for our protagonist over the discourse of the story.

2.3.1 Narrative Structure

Following of the investigation on narrative, it has been established several elements that defines a narrative through sequences of events for telling a complete linear story. However, when writing a story for the production of this project a framework for writing and establishing a narrative structure is highly necessary. There are many different narrative structures like Syd Field's 3-act structure (Field 2005) or Branigan's narrative schema (Branigan 1992) etc. and most of them are about exposition, inciting incident, rising action and then resolution. In simple terms this means that you need to introduce your character and setting, then an event propels the plot forward, then obstacles and complications arise before finally resolving the conflict one way or another.

2.3.2 Plot

The plot of a story is defined as *"all the events that are directly presented to us, including their causal relations, chronological order, duration, frequency, and special locations"* (Bordwell and Thompson 2010). Meaning the explicit events that make up the story, not lore and rules of the world that is not presented to the audience event though it is there. This also how you might define a story, because a story also represents events that are not presented, but both terms overlap when it comes to presenting events (Bordwell and Thompson 2010). The story is therefore more closely related both the presented events as well the explicitly presented events that make up the film world also known as Diegesis (film world). This distinction between story and plot is presented as the figure below:

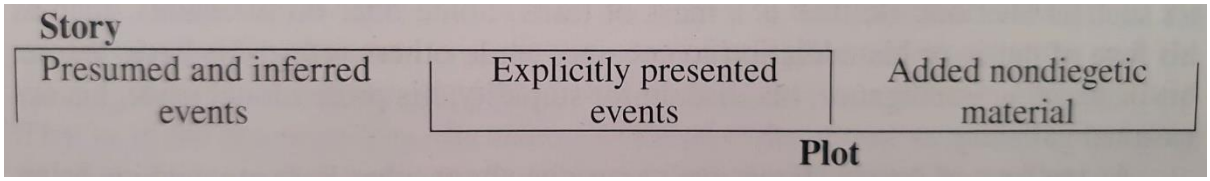


Figure 1: Story & Plot Distinction

In the figure (see figure 1) the plot goes beyond the story world by presenting nondiegetic visual and auditory feedback, which is there to affect the audience understanding of the diegesis (Bordwell and Thompson 2010). This distinction between plot and story is also known as the narrative discourse (Bordwell and Thompson 2010). Following this characteristic of plot and story from the previous chapter and how it is connected to narrative – it is also important to look at Course and Effect.

As previously mentioned, narrative is linked to a chain of event (both diegesis and non-diegesis events) linked together by Course and Effect. But what does Course and Effect mean, and how exactly is this term linked to a narrative? Bordwell and Thompson explains this by saying that usually you have an agent of course and effect. This intelligent agent's role (usually the main protagonist) is

to trigger and react to events of the diegesis. Meaning if a narrative is built up on the foundation of linked events – then the importance of Course and Effect is the create these events. When writing a script and thereby writing in the intelligent agent of your story, it is important to drive the story forward linking these events through an intelligent agent. This makes it possible for the audience to be guided towards the plot and message of a story without being told explicitly what it is. This can therefore also be important to implement when filming a fictional narrative driven 360-degree video.

2.4 Attention (Comprehension)

Comprehension is defined as *"the ability to understand something or be familiar with some fact or situation*" (Cambridge Dictionary). This term has been used in association with attention theory for the fact that if a user has comprehension or no comprehension to e.g., a problem, that may say something about the user's level of involvement for the specified problem (Celsi and Olson 1988). Research in comprehension studies is also usually closely linked education. Measuring comprehension on specified skillset of a student at e.g., reading a text in class or watching a film, researchers can get a better understanding of the student's level of understanding of how well they have remembered the narrative. This puts the elements of comprehension into several aspects; firstly, the student's level of attention to the specific happenings and plot, as well as memory – how well they remember specified elements of the narrative. Characteristics of memory places high value on it, not as much on the understanding of what they have studied, but how well they can remember it (Barbe 1958). However, research in comprehension show that it can be very complex to categorize, because you need to be very specific on the what and the why of the material the researchers are investigating. The skillset of watching and remembering a film involves two sub-skillsets; it involves decoding of the spoken and visual stimuli, and secondly it involves if the decoding can be measured in an uncomplex ways since there is no uniform method/process to measure comprehension. This is due to the fact that it is very subjective to both the individual's level of comprehension as well as the "what" specific the researchers are decoding from the level of comprehension (Caldwell 2008). Caldwell introduces Wiggins and McTighe's six factors of understanding or comprehension. This involves:

1. The why and how: e.g., a person can explain why the second world war started or how the movement took place.
2. Interpretation: that a person understands the importance/ significant of an event.
3. The ability to use the knowledge in a new situation or in a new context. E.g., a person puts his/her view on the interpretation of different authors understanding of a subject/ event.
4. Perspective: understanding of the different perspectives there are in regard to a certain event.
5. Empathy: that a person feels and emphasizes with others/ other characters. E.g., a person's ability to walk in another person's shoes and imagine the thoughts and feelings of others.

6. Self-knowledge: knowledge about what we think and why we think that way. Reaching and recognizes that his/her ideas or biases about specific events/topics and the ability to evaluate and identify the source of these perceptions (Caldwell 2008).

Knowledge is therefore also closely linked to comprehension as well as memory. This ability to interpret information of what you have seen or read into your own word. Hence comprehension is viewed as a highly subjective stance and should also be measured as such.

Further research into narrative comprehension provide evidence for basic questions that emphasizes people's own perspective to given events of the material. Simple questions such as "What happened at the beginning of the story?" (Lynch, et al. 2008) or "Explain what happened to the protagonist at the end of the story?".

These basic principles can be argued for their usefulness when dealing with comprehension, since evaluating people comprehension skills to e.g., a written story in comparison to a multi-mediated system such as a film. In cinema there is "usually" both the visual and the auditory stimuli that the audience needs to decode and understand in order for them to express what happened in the film and comprehend what was is about. Audio and visual stimuli can easily work independently or together when developing a film. And choosing to write and film a film which may require a higher level of comprehension so the audience can reflect on the happenings of the story as well as what the intentions the director had is a part of what people love about films and storytelling in general. Moreover, remembering information induced through a multimodal system is shown to be more easily remembered by people then information induced though a single modality (Caldwell 2008).

However, even though people in general have an easier time remembering and learning from a multimodule system, there is still no suggestion to that this form of comprehension differs from single module comprehension like reading or listening. Factors such as motivation and knowledge of the material still affect comprehension, it does not matter if it through a cinematic experience or through a written or spoken text.

Johanne Schudt Caldwell states in her book "Comprehension Assessment" that *"…We know much less about the process of comprehending visual stimuli, and until there is more definitive information to guide our efforts, it makes sense to assess student learning in that modality using the same principles that guide assessment of listening and reading comprehension".* (Caldwell 2008)

Therefore, it can be argued that an individual's comprehension to a plot of a film (a multimodal experience) is guided by the same principles assessment from reading or listening (single module experience). This project could benefit from the varied principles of comprehension from written text to the plot of a narrative mediated as a film. A focus on the audience comprehension of the plot might identify if or at what level the audience understand the narrative of a story.

Moreover, previously mentioned empathy, and the audience level of empathy towards the protagonist of a story might also prove as a method for assessment of an audience level of understanding of the happenings of a narrative.

Furthermore, empathy prove to be a useful tool to recognize a person's ability to remember the happenings of a story. This will be explored in the next chapter.

2.4.1 Empathy:

As mentioned in the previous chapter the concept of empathy has been recognized as a possible tool for understanding an individual's level of comprehension. Research in empathy is a highly psychological topic linking to the social characteristics of what makes us human beings. It is our ability to identify what other people are thinking and feeling, that further engages our ability to converse with people in a (proper) social manner. Furthermore, stating it is a social standing that we have adapted to, and is affected by how we are raised, as well as our cultural backgrounds. This entails that empathy is broadly linked to a *person´s state of mind and or ability to be emotionally affected by how others feel and think about their situation…* (Stueber 2013).

New research in empathy has also linked the concept to CVR, especially when for gathering outreach for understanding and empathizing with different courses. E.g. National Geographic presented the past couple of years several 360-videos with the purpose endorsing a message of wildlife preservation (Geographic, National 2017), the challenges of climate change (preservation of the coral reef) (Geographic, National 2020) , as well as the first space 360 VR experience filmed (Geographic, National 2018). Here they utilize the medium as an "empathy generating machine" for their messages, for enlightenment and inspiration to the viewers (Palminteri 2019). Furthermore, empathy in general has been seem as a goal in traditional cinema. With the goal to make the audience feel as if they have the experience of the character onscreen and can identify with their struggles (Starzec 2020). Some elements presented is the filmmakers desire to establish the main protagonist motive as well as clear "objects of desire" that the audience can evaluate upon, making it clear for the audience why the protagonist act like he does in that specific situation (Nåls 2019). If this objective is understood by the audience, then in turn it can act as a pleasurable experience for the viewers, and it will in turn affect the emotional meaning for the viewers involving the main protagonist. In this sense: understanding is very mush linked to motive. The audience can feel for the main protagonist, by understanding his/her intensions – and then the audience can assess for themselves if they accept or reject the assessed motive (Nåls 2019). Moments that can represent certain scenes of empathy, are often dramatical/ climactic moments written into the narrative. Which even though they might occupy a minor part of the film – it is still a significant part of the narrative, as it creates understanding and trigger empathy responses for the audience.

Measuring empathy responses has been done through several means such as changing hearts rate, skin conductance and face recognition measures, observational data (behaviourism) (Nåls 2019). But it is recognized that subjective ratings are a more clear and helpful analysis tool for understanding emotional responses. This is mainly due to the fact that empathy is a highly subjective experience from person to person in the context of the situational setup (attention to the film/comprehension of the narrative), the affective stimuli (through the medium) as well as cultural background (might be that different culture and background differences might make people react/understand certain events differently) (Neumann, et al. 2015).

3 Design

This design section will firstly cover some consideration and requirements gathered in the analysis. The goal is to structure and plan the design process as a normal film pre-production phase. This includes consideration in location scouting, equipment, props, finding actors, transportation etc. Furthermore, a story needs to be written for both a CVR-version as well as a traditional film format version, the story will be the same for both versions. To incorporate this in a form that is more manageable when filming, a script will be written. Additionally, a storyboard (see appendix 9.1 Storyboard: Traditional version will also be planned for an easy and practicable production.

3.1 Production Constraints

There are several constraints that needs to be considered before starting to think about plot, character and writing a story for the film production/implementation for this project. From evaluation the situation, actors and equipment might prove a major constraint for the production, meaning that the script needs to be simple in terms of actors (one character is preferred), as well as transport of equipment needs to be minimized. Additionally, regarding transport, the preferred set location needs to be scouted for both availability as well as convenience. Here, the desired location is Aalborg University's (CPH) campus and writing a script that mainly occurs inside the building is preferred – considering the noise from the wind and traffic as well as for better control of the light sources, power for the equipment and in general a more controlled environment (See 2.1.1 Limitations of 360-degree video).

3.2 Plot

Keeping the aforementioned constraints in mind, one element that was important was to keep it short, but also tell a complete story. The plot of the story centers around a university student who one day, after returning to his/her group receives a mail from the university which states that he/she has been expelled.

Main plot points regarding main character in terms of understanding the plot:

- He is a student.
- He is a drug addict.
- He got an email stating that he is expelled.
- He chose to do nothing about it.

The plot of the story will be structured around Branigan´s narrative schema (Branigan 1992) (see 2.3.1 Narrative Structure) which is divided into four parts:

- The Exposition: Introduction to the main protagonist and setting up the environment.
- Inciting incident: State of change for the main character.
- Rising Action: Inner conflict and temptations
- Resolution: Resolve the resolution.

See Appendix 9.3 Script

3.3 Notes on the story

This simple daft of the story is planned for optimal settings regarding the constraints (abovementioned). Here are some key conditions for filming listed:

- Location is at a group room at the university (available, accessible, indoors, and minimal transport).
- One actor is needed to play the university student (preferably between the age of 20-30).
- Controlled environment.
- Props are inexpensive and mostly available at the location itself.

3.4 Equality in the production of the two films

Keeping the films as equal as possible without sacrificing each individual medium's strengths, would ensure minimizing the bias that could come from each medium's individual peculiarities. To match the feel of action happening all around, that the CVR film would give to the viewer, it was decided to use mainly continuous Wide Shots for the traditional film. That way, ideally, the gaze of the camera, which would follow the main protagonist, would match the gaze of the viewer in CVR (Skenderidis 2020).

3.5 Storyboard

After writing the story and plot point, the next phase is to storyboard the film for both versions, with complete notes. The storyboard will be utilized as a tool for visualizing all the shots beforehand and making sure that the production is consistent (See 9.1 Storyboard: Traditional version and 9.1.2 Storyboard: CVR).

Differences in the production phase when shouting the film through two different mediums require planning of the shots for both. Additionally, careful planning of the CVR version is desired to combat potential bias of the Mise-en-Scene (See 2.2 Mise-en-Scene).

3.6 Equipment and props

The equipment for creating the films would be as follows: An Insta360 Pro II as the 360 camera. A Canon 70D with a zoom lens of 24-75mm focal length

Prop list:

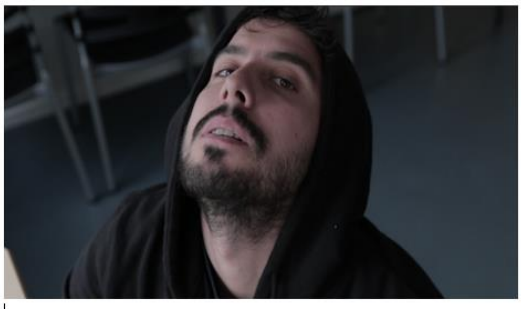
1. Tobacco
2. Joints/cigarettes
3. Ashtrays
4. IT or similar books
5. Laptop
6. Pills

4 Implementation

This section will cover the post-production phase of this project. After filming the footage for the two versions of a film (CVR, traditional video), the post-production phase will cover video editing which was put together in Adobe Premiere Pro.

4.1 Filming and cinematography

Close-ups proved difficult filming the VR version, due to the overall nature of filming in VR. And when editing the VR version to planned close-up shots where rearranged to middle-shot. The camera positioning was the same for both versions as to keep it consistent. And some of the close-ups that were planned for the regular version was changed to fit the VR version. Not all of it through. E.g., the ending scene was important to have a close-up of the main protagonist (see picture below).



Here, it can be seen a clear difference that was purposefully different in the two versions. It was a creative choose to have this difference, as the regular version might become too restricted in terms of positioning and movement, therefore benefits of movement should not be restricted through the whole film experience because then it can be argued the regular film is not a proper "representation" for regular cinema. The same can also be argued for VR since the VR version should also be a proper "representation" of VR films and experiences.

4.2 Editing

The editing of the two versions of the film was based the storyboard scene for scene. The regular version (traditional film) was edited so it fit the slower pace of the VR version, since the VR would not have as many cuts and transitions due to possible disorientation. To combat disorientation the starting shot (exposition) was lengthened compared to the rest of the video. This is to give the audience time to acclimate to the environment in CVR and gradually the flow of the film moves more quickly towards to climax of the film.

CVR

Traditionel

In order to keep the equality of the two productions as possible, flow of the cut between sections needs to be as close in length as possible. But at the same time cutting between two clips in CVR in the same area with only camera positioning being different does not contribute consistent flow of the story and often keeping the Insta Pro camera stationary and letting the story unfold around the camera was a better solution and adding to the strength of the medium (see 2.1.1 Limitations of 360-degree video). Vice versa, the traditional version of the film will utilize cutting to close-ups of his reactions, and e.g., guiding the audience from the laptop screen to the pills to his reaction and interaction with these objects.

4.2.1 Voice over

The choice of having a voice over was to further enhance the emotions and problems the main protagonist felt in certain situations. It is used to give the audience a deeper understanding of the sate he is in. The dialogue never narrates on the happenings of the story, but only as a means of expressing his confusion and change of mood due to the cause of effect (see 2.3.2 Plot). E.g., After he receives the mail about his expulsion from the university (initiating event) he narrates to the viewers “What do I do know?”, underlining his state of confusion and looking for a solution. Then through his actions, the audience see his decision of picking up the pills (See 9.3 Script).

5 Testing

This section will cover the experimental design procedure, ranging from how the design structure was chosen to how the experimental setup and testing was conducted. Furthermore, presenting the research hypotheses.

Disclaimer: Due to the lock-down of the university, gathering and adequate amount of test participants proved difficult. Hence this paper will present a pilot-test of eight participants (four for each condition).
Additionally, a presentation utilizing fictive data that supports both research hypothesis will be presented in addition to the pilot test. This is to showcase the significant test approach for future test procedures.

5.1 Design structure

The Between-Group design is utilized as test condition and setup. Test participants will only test one of the test conditions.

1. Condition: CVR
2. Condition: Traditional film format

The decision of a Between-Group design structure is due to a potential bias of the learning through experience (Lazar, Feng and Hochheiser 2010). Even if each condition changes the viewing format of the film and possibly the experience – the story is still the same for both conditions. And since the investigations objective is to test the audience understanding of the plot/message of the story, exposing the test participants to the film two times will not provide conclusive results due to the previous exposure. Nevertheless, between group design has a disadvantage, and that is that each participant as a different individual will have peculiarities that could substantially impact the outcome of the experiment. Meaning that a larger sampling size will be preferable.

5.2 Hypothesis

In order to investigate the Final Problem Statement, a research hypothesis must be specified and tested. Additionally, the independent and dependent variables will also be presented.
For clarification, the goal of the project is to investigate the overall notion of how CVR affects narrative comprehension and empathy towards characters. Seeing if that limits their understanding of the story that the filmmaker wants to portrait through the medium?

Independent variable: CVR (1) and Traditional film (2)

Dependent variable: We are measuring; "How well the audience understand the plot of the story".

H0: There is no significant difference in understanding of the plot of the story between an audience who are watching the story in CVR and those who are watching it in traditional format.

H1: There is a significant difference in understanding of the plot of the story between an audience who are watching the story in CVR and those who are watching it in traditional format.

H0: Viewing the film in CVR will not generate more empathy of the main protagonist.

H1: Viewing the film in CVR will generate more empathy of the main protagonist.

5.3 Sampling and distribution

A convenience sampling is used for data collecting, this is a non-probability method that has the advantage of utilizing conveniently available part of the population and not a selected portion (Dudovskiy 2018). Since there is no specified target group for this project other an "audience" this is the preferred sampling method for quicker and easier testing. However, the test will assume that the test participants are generally familiar with cinema. And previous experience with AR, VR and/or CVR does not exclude any participation in the experiment, since it is not the effectiveness of the different mediums that the project investigates, but investigating the difference between the two experiences when it comes to understanding of the events of a narrative. However, assuming that previous experiences with the mediums has no effect on the results might be floored and does provide a potential bias.
Sampling for test participants for each condition will not be normally distributed, to keep the test random. Test participants who agree to the test will pick a random number from a bowl (either 1 or 2). Picking a 1 the test participants will be in group 1 that watches the film in CVR and vice versa.

5.4 Location and Equipment

The test location can be substitutable for the convenience of the test participants. This method has its advantage both due to the flexibility of the convenience sampling method previously presented, and the efficient lightweight of the testing equipment that is easily transportable for one person. Furthermore, it also gives the test participant the advantage of being tested in an environment that is relaxing and less controlled – simply an environment a participant might be in when watching a film in normally.

Equipment for test:

- A laptop

- VR Headset
- Headphones

5.5 Testing setup

The testing setup will be as following, with only one test participant in testing room/testing area, with a divider between the test participant and the test conductor. The divider illustrated in the Figure 2 as a wall, is a depiction exemplifying that the test conductor will not be present in the same testing area as the test participant when the viewing of the film is ongoing. This is to keep any distractions to a minimum throughout the testing period.

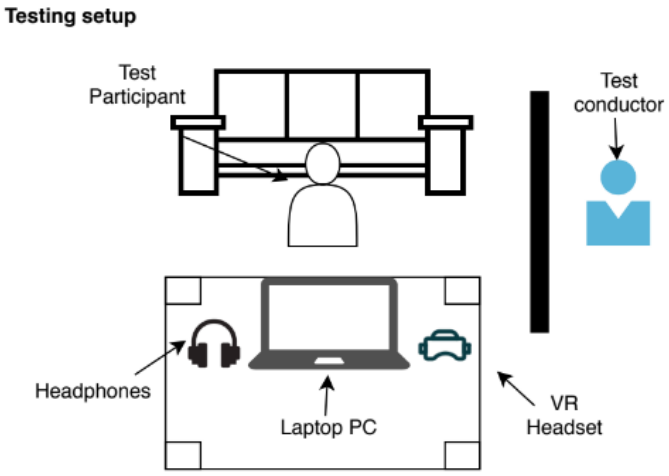


Figure 2: Testing setup environment

5.6 Experimental Procedure

The experimental procedure presented will be the same for each test participant with only changes to the medium presented depending if a person is testing condition 1(CVR) or condition 2(traditional film).

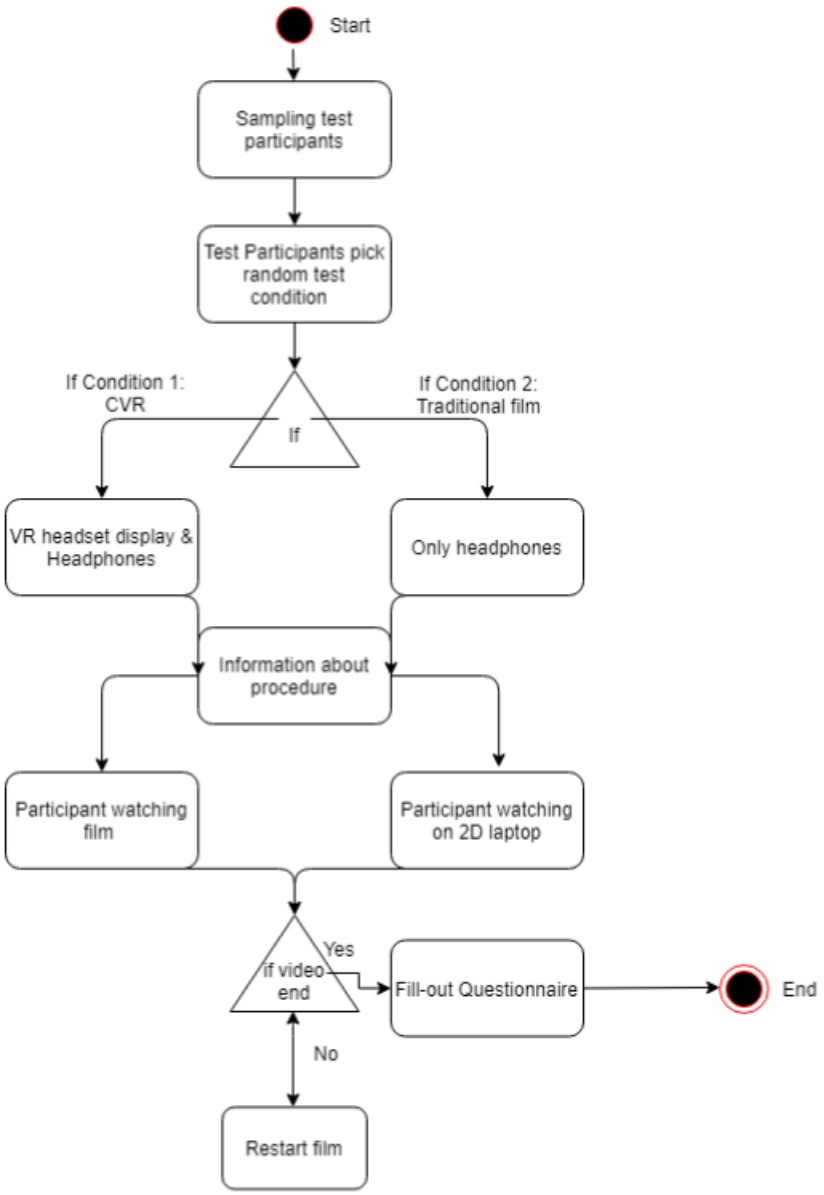


Figure 3: Experimental protocol diagram

The protocol for *"information about procedure",* will include the test conductor explaining to either test participant (for condition 1 or condition 2) that they will be watching a short film and afterward there will be a questionnaire regarding the film, as well as getting each participant the sign a consent form (see appendix), stating the procedure of test and they agree to participate. Only one participant will test at the time, and the test conductor will make sure to explain to the test participant which has already participated do not communicate to other potential participants waiting.

Note: No information to the test participant regarding the film of any kind besides the length, this is to not give the participants any knowledge about the film beforehand.

5.7 Questionnaires

In order to evaluate and analyses the audience understanding of the plot of the story a questionnaire needs to be designed for the intend of measuring the audience level of comprehension as well as the audience level of empathy for the protagonist. The questionnaire will have to be the same for both CVR and traditional film for direct comparison.

For comprehension, analyzing the audience ability to recognize, recall and point out key event in the story is desired.

These key events used for measuring narrative comprehension encompass four open-ended questions that are designed based on a narrative schema mentioned in the analysis (section 2.3.1 Narrative Structure).

- Orientation and exposition - Introduction of character and the state he is in.
- Initiating Event - The email, informing him about the risk of expulsion
- Complicating Action - He tries to solve his expulsion but instead does drugs and voids it.
- Resolution - He decides to do drugs instead of solving the problem.
  (See appendix 9.2.1 Comprehension Questionnaire)

For the empathy questionnaire, these questions are based asserting the audience experience with the main protagonist, and to investigate if they identify with his struggles (Starzec 2020). As well as if the audience understand the motive (see empathy section) of the character, lastly to see if the audience accepts or rejects his behavior. As Jan Nåls stated: these empathy moments that are written into a narrative are often represented in the dramatical/climactical events in a film (Nåls 2019). Therefore, the questions will only encompass the climatic ending of the film. This investigation led to three question:

1. From a scale of 1 to 5
   - How much did you feel sorry for the main character? (identification of the struggle)
2. From a scale of 1 to 5
   - How will was his motivation established in the end? (when he accepts his destiny). 1 is “very low” and 5 is “very high”. (audience understands his motivation).
3. From a scale of 1 to 5
   - How much did you accept his behavior in the end? (audience accepts his decision).

See appendix for questionnaires (9.2 Questionnaire)

5.8 Consent form

A consent form has been distributed to the participants and they will be asked to sign before proceeding with the test. The consent form can be found in section in the Appendix 9.2.3 Consent Form.

6 Result

This section will present an overview of the data gathered, with the purpose of providing significant results that prove or reject the Research Hypothesis. As previously mentioned, the results presented are fictive and will support the H1 of both hypotheses. However, a small pilot-test was conducted, and the results will be presented.

H0: Viewing the film in CVR will not generate more empathy of the main protagonist.

H1: Viewing the film in CVR will generate more empathy of the main protagonist.

H0: There is no significant difference in understanding of the plot of the story between an audience who are watching the story in CVR and those who are watching it in traditional format.

H1: There is a significant difference in understanding of the plot of the story between an audience who are watching the story in CVR and those who are watching it in traditional format.

The results gathered from the two questioners (see appendix 9.2 Questionnaire) were first sorted from highest to lowest values and then ranked for easier evaluation – this procedure was consistent for each question. A Mann-Whitney U-test was utilized to calculate the significant difference between the two test conditions. These calculations were executed in Microsoft Excel.

6.1 Calculation

A Mann-Whitney U test was run to determine if there were differences between the group testing condition 1 compared to condition 2. The data gathered from two questionnaires which needs to be clean for processing. This means that the data was ranked (total amount of answers) and then sorted from the lowest scores in rank 1 to highest scores in rank 5 (For Empathy), and the other questionnaire answers (Comprehension) was sorted from lowest score of 0 to maximum rank of 4. When deciding how to rank numbers that are presented more than once (e.g., several test participants might have the same score to some questions) it is important to ensure equality. The sum of the same answers is calculated and then divided by the total amount to get the average score. With these numbers sorted, calculating the total sum for each of the two groups of data.
For the fictive dataset a total amount of test participants is set to 30 audience members. 15 watching the film in CVR (n1=15) and 15 participants watching the regular version (n2=15). In a Mann-Whitney U test it is not necessary that there are an equal amount of test participant for each condition since it is a non-parametric test, but for showcasing the fictive data it was decided to keep it equal for simplicity.

Critical Values of the Mann-Whitney U
(Two-Tailed Testing)

n_2	α	n_1																	
		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
3	.05	--	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8
	.01	--	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	3	3
4	.05	--	0	1	2	3	4	4	5	6	7	8	9	10	11	11	12	13	14
	.01	--	--	0	0	0	1	1	2	2	3	3	4	5	5	6	6	7	8
5	.05	0	1	2	3	5	6	7	8	9	11	12	13	14	15	17	18	19	20
	.01	--	--	0	1	1	2	3	4	5	6	7	7	8	9	10	11	12	13
6	.05	1	2	3	5	6	8	10	11	13	14	16	17	19	21	22	24	25	27
	.01	--	0	1	2	3	4	5	6	7	9	10	11	12	13	15	16	17	18
7	.05	1	3	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
	.01	--	0	1	3	4	6	7	9	10	12	13	15	16	18	19	21	22	24
8	.05	2	4	6	8	10	13	15	17	19	22	24	26	29	31	34	36	38	41
	.01	--	1	2	4	6	7	9	11	13	15	17	18	20	22	24	26	28	30
9	.05	2	4	7	10	12	15	17	20	23	26	28	31	34	37	39	42	45	48
	.01	0	1	3	5	7	9	11	13	16	18	20	22	24	27	29	31	33	36
10	.05	3	5	8	11	14	17	20	23	26	29	33	36	39	42	45	48	52	55
	.01	0	2	4	6	9	11	13	16	18	21	24	26	29	31	34	37	39	42
11	.05	3	6	9	13	16	19	23	26	30	33	37	40	44	47	51	55	58	62
	.01	0	2	5	7	10	13	16	18	21	24	27	30	33	36	39	42	45	48
12	.05	4	7	11	14	18	22	26	29	33	37	41	45	49	53	57	61	65	69
	.01	1	3	6	9	12	15	18	21	24	27	31	34	37	41	44	47	51	54
13	.05	4	8	12	16	20	24	28	33	37	41	45	50	54	59	63	67	72	76
	.01	1	3	7	10	13	17	20	24	27	31	34	38	42	45	49	53	56	60
14	.05	5	9	13	17	22	26	31	36	40	45	50	55	59	64	67	74	78	83
	.01	1	4	7	11	15	18	22	26	30	34	38	42	46	50	54	58	63	67
15	.05	5	10	14	19	24	29	34	39	44	49	54	59	64	70	75	80	85	90
	.01	2	5	8	12	16	20	24	29	33	37	42	46	51	55	60	64	69	73
16	.05	6	11	15	21	26	31	37	42	47	53	59	64	70	75	81	86	92	98
	.01	2	5	9	13	18	22	27	31	36	41	45	50	55	60	65	70	74	79
17	.05	6	11	17	22	28	34	39	45	51	57	63	67	75	81	87	93	99	105
	.01	2	6	10	15	19	24	29	34	39	44	49	54	60	65	70	75	81	86
18	.05	7	12	18	24	30	36	42	48	55	61	67	74	80	86	93	99	106	112
	.01	2	6	11	16	21	26	31	37	42	47	53	58	64	70	75	81	87	92
19	.05	7	13	19	25	32	38	45	52	58	65	72	78	85	92	99	106	113	119
	.01	3	7	12	17	22	28	33	39	45	51	56	63	69	74	81	87	93	99
20	.05	8	14	20	27	34	41	48	55	62	69	76	83	90	98	105	112	119	127
	.01	3	8	13	18	24	30	36	42	48	54	60	67	73	79	86	92	99	105

Figure 4: Critical Values table for the Mann-Whitney U Two tailed T-test: https://www.academia.edu/35153536/Critical_Values_of_the_Mann_Whitney_U_Two_Tailed_Testingfsfs

When the sum of each test group is calculated it was possible to evaluate the significant test by calculating the ustat value for each question for the two test conditions. And then evaluating if the is a significant difference by finding the test crit value (See Figure 4). The condition that needs to be met is:

$$ustat < ucrit\ at\ \alpha = 0.05$$

Meaning in order to reject the H0 this condition needs to be true. The calculated scores from the fictive dataset that there is a significant difference between the two groups supporting the H1 hypothesis at Q1: 29,5 < 64 = true, Q2: 27,5 < 64 = true, Q3: 32,5 < 64 = true and Comprehension:

40,5 < 64 = true. In chapter 6.1.1 Empathy fictive data results and 6.1.2 Comprehension fictive data results to see the visual representations of the results.

6.1.1 Empathy fictive data results

Presenting result gathered from the Empathy questionnaire. These results are fictive and are visually presented in the boxplot diagrams below.

The Null hypotheses(H0) is rejected, that there is significant difference of the ranks of each treatment in favor of the H1. The same calculations have been done for the rest of the dataset.

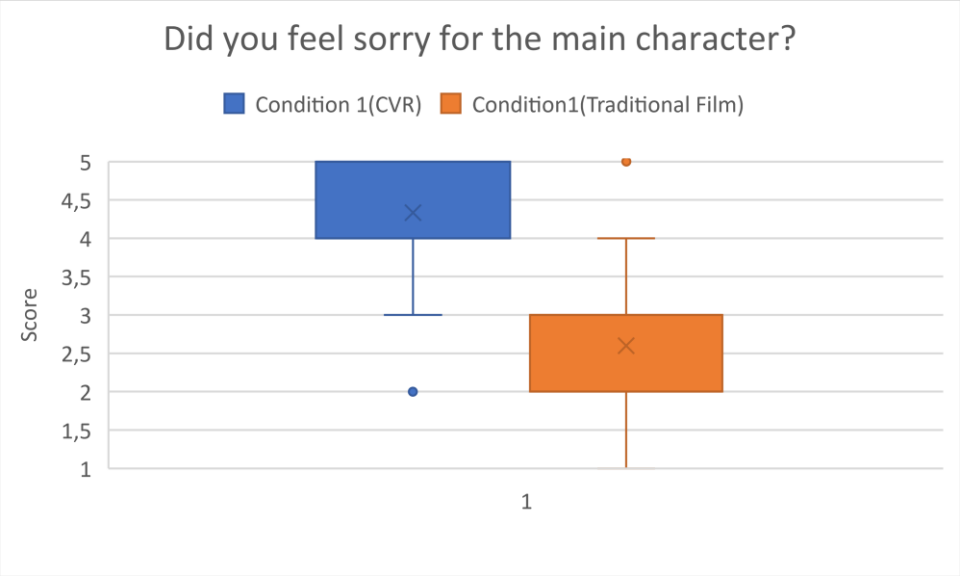


Figure 5: Boxplot diagram illustrating groups of fictive numerical data for the question: Did you feel sorry for the main character?

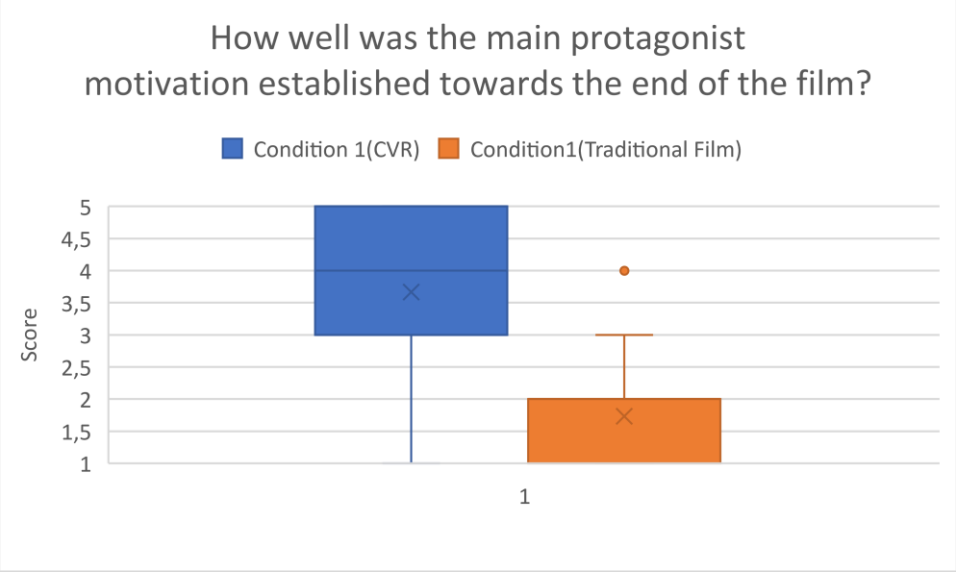


Figure 6: Boxplot diagram illustrating groups of fictive numerical data for the question: How well was the main protagonist motivation established towards the end of the film?

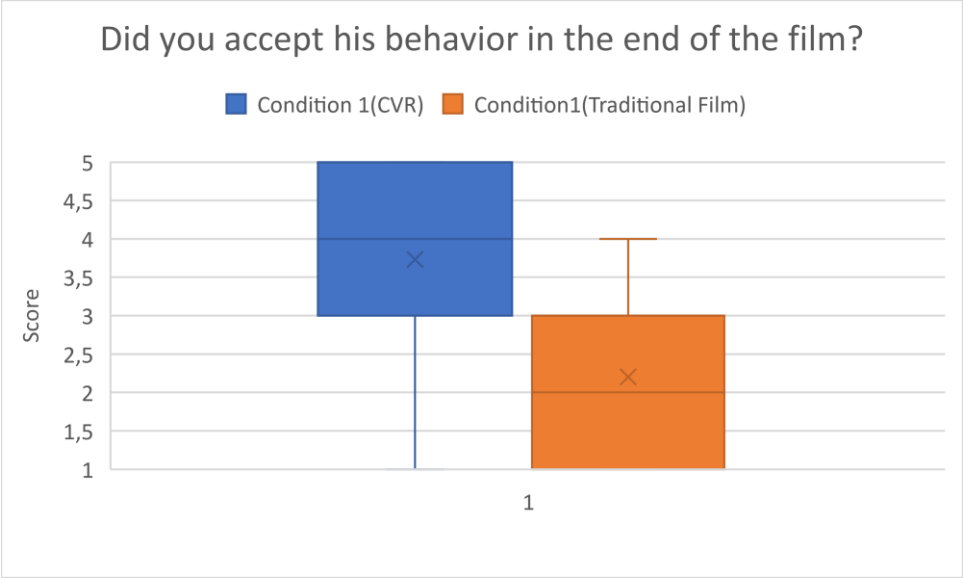


Figure 7: Boxplot diagram illustrating groups of fictive numerical data for the question: To what degree did you accept his behaviour in the end?

The spread of data can be seen in the boxplots above. The blue box contains the data from test participants answers to empathy scale when viewing the video with VR glasses in 360-degree scope. The orange box contains a visual representation of the spread of data for test audiences watching the regular version of the film on a laptop. In these examples from the fictive dataset present a significant difference that supports the hypothesis(H1) that the audience generate more empathy for the main protagonist when viewing the film in CVR.

6.1.2 Comprehension fictive data results

Presenting result gathered from the comprehension questionnaire. These results are fictive and are visually presented in the boxplot diagrams below.

Comprehension is based on the answers the test participants have in the questionnaire (see 9.2.1 Comprehension Questionnaire). Even through the questions are open-ended, the goal is the investigate if the test participants understand the plot of the story by them self-reporting on the happening in the:

- Explosion: He is a student
- Initiating event: Mentioning the email.
- Complicating action: That the main protagonist tries to solve the event but ends up giving up.
- Resolution: He does dugs instead of solving the problem.

Test participants is rated from a scale of 0-4 where 0 is if a participant gives no correct answers, 1 point is added for one correct answer etc.

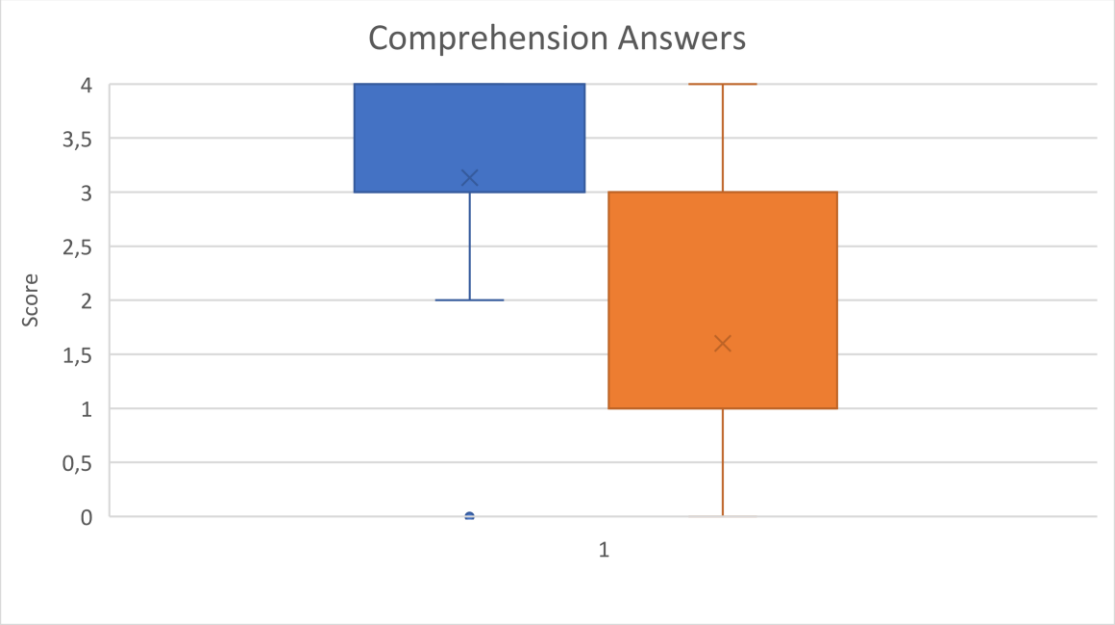


Figure 8: Boxplot diagram containing visual representation of the gathered spread of the fictive results.

The diagram (see Figure 8) shows the spread of data from the test participants answers. The blue box representing the scale of how well they self-reported to the answers after watching the film in CVR, and the orange box represent the group that watched the regular version of the film.

6.2 Pilot test

A pilot was conducted containing a sampling size of eight test participants in total. They were randomly distributed to a test condition picking a random number (1 or 2) from a bowl, ending with three test participants for each group (see Figure 3: Experimental protocol diagram for full test protocol).

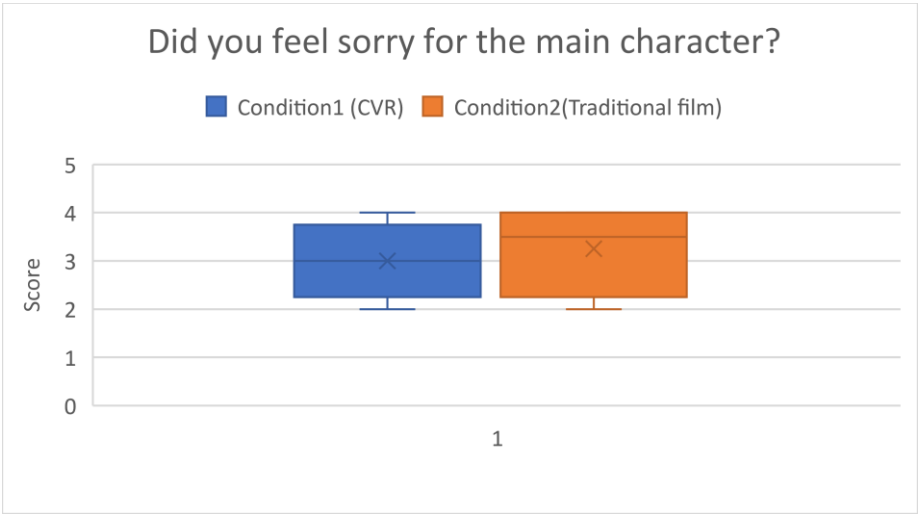


Figure 9: Boxplot diagram illustrating groups of numerical data collected from the pilot test for the question: Did you feel sorry for the main character?

In Figure 9 it can the seen that the test participants answer from the pilot test are very similar leaning towards audience members watching the regular version stating that they felt more “sorry for the main character”. Since the However due to the size and similarities in the result there are no visual tendencies to mention.

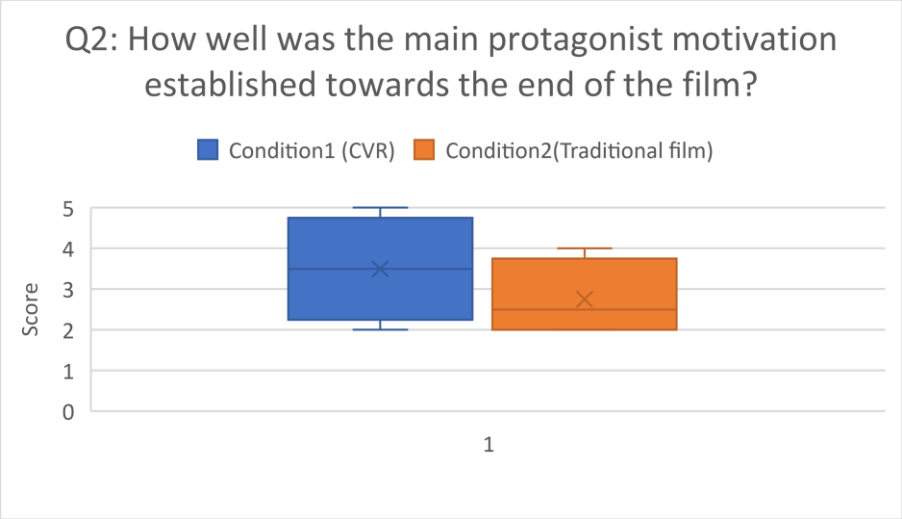


Figure 10: Boxplot diagram illustrating groups of numerical data collected from the pilot test regarding the question: How well was the main protagonist motivation established towards the end of the film?

The results seen in Figure 10 additionally did not find a significant difference, with a ustat value of 5,0. Since the result needed to be smaller or equal to the “crit value” of 0 (see Figure 4). The spread of data was in favour of the audience members watching the CVR version of the film.

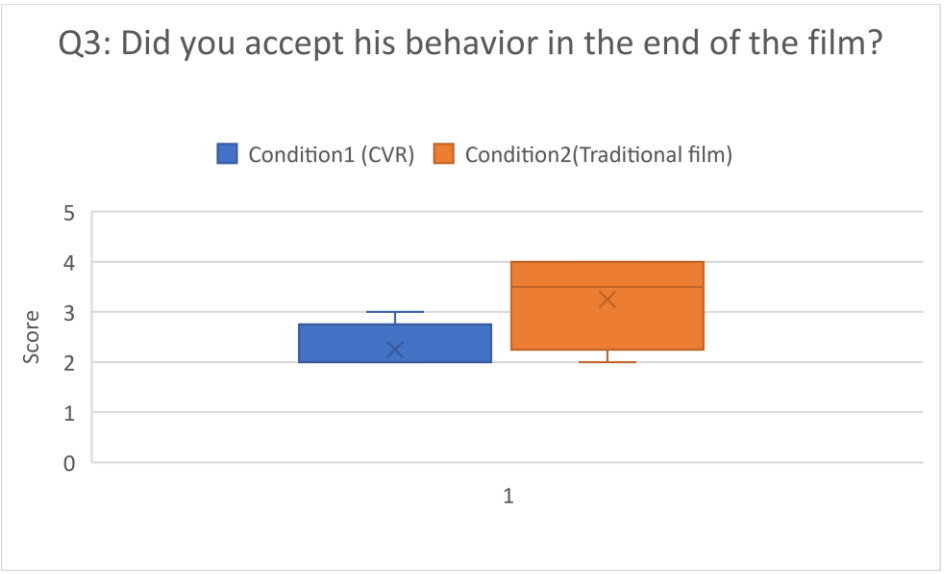


Figure 11: Boxplot diagram illustrating groups of numerical data collected from the pilot test regarding the question: To what degree did you accept his behavior in the end?

The results in question 3 visually represented in the boxplot in Figure 11, did reveal some interesting results. Even through there is no significant difference found, it was the close with a ustat value of 3,0. The boxplot shows that audience members watching the regular version of the film answers that they accepted the main protagonist behaviour in the end of the film. This helped by two test participants max ranking in condition 2. However, due to the sampling size of the pilot test it cannot be argued against the randomness of the data, where one or two people can fluctuate the scale with

high or low results, but there are tendencies that leans towards audience members watching the traditional version feel more empathy with the main protagonist when looking at question 1 and 3.

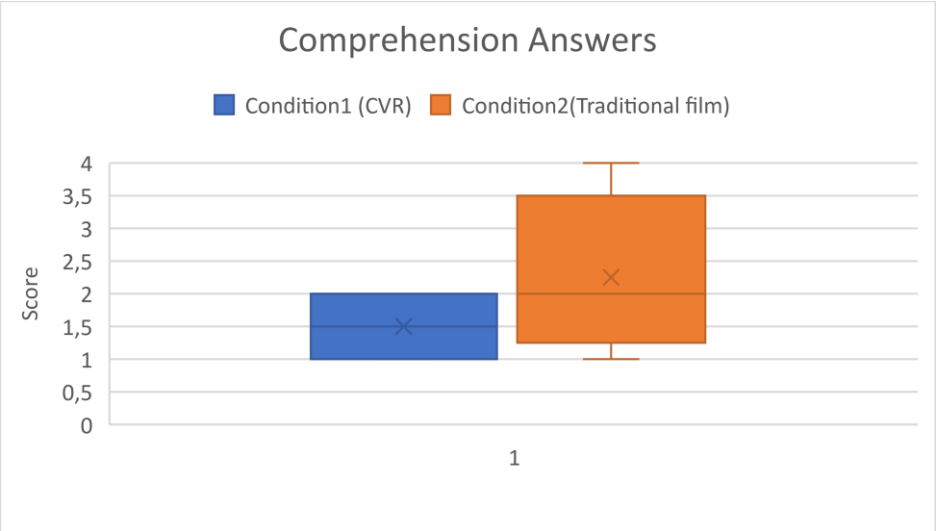


Figure 12: Boxplot diagram representing the spread of data collected from the Comprehension questionnaire.

The comprehension results (see Figure 12) did not reveal a significant difference with a “ustat2 value of 5,0. Tendencies leaning towards audience members watching the regular version of the film where better at self-reporting the overall plot of the film regarding: exposition, initialing event, complicating action and resolution. Comments from the test participants in the pilot test can be read in the next chapter.

7 Discussion

7.1 Results and sampling

The lack of a substantial test is the biggest limitation in this project. The pilot test added some insight into how a future test could be conducted and analyzed, but with a sampling size of eight participants the test is not large enough to conclude if there is a significant difference between the two test groups. There are some tendencies in the results that show that test participant watching the traditional lead to a better understanding of the plot of the story. This tendency could be seen in 3 out of the 4 answers – where only the question "Q2: How well was the main protagonist motivation established towards the end of the film?" was in favor of the test condition 1 (CVR) with a ustat value of 5,0 to a crit of 0.
However, the result that showed the biggest significant of data was Q3 "Did you accept his behaviour in the end of the film?" with the value of 3,0 to crit value of 0 in favor of condition 2. The result was not significant, but was heavily leaning towards audience members watching the regular film felt more empathy with the main protagonist. But this result might be very random, since this result was punched by two out of four test participants in condition 2 ranked this at a four out of five. Again, stating that just one or two high/ low ranked results can control the outcome of the presented pilot results, therefore it is unconclusive.

Design structure: perhaps having conducted a within-group design test could show some interesting results – by having the test participants themselves see both versions explain which made them feel more empathy towards the main protagonist and which version was best at presenting the plot points of the story (or both).

7.2 Film Production

The overall success factor of the two film productions was to have as little bias as possible by having the only changing factor being the medium itself. However, limitations that might have an impact on a test participant understanding of the story were substantial.

A big bias was when filming was due to that fact that the scenes for the CVR and regular edition of the films were not filmed at the same time. This meant that even though it is the same scenes, the acting and the timing of the action is different. This further resulted in that the two versions were a bit of timewise, where some scenes where longer in one version compared to the other, and the length of the short films varied. E.g., the scenes inside the group room in the CVR version were longer between cuts then the regular version, where there are more close-ups of the main protagonist. However, the restricted positioning and movement of the Insta Pro VR camera was known limitation and perhaps more testing and planning of camera positioning in the CVR version might result in creating better shots indoors.
The limitation of the Mise-en-Scene proved additionally challenging in CVR, this was why the film was centered mostly in one room where it is easy to control everything in the Mise-en-Scene. Other factors that should be considered as biases are the difference of the two cameras used, underlining the camera settings, exposure, and the quality of the film shots, e.g., filming with the Insta Pro camera was filmed in 8k compared to the regular film filmed in full HD. Through initial test shots with the Insta Pro camera it proved necessary to film the CVR version in the highest resolution possible for rendering the best results, leaving minimal tear in the shots. However, it did result in the

fact that the same scene filmed from both cameras looked different. A possible solution could be to do some color grading and try to minimize the difference in tone and look of the films.

It could also be argued what effect the narrative dialogue in the scenes might have resulted in the way the audience understand the films. It is a concern that it might have given the audience to many hits of the overall situation the main protagonist is in, this might be a factor when it comes to understanding the film as well as gaining empathy for the main character. However, it was used to help guide the audience, but perhaps a pilot test showcasing the audience a version of the film with voice over and another without enlighten the effect the narration has.

Another bias is the subtitles in only the CVR version and not the regular version when the main protagonist receives the mail from the school study board. The subtitles here where a last-minute solution to a problem when editing the CVR version that the laptop screen was too small and overexposed meaning it might be hard for the test participants to read the text. Some possible solutions might be to have tested how to film a laptop screen, so it is easier to read, or perhaps to have the main protagonist read the mail out to himself.

Stitching the CVR version also presented a bias in some of the image overlays. This was present when the main protagonist walks between the two of several cameras included in the Insta Pro. What effect this has on the testing itself is not certain, however optimally manually stitching the film together might minimize any potential biases.

7.3 Empathy and Comprehension

Comprehension was used as a property for assessing the audience understanding of a story, by determining if they have understood the plot of that story. This was done by participants self-reporting on the plot after they have watched one version of the film presented to them. It can be argued that this was not the optimal solution, objective data might also have been a better method for measuring comprehension by e.g., utilizing hearts rate or skin conductance response. There might additionally also be a correlation of a person's heart rate and empathy responses. Moreover, utilizing other practices for assessing an audience understanding of the plot might also be relevant to explore. To give an example presence or telepresence have been utilized in a lot of research when working with VR and people.

8 Conclusion

This study was designed to investigate the medium of CVR, by comparing it with traditional film, when it comes to the audience understand of it. The Final Problem Statement that was investigated in this project was *"To what degree does an audience understand the plot of a CVR fictive film compared to the same film filmed traditionally?".* However, due to the necessary sample size a significant test providing conclusive data is warranted. Some tendencies in the pilot test (See Figure 11) did draw a picture towards the traditional video conveying more empathy responses for the main protagonist. The results from the comprehension questionnaire did not show any mentionable results. Thus, without actual data, the hypotheses could not be supported or rejected. All there is, are the indications found in the literature of such relationships existing when connecting comprehension and empathy with understanding of a film.
Furthermore, with the addition of the fictive dataset, this report could serve as a guide for future testing.

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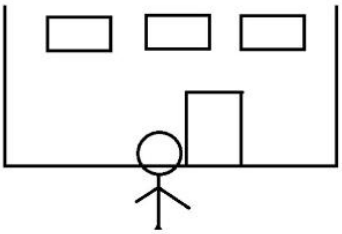
9 Appendix

9.1 Storyboard: Traditional version

PROJECT NAME: Video Project: Traditional

FILM DIRECTOR Josua Leo Severin

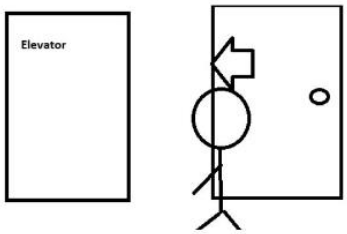


SHOT: Long Shot

ACTION: Main character walking towards school entrence.

CAMERA MOVEMENT: Camera Paning L-R

LOCATION/SCENE Outside School entrence

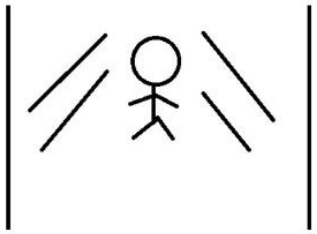


SHOT: Mid-shot

ACTION: Character moves to elevator

CAMERA MOVEMENT: Still

LOCATION/SCENE Entrence

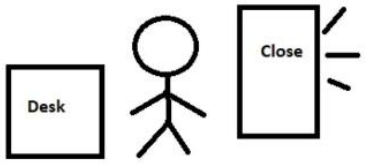


SHOT: Long-shot

ACTION: Character walking towrads and pasing camera - enters empty room.

CAMERA MOVEMENT: Panning L-R

LOCATION/SCENE Hallway

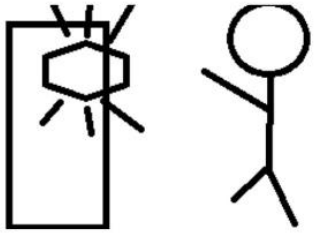


SHOT: Mid-shot

ACTION: Close door - look at camera - desk

CAMERA MOVEMENT: Still

LOCATION/SCENE Grouproom

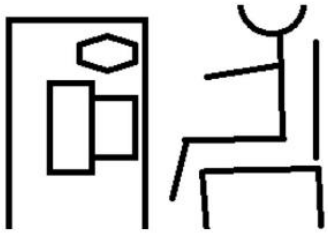


SHOT: Mid-shot

ACTION: Throw bag on desk

CAMERA MOVEMENT: Still

LOCATION/SCENE Grouproom



SHOT: Mid-shot

ACTION: Sits down open laptop

CAMERA MOVEMENT: Still

LOCATION/SCENE Grouproom

PROJECT NAME: Video Project Traditional

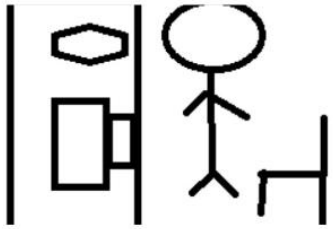
THE DIRECTER Josua Leo Severin

SHOT: Mid-shot - over the shoulder
ACTION: Character reading mail

CAMERA MOVEMENT: Stil
LOCATION/SCENE Grouproom

SHOT: Close up
ACTION: Character reation

CAMERA MOVEMENT: Still
LOCATION/SCENE Grouproom



SHOT: Mid Shot
ACTION: Character stands up in frustration

CAMERA MOVEMENT: Tilt with character
LOCATION/SCENE Grouproom

SHOT: Mid-over the shoulder shot
ACTION: Character starts to write a response

CAMERA MOVEMENT: Still
LOCATION/SCENE Grouproom

SHOT: Close-up
ACTION: New reaction shot -

CAMERA MOVEMENT: Still
LOCATION/SCENE Grouproom

SHOT: close-up
ACTION: Mail response - nothing happening

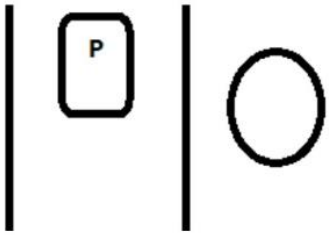
CAMERA MOVEMENT: still
LOCATION/SCENE Grouproom

PROJECT NAME: Video Project Traditional

THE DIRECTER Josua Leo Severin

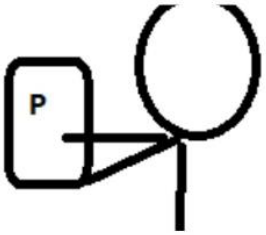
SHOT: Close up
ACTION: Gives up looks around desk

CAMERA MOVEMENT: Still
LOCATION/SCENE Grouproom



SHOT: Mid-shot
ACTION: Looking and grappiing pills

CAMERA MOVEMENT: Still
LOCATION/SCENE Grouproom

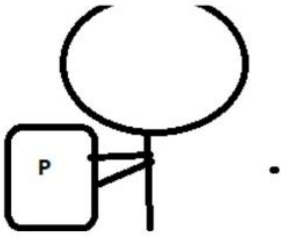


SHOT: Medium Shot
ACTION: Looking at pill - then throws them away, cleaning up deak

CAMERA MOVEMENT: Still
LOCATION/SCENE Grouproom

SHOT: Close up
ACTION: Reaction

CAMERA MOVEMENT: Still



SHOT: Medium Shot
ACTION: Pick up pills agoin

CAMERA MOVEMENT: Still

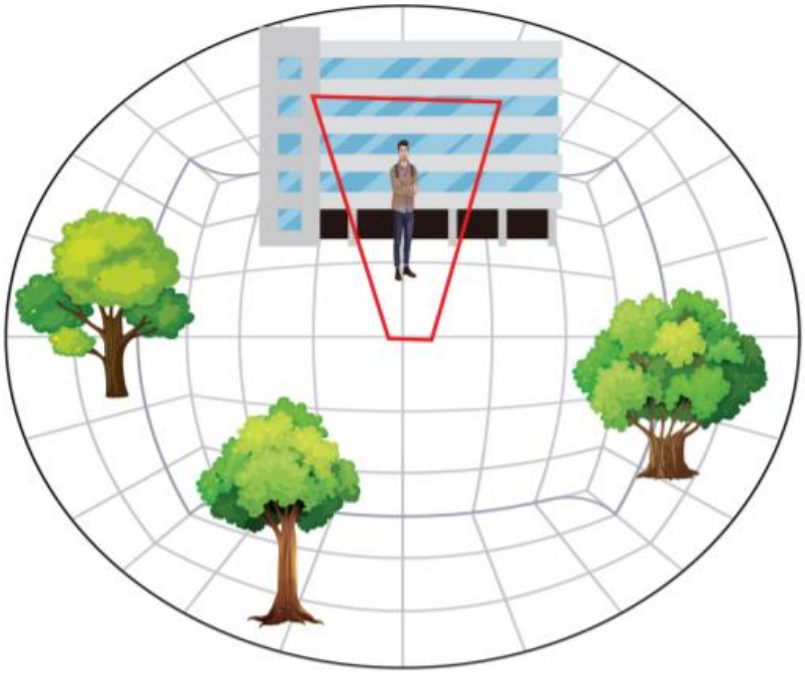
SHOT: Extreme Close-up
ACTION: Reaction after swollowing pills

CAMERA MOVEMENT: Tilt up

9.1.2 Storyboard: CVR

PROJECT CHOICE

SCENE #: 1 SHOT # 1 SHOT SIZE # WS



PROJECT CHOICE

SCENE #: 2-3 SHOT # 2-3 SHOT SIZE # WS

9.2 Questionnaire

9.2.1 Comprehension Questionnaire

Comprehension Questionnaire

Age: ___

Gender: ___

Please give your first impression and answer all the questions by circling the most appropriate answer. You can only choose one answer to each question!

The film is divided into four parts: the exposition (1), the Inciting Incident (2), the Complicating action (3), and the Resolution (4). Please describe your understanding of what happens in the story in each of these parts.

1. Exposition: We are introduced to the main protagonist as well as the state he was in. What can you tell us about the character?

2. Inciting Incident: an event occurs and changes the character's current state. What do you think that event was?

3. Complicating action: The main protagonist tries to resolve a situation, but there are obstacles in the way.

4. Resolution: The conflict is resolved by the main protagonist. How did he resolve it? (what happened?)

9.2.2 Empathy Questionnaire:

Empathy Questionnaire

Age: ___

Gender: ___

Please read the questions carefully and give your first impression and answer to all the questions by circling your answer. You can only choose one answer per question!

Putting yourself into the main protagonist shoes (when he receives the mail that he has been expelled).

1. Did you feel sorry for the main character?

   Not at all Very Slightly Moderate A lot Very much

2. How well was the main protagonist motivation established towards the end of the film?

   Not at all Very Slightly Moderate A lot Very much

3. To what degree did you accept his behaviour in the end?

   Not at all Very Slightly Moderate A lot Very much

9.2.3 Consent Form

Consent for Participation in Interview Research

I volunteer to participate in this research project at Aalborg University.

1. My participation in this project is voluntary. I understand that I will not be paid for my participation. I may withdraw and discontinue participation at any time without penalty.

2. Participation involves fulfilling a questionnaire at the end.

3. I understand that the researcher will not identify me by name in any reports using information obtained from this project, and that my confidentiality as a participant in this study will remain secure.

4. I have read and understand the explanation provided to me and I voluntarily agree to participate in this study.

My Name

_____

My Signature

_____

Date

_____

Signature of the Investigator

_____

9.3 Script

Name: CHOICE

DISSOLVE TO:

1. EXT. OUTSIDE THE UNIVERSITY

CAMERA PANS AROUND TO SHOW THE SURROUNDINGS

Outside the one of the entrances to the university, see parking lot, student walking about, and the main protagonist walk towards the door…

WS - CAMERA DOES A BODY SCAN OF THE YOUNG MAN

A YOUNG MAN with black jeans, black hoodie – half zipped, shoes half-laced, backpack strapped on one shoulder, half-open – walks to the entrance outside the building towards the camera.

OVER THE SHOULDER SHOT – WALKING UP TO THE DOOR

HE SEES A SIGN (GROUPROOM, DENNIS)

CAMERA FROM THE INSIDE – WE SEE HIM OPENING THE DOOR

WIDE SHOT PUSHING IN AT THE DOOR SLOWLY
THE WIDE SHOT HAS TO INCLUDE ENOUGH INFORMATION BOOKS, DISHES, COFFEE CUPS, PAPERS) – OTHERWISE USE A PAN BEFORE SETTLING IN THE DOOR

He is walking slowly inside as if lost, stumbling slightly, then stops and looks at the camera. As if talking to himself he asks

CAMERA STOPS AT A CLOSE UP OF THE YOUNG MAN

YOUNG MAN (V.O)
Fuck, I forgot my books again, didn't I?

CAMERA STARTS TO PUSH IN AGAIN AS HE SIGHS

After a short pause, he walks over to his untidy desk, throws his half open bag next to an open laptop

NOTES: We need to hold the first shot in the beginning to let the user acclimate with the environment. The footsteps could serve as a nice transition for the two scenes.

CUT TO:

2. INT. INSIDE THE APARTMENT

His group room is ordered chaos, there are books about computers lying around, and on his desk there are pills, beer cans, used coffee cups, paper etc.

He stands, looks around, and moves towards the room slowly as if lost, he stops near the camera – looks straight at it and as if talking to himself...

YOUNG MAN (V.O)
What did I come here to do again?

CAMERA PANS WITH HIM AT THE SCREEN
could also move slightly to the side to reveal the screen better and make it easier for young man to look at the camera, could go handheld for this one

He looks around and then a notification from his computer catches his attention. An email reads "You have not been paying your tuition; therefore, you have been expelled from the university effective immediately." After a long pause, he takes a big sigh – turns and looks at the camera and asks himself.

GET A CU OF HIS REACTION TO THE LETTER
CU OF THE SCREEN
CU OF THE CURSOR

YOUNG MAN (V.O)
When the fuck did this happen. What do I do now?

NOTES: Emphasis should be given on the environment at first, then on the screen. If necessary cut do different angles

DISSOLVE TO:

4. INT – INSIDE THE GROUP ROOM MOMENTS LATER

CAMERA AT THE SAME POSITION AS BEFORE

The YOUNG MAN is still sitting at his desk looking at the screen baffled.

CAMERA IS STATIONARY – HE MAY GO OUT OF FRAME BUT HIS JOINT PICKING SHOULD BE IN FRAME, THEN HE COMES BACK INTO THE FRAME

After a short pause, he gets up suddenly as if just awoken, stares at the screen for a brief moment.

He stands, then nervously, he is taking out a joint and a lighter and start to light it, but then stops himself before he starts. Decisively, he sits back again and opens the reply window. The cursor remains blinking without anything written.

THE IMPORTANT PART HERE IS THE SCREEN, AND THAT HE WRITES NOTHING, GET AN ECU OF THE SCREEN AND CURSOR

He slams his hands on the table in frustration. Pauses for a second and thinks takes a big sigh.

CU OF THE HANDS SLAMMING AND DESTROYING THE JOINT
CAMERA SHOULD BE OVER THE SHOULDER AS BEFORE
Insert shot of the ruined joint on the desk.

He relaxes, and after a brief relaxed moment, he begins tapping his feet nervously. He glances at the camera questioningly without saying a word.

CU OF REACTION SHOT OF RELAXATION AND SIGH
CU OF FEET NERVOUSLY TAPPING
CAMERA SHOULD PAN TO FOLLOW HIM TO THE COUCH, CUT ON MOVEMENT MAYBE AND THEN SEE IN POST WHAT FITS.

He gets up decisively again and goes to the clean up the floor and the desk. He stops, glances at the camera questioningly again as if an answer will come out of it. Slams his hands on the counter and sighs deeply.

CAMERA SHOULD STAY OVER THE SHOULDER IN WIDE SHOT AND WE SHOULD FOLLOW HIM AROUND IN PANS – TAKE STATIONARY SHOTS JUST IN CASE. HAVE INSERT OF THE DISHES BEING WASHED
HAVE DIFFERENT ANGLES FOR WHEN HE GLANCES AT THE CAMERA
Goes back to the desk and sits down, and he tries to write again. Nothing comes out. After a pause and a big sigh, he...

CU OF THE RUINED JOINT BEING LEFT ON THE DESK
Closes the screen calmly, takes out a new joint with him, lies on the couch. Now relaxed, and blows it into the camera.

FADE TO BLACK

NOTES:

The idea here is for the camera to follow him around in over the shoulder wide shot.

Where punctuation points are needed, we will have the insert shots of different details, ashtray – dishes – screen – feet tapping – hands slamming the desk.

Have stationary over the shoulder shots as a backup.

Include some close ups for the important action – when he reads the mail, when he stands up, when he takes the pills, when he sighs.