

Interactive Cinema and the Use of Alternative Mixes for Autistic Accessibility and Representation of Autistic Experiences

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Abstract

Autism research and media representation has been mostly limited to stereotypes and a focus on adolescents (primarily adolescent boys), along with the perspective being through the parents with autistic children. Sound design, together with the provision of alternate mixes, can be used to better represent autistic listening experiences, as well as providing greater accessibility. I created an interactive short film called '*Processing*', that follows an autistic character and allows users to listen to the film in three different ways: *a traditional mix*, inspired by the usual post-production process for audio, *a representative mix*, inspired by the heightened sound perception autistic people may experience, and *an accessible mix*, where sound intensity was reduced in order to provide audiences with audio processing conditions a more comfortable experience. Autistic listening, while as uniquely varied as all listening experiences, is typically characterised through increased awareness and heightened sensitivity due to a difference in the cognitive processing of sound. The creation of '*Processing*' is the result of engagement with literature on the topic, an analysis of media representation and accessibility work, as well as participatory group studies with autistic people. This research has demonstrated that autistic audiences desire a greater level of purpose built and customisable accessibility to support their needs as a viewer as well as more diverse representations in media. The use of alternate mixes also proved promising in supporting audience choice, for the purpose of accessibility, as well as representing autistic listening experiences.

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Author's Declaration

I declare that this thesis is a presentation of original work and I am the sole author. This work has not previously been presented for a degree or other qualification at this University or elsewhere. All sources are acknowledged as references.

Chapter 1: Introduction

Even though previous research has demonstrated that autistic listening experiences differ from non-autistic ones (Remington and Fairnie, 2017), film and television has done little to represent this variety of experiences (Jones, Gordon and Mizzi, 2023). Furthermore, media accessibility work rarely focuses on neurodivergent experiences – resulting in no accessibility measures for neurodivergent audiences. This research aims to address these shortcomings by not only delving into what makes Autistic Listening but presenting an example of ways this can be put into practice through an interactive short film, that has alternate mixes to allow for different experiences of the film, and presenting new ways to represent Autistic Listening as well as creating media accessible for autistic audiences. In the process of doing so, the project has been anchored by the concept of *Aural Diversity*, which addresses the diverse nature of hearing and how that may impact audio-based research (John and Drever, 2022). *Aural Diversity* discusses the idea of the varied ways people can hear. Beyond physical implications of the pinna, various physical disabilities (such as D/deafblindness) and neurological conditions (such as autism) compare to what can be considered the auditory norm. While *Aural Diversity* is expanded in various capacities by John and Drever (2022), its implications on autistic listening will be the primary focus of questions answered throughout this thesis.

The research questions (RQ) this project hopes to answer are:

- RQ1: What is succeeding and failing with autism representation within film and television?
- RQ2: How can Interactive Cinema be used for educative and representative content of autistic people?

- RQ3: What features would an accessible audio mix for autistic audiences need to have and how can they be incorporated to audio postproduction processes through the use of alternate mixes?
- RQ4: What features of a representative audio mix would autistic people want to portray their listening experiences?

RQ 1 and 2 were interrogated through critical engagement with relevant literature before being put into practice both via discussion with autistic participants in a focus group and during the production of an interactive short film, titled *Processing*, about an autistic character undertaking a day with social challenges to interact with. The film was designed to represent autism positively, with the voices, opinions and experiences of autistic people engaged with in supporting the creation of the film. The film was also made with key awareness of damaging tropes that can limit autistic representation, and it was ensured such tropes were not adhered to. Designing the film to be as accessible for autistic audiences was also essential in fulfilling meaningful representation that autistic people could see themselves in. A focus group, of autistic participants, was also used to support the engagement with current literature in order to have the voices of autistic people at the heart of the research. This focus group was also used for RQ 3 and 4, with participants asked what features they would want in alternate mixes for their accessibility and representing their listening experiences. The development of *Processing* and its alternate mixes was essential in supporting the theoretical discussion of autistic accessibility due to the underrepresentation of autistic accessibility, or neurodivergent accessibility as a whole, in the media accessibility field of research. Pulling from other mix-focused media accessibility, such as the Enhancing Audio Description project's purpose built mix for visually impaired audiences (Lopez, Kearney and Hofstädter, 2021), that used 50 visually impaired participants to inform the EAD mix. The film was also designed as interactive, in order to examine the benefits of participants directly engaging in test-screenings by having them impact the story they are watching, *Processing* was important not only important in

supporting the underrepresentation of autistic accessibility, but to be an artefact that answers all 4 research questions.

Throughout the process of my research, I became aware of the importance of my position as both an autistic and a queer researcher. Autism research's future requires autistic-led research, specifically in fields that benefit daily living of autistic people (Pellicano, Dinsmore and Charman, 2014), something that my position as a researcher aligns with. Research on neurodivergent conditions has highlighted overlaps between them, such as among ADHD, OCD and Autism (Antshel and Russo, 2019). While each condition is unique and has distinct support needs, emerging research seems to have started pointing towards a panoptic perspective on neurodivergent conditions specifically when dealing with support (Kushki et al., 2019). Thus, when developing support and accessibility for autistic people, research may support overlapping conditions.

My positionality is also informed by my identity as both an autistic person and as a queer person, which is connected to the intersectional *Neuroqueer Theory*. The intersectional identity of being *Neuroqueer* exists to break the performance of normativity, where a dominant heteronormative non-disabled society reinforces such a performance (Barnett, 2024). It aims to break socially constructed values of gender, sexuality and neurotypicality in order to improve social inclusion (Barnett, 2017). Neurodivergent and queer overlaps occur due to their existence disrupting the status-quo of a hetero-neurotypical society (Grace, 2016). Within the context of my research, I bring a level of subjectivity determined by how I have lived as a neuroqueer person and the way I understand my experiences. While it is impossible to speak for every autistic person, my autistic identity informs my research and perspective, but it is my role, as the researcher, to recognise these biases.

This thesis starts with a thorough literature review, before moving onto the practice lead approach with the focus group and interactive short film. The success of the film was then scrutinised by test screenings.

Chapter 2: Media Accessibility and the Representation of Autism

2.1 Introduction

In this chapter I will explore the history of autism research, in particular in relation to developing understanding around autistic listening. I will then analyse the broader fields of representation and audio accessibility underpinned by a focus on autistic experiences. Finally, I will discuss interactive cinema and alternate mixes for their potential application within accessibility and representation for autistic people.

2.2 Autism Research and Autistic Listening Experiences

Crucial to autism research is understanding the current failings in support for autistic people's experiences, including access to diagnosis, within the UK. It is also important to bring in the perspective of co-occurring conditions, that are often analysed exclusively in isolation. Despite greater quantities of diagnoses, with a 787% increase between 1998 and 2018 from the UK's Clinical Practice Research Datalink (CPRD) database (Russell et al., 2022), the historical bias within autism diagnoses has only just begun to change. Those assigned female at birth (AFAB) compared to those assigned male at birth (AMAB) can have as much of a difference as 10:1 of being diagnosed, with the bias in favour of AMAB individuals (Cruz et al., 2024). While partially being down to the difference in the ways autism presents in AMAB and AFAB people (Rivet and Matson, 2011), Rivet and Matson discuss how, due to the current conceptualisation of autism, it favours AMAB presentation of autism, resulting in the process of diagnosis becoming harder for AFAB autistic people. On top of sex related bias, the waiting list for getting an autism diagnosis in the UK, through the NHS, reached 172,022 in 2023 (Lang, 2024), some people with suspected autism waiting two and a half years to see a specialist compared to

four months in 2019. Being able to socially identify as an autistic person has clear benefits to mental health and wellbeing (Cooper, Smith and Russell, 2017), with self-diagnosed autistic people being able to access the same interventions, to support their mental health, as clinically diagnosed autistic people, something limited access to a diagnosis impedes. Due to this, informal self-diagnosis, where someone identifies as autistic without a formal clinical diagnosis (National Autistic Society, 2025), has become increasingly prominent.

Autism is now understood as a neurodevelopmental condition that is observed through social differences: interaction, communication and imagination (Davies, 2022). Davies discusses how autism can be alongside a learning difficulty but is not defined by such and is a separate diagnosis. Historically, autism has been described, within research, as a learning difficulty alongside what we now define as autistic traits. While first named by Eugen Bleuler in 1911 from the Greek word 'autós' in describing patients as withdrawn (Roman-Urrestarazu, Dumas and Warrier, 2022), autism research began in the 1940s with Kanner's article *Autistic disturbances of affective contact* (Kanner, 1943) where we have early descriptions of autistic experiences and traits from autistic children. Within the article, the data on autistic people is presented through experiences documented by the parents of the autistic person, in one case in particular Kanner observes that the description of a mother's 3-year-old were a recollection of her own events rather than what actually happened (p.225) and may not fully represent the autistic child's experiences as it was only the parent's experience that was used in the study rather than comparing her account with an unbiased observation of the autistic child. Kanner discusses the following observed traits: social interaction challenges, struggling with changes in routine and spontaneity, high memory capacity, high intelligence, echolalia (the repetition of words, phrases or sounds as a response to something heard) and audio sensitivity. While this was an important first step for autism research, Thompson (2013) reflects on how much of the research was misguided, mistaken, or even outright wrong. Within Thompson's article, he writes how most people labelled with autism ended up being separated from society in

public institutions. Thompson mostly credits this mistreatment and perception of autism to child psychiatrists' "selective samples" (p.82) taken from the institutional populations they worked within, and therefore not including autistic people who lived either with the support of family or independently.

While Thompson identifies an "avalanche" (p.82) increase in research, he still identifies limited progress in the field at the time of writing, in 2013. Thompson believes that while research has been flourishing, the individual experience of someone with autism likely has changed a very limited amount despite discoveries and development of autism research. As identified by Fletcher-Watson et al. (2019), much of the research has not meaningfully included the voices of autistic people, and it is only recently that there has been greater awareness of the importance of meaningful and autistic led research so that perspectives aren't skewed away from autistic voices when conducting research (Roche, Adams and Clark, 2021).

The key focus of this research is the autistic experience, specifically the aural experience. An altered sound perception, with a heightened sensitivity to sound, is a trait which has been supported since 1944 with Kanner's work. This early work is discussed and used within more modern autism research, such as in relation to the building of the *Sensory Profile (SP)*, a tool created to assess children's response to sensory events and used in supporting autism diagnoses in children (Dunn, 1999). Crane, Goddard and Pring's study (2009) used diagnostic processes of the *Autism-Spectrum Quotient (AQ)* (Baron-Cohen et al., 2001), a 50-item questionnaire which aims to indicate autism based on traits they exhibit, and *Wechsler Abbreviated Scale of Intelligence (WASI)* (Wechsler, 2018), a test for overall cognitive ability. These diagnostic tools are used alongside Dunn's SP to demonstrate that, while differences will exist among autistic people, most autistic people will experience a form of altered sensory

processing. Furthermore, Crane, Goddard and Pring's study disproved prior research (Williams, 1992) that believed such sensory experiences diminished with age.

One of the early tests of autistic listening was a study on sensory processing within autistic adults in 2009 (Crane, Goddard and Pring p. 216). Beyond just looking at 'unusual sensory processing' of autistic adults (Crane, Goddard and Pring, 2009), a study on the auditory capacity of autistic people was the first to discuss autistic listening experiences, not just focusing on auditory overstimulation, with the potential advantages autistic listening may have compared to non-autistic hearing (Remington and Fairnie, 2017). While sound can still present as an uncomfortable experience for autistic people, with particular sounds or high volumes causing overstimulation, Remington and Fairnie found that autistic people seem to have a heightened perception of sound, as well as sensitivity. This allows them to hear elements of an environment that non-autistic listeners may miss within a soundscape. The heightened perception creates a different listening experience to non-autistic listeners and was proven by placing participants within a sonic environment where they were supposed to follow a specific conversation. A separate audio distraction within the soundscape was noticed more by autistic participants when compared to non-autistic participants.

Davies (2022) reflects on autistic listening as its own unique conceptualisation of hearing within *Aural Diversity*, in connection to a simple model of auditory processing, that considers both the physical and the neural. The physical elements of listening are from the elements of listening before the brain, such as the electrical signals sent from the cochlea after receiving sound waves from the environment. This differs from the neural perception of sound which is how sound is processed in the brain, which is affected by neurodevelopmental conditions, such as autism, allowing for a definable difference in listening experiences.

Much of the established literature on autistic listening is clinically focused, with autistic listening experiences as evidence for a person having autism. While Remington and Fairnie analyse autistic listening as an interesting unique trait against non-autistic listening, Davies reflects on the differing cognitive experience of autistic listening, there is limited wider presentation on the experience of what it is like to hear as an autistic person, or how this can be sonically represented to non-autistic ears. There is discussion on how autistic access may be impacted by sound, such as the overstimulation/ sensory overload caused by a heightened perceptual capacity and the social ramifications this may have for an autistic individual (Remington and Fairnie, 2017), but limited discussion on the individual experiences autistic people have with sound. While individual experiences are presented in media, there are limitations in the current examples of autistic experiences, let alone autistic listening experiences. Now that we have established autistic listening, I am going to be focusing on representations of autism in media. I propose that the way autistic people are represented should be more than just characterisation, and should consider implementing autistic experiences, such as autistic listening, through sound design techniques.

2.3 Autism and Representation in Media

Media, within this thesis, will primarily refer to Film and Television programs, however references to other forms of media (like books, plays or games) may be specifically referenced when relevant. The way Film and Television represents minority groups is essential in ensuring cultural diversity (Fürsich, 2010). Representation directly correlates to societal understanding and how people are treated, with positive representation being a significant topic in designing meaningful representative media for minority groups, such as autistic audiences, due to the way groups are represented closely linked with power (Kidd, 2015), whether that be politically or socially. To define positive and negative representation, the ways Fürsich (2010), discusses representation will be used as a guideline. Those guidelines being

positive representations enabling diversity through nuanced and varied portrayals of characters, whereas negative ones reinforcing stigmas and stereotypes.

Between 2000 and 2013, in film and television, most characters represented as autistic were white, male, middle class, and presenting their autism physically/verbally usually with atypical speech patterns, special interests and a need for care (Scott, 2014). Autistic characters in media, after Scott's research and until April 2020, saw a notable increase in diverse representation, presenting a greater variety of non-Caucasian backgrounds and LGBTQ+ identifying autistic characters, however, they were still underrepresented compared to cisgendered heterosexual male autistic characters (Dean and Nordahl-Hansen, 2022). While Dean and Nordahl-Hansen found discussions on autistic characters from international media discussion, 56% of autistic characters found were from USA Film and Television productions, so their research outcome would be primarily based on US autistic representation. Jones, Gordon and Mizzi (2023) further found, through a comprehensive study on media depictions of autism which included TV shows (*The Good Doctor* (Shore, 2017-2024) and *Atypical* (Rashid, 2017-2021) and novels (*The Curious Incident of the Dog in the Night-time* (Haddon, 2003) and *The Rosie Project* (Simsion, 2013)) a limited representation of autistic people without high support needs and therefore limited portrayals of the wide autistic spectrum. Focusing on one portrayal of autism limits societal understanding of autism and creates a limited understanding of autistic lives.

When creating representative media, combining scholarly and lived experience, can aid positive representation (Brick, 2024). Brick describes how presenting an autism coded character (a character written with traits that audiences may relate to autism without being canonically recognised as autistic) allows audiences to experience and understand the life of the character. Compared to creating a real and varied portrayal of autism, media has mostly

developed a singular 'autistic type', making spectacles of hyper-intelligent and successful autistic people and characters (Brick, 2024). In Brick's findings, many of the most positive portrayals of neurodivergence are characters not even canonised (having not been described as autistic within the world of the story), but have been given such labels by fans/communities based on autism coded traits. Autistic-coded characters tend to present subtle traits, compared to a canon autistic character having autistic traits presented more obviously, typically limited and stereotypical. These canon autistic characters with stereotypical traits typically are written by neurotypical writers, such as in the cases of Simsion's book *The Rosie Project* (Bulsiewicz, 2019) or with limited to no research into autism as in Haddon's book *A Curious Incident of the Dog in the Night-time* (Tink, 2024). Haddon specifically comments on this during a blog post titled '*asperger's & autism*' (2009). Haddon explains how Christopher, the main character of *Curious Incident* was not written as autistic, but the term 'Asperger's' was used on the cover, something Haddon regrets. Haddon does not present himself as a spokesperson for autistic people, nor had the intention of writing *Curious Incident* as a portrayal of the autistic savant stereotype, however, it has contributed to that stereotype being presented as the sole 'version' of autism, with the book being adapted into a successful stage-play (Stephens, 2012-2017) winning Olivier awards and having over 1,600 performances in its 5 year initial run. Such success unintentionally further perpetuates the singular depiction of autism as a socially awkward savant male character.

Beyond just limited representations of autism, there still remains actively harmful portrayals of autistic characters that do nothing but further entrench stereotypes and stigma, ultimately negatively impacting autistic people's mental health and wellbeing (Hungerford et al., 2025). Sia's 2021 film *Music* uses a non-autistic actor to portray negative and possibly dangerous and traumatising ways of 'dealing' with autistic people, such as restraining them during meltdowns (Charles, 2024). Moreover, Sia's research into autism was done entirely through

Autism Speaks (Charles, 2024), an organisation who repeatedly ignore autistic voices, such as not having a single scheduled autistic person at a 2013 summit on autism (Robison, 2020).

Representation in media affects the way people and groups are perceived, understood and tolerated (Fürsich, 2010), so when representation is limited to stereotype so will public perception. Autistic representation typically falls into the boxes of burdens or saviours to create a reaction from neurotypical characters around them, rather than being characters with their own motivations (Jones, Gordon and Mizzi, 2023). While this study recognises there is no ideal or perfect portrayal of autism, based on the completely individual experiences of all autistic people, developing a greater variation of representations, with individual goals and presence within a story, can improve matters. Reductive representations use autistic characters as cause and effect rather than presenting fulfilled characters living a life within the story and, as a result, perpetuate negative social perception of autistic people.

When considering autistic characters in fiction books used for teaching in American classrooms, Barrio et al. (2021) makes an important distinction between positive and negative ways to portray autistic characters (see Table 2.1).

Positive ways literature presents Autism	Negative ways literature presents Autism
Portray Autism as a characteristic and part of a person's identity	Portray Autism as a deficit or a Superpower
Include the character's strengths (e.g. what they are good at, their likes)	Include characters that are geniuses only or have extreme behaviours.
Describe social communication and interaction as challenges.	Showing stereotypical challenges (e.g. no eye-contact and robotic movements)
Unpack the characteristics through dialogue	Overemphasise the restrictive and repetitive behaviours, interests, or activities.
Describe the character's restrictive and/or repetitive patterns of behaviour, interests, or activities with a balance between communication and social interaction.	Rely heavily on sensory aspects of autism.
	Use stereotypes about a specific population or community.
Allowing readers to infer traits of a character's autism.	Having an autistic character's traits be the only development of their character.
Portray all genders.	Failing to portray specific underrepresented population (e.g. Only showing autistic characters as white heterosexual and male)
	Show how to be a saviour.
	Focus on "fixing" the "problem" (i.e., ASD).

Table 2.1: A list of positive and negative ways literature, from American classrooms, portrays autistic people. Based on the work by Barrio et al. (2021).

Current autistic representations in film and television appear to be at fault for portraying the majority of negative representations, further entrenching stigma when consumed (Mittmann, Schrank and Steiner-Hofbauer, 2024). The future of autistic characters in audio-visual media must expand upon the narrow representations and provide varied representations of autistic lives and experiences. While a hyper-intelligent white, middle-class, heterosexual autistic man can represent an aspect of autism it cannot continue to be the norm for *the* autistic experience. Diverse representations of backgrounds, lives and experiences would allow a positive and

progressive understanding of autism to develop, as well as providing a wider variety of autistic people to be seen and represented in the audio-visual media they consume.

Joseph Inman, an autistic filmmaker, who wrote and directed the short film *Spines* (2023), about an autistic boy understanding how to express himself and better communicate with others, discusses his experiences in an episode of the DARCI podcast (February 2024). He found during production that there is a huge limitation in autism representation in the current media landscape. Inman stated that an important part of changing the industry would be filmmakers themselves leading the change in creating meaningful media on and for disabled people. *Spines'* lead character, Thomas, was created to fulfil this void in representation, and was a combination of the autistic actor, Oscar, and Inman's own autistic childhood experiences (DARCI Podcast, February 2024).

In progressing representation of autistic people within media, having autistic filmmakers take the helm in emerging autistic portrayals on screen could be a good start. For portraying the experience of autism, the opinions have to come from within, rather than based on an external appearance of autism (Williams, 1996), therefore needing autistic voices behind research and media in order to present autistic experiences. Schwarz mentions that, despite autism having a widely negative societal perception, the use of progressive films about historical autistic figures could change societal perspective, mentioning the biographical films on Alan Turing (*Breaking the Code* (Wise, 1996)) and Glenn Gould (*Thirty Two Short Films About Glenn Gould* (Girard, 1993)) (Schwarz, 2005). Despite these observations and goals for change in autistic representation, the last two decades have seen limited development in progressive and varied portrayals of autistic characters (Eastwood et al., 2022), based on the listed positive and negative portrayals of autistic characters from Barrio et al. (2021) and supported from a similar list by Murray (2008). To make meaningful change, Eastwood et al. (2022) call to *de-*

neurotypify the film studies curriculum, exhibiting work by autistic people and about autism alongside other creative work, rather than including it in access and awareness spaces only. Rather than what Eastwood et al. call a 'cinema of disability' (p.687), they encourage a practice of filmmaking in tandem with what currently exists that explores diversity and imagination outside the bounds of neurotypical foundations within cinema.

While creating media about autistic experiences works well to inform non-autistic audiences, in making better representative content, the priority should be on the represented audience. In a thesis paper on *neuroqueer* (a term connecting LGBTQ+ and neurodiverse communities (Walker and Raymaker, 2021)) filmmaking, Allsopp found that much of the current media around disability were stories of overcoming and inspiration to be consumed by a non-disabled audience (2023. p.258). Working with neuroqueer filmmakers Kennedy and Hellett, Allsopp writes how they reject mainstream visibility as a political voice for minority communities (p.139). Hellett, head programmer of the Oska Bright Film Festival, a film festival for films made by or featuring people with learning disabilities or autism, still finds importance in engaging non-learning disabled audiences, with 50% of Oska Bright's audiences not having a learning disability (Dimensions, 2019) and believes the best action for fighting the barriers for filmmakers with learning disabilities, autism or additional needs is through positive action. Allsopp compares the works of Kennedy and Hellett to the essay *The Oppositional Gaze: Black Female Spectators* (bell hooks, 2008), where bell hooks champions black representations from black creators and opposes white created stories on black experiences. Kennedy and Hellett's work are comparative in the way they reject the dominant media culture via bell hook's concepts of the critical spectator and the oppositional gaze and create stories based off their own lived experiences as neuroqueer creators. The critical spectator is defined by bell hooks as an audience member recognising the systemic issues and bias in how media may be representing a marginalised group, specifically mentioning black families observing film and television as a system perpetuating white supremacy (p.255). To develop an

oppositional gaze, bell hook discusses how black audiences created an independent black cinema in order to show their perspective (or gaze) compared to the white lead film and television industry (p.255). Both concepts refer to how media is consumed by minority and marginalised groups, initially conceptualised through black women, and how they actively engage with and criticise media representations of themselves. It is the dormant media representations that Kennedy and Hellett, specifically as neuroqueer people, directly challenge with the media they make and distribute with the intention of challenging preestablished system. Next we move onto Media Accessibility, which is an essential in meaningful representation in media, as to create media for autistic people it must also be accessible for them to watch.

2.4 Autism and Media Accessibility

Media Accessibility (MA) involves different methods to support the access needs of audiences with different languages and/ or sensory disabilities (Romero-Fresco, 2020), such as audio processing conditions, D/deaf audiences and blind audiences, all of which will require unique accessibility features. Accessibility features are important in developing social change to support disabled people, through involving disabled artists to challenge what is considered the norm (Romero Fresco and Dangerfield, 2022), as the integration of disabled people in developing MA allows for designed for purpose accessibility. Purpose built accessibility allows for the specific needs of audiences to be met rather than the generalised approach to accessibility, currently available. To develop this, accessibility must become part of filmmaking, as suggested through the concept of Accessible Filmmaking, where accessibility is considered during the filmmaking process and not just during distribution (Romero-Fresco, 2019). Said integration can reduce the resistance some filmmakers currently have to access functions due to how they can change their film. A 'maker-expert-user gap' was defined by Grecco (2013), and adapted by Branson (2018), that separates filmmakers (maker), MA

professionals (experts) and viewers (user), in the process of creating accessible media. To close these gaps, Romero-Fresco (2019) looks to future possibilities where engaging in Accessible Filmmaking allows filmmakers to engage with MA and have a say on the different versions created. Not only does this promote accessibility but also allows accessible content to be consumed the way a filmmaker would have any other audience member experience their work and create a fulfilling experience for creator and consumer. This concept Romero-Fresco intends for all levels of filmmakers to engage with, from professionals to amateur and features to shorts.

Neurodivergent people have relatively unexplored access needs when it comes to accessibility functions, despite their atypical sensory processing affecting media consumption (McClenaghan, Pardoe and Ward, 2022). In a study about future audio accessibility, McClenaghan, Pardoe and Ward compare different broadcast television genres on how their use of non-dialogue sounds and the clarity of the mix affects accessibility for neurodivergent and D/deaf or hard of hearing audiences. The study compared different genres of broadcast television, and found that genres with more non-dialogue sounds, such as the chimes and buzzes in game shows, were harder for neurodivergent audiences to remain focused on the central dialogue. The highest ranked programme genre, for being able to follow the central dialogue, was news shows as they had minimal sound effects and were almost entirely dialogue. This comes down to busier mixes, like game shows, present a higher cognitive load for neurodivergent people to process. Typically, neurodivergent people process more sound within the environment due to heightened sensitivity and perception (Remington and Fairnie, 2017). Within media consumption, neurodivergent audiences were found to use accessibility features, such as subtitles, more so than neurotypical viewers, emphasising the need for greater research and understanding on future accessibility services for autistic audiences. Research on ways to develop MA for neurodivergent audiences is beginning to develop, with

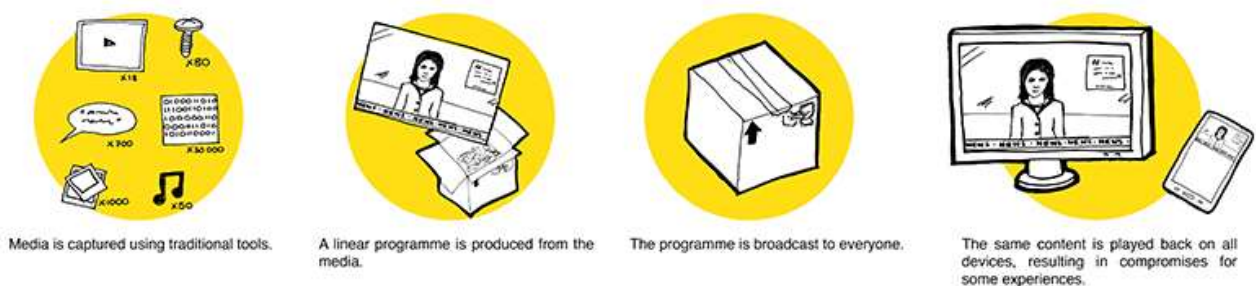
Allen observing ways changing the order a story is told, based off of traditional genre story beats, can be easier to remember for ADHD audiences (2026).

With an increased perception of sound common within autistic people (Remington and Fairnie, 2017) it is possible to claim that current media audio is not as accessible as it could be for autistic audiences. Content with frequent unexpected sounds, such as game shows, are some of the least accessible (McClenaghan, Pardoe and Ward, 2022) which may come from the heightened awareness of all sounds within an environment (Davies, 2022) making it harder to consume. While a representative audio experience for autistic people may be a more overwhelming soundtrack to truly represent how autistic people typically find sounds more intense. In order to allow the same media to be accessible to an autistic audience there must be a level of self-agency in allowing audience control over different levels of sound. With there being no specific example of what autistic listening is like for an autistic individual a truly accessible mix would be one that allows the audience to control levels of different sounds within the mix.

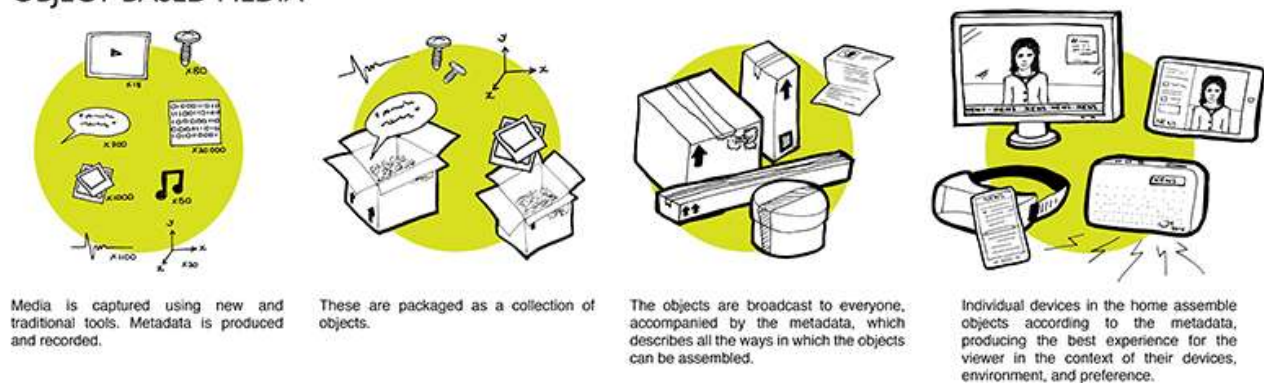
A tailorable audio mix for accessibility needs has been at the centre of the BBC R&D team's research on Object-Based Media (OBM), a style of personalised content where every part of the media is broken down into 'objects' (Figure 2.1 (BBC, 2013)). OBM's goal is a broadcast system where every audience member can create a media experience for themselves, such as functions to make content accessible for people with cognitive and sensory needs (Armstrong and Crabb, 2017), such as autism. This is possible when using OBM due to media being recorded and broadcast as objects, rather than a singular program, which any viewer can influence through devices, environment, or preference (Stout, 2019). To allow systems like OBM to be widely accessible to use, part of the project has been developing Render Engine Broadcasting, a real time rendering technology for delivering personalised experiences

like OBM, to allow the OBM technology to be used at home (Lomas, Lumb and Shephard, 2019). The OBM toolkit, StoryKit, allows the production team to allow for the self-tailoring needed to further enhance the viewing experience, such as for people engaging with accessibility functions, but can also be used to allow different story pathways or general preferences. This tool is engaged with during production, which would allow a willing producer to work with accessibility functions rather than just leaving it to a broadcaster's standard subtitles and audio description. StoryKit allows for accessible content to be created without bespoke code having to be written for it (BBC, 2017). OBM further supports accessibility, such as being able to broadcast multiple audio mixes allowing, for example, for a standard mix, a representative mix (of the autistic listening experience), and an accessible one to all be broadcast and allowing audiences to choose. OBM has been researched for its potential benefit for ADHD audiences, with media being broadcast in a different order benefiting ADHD people based on how they can remember elements based on it being broadcast in an order typical fairytale storytelling (Allen, 2026).

TRADITIONAL MEDIA



OBJECT BASED MEDIA



BBC | R&D

Figure 2.1. A visual representation on the difference between traditional broadcast media and OBM. This image was created by and is owned by the BBC.

Also in connection to championing personalisation and adding a reflection on the importance of spatial audio for accessibility, are the Enhancing Audio Description projects, which put a key focus on binaural audio as part of their accessibility methods, alongside sound effects and the I-voice (first person narration), in making a sound mix accessible for visually impaired audiences (Lopez, Kearney and Hofstädter, 2021). The combination of those methods is what is called Enhanced Audio Description (EAD). Binaural audio, a form of stereo-audio where the sound has been filtered to mimic hearing localisation in humans when wearing headphones (Roginska, 2017), allows for a separation of objects within a soundscape so that audiences with visual impairment can follow a scene sonically in a wider space, compared to how traditional mixes place dialogue in the centre speaker. Currently, traditional Audio Description (AD), an audio track in the third person that provides information from the visual layer (and occasionally sound elements) of a film or television programme (Lopez, Kearney and Hofstädter, 2021), only acts as a 'one fits all solution', without adapting to the nuanced needs and preferences of audiences (Lopez, Kearney and Hofstädter, 2021). EAD methods have also been found to support social inclusion, as mixes have been found to be accessible for visually impaired audiences while also welcomed by sighted people, encouraging the same mix to be listened to by both groups (Lopez, Kearney and Hofstädter, 2021). The EAD project is testing if what works in binaural audio could be achieved through loudspeaker reproduction and further implementation of OBM, a premise discussed in a lecture on EAD at the University of York (Lopez and Kearney, 2024).

Separating the sounds within a track into objects may also prove an accessibility feature beyond its intended target audience of visually impaired people, and, with autistic people struggling with overlapping sounds (McClenaghan, Pardoe and Ward, 2022), allowing autistic people to separate sounds coming from a centre mix and follow the sound of the scene more easily could be beneficial. Being able to clearly discern dialogue, from other sounds within a

mix, would be particularly pertinent when the viewer has specific agency within a story, such as through the engagement required in interactive stories.

2.5 Active Engagement and Interactive Cinema

Interactivity can be used to actively engage audiences, and is evident through educational techniques like Game-Based Learning, a process that balances the design of interactive gameplay with learning goals (Plass et al., 2020). The ways in which games actively engage audiences, through play, can be supported through how active engagement causes intrapsychic activity, that is, the emotions, thoughts and feelings gained from reacting to an event or stimuli (APA, 2018). Intrapsychic activity occurs specifically when engaging with a presented topic (Walshaw, 2004) and cannot happen without engagement. With video games providing a necessary focus, due to a player's active role in playing the game, they could result in a more active engagement and therefore allow for a stronger platform to learn from. Game-based learning allows the opportunity for learning and understanding based on the engagement a game facilitates (Abdul Jabbar and Felicia, 2015), something Interactive Cinema is able to inherit from its part-game part-cinema medium.

Interactive Cinema is a form of visual media, like traditional film or television, but with the added experience of interactivity more typically found in video games. This can be as extensive as audience control over what is seen to a choose-your-own-adventure story. It explores elements of audience contribution, through the choices that can be made throughout the viewing experience (Hassapopoulou, 2024), something traditional linear cinema storytelling cannot, as the audience can only be spectators to a story. Interactive Cinema itself can be seen as the development and combination of film and video games, with specific technologies targeted towards games beginning to overlap for use in a cinema context.

(Vosmeer and Schouten, 2014). Examples of Interactive Cinema often market themselves either more as games, such as TellTale Game's *The Walking Dead* (2012) and Quantic Dream's *Detroit: Become Human* (2018) or as cinema but with choices like Netflix's *Black Mirror: Bandersnatch* (Slade, 2018). While all being interactive in nature, the actual agency an audience has varies greatly. *The Walking Dead* has a singular ending, with choices that affect smaller details of how the ending is reached, *Bandersnatch* has 5 unique endings based on choices, and *Detroit* has 85 unique endings trackable through an in-game flow chart. While Stern (2008) argues that interactive storytelling should have vast amounts of outcomes based on the choices made, Vosmeer and Schouten (2014) present the option of 'fake' interactions. Fake interactions refer to where the audience feels like they have an element of agency within the story, however their actions may actually have limited or no effect at all. This, while opposing Stern's idea of an interactive story, still presents a story users interact with as it develops even if all audiences reach the same ending despite making different decisions. Even though outcomes from interactions are limited, the feeling of real interaction is still part of the story. Tanenbaum (2011) argues that the existence of participation is the important distinguishing difference in Interactive Cinema rather than affecting the plot. Despite evident disparity in the impact of interactivity in interactive cinema, the key difference it allows against traditional cinema is how it challenges passivity of modern media consumption (Hassapopoulou, 2024). Within Hassapopoulou's book on Interactive Cinema (2024), she writes how in interactive options a viewer becomes an active participant rather than a less active viewer, which she likens to taking part (attending, passively observing) compared to having a part (involving oneself with an activity, being an integral part of) (p.35). The particular aspect of taking part, over consuming visual media exclusively as a spectator, involves the viewer in the media they are interacting with. While Hassapopoulou still supports that spectators can be active viewers, particularly in the construction of meanings, interactivity inherently forces an element of active engagement for viewers to consider while they are involved within a story told in an interactive film.

Interactivity as a facilitator for empathic response, between author and audience, on the topic of mental health was discussed in the screening of *Stepping Through Interactive* (Manni, 2025) for the York Festival of Ideas. Originally conceived as a linear film in 2016, *Stepping Through* developed into an interactive short in 2018, allowing audiences to shift from watching a film on mental health to engaging with it. With interactive elements on a timer, Manni (the filmmaker and researcher) and Gowland (a participant in the short) discussed how it allowed audiences to feel the pressures as if they were in the situations described throughout the film. The film allows viewers to partake in decision-making opportunities, even if they don't largely affect a story, which still fulfils the criteria for audience participation and creates an active engagement which serves to benefit the ability for Interactive Cinema to act as educative experience.

2.6 Interactivity to Represent Disability

Presenting disabilities through user interaction can be a contentious topic, as disability simulations have both changed attitudes and reduced prejudice as well as negatively impacted societal perceptions of disabled people (Kiger, 1992). Specifically within disability simulations, the focus on user impairment, influenced through current societal awareness of disabilities, leaves out other elements of the experience of disabled people (Nario-Redmond, Gospodinov and Cobb, 2017) and therefore fails to drive meaningful changes within public opinion. Disability simulations ignore key parts of the lives of the group with that particular disability and the social barriers they face (Nario-Redmond, Gospodinov and Cobb, 2017). The efficacy of such simulations have been disproved and questioned on their ethics have been raised not just on their ineffectiveness but also their questionable representation of disability (Flower, Burns and Bottsford-Miller, 2007). These simulations can be as simple as blind walks (covering your vision with a blindfold and navigating space), using a wheelchair or ear-plugs

(to limit hearing), with such experiences supposed to exhibit the idea of what it may be like for a disabled person in everyday life (Kiger, 1992). Kiger further discusses how the success of disability simulations requires greater thinking around design and procedure, due to participants in a disability simulation finding wheelchairs 'demeaning' and leaving them 'fearful', rather than learning to respect the experience disabled people face. Through experiments involving disability simulations, Nirio-Redmond, Gospodinov and Cobb found that these simulations worsened attitudes towards disabled people. The outcome of their research calls for professional responsibility towards providing accurate representations of disabilities without appropriating their diverse experiences. Therefore, focusing interactive experiences of disabled people, on other facets of disabled experiences – not just a focus on impairment - is important in avoiding the damages a simulation can cause.

In using Interactive Cinema to present the autistic experience, it is important to consider carefully how to represent the ways in which an autistic person may experience the world rather than providing a fixed, definitive simulation. Interactive mediums, such as videogames, that focus on sharing neurodivergent experiences may allow a player to experience in-game elements as if they were neurodivergent. Currently, there is a limited portrayal of atypical experiences, such as that of neurodivergent people, and in the cases neurodivergent experiences are represented the approach to this is limited to a medical or educational setting (Meinen, 2023). Meinen argues that, due to this, video games have an overlooked potential to communicate the lived experience of neurodivergent people, causing the limited use of neurodivergent experiences presented in medical or educational settings causing more harm than good. The way Meinen believes this can be changed is through three gameplay changes: stimulation being reflected in setting and game goals, a nonhierarchic relationship between the player and player character (with the player character responding to input from the player, but the player character having information yet to be revealed to the player), and a two-directional engagement (where the player and the player character work together in

developing the story and presenting the neurodivergent experience of the player character) (Meinen, 2023). Interactive Cinema, as an interactive medium like video games, can fulfil these gameplay changes by: setting up goals for the interactive film's protagonist and reflecting stimulation based on the environment, the interactive film's protagonist has knowledge of the film's world beyond what the viewer knows but is still influenced by the player/ viewer, and therefore naturally works two ways between the player/ viewer and the protagonist. Reed et al. speak specifically on visual novels' potential as one of the ways personal experiences and varied world perceptions can work as immersive explorations of marginalised voices (Reed, Murray and Salter, 2020). Through combining Meinen's gameplay changes with Reed et al.'s perspective on immersive exploration of marginalised voices, Interactive Cinema could be the medium for successfully sharing neurodivergent experiences in an artform that educates, rather than being designed specifically for education.

Through the use of interactive stories, showing a world through a neurodivergent lens, such as an autistic perspective, allows the user to explore and understand feelings and emotions an autistic person may experience (Meinen, 2023). The focus should be on a positive part of life instead of the harmful and negative ways often found in disability simulations. Such difference in design and process may align with what Kiger mentioned as possible solutions to the failures of disability simulations (1992). With a focus on an autistic experience and perspective, in an interactive film format akin to a visual novel, it allows the world of an autistic person to be represented rather than taking a neurotypical person and changing their perception in a way that makes them feel negatively about what the simulated autistic experience is like. This may be possible, especially if in creating a story on disability, a focus is placed on social experiences as well as positive daily experiences, rather than just struggles.

In Hassapopoulou's book *The Ambiguous Ethics of Media Participation* (2024), she calls into question the ethical problems that can arise within interactivity. From the problematic romance game *Stockholm: An Exploration of True Love* (Audemars, 2009), where the player has to make their kidnap victim fall in love with them, to Abramović's *Rhythm 0* (1974), where the artist allowed an audience to interact with her and her body in any capacity, the idea of human interaction comes with the dilemma of intention when engaging with the media at hand. Hassapopoulou brings into question the line between decisions made as part of interactive art, games and cinema and real-life actions and treatment of people, and therefore interactivity can alter spectator behaviour and collective consciousness. These traits of interactive cinema allow us to reflect on how it can be used to positively change spectator perception, such as in presenting autistic experiences for people to understand through interactive decisions. Freedom of spectator choice could prove both effective and problematic in presenting an audience with the topic of understanding the sensory experiences autistic people may have. A possible way to benefit from the positives of interactive cinema without the ethical risks might lay with interactivity but to a limited extent, as posed by Vosmeer and Schouten (2014), this could change the collective consciousness to be more understanding of autistic experiences and alter spectator behaviour.

The future of Interactive Cinema, at the time of writing, seems uncertain, with Netflix removing almost all its interactive films. The first 20 of 24 interactive titles were removed from Netflix in December 2024 (Peters, 2024), but the remaining four, including the earlier mentioned *Black Mirror: Bandersnatch*, were removed from its library in May 2025, citing technologies around Interactive Cinema as limiting and having served their purpose (Spangler, 2025). Such a position comes as a stark contrast to their ex-VP Todd Yellin's perspective, wanting the company to begin 'doubling down' on interactive storytelling (Ramachandran, 2019). Yellin left the company in September 2022. While this marked an end to specials on Netflix with direct interactivity within the films, it is not a complete end to interactivity on the platform.

Kaleidoscope (Garcia, 2023), a heist program that gained acclaim for its episodes providing a different story experience depending on the sequence watched (Ong et al., 2024), may show a new approach to audience-involved storytelling, but time will tell if Netflix, or any other major distribution company, will re-engage with the interactive format.

2.7 Alternate Mixes for Accessibility and Representation

To define a standard use of sound within a mix, the Film Sound Analysis Framework (FSAF), by Barbosa and Dizon (2020), can be used to describe the features sound traditionally plays within cinema. The FSAF helps analyse and define sound within the context of serving the narrative and cinematic experience, and separates elements of sound used in film into a classification grid (table 2.2). This classification grid clusters film sound design, including music for film, to be analysed into syntactic taxonomy, semantic taxonomy, applied syntax and applied semantics. Syntactic Taxonomy Analysis is the voices, background sounds, sound effects and music and are reflected as the standard for mixing film audio (Angell, 2009), representing the core elements that make up what you hear when listening to a film. Semantic Taxonomy Analysis is what creates the suspension of disbelief, creating a more detailed world through film sound in order to tell a story (Barbosa and Dizon, 2020) and is how sound is presented to an audience, whether it be from a non-diegetic voiceover or diegetic dialogue between characters. Syntactic Applied Analysis and Semantic Applied Analysis represent the technical process, artistic techniques and creative choices that serve a film's narrative and in supporting the suspension of disbelief of film audiences.

	<u>Taxonomy</u> (Understand)	<u>Applied</u> (Techniques)
<u>Syntactic</u> (structure)	Voice Background Sound Sound Effects Music	Manipulation of Loudness The use of Silence Manipulation of Pitch Changes in Timbre Spatialisation
<u>Semantic</u> (Meaning)	Diegetic Non-Diegetic Meta-Diegetic Oneiric	Sound Masking Interior Sound Overlapping & Anticipation Split Second Mickey Mousing Leitmotif

Table 2.2. The classification grid from the FSAF by Barbosa and Dizon (2020).

Where FSAF has an intended use to support the creation of sound design for film, it allows features within a traditional mix to be analysed for an alternative mix creation process, whether to be used for creative and/ or accessibility reasons by clearly defining what elements of film sound are essential in telling the story, and which elements are creative choices to enhance audience experience. For the purpose of accessible sound design, Syntactic Taxonomy Analysis makes up the core parts of a standard film mix required to build the base structure of sound within film, and are likely not to differ from traditional sound production techniques. Both Semantic Taxonomy Analysis and Semantic Applied Analysis are creative choices that may be used for accessibility reasons, to support the communication of a films story for audiences that may need additional information. For example, one of the EAD methods involves a internal first-person narration to support visually impaired audiences from the perspective of a character (Lopez, Kearney and Hofstädter, 2021), rather than from traditional audio description and embedding the accessibility in the sound design through meta-diegetic narration. Finally, Syntactic Applied Analysis is for the sound techniques that directly apply to accessibility, such as changing loudness and pitch to support audiences with misophonia, or

specialisation to support the tracking of voices for visually impaired audiences (Lopez, Kearney and Hofstädter, 2021).

Previous work has already explored how alternative mixes can be key to accessibility. Lopez, Kearney and Hofstädter (Lopez, Kearney and Hofstädter, 2021) focus on accessibility for blind and visually impaired people, reflecting on how different mixes might accommodate different needs and preferences. Current accessibility research within broadcast media puts an emphasis on an alternate 'clean audio' channel for people with hearing loss (Shirley and Ward, 2021) and supports those who struggle with traditional mixes by reducing background noises so that dialogue is easier to hear. However, the use of alternate mixes for neurodivergent audiences has also been explored. When discussing his work on *Spines* (already discussed in section 2.3), Inman highlights how there is no set standard for autism accessibility in film, with autism friendly screenings in cinemas reducing the volume to make them accessible but not considering the film itself (DARCI Podcast, February 2024). Inman's desire to show sensory overload was a part of *Spines*' audio design, but could pose a sensory problem for an autistic audience, so he created an alternate mix. The standard mix of the film simulated the experience of the protagonist through syncopated rhythms and heightened diegetic sounds to help audiences better understand what having sensorial-affected autism may be (BFI, 2023). Inman ensured *Spines*' accessibility, to autistic people, by developing a mix that wouldn't be as overstimulating, presenting the importance of such mixes in both protecting autistic access needs and creating a representative portrayal of the autistic experience through audio. This experience showed Inman the larger problem of inaccessible audio beyond autistic audiences and how accessibility measures need drastic improvement. Projects like *Spines* are important in developing an autistic story from an autistic perspective, in order to go against the exclusion in autistic voices in much of autistic media portrayal, as was indicated by Thibault (2014), while developing needed accessibility within media through alternate mixes available to a viewer. Inman hopes that filmmakers will be encouraged to

create and celebrate “the artistry of creating accessible films” (BFI, 2023 p.19) as a result of their creative input, rather than delegating the task to a distribution process.

2.8 Conclusion

Throughout this chapter, there has been analysis of autistic representation in media and the importance of autistic voices, accessibility, with a focus on representing autistic listening as described by Davies and Remington & Fairnie but also connecting wider elements regarding representation. The use of Interactive Cinema, as a educative tool, was also studied in order to present an accessible and representative film to better accessibility and representation for autistic audiences. This literature analysis answers RQ 1 and 2, and leads directly into the creative process in approaching an interactive short film to put into practice the theory behind representative film, for autistic people, in an interactive format in order to analyse and understand autistic listening experiences. I have explored research and practice linked to Aural Diversity, specifically autistic listening, Media Accessibility from alternate mixes and Object Based Media, and Interactive Cinema and ways it can be used to communicate research on the prior mentioned topics. While there has been an increase in research in the field of autistic representation and accessibility, there is still clear evidence that a gap in research for made-for-purpose accessibility and nuanced representation of autistic people exists. There are limited examples of individual experiences of the autistic spectrum in public media, which prevents societal perception of autism to change. In terms of accessibility, this chapter explored emerging technology that would facilitate the personalisation of media experiences. A benefit to all people, disabled or not.

The potential benefits that an interactive medium, such as interactive cinema, could offer were discussed, in particular in relation to representation and audience learning. Furthermore, it

provides a portal into exploring how alternate mixes could be hosted. The following chapter will explore the work carried out with the autistic community in the development of *Processing*, an interactive short film that aims to put the research from the literature into creative practice, developing alternate mixes through choices informed by autistic experiences.

Chapter 3: Participatory Research in the short interactive film *Processing*

3.1 Introduction

In this chapter I will discuss my approach to my research followed by the aims of the participatory research and the methods I followed to gather and use data from autistic participants. In supporting an autistic community focused method in autism research, I aim to raise the voices of autistic people within the research and the creative output. Developing a proof-of-concept film was essential in fulfilling the theory from RQ 1 and 2, but also in fulfilling the research that would come under answering RQ 3 and 4 with direct feedback from both autistic and non-autistic audiences. This feedback can then be used to prove the techniques in accessibility, representation, and interactivity for both future research into autistic accessibility and representation as well as industry practice in supporting and portraying autistic audiences. Underpinning my approach will be critical self-reflection through reflexivity on my subjectivity within the project, defined by Braun and Clarke's approach to Reflexive Thematic Analysis (Clarke and Braun, 2014). This chapter will also explore how the data from a focus group was directly applied to the development of the alternate mixes for the interactive short film *Processing* that was produced alongside this research. The aims for *Processing* were:

- Create a film that positively represents autistic experiences and differs from stereotypes present in media representation of autistic characters
- Develop alternate mixes that can support accessibility for autistic audiences with audio processing conditions and that can represent what it may be like to hear the world as an autistic person with audio processing conditions
- Involve voices of a wider autistic community in co-creating the interactive short film
- Use interactivity meaningfully to engage audiences

A link to the film can be found in Appendix [3.1](#), [3.2](#) and [3.3](#) with all interactive nodes available in Appendix [3.4](#).

3.2 Approaching the Interactive Short Film

To write the interactive short film I worked with my friend and fellow graduate from the BSc in Film and Television Production at York, Nia Parker, who identifies as neurodivergent and queer as well. A memorandum of understanding was created for this co-writing process (Appendix 3.5). We knew from the offset the importance of diverse representation of our autistic protagonist along with presenting a positive representation of autism that would not reproduce the common stigmatised tropes of modern media, which were reflected on in Chapter 2.3. Originally, I planned for a focus group to run so that a diverse group of autistic people could inform the story in the film. Such participation from members of the autistic community was essential to engage autistic voices in research about autism and autistic experiences (Williams, 1996; Fletcher-Watson et al., 2019), and to ensure the research fulfils the interest of the autistic community (Roche, Adams and Clark, 2021). It is also essential for the participation of more autistic voices, as they have been mostly absent and not included from media portrayals of autism (Thibault, 2014). Unfortunately, after not garnering enough attention, I had to suspend this original focus group in favour of a later one. Due to this, a focus group couldn't be used in the scripting phase but instead was used to inform the post-production stage (see Chapter 4.2). During the writing process, Nia and I engaged with literature discussing important elements of autistic representation, in particular the elements of good and bad tropes in autistic characters from Barrio et al. (2021, table 2.1. See Chapter 2.3).

In developing the main character (Andy) and the storyline, we decided on an early 20s autistic person simply going through their day. The driving point of the story is some tasks Andy must complete, including some stressful social interactions. We did not do this to trivialise autistic experiences, the aim was to present tasks which may seem simple to others but can be intense for autistic people. The point of these tasks was also to show perseverance from Andy and support from side-characters within the story. Elements of interactivity were also carefully thought upon, and how user intervention can create differences in the experience for Andy and themselves without the experience becoming a way to toy with an autistic character, such as within the interactivity discussed by Hassapopoulou (see section 2.5). While choices by a user will make slight differences in actions throughout Andy's day, we decided that the choices would be used for engagement with the story, rather than controlling it. We focused on slight dialogue changes or decisions that made minimal changes throughout the film but weigh towards two different endings (See Figure 3.1). Most choices have no impact on whether or not Andy had a stressful day (orange), however some choices pushed the narrative towards the 'good' ending (green) and some pushed it to the 'bad' ending (red). The 'good' choices were achieved through supporting Andy in having a less stressful day, as well as enjoying new experiences through pushing their boundaries. The 'bad' ending has the opposite of this, with the ending achieved through choices that left Andy stressed and trying new experiences. Both endings leave Andy in a comfortable space, processing the day and overall having had a good experience. The main difference is whether Andy decides to join others to the next bar or leaves early, having had a more emotionally exhausting day. The complete node tree from Stornaway (the software used to play the film with interactive choices, through connecting separate nodes) can be seen in Figure 3.1. All reflections Andy makes on the day may vary at the start but always end up as positive, as the day was still a good one, no matter the challenges faced. This story was developed over a few sessions where Nia and I brainstormed and talked through the script as it was written.

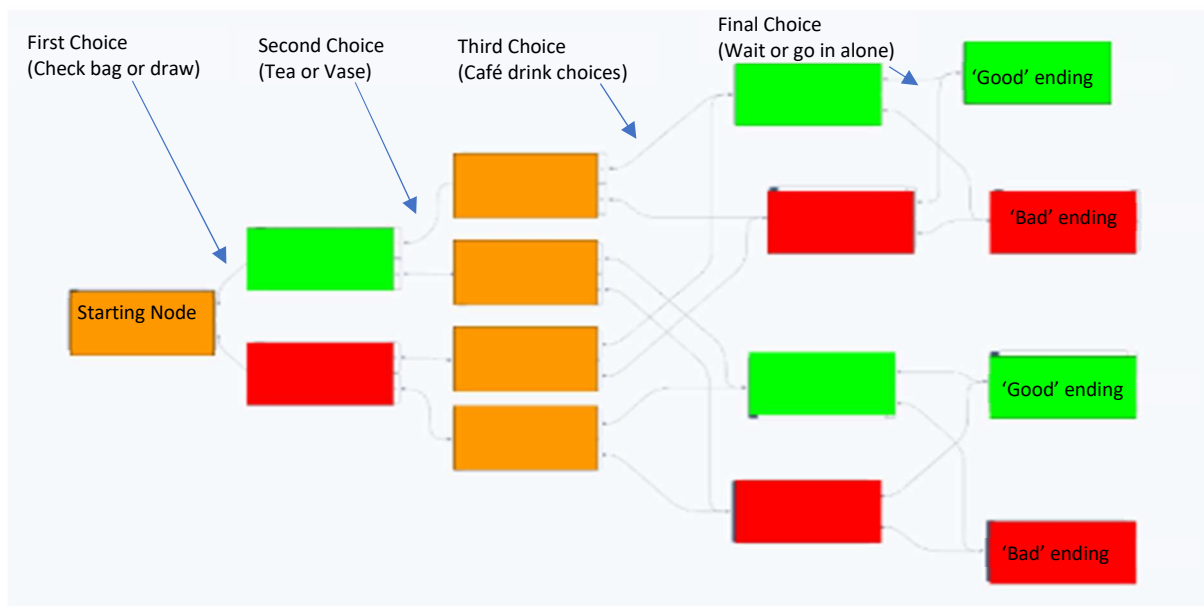


Figure 3.1: A colour coded chart of the interactive nodes for the film 'Processing'.

The final script (Appendix 3.6) follows Andy starting their day before realising they have to get ready for a birthday party in the evening. Throughout the day, Andy buys a present, meets with their friend (Nadia) in a café to plan for the evening, gets ready, and attends the birthday party. Based on audience choices, the day can be slightly more or less stressful for Andy, and will affect the outcome of the day. The title, *Processing*, was decided on as it fits the theme of understanding autistic experiences, in particular audio-processing, and reflected the calm ending of the film.

To be able to fulfil the representation of an autistic character on screen, it was essential to have Andy portrayed by an actor who could sensitively play an autistic character and ideally be autistic, or at the very least neurodivergent. Andrew, who's name had no influence on the character of Andy, is a Manchester-based actor who is half-Mexican, queer and neurodivergent. While these were not the reasons he was chosen, as a talented actor willing to be involved in *Processing*, they were benefits that could not be overlooked. Being able to

portray an autistic character with greater diversity than the typical heterosexual white autistic characters that present as the majority in mainstream media was important in expanding the representation of autistic characters I set out to achieve. While having a non-male character as the film's protagonist would further support a new and diverse portrayal of autism, the scope of this project was partially limited due to the lack of funding, and therefore actors had to be willing to be involved without pay. Fortunately, thanks to my personal connection with Andrew, a trained actor who could still fulfil the role while benefitting the diversity of autistic representation, was secured.

The remaining cast and crew were put together through personal connections and an open crew call to Film and Television Production students at the University of York. Call sheets from the production can be found in Appendix 3.7.

3.3 An Autistic Focus Group

A focus group was organised with the aim of informing the sonic design of *Processing*, to ensure that autistic voices were consulted in the representation of their listening experiences and the accessibility of the interactive short film. A focus group was chosen, rather than interviews or a survey, to allow for a discussion among multiple autistic people to share and compare their experiences with representation, audio-processing, and media accessibility.

3.3.1 Recruitment

During recruitment I sought engagement from any autistic-identifying individual and did not limit participants on whether they identified with other co-occurring conditions or learning difficulties. Moreover, participants both with formal diagnoses and self-diagnosed were

welcomed. Excluding the voices of self-diagnosed autistic people from autism research would negatively impact our understanding of the autistic experience due to locking out autistic people who have been unable to ascertain a formal diagnosis due to age, gender and social circumstances, leaving informally diagnosed autistic people as an under researched group (McDonald, 2020). Also, with overlap of co-occurring neurodevelopmental conditions (Dell'Osso et al., 2023), as mentioned in Chapter 2.2, participants may present with experiences and traits defined typically as autistic, such as with how people with co-occurring conditions, with autism, typically rate higher than neurotypical people on Baron-Cohen's AQ score with similar traits to those with autism (Gadelkarim et al., 2019). While the focus through this thesis and project will remain on autistic people, formally and informally diagnosed, other neurodivergent experiences can also be considered alongside autistic experiences in understanding the perceptual differences compared to neurotypical people.

To recruit for the focus group, posters were advertised online and in physical locations, with a focus on neurodivergent safe spaces. I advertised on the *Neurodiverse York* Facebook page and *York Trans and Non-Binary Network*, which has a dedicated neurodivergent section within the private Discord group. Physical posters were placed in *Portal Bookshop* and *Over The Rainbow Café* as well as spaces around the University of York. While mostly queer safe spaces, *Portal Bookshop* and *Over The Rainbow Café* also actively engage with being neurodivergent safe spaces within the City of York, promoting local discussion and supporting political change for a variety of marginalised groups. As an educational institution, posters around the University of York, while not specifically a safe space for neurodivergent people, presents itself as an inclusive environment.

The posters were designed to be comfortable to read for the autistic participants they hoped to gather interest from. With recommendations taken from a GOV.UK blog for making

accessible posters for people on the autistic spectrum (Pun, 2016), the designed posters were made to be clear and informative and with softer colour palettes.

The first poster design was made to be bolder and with simple information (Figure 3.1). However, after the original date for the focus group did not garner enough interest, when changing the date of the focus group and moving it online the poster was changed as well.



Figure 3.1: A yellow and blue poster advertising a focus group for autistic people.

While there were other reasons for the focus group not picking up enough interest to run, such as originally being out of term time, meaning much of the footfall around campus spaces was far less than during the semester, and in-person, limiting accessibility, the poster was updated to hopefully pick up more interest than the first did. Softer colours were chosen, as per Pun's recommendations for autistic accessible posters (2016), and more information was provided on the poster, as well as a QR code to an easy-read sheet about the focus group

and the project (Appendix 3.8). Easy-read documents are human-made materials designed for readers with a variety of disabilities, such as autistic adults, using simplified and easy to read information (Yaneva, 2015). The QR code allowed people to register their interest, to allow potential participants to reach out without a direct email, as shown in Figure 3.2. These were all implemented for the second poster (Figure 3.2) and possibly aided in the success of the second attempt at a focus group.



Figure 3.2: A soft yellow, pastel orange and dark bricky-orange poster advertising a focus group for autistic people.

3.3.2 Ethics

Recruitment and data collection only started after full ethical clearance from the Ethics Committee of the School of Arts and Creative Technologies was given. During the preparation of the ethics documents, I considered that participants might be engaging with personal and potentially distressing accounts of their experiences as autistic people, including their struggles with sound sensitivity and issues of representation. Participants were given the

standard information sheet, necessary for all university activities, but I additionally made a detailed description of the entire process of the focus group, including topic of questions, emailed to participants as an optional document to support their access needs, if they needed it. While some research requires participant responses to come naturally, rather than pre-planning answers, I deemed it important to allow participants the opportunity to have the questions ahead of the study. Not only did this provide clear information, something often desired by autistic people, but it pre-emptively provided information, rather than waiting for a participant to request it, increasing the accessibility of the experience. Providing the support ahead of time, as a prediction of access support, promotes inclusivity by preparing for additional needs participants may have. The information sheet (Appendix 3.9) and a blank version of the consent form (Appendix 3.10) are available in the appendixes.

3.4 Data Collection

This section details the process that happened during and what followed the focus group of autistic participants that was arranged. After the reflection on the focus group, the discussion moves to the data analysis of the anonymised focus group transcript.

As participants were recruited from the York area, many of their experiences and media they discuss are informed by that as their background. With mentioned media, in particular, being mostly mainstream Western depictions of autism or autistic-coded characters.

3.4.1 Overview

The focus group took place in September 2025 online using the Zoom platform. There were 5 participants and the session was 2 hours long, including a 10-minute break. The questions that were asked, in order to direct the open discussion were:

- What are your experiences as autistic people?
- What are your feelings around autistic representation?
- What is your personal experience with hearing, and what parts of that do you consider are related to your autism?
- Do you think there are ways sound could be better adapted, in media, for representing autistic listening?
- How can sound be made more accessible to your autistic listening experiences, as an audience member?

A transcript was automatically generated, from Zoom's built in captions feature, and was later downloaded, checked and anonymised.

Data was analysed using Reflexive Thematic Analysis (RTA), a data analysis technique pioneered by Braun and Clarke (2014) for deconstructing qualitative data into codes and then organising them into themes, which takes the position of the researcher as central (see Chapter 1 for a reflection on my positionality). RTA invites researchers to interrogate their positionality, practice and process, meaning presenting my background, as the researcher, in relation to the study and analysing how that may affect my interpretation of the data (Clarke and Braun, 2014). The reading of datasets I analyse will be from my perspective, not from a definite truth, and therefore my perspective is important to critique so that a reader may understand my position. The influence of participant's experiences as the key takeaway of the

focus group, and into the design of post-production sound, would mean codes developed from the dataset would be primarily semantic, with the explicit word of the experiences being the data taken away. Some latent codes would also be developed where, as a researcher, I would imply meaning from what participants said about their experiences. Latent codes would be relevant mainly for connecting shared experiences with a wider meaning or concept, where semantic codes engage directly on specific experiences.

RTA involves six stages, which are listed in Table 3.1.

Stage	Description
1. Familiarization	The process of engaging with the data multiple times in order to develop understanding of it. Braun and Clarke lay this out in three stages. 1: Immersion, where the researcher develops an intimate knowledge of their dataset. 2: Critical Engagement, where the dataset is looked at critically as data. 3: Note-taking, where the researcher makes notes as they engage with steps 1 and 2.
2. Coding	The process of exploring and patterning the dataset into analytically interesting ideas, concepts or meanings.
3. Initial Themes	Connecting codes, created in the prior step, together based on the meaning they represent.
4. Reviewing Themes	The themes created are then gone over and changed, with critical reflection from the researcher, in order to be refined. Working further with the data may support or reject the themes that have been initially developed.
5. Defining Themes	Themes are finalised and named relevantly to the research and the data within them.
6. Writing	Writing up the data is still essential in the analytical process of RTA, as the way codes and themes are written may

	change, move or be removed. Braun and Clarke describe the process of RTA as telling a story trying to convince the reader based on your data, so the story must still be given room to evolve as the data is finally written on the page
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Table 3.1: The 6 stages of RTA outlined in *Thematic Analysis: A Practical Guide* by Braun and Clarke (2021).

Before getting straight to coding the data from the focus group, I made sure to take a step back and distance myself from the open conversation that took place. Being a discussion on autistic experiences, I was personally involved in the conversation not just as the researcher but also as an autistic person, with my own experiences. To avoid muddling the data with a bias from my own experiences, I distanced myself from the RTA process, focusing on other aspects of my research and taking time to engage with other projects. While spending time outside of the coding process, I still took time to engage with the first step of Braun and Clarke's Thematic Analysis (Braun and Clarke, 2006), *familiarisation*. Over my time working around the data, I took time to reflect on the focus group and look over the transcript to familiarise myself further with the conversation that occurred, and what it may mean for my thesis and interactive short film. While no demographic information was collected, most of the data was specific to the participants' experience and therefore some experiences were unique to participants based on their age as well as the differing experiences that autistic people can experience through the gender they were assigned at birth. As Andy is an early 20s autistic character, the participants who were closer to this age may have had more relatable experiences as presented with the character. While the film was not shown to participants, as it was still in post-production, details on the character and story were described to participants, in order to support their opinions on how autism was going to be represented in the film.

A key aim of the focus group was to have an open conversation directly with a group of autistic people that represented a wide array of experiences, which was achieved through a diverse age range and gender representation of the participants in the focus group. Beyond collating various experiences that placed autistic voices as central to the sound design of *Processing*, it was also essential in highlighting the importance of consultation in defining realistic and varied autistic experiences (Eastwood et al., 2022) rather than relying on written or personal experiences alone. This aspect was essential, as the diversity of accessibility could not have been written by myself alone, and writing representation from my own perspective would not be representative of wider autistic experiences. To foster this as usable data, I designed the focus group to be as open a conversation as possible, where participants could each answer my set questions but expand further and bounce off of each other's experiences, as autistic people. As mentioned, I was aware that this would implicate me and my own experiences within the conversation, however, using RTA I was able to use this as a benefit. Being able to involve my own experiences as an autistic person, in both the focus group and the coding process, I can act as an insider researcher and use my own subjectivity as an asset to representing participant accounts (Braun and Clarke, 2021).

After the familiarisation stage was completed, I began coding the transcript. In RTA codes are the initial output of the dataset and can be from shared experiences or that of an individual, in order to create patterns out of the data. I used the digital transcript directly to write up the codes and rework them as I underwent an iterative analysis process through coding, returning to the transcript, and confirming or altering the written codes. The final codes are outlined in Appendix 3.11. Once the coding process was completed, I worked on developing the themes. In RTA themes are ways to organise data from codes, and direct the discussion of the data in a meaningful direction for the research. For this stage, my process was also iterative, with the codes approached and re-evaluated until strong themes were developed (Appendix 3.12).

During the writing process, multiple themes were combined, due to their similarity, and resulted in the final themes presented in Table 3.2.

Theme	Description
1. The Diverse Experiences of being Autistic	Similarities and differences among autistic experiences
2. The ‘Sheldon Cooper’ Problem	The problems of current autistic representation, ways that it could be improved and the ways autistic representation is done well.
3. Accessibility for Autistic Audiences	Current and possible future access tools.

Table 3.2: A table on the themes developed from the focus group

It is important to point out that, due to the small size of the study, these results are not generalisable. While experiences were noticeably transferable between participants, these cannot represent all autistic experiences, both due to the small group size and the widely individualistic needs and experiences of all autistic people. However, due to the type of data analysis applied, the focus is on the richness of the data provided rather than on quantity. RTA does not necessitate a minimum number of participants as importance is held in the quality of the data analysis and codes, with meaningful themes, produced by the researcher, and is defined as an art rather a science. Relevant quantities of datasets should be acquired based on the needs of the project, as too much data may reach a point of data saturation, where no more data can create or develop meaningful codes (Braun and Clarke, 2021).

The following sections present the analysis of each of the themes generated.

3.4.2 Theme One: The Diverse Experiences of being Autistic

The topic of individual experiences of autistic people was possibly the most important data to collect from the focus group, so that the design of the alternate mixes was supported by a variety of autistic experiences. Autistic traits of masking, an autistic coping mechanism where the person hides their autistic traits to appear non-autistic (Autisitca, 2025), and 'eccentricities', were brought up widely among the group.

"I've been masking most of my life, hence the late diagnosis, and so, I do encounter a lot of people who either don't believe me [or] have very odd things to say about it."

- FG_P1

Here, not only has FG_P1 discussed their experience with masking but spoken about how their experience with an autistic trait likely delayed the medical recognition of their autism, which may have left them without support systems during education or work life. The idea of 'eccentricities' were mentioned by FG_P2 as a reason that people may write off the fact they were autistic and instead being just an eccentric person. There was a problematic element in this, where autistic people would often have their autistic identity ignored as it easier to label someone as slightly eccentric rather than having a medically diagnosable condition, such as autism.

This further relates to another element discussed around different ways autistic family members, of the participants, presented and represented themselves. While most family members were, at the very least, aware of the autistic identities of the participants they were related to, the ways the family members identified varied. With autism likely coming from a variety of genes (National Autistic Society, 2025), it can pass on genetically. Despite this,

many family members, participants mentioned, denied that they may also be autistic, despite presenting with “eccentricities”, whether they be the same as their family relations or different.

“But he's 55 years old now, he's on his way towards retiring, and he's like, there is literally no point in me finding out”

- FG_P2 on their dad

Such statement could reflect an autistic person not needing, wanting or caring about seeking a diagnoses, but further research into autistic people around the age of retirement would need to be conducted to expand upon this. Whether a diagnosis was relevant or not for FG_P2's dad, information, such as a diagnosis, supports the lives of autistic people. Information, such as that provided through diverse representation, will be discussed in Theme 2 as a possible benefit that can lead to diagnoses for autistic people. Not just the individual viewer but also friends or family can benefit from a single audience member seeing autism represented, and support needs of autistic people around them, or help them in a journey towards a diagnosis. Participants agreed that diagnoses further support the benefit of information, as being informed of being autistic allows for autistic people to have their needs met.

“since my diagnosis, I've not had any social problems with groups.”

- FG_P3

Diagnosis, whether formal or self-diagnoses, provides autistic people with the information to begin supporting themselves and their needs. Such information to support has a greatly positive impact on individuals' mental health (Cooper, Smith and Russell, 2017) and also legally supports them, in the UK, under the Equality Act 2010, and possibly any other regional anti-discrimination laws. This also allows reasonable adjustments to be made, which participants discussed as particularly important for their wellbeing, within social and workplaces.

“A reasonable adjustment, so that's what I'd be asking for.”

- FG_P3

Thanks to clear labels, participants felt that, beyond supporting their needs in their day to day lives, other people could understand their needs more, thanks to being informed of them being autistic and therefore what needs they may need supporting in, on an individual basis.

An interesting difference that arose among was the use of accessibility functions, in particular subtitles. While some participants couldn't watch a programme without them (see Theme 3), some found them too distracting, showing that blanket accessibility cannot replace dedicated accessibility and personal choice. Different participants also commented on how diversity was often disregarded in representations, particularly in relation to gender, race, and sexual orientation that are often disregarded, which is connected to the already discussed preponderance of cis-het white male autistic characters in media (see 2.3) and connects to a disregard for intersectionality.

FG_P1 and FG_P3 discuss here their experiences of diversity beyond being autistic, and the intersectional experiences between gender and sexual orientation as part of their experiences as autistic.

“People come in all different shapes, you know?”

- FG_P1

“I have been polyamorous for more than 30 years, and I used to go to quite a lot of the polyamory cafes. About half the people there were autistic”

- FG_P3

These leads me on to my next theme on the impacts of a particular representation of autism within media.

3.4.3 Theme Two: The ‘Sheldon Cooper’ Problem

While not exclusive to *The Big Bang Theory*’s (CBS, 2008-2019) Sheldon Cooper, played by Jim Parsons, he is a prime example of a character that has a lot of traits associated with autism, such as being an intellectual savant and being socially stunted. Even though Sheldon is not canonically described as autistic, despite a participant indicating that there are lines in the script that hedge the idea of an autism assessment (see quote from FG_P2 below), he is widely considered autistic among viewers (Brown, 2023).

“‘He isn’t crazy, his mother had him tested.’ That they would have actually tested him, and like, the joke was that he was autistic, he wasn’t crazy.”

- FG_P2

Unfortunately, the reason for Sheldon not having his autism canonised was due to a lot of the show’s humour being based around his atypicality, and labelling him autistic would further stigmatise autistic people by representing this stereotype, despite audiences widely considering Sheldon as autistic (Robinson-Greene, 2017). Within the focus group, it was agreed that this stereotype of a straight white cis male, who is rude and also a savant, was massively damaging to what autism actually is, and likely influences the opinion of neurotypical people on autistic people, as well as autistic people not wanting to identify as autistic due to not looking or acting like this stereotype. A comment by one of the participants also integrated the concept of ‘supercrip’ to discussions:

“absolutely, like, talking about Sherlock and, you know, Sheldon Cooper and kind of the idea of the supercrip.”

- FG_P2

‘Supercrip’ is a term coined by the disabled community about sentimental narratives that neurotypical audiences view as inspirational (Martucci, 2024), and sensationalises the disabled experience down to stories of success. Sensationalisation and the spectacle of ‘visible’ autism was a connected point to the discussion on audiences using autistic people or

characters as entertainment. Beyond Sheldon Cooper being used for laughs, through traits people associate with autism, shows like *The Undateables* (Channel 4, 2012-2020) and *Love on the Spectrum* (Netflix, 2022-present) present autistic people, and people with other disabilities in the case of *The Undateables*, as a sensationalist spectacle for audiences to watch due to being visibly disabled. As commented during the focus group:

“choosing people with potentially, you know, like, level 2 autism, and people who may struggle substantially socially, and kind of, you know, making a real scene of that, almost, for the benefit of non-disabled people to watch it”

- FG_P2

These shows also use childish music and simple wording, when describing the lives of the shows' subjects, further negatively presenting them for audiences to enjoy. Treatment of autistic people, and disabled people in general, in this manner was a particular sore subject for participants, and something they agreed needs changing in the representation of autism in order to develop more diverse representations. FG_P2 brought up the representation of autistic characters as more diverse with their sexual orientation and gender presentation.

“I think it's harder for non-disabled audiences to wrap their head around the fact that they can have sex, and that they can be intimate, and that they can have fulfilled love lives. Whereas for us, particularly because we're all, like, on the in-group, right? Like, we all know that it's totally fine. That it can look beautiful in a range of number of ways, whether that's polyamory, whether that's monogamy, whether that's being bisexual, transgender, whatever.”

- FG_P2

Such experiences is currently being represented by an independent and disability-led theatre company, called Birds of Paradise, in their production (*We indulge in*) *a bit of roll play* (Gale, 2026), about a disabled university student balancing sex, family and disability. This performance was only performed over 3 days, and as an independent theatre company may not see a wider release outside its performance in the Tramway, Glasgow. Despite this representation existing, it does not represent wider disabled representation.

As discussed in Chapter 2.3, non-canonised autistic representation/coded autism is greatly important for diverse presentations of autistic experiences (Brick, 2024). Although Sheldon represents a negative example of non-canonised representation of autism, in general (as discussed in Chapter 2.3) it is among non-canonised/coded characters that most positive representations are found. A particularly powerful example coded autistic representation was Jess from *New Girl* (Fox, 2011-2028), particularly for the less-represented female autistic character.

“Jess in New Girl. I think me and a lot of other autistic women see a lot of ourselves in her”

- FG_P1

Ironically, Amy Farrah Fowler, played by Mayim Bialik, who marries Sheldon Cooper in *The Big Bang Theory* was mentioned as excellent representation, despite standing beside a character whose traits are played for comedy. Participants supported that these characters, with their traits clearly being built on autistic experiences, would have massively benefited from becoming canonically autistic, even in just a single line or comment that they were diagnosed.

“I actually really like Amy Farrah Fowler from Big Bang Theory. I think she would be a great representation to have overtly stated that she was autistic, very much fits in with all the, you know, the stereotypes and the signs and symptoms.”

- FG_P2

This would shift fandom representation, where fans of a show collectively canonise a character as autistic among themselves, into canonical representation, and present audiences with more diverse presentations of autism. Despite the desire for more positive representation, the idea of “arsehole-ish” autistic characters were still discussed as important:

“I'm fully supportive of us having autistic characters who are right arseholes, because there are some autistic people who, in my humble opinion, are right arseholes. Like, we're only given autistic people who are supposed to be right arseholes, and usually who use the autism as an excuse, or a reason behind arseholish behaviour that is distinctly arsehole-ish, and not just being misinterpreted as being negative.”

- FG_P1

Despite not representing wider autistic experiences, this character archetype is one of the most common to be found in characters considered autistic. Such ‘arsehole-ish’ characters, that despite not canonically being autistic are widely considered as autistic, are Sheldon Cooper, Dr House, played by Hugh Laurie in *House* (Fox, 2004-2012), and Sherlock, played by Benedict Cumberbatch in *Sherlock* (BBC, 2010-2017). They are presented as highly intelligent but often rude and insulting to others. Although characters with these traits might represent one possible reality of autistic experience, it is by no means the only one, but it is nonetheless the most common representation in media.

3.4.4 Theme Three: Accessibility for Autistic Audiences

For creating accessible media, sound was a particular element that participants requested to be adapted to their needs. Misophonia, an extreme emotional reaction to everyday sounds (NHS, 2024), was brought up, but the specific sounds varied from person to person. However, some overlaps were present, such as artificial sounds.

“So when things don't sound quite right, and they don't sound really realistic, not only can I not prepare myself. Well, it takes me out of it, because suddenly I'm picturing some guy back in the studio, like, bashing a drum or whatever”

- FG_P1

Similar experience was discussed when it came to unexpected sounds, such as random bands or jump scares. Participants felt that, where possible, unexpected sounds should be avoided in media, so that a sudden noise doesn't cause distress to an autistic person, especially in an

autistic accessible mix. A way of overcoming the inaccessibility of unexpected sounds without removing them from a mix was provided by one of the participants:

“Like, then let us expect it, because that's a really useful tool for guiding audiences and kind of just, yeah, being gentle with them and making sure they understand what's coming up without necessarily saying, there's gonna be a really loud noise in a minute.”

- FG_P2

Context was also considered crucial, some participants mentioned that being in an environment where unexpected sounds were expected, such as going to the cinema, makes these less distressing as the loud volume is anticipated when going into the location.

“sometimes maybe going to the cinema, if there's a loud noise, you expect it, or, like, it can feel calming, because you know that the sound is produced in such a way where, I don't know, it just feels really comforting to me.”

- FG_P2

Some participants who were particularly affected by these unexpected sounds would avoid certain genres, such as horror, altogether.

The key detail for developing autistic accessibility discussed was viewer choice/ personalised accessibility. An overload of information was a feeling expressed by the participants that could be caused by media. As mentioned in Theme 1, subtitles were mentioned as providing too much information and could become distracting. While not agreed by all participants, subtitles where text on-screen spoiled upcoming action were particularly problematic for participant's viewing experiences:

“They sometimes give the answers before the person has said it, and that's a spoiler.”

- FG_P3

FG_P3 mentioned that their sons, who are also autistic, need them to watch a program. With this clash between access needs among autistic people in a singular home, a way that could

bridge the access needs between them would benefit their viewing experience together. An alternate mix, that had clearer central dialogue, could allow FG_P3's son to watch media without subtitles, and therefore allow both parties to watch programmes together.

Compared to too much information posing a potential accessibility problem for participants, information was also discussed as particular important, in many regards, by participants. As subtitles were too much information for some, others found that the visual information provided by subtitles allowed them to follow dialogue better than without, even help when dialogue was lost due to too much auditory information in a scene.

“having that additional information there, just everything in my brain's just like, okay, I know who that [character speaking] is.”

- FG_P5

However, it was excessive use of sound within a soundscape that was the main culprit of information overload, compromising their ability to follow central dialogue. Following evidence from Remington and Fairne (Remington and Fairnie, 2017), it is clear that autistic audiences can struggle with distracting sounds, taking them away from central conversations and proving an accessibility concern caused by audio post-production techniques. One of the participants, when talking about how they struggle when dialogue is quiet or unintelligible, or too fast to follow, explained:

“it takes me longer to process any information, whatever that information is, and I think that's mostly due to the autism. Having the written gives my brain a little bit more information to use to try and catch up faster.”

- FG_P1

Subtitles, as additional information, helped FG_P1 when dialogue was not clear. They also mentioned that a difference in audio design to “mitigate [their] need for subtitles”. While they weren't sure what that could look like, it presents that an alternative to subtitles could be useful to autistic audiences.

3.4 Discussion and Conclusion

Throughout the focus group, participants were asked to discuss about their autistic experiences, their perception on the representation of autism in media, and their experiences, wants, and needs when it comes to media accessibility. Across the group, it was clear that there is not enough diverse representation in portrayals of autism. Just as there is a need for varied representation, access needs differed between the participants. Supporting the importance of there not being a 'once size fits all' approach to accessibility; to be accessible media must allow a variety of personalisation to support their viewing experiences. As to be seen in chapter 4, this information supported the requirement for *Processing* to represent autism in a non-stereotypical way, and to allow audiences to choose different ways to watch the film to support their access needs.

In terms of representation, a clear takeaway was a desire for more diverse and more canonised autistic characters. While changes in representation that they wished to see support more nuanced approaches, including different minority groups and walks of life to be portrayed by autistic characters, the importance of not having these replace current representations, even if they fall into the Sheldon Cooper-esc stereotype, was noted, as participants still felt the Sheldon stereotype still represented some autistic people. A want for varied representations to add to, rather than replace, representations of autistic experiences would serve to benefit the autistic community. Adding to autistic representation could be as simple as autistic-coded characters in pre-established series' mentioning their autistic identity even just once, to provide representation to autistic people who may not often see their identity canonically recognised in media.

Data discussed around media consumption mostly points towards the direction much media accessibility research is taking, that is, an approach that centres personalisation. In Theme 3, autistic accessible media was discussed broadly, but also specifically in connection to how some access needs clash, with different participants having different requirements for what can assist their experience as a viewer as well as what can hinder such experience. This was exemplified by the differing experiences with subtitles.

It may not be possible to cater to the needs of every audience member when creating media without giving audience members near complete control of how they view content, such as with OBM. Without creating media as customisable as OBM, a question of whether some choice is preferable to no choice is a valid one. The next chapter will explore how aspects of choice in relation to the type of soundtrack experienced was applied to the short interactive film *Processing* and the outcome of the test screenings conducted.

Chapter 4: Interactive Filmmaking with Alternative Mixes

4.1 Introduction

Guided by the feedback received by autistic people through the focus group discussed in Chapter 3, the next step was to create alternate mixes, both for autistic accessibility and to represent autistic listening experiences. The aim was to work with autistic participants to develop meaningful perspectives in research, including their voices within the creative process, beyond just my own perspective as an autistic person. While the script had already been informed from research and literature mentioned in Chapter 2, as well as the co-writer's and my own experiences, it was deemed of importance to include a wider array of perspectives when it came to post-production work on *Processing*, to reflect differences of experiences within the autistic community.

This chapter covers a personal reflection on the creative and technical processes undertaken, as well as the audience response from a test screening. The film's alternate mixes can be streamed on Stornaway (Appendix [3.1](#), [3.2](#), [3.3](#)) and the individual nodes are also accessible on a Google Drive (Appendix [3.4](#)).

4.2 Creative Analysis on Processing

Creating a short film is a challenging process, let alone without a full crew of dedicated roles. While I had a dedicated crew for the production stage of the film, and also co-wrote the script, post-production was an entirely solo endeavour. Without a budget, I fulfilled the role of editor, colour grader, sound editor and mixer for the film. This was a valuable experience to develop

my skills beyond audio. However, this took time away from mixing. Although there were some challenges (such as having locations where it was hard to isolate noise and needing my sound mixer to step into the role of a character after a cast member dropped out last minute) taken into post-production from the filming, which impacted the final sound of the film and hence the overall quality of the production, I believe it did not impact the results of the study. An analysis of audience feedback on this matter is discussed in section 4.3.

The mixing process focused on the creation of three distinct mixes: a traditional mix, a representative mix and an accessible mix. All three were monitored through stereo headphones, as this was the way the test-screenings were going to be setup. The traditional mix was mixed first, in a manner standard for audio-postproduction informed by Rose's book on *Audio Postproduction for Film and Video* (2008) as well as Film Sound Analysis Framework mentioned in Chapter 2, for defining 'standard' film sound. This was done through a combination of technical and artistic approaches to traditional mixing, tweaking the traditional mix from my own monitoring as well as based on technical requirements, such as through the Nugen VisLM plugin for monitoring the loudness meters. From the traditional mix, the representative mix and the accessible mixes were created. The process of this is outlined later in this section. Before mixing began it is important to establish the typical workflow when approaching audio post-production. Mixing begins once a film has reached picture lock, a stage where a film's visuals have been finalised. Colour grading can happen after this stage, but the film should not have clips moved beyond this stage, that is, the length of each shot and their placement in the whole sequence of the film shouldn't change, as it can present issues with syncing image and sound.

In professional audio post-production, mixing has multiple stages with multiple roles. Table 4.1 shows this process, based on roles listed on the ScreenSkill's website for job profiles and workflow stages from Boom Box Post, a professional post-production company (2022).

Workflow Stage	Roles	Description
Spot	Supervising Sound Editor	The edited film is viewed, plot and style preferences are noted and given to the sound editor.
Editorial	Sound Editor, ADR Editor, Foley Artist, Composer, Music Editor	This is the largest stage, with all creative elements of audio post-production coming together to bring the image to life. The sound editor (sometimes called track layers) work through each separate section of the mix, from dialogue to music to sound effects. Foley artists may create additional sound effects, ADR editors may record dialogue, the composer would design the music, and the music editor would put the composers work together, to be used by the sound editor.
Editorial Preview	Supervising Sound Editor, Sound Editor	The work from the editorial stage is then reviewed by the sound editor and the supervising sound editor, and any notes or improvements are exchanged.
Assembly	Supervising Sound Editor	The Supervising Sound Editor combines all the work from the editorial stage, with changes in levels and panning done based on the requirements of a scene.
Pre-mix	Dubbing Mixer	All elements in the assembly are combined by the dubbing mixer to fulfil the creative vision of the film.
Final Mix	Dubbing Mixer	The dubbing mixer balances the sound of the final film, ensuring levels, reverb, specialisation, and frequencies. They also ensure that the film is mixed to audience's

		needs. Older target demographics are likely to have less sensitive hearing, compared to a younger audience, so the mix must reflect this. How the film is to be viewed, either through headphones, television speakers, or in a modern cinema will also all be variables the dubbing mixer must take into account for the final mix. Different mixes may be made to fulfil these different viewing formats.
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Table 4.1: The stages and roles from a professional film and television productions audio post-production process.

While the order of the above stages was followed for the mixing of *Processing*, they were all done by just myself, rather than separate roles. Throughout the sound editing process for the alternative mixes, decisions were guided by the discussions from the focus group (see Chapter 3.6).

Participants discussed the need for more varied representation (see section 3.6.4) and while the main character Andy does not further gender representation in autistic representation, the character doesn't fall into other stereotypes that permeate much of autistic representation. The focus was on creating a sympathetic character, anxious around busy social settings, and not a rude savant, which allowed the representative mix to focus on showing this experience through the sound design. This also impacted the choice of music in the film, as I did not want any of the music to feel infantilising, like shows mentioned in 3.4.3. As there was no composer for the film, and I do not have talent in music composition, copyrighted songs were chosen, in order to fulfil mood choices within *Processing*. These songs were, *Marcel* by Her's (2017), a warming song about slowing down and enjoying the moment, *Mayonaka no Joke* by Takako Mamiya (1982), a Japanese city pop song to fit the setting of a tea house in the film, and *Laser*

Gun by M83 (2016), an electric synth-pop song for the film's party scene. These choices, informed from the focus group, aimed to use autistic experiences to present a nuanced representation of Andy's autism and show them as a sympathetic protagonist, through the sound design of *Processing*. The traditional mix was then monitored before being levelled with the plugin Nugen VisLM2, a tool that measures loudness harmonisation from multiple sources to ensure that the combination of the sounds of the mix did not peak, where the loudness of a track causes clipping and distortion due to limitations of the system it is playing from (Winer, 2017). This tool is also used to show LUFS (Loudness Units relative to Full Scale) and exists to make sure that, when viewed, the final mix of the film is a set volume and that it isn't too loud or quiet, no matter the system it is played on. While it varies between mediums, typical broadcasts aim for around -23 LUFS, with + or – 0.5 variation.

The above process created the traditional mix of the film but there were still different mixes of the film to be made. To do this, the tracks were separated into separate into different stems. Stems are mixed tracks that can be exported as a single file (Cory, 2025), but for the purpose of mixing from a traditional mix and my other alternative mixes were separated into track folders. These stems were separated into the key elements of the film's mix: dialogue stem, music stem, sound effects (SFX) stem and the atmospheric (Atmos) stem. The level of these stems was then changed in order to create a representative mix and an accessible mix.

The representative mix by raising the levels of the stems outside of the dialogue track (SFX, Music, Atmos), still maintaining around -23 LUFS. The aim was to present audiences with a simulation of how people with audio processing conditions may hear. While it was not entirely applicable due to the calmer nature of the film, I made sure not to include sudden audio or visual changes that may cause distress to audiences that have neurological processing conditions.

To engage with the problem of accessibility with film mixes outlined in Chapter 3, the accessible mix was designed with reduced background sounds so that the main dialogue could be easier to focus on for audiences with audio processing conditions. By lowering the levels of stems outside of the dialogue (SFX, Music, Atmos), and maintaining around -23 LUFS average, for the entire mix, across each node, I was able to experiment with a simple way of making film sound more accessible.

Focus group participants mentioned subtitles as supportive in their viewing experiences. However, I decided not to include them for the film as I was concerned that subtitles may reduce the differences audiences found between the accessible mix and the traditional mix or make the over-crowded audio of the representative mix easier to discern the central dialogue from and, as a result, affect the results from the study as they might be focussing on the subtitles rather than on the audio. However, in the future the addition of subtitles together with alternate mixes could provide an interesting avenue for research.

4.3 *Processing*: Test Screenings

After receiving ethics approval (see Appendix 4.1 for the Information Sheet and Appendix 4.2 for the blank Consent Form) from the Ethics Committee of the School of Arts and Creative Technologies, test screenings were conducted in the picture finishing suites in the School of Arts and Creative Technologies building, at the University of York. The aim of the process was to evaluate the success of *Processing* and its alternate mixes. The picture finishing suites were selected because the rooms were both in a private corridor of the department's building as well as being acoustically treated. A sound pressure level (SPL) was recorded at 24dB, which registers below other quiet environments, such as a library that typically registers

around 30dB (Dattatreya, 2025). With such a quiet room, not only could the audio of *Processing*'s mixes be listened to without any noises that may cause a distraction, but will not cause distress to participants with audio processing conditions, thanks to the acoustic treatment present in the room.

A number of individual screening stations were setup so that each participant could engage individually with the interactivity of the film (see Figure 4.1). The additional monitors allowed the response form to be set-up and ready, making the experience easier for participants.



Figure 4.1: A photo of one of the individual test screening set-ups.

Following viewing *Processing* at their own pace, they were asked to fill out a Google Form (Appendix 4.3) with the following questions (Table 4.1)

Section	Question
1. Interactivity	Please leave a short description of your experience with the interactivity of the film. (Long-answer text)
	How much did you feel like the interactivity made you more or less engaged than if it were a linear, non-interactive film? (Scale from 1-5)
2. Alternate Mixes	How much did you like having the option of alternate mixes? (Scale from 1-5)
	Which mix did you prefer? (Multiple choice)
	Which of the mixes did you like, if any? (Checkboxes)
	Are there any specific alternate mixes you wish were present, that are not? (Short-answer text)
	What was your experiences of the alternate mixes? (Long-answer text)
	Would you like more films to offer different ways of listening to films, beyond a traditional mix? (Scale from 1-5)
3. Representative mixes and Accessible Mixes	The representative mix was based around representing audio processing conditions, particularly what it may be like to hear as an autistic person, with sounds being more intense.
	How much do you feel like it represented your listening experience? (Scale from 1-5)
	Could changes be made to make it more represented to your listening experience? (Long-answer text)
	The accessible mix was created to be more accessible for audiences with audio processing conditions, particularly

	autism, by making the dialogue clearer and background sounds less intrusive. Did you find the accessible mix more accessible than the other mixes available? (Checkboxes)
	Could changes be made to make it more accessible to your listening experience? (Long-answer text)

Table 4.1: Questions from the feedback form for the *Processing* test screening

The recruitment for the test screening was accomplished similarly to the focus group recruitment (see Chapter 3.5.1), with the use of posters disseminated across university spaces. The main difference was this poster was designed to be more like a film poster, showing the title, Andy (from a still image at the end of the film) and a QR code to sign up (Figure 4.2).

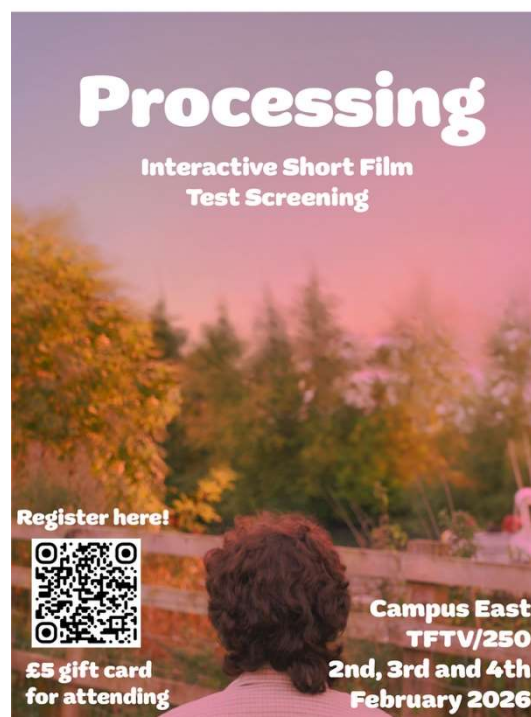


Figure 4.2: A poster for the interactive test screening of *Processing*

There were also some people, outside of University of York spaces, who wanted to take part due to their involvement in the project, from people associated with the locations used and some crew members. These people were sent the poster, so that they could register the same way as those who would have seen it in places around the University of York campus. Compared to the focus group, there was no restrictions requiring participants to be autistic, as ideally the test screening would have had an even split of autistic, non-autistic neurodivergent and neurotypical attendees. This goal was set so that the responses could be compared with the data on whether the attendees identified as autistic.

There were 7 participants overall, and there were an even split of autistic (28.6%), non-autistic neurodivergent (42.9%), and non-neurodivergent participants (28.6%). A split of participants was desired to see the potential benefit of alternate mixes for autistic access, for the representation of autistic experiences and as educational tools. To evaluate autistic access, it was essential to work with autistic participants. To analyse the mix representing autistic listening experiences, autistic people were also essential, to allow for a discussion on how accurate this representation was to their experiences, whereas non-autistic people could feedback on how the mix had allowed them or not to understand differences in listening experiences. While likely to experience different access needs and listening experiences to autistic people, neurodivergent non-autistic participants' experiences were also of particular interest to observe alongside the results from autistic participants due to the co-occurrence of conditions and overlaps between other neurodivergent conditions (Dell'Osso et al., 2023; Gadelkarim et al., 2019). Due to this co-occurrence among neurodivergent conditions, I deemed it relevant to include non-autistic neurodivergent people and ask them to specify that this is how they identified, so that, if their listening experiences were closer to autistic listening than neurotypical listening, the data for non-autistic people was not muddled with inconsistent data. The even split among the ways participants identify themselves was a fortunate coincident, allowing me to compare the data between each group. While these findings are

not generalisable, due to the small number of participants that come under each of these stated groups, their qualitative experiences from the test screening are still important in understanding how listening differs for autistic people.

All participants had the choice to listen to any of the mixes they wanted, with each of the different mixes being clearly labelled and shown to participants before they began the screening, and were informed that they could choose whether or not they listened to all the different mixes. Despite this, all participants listened to at least part of the mixes, with some listening to all the mixes in their entirety and some only listening to short sections. Some verbal comments indicated that only a slight section of the film was listened to with the representative mix, due to the fact it was challenging to listen to. They mentioned that it reinforced their self-diagnosis of autism, as the sound design was like how they can find real life environments challenging.

Feedback on the interactivity mostly supported the literature on supporting audience engagement with the film with their direct involvement in the plot (Vosmeer and Schouten, 2014). The majority of participants (57%) found the interactivity significantly supported their engagement, while 29% found it slightly more engaging, and 14% found it no different from a linear film. Audience members also liked having alternate mixes (Figure 4.3), with no participants outright not wanting alternate mixes and the majority wanting the option.

How much did you like having the option of alternate mixes?

7 responses

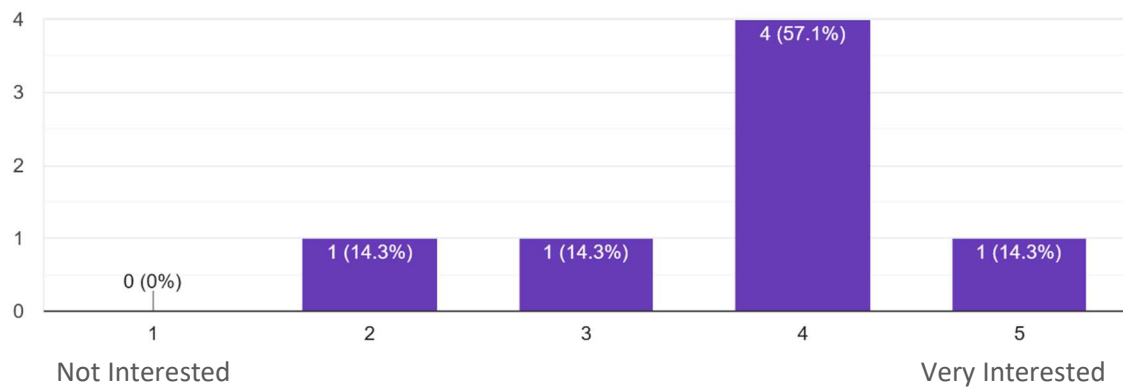


Figure 4.3: A graph of the audience members response to being asked how much they liked having options of alternate mixes.

Participants also expressed a desire for more films to offer alternative mixes (Figure 4.4), which demonstrates an interest in the provision of these experiences even though the sample is small and more research would be needed. This preference echoes the feedback from the focus group (see Chapter 3.8), that supported the need for personalisation of accessibility.

Would you like more films to offer different ways of listening to films, beyond a traditional mix?

7 responses

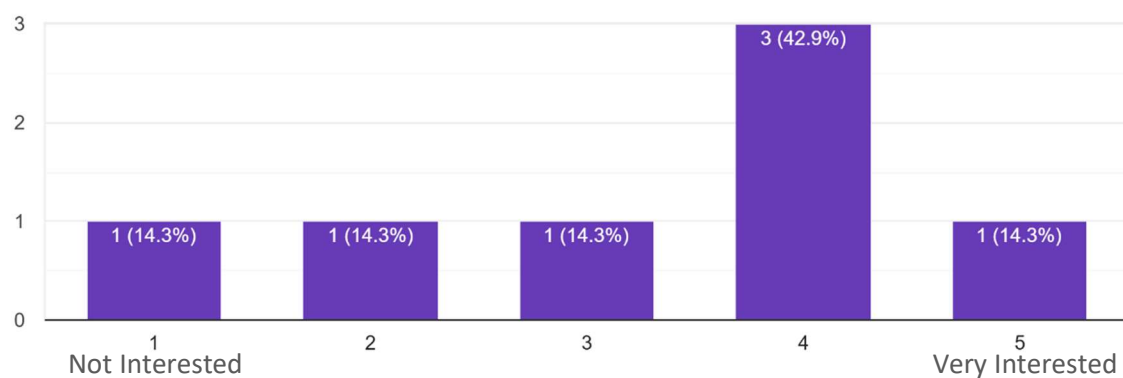


Figure 4.4: A graph of the audience members responses to being asked how much they liked having options of alternate mixes.

In terms of preferred mixes, 57% preferred the accessible mix, with the majority of those participants being autistic audience members. The remaining 43% preferred the traditional mix, with no audience members preferring the representative mix. While not the outright intention, the mix was designed to be less comfortable, to represent the sonic sensitivity/misophonia that can be experienced by autistic people. However, 29% of participants marked that they still liked the representative mix as an experience they could still watch (Figure 4.5), meaning, despite it not being accessible to some audiences (as the majority of participants who identified themselves as neurodivergent did not select this mix as one they 'liked'), it still exists as a potentially usable way to better communicate autistic listening experiences to audiences.

Which of the mixes did you like (if any)

7 responses

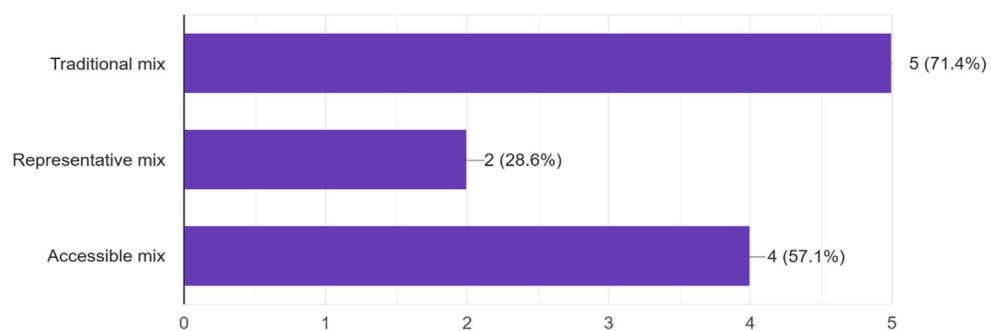


Figure 4.5: A graph of the audience members response to being asked which mixes they liked.

Despite the lower popularity of the representative mix, it did appear successful in representing the majority of participants' listening experiences (Figure 4.6). However, it is worth noting the small sample size, and further research with larger groups would be needed, allowing a comparison between a wider group of participants who identify as autistic and neurotypical.

The representative mix was based around representing audio processing conditions, particularly what it may be like to hear as an autistic person, with sounds being more intense.

How much do you feel like it represented your listening experience?

7 responses

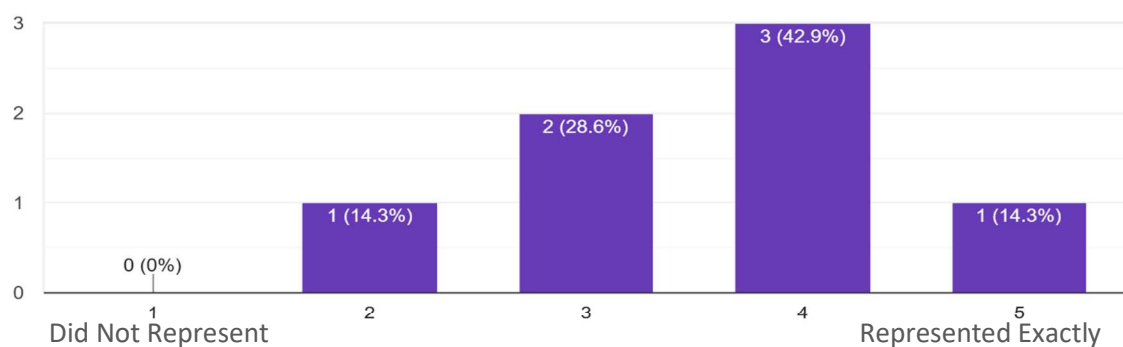


Figure 4.6: A graph of the audience members response to being asked how much the representative mix represented their listening experience.

The answers on the accessibility of the accessible mix indicated that a majority (57.1%) found it to be more accessible than the traditional mix and the representative mix (57.1%) (Figure 4.7).

The accessible mix was created to be more accessible for audiences with audio processing conditions, particularly autism, by making the dialogue clearer and background sounds less intrusive.

Did you find the accessible mix more accessible than other mixes available?

7 responses

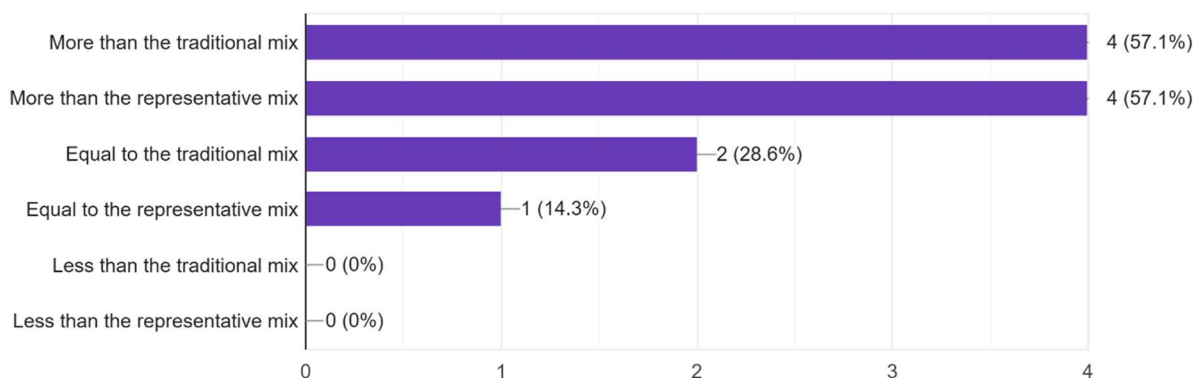


Figure 4.7: A graph of the audience members response to being asked how much the representative mix represented their listening experience.

An interesting comment, that potentially presents a limitation of the study, came from the question titled “Could changes be made to make [Processing] more representative of your listening experience?” that said:

“My experience would be different if it was played through speakers compared to headphones.”

While the film was specifically mixed in stereo and for headphones, due to the film being interactive and therefore likely to be viewed individually, many films will be watched over speakers. Potential future work on the way people watch films, when they watch them, could show the differences in accessibility between headphones and loudspeaker reproduction, and how the environment the loudspeakers are projecting into, however this was beyond the scope of this study. Further studies should likely include loudspeaker versions, and could even consider how autistic audiences listen to what they watch, whether headphones or loudspeakers are preferred. Designing *Processing*, or other films, to be tested/ listened to over loudspeaker would require additional proofing and mixing to ensure the same desired listening experience was had from headphones to loudspeakers. A larger production, such as one

designed to be published on streaming services, would likely not have this issue as they are already mixed to be listened to on various devices, from surround sound television to laptops and mobile phones.

One comment made in the final question of the form, that asked “Could changes be made to make [Processing] more accessible”, had a response that requested the addition of subtitles, echoing comments by the focus group, as well as an interest in a mix that only includes dialogue. As mentioned in the introduction of this Chapter, the decision not to include subtitles was deliberate and only for the test screenings. If *Processing* was to see a wider release, it would be essential to include subtitles to further promote the importance of accessibility and acknowledge that subtitles, not just audio, are an avenue for greater accessibility for autistic audiences. A wider release would also require more accessibility functions to be available, such as audio description for blind audiences and subtitles for D/deaf audiences, for autistic identifying blind and D/deaf audiences.

Overall, the findings from *Processing*'s test screenings points towards the same outcome as the focus group; autistic people want more accessible media made for them, or that gives them the choice to make it accessible for them. While the limited scale of the study requires further study to come to definitive conclusions on this, the fact both participants from the focus group echoed the same preferences as autistic participants from the test screening shows a correlation in the desire for accessible media. Alternate mixes appear to be a simple yet effective way to create more accessible film for autistic and other neurodivergent audiences, without compromising artistic intent. The test screening also suggests interactive cinema acts as an engaging medium for similar studies to use, and to educate people on autistic experiences, but further research on interactive cinema for academic studies would be essential to categorically draw this conclusion.

Chapter 5: Discussion and Conclusions

5.1 Introduction

When embarking on this research project my aim was to integrate three main elements: (1) the participation of autistic people; (2) the use of interactive cinema as an educative tool and (3/4) the use of alternative audio mixes as a form of accessibility and representation. This work was framed within an understanding of the challenges of representation of autism in current media. To bring this to fruition, autistic people were consulted in the preparation of the interactive short film *Processing* through their participation in a focus group and subsequently feeding back as part of test screenings. Regarding the use of alternative mixes, I created three versions: a traditional mix, a mix designed to be accessible to autistic audiences, and a mix that would better represent autistic listening experiences. These mixes were also informed by the literature reviewed in Chapter 2, which established the differing listening experiences autistic people may have and how this research could be used to support autistic audience members as well as represent autistic listening experiences to broaden the understanding of how it may be to hear with auditory processing conditions to audiences without them.

This chapter reflects on the main findings, successes and shortcomings of the work undertaken. It also explores potential future avenues of research on autistic audio accessibility and media representation.

5.2 Processing *Processing*

Previous research on the listening experiences of autistic people (Davies 2022; Remington and Fairnie 2017) provided me with the starting point to create both an accessible and a

representative mix, with the former focusing on avoiding sensory discomfort for autistic audience members.

Feedback from test screenings shows that the mixes fulfilled their purpose. However, for wider use, the mixes would require a higher degree of polish, as some elements of *Processing* were not to the same degree of audio-visual quality as professionally produced media. Issues from the shooting of *Processing*, such as changing of natural lighting, imperfect camera movements and shot composition as well as visible equipment and crew were unfixable visual changes. The colour grading of the film could also have been better, with *Processing* being my first time extensively colour grading and my first time using the software DaVinci Resolve. One scene, towards the end of the interactive film – an outdoor scene at a bar - had problems with the recording of audio, due to my location sound mixer having to step in for an actor who dropped out. While I would have liked to prioritise the sound, the character was required for the overall story of the film, and this trade-off had to be made. Due to this, the audio, while usable, had clear problems I was unable to fix in post-production, such as the inconsistencies of dialogue quality in the pub garden. Despite this, a key area to highlight is that it was possible to go from a 'traditional' mix as a starting point (that is, a mix that follows the conventions of film and television mixing) to the alternative mixes (both accessible and representative) with changes that can be easily accommodated into the postproduction workflows, such as changing levels of different audio stems to provide alternate mixes for viewers or allowing audiences to change the levels on stems themselves in settings typically available on streaming services. Current options available on Netflix are different dubbed audio of languages and subtitles, and the different languages the subtitles are available in. Below is a mock up design of what options of alternate mixes could look like on a streaming service, like Netflix, when integrated in their

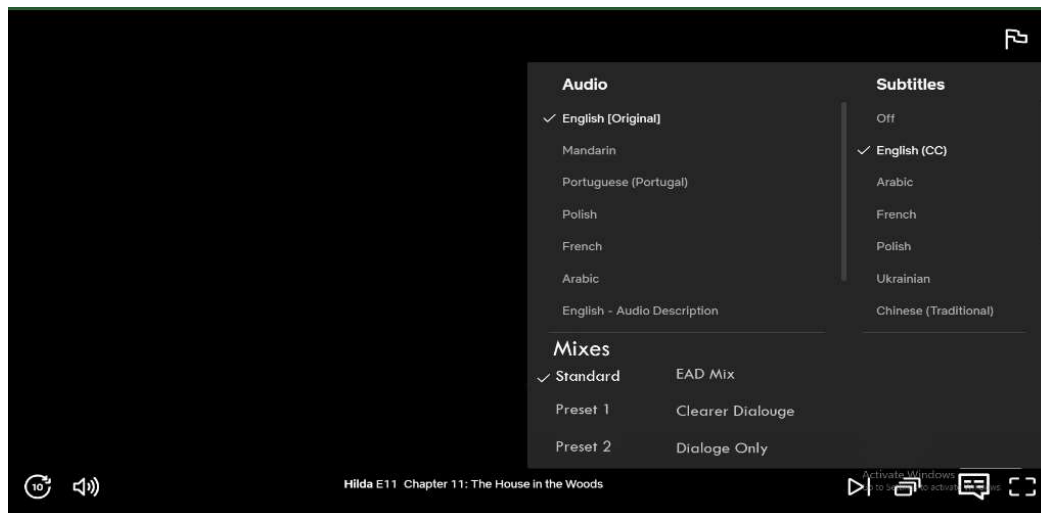


Figure 5.1: A graphic example of how a streaming services could implement a choice between mixes

current section for audiences (Figure 5.1). In implementing these into modern and emerging streaming services, it would likely be technically feasible. Through delivering audio stems separately, rather than in a final complete package to be streamed, streaming services could set either pre-designed alternate mixes with different levels, such as one with less background sounds to allow for clearer dialogue, or even allow for multiple sliders for user customisability. This could appear similar to video game audio options, that typically allow for music, sound effects, and other audio elements to be changed to the user preference (Figure 5.2).

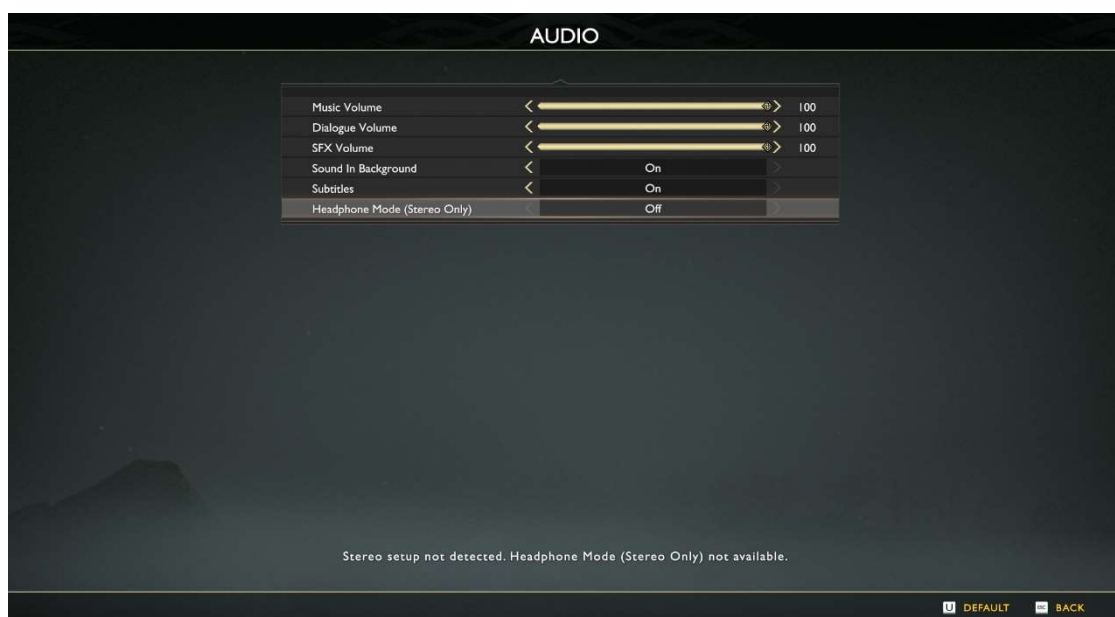


Figure 5.2: Audio settings in God of War (Barlog, 2018)

Most of the work was accomplished with slight changes to the levels output by separate stems, rather than requiring mixing from scratch, and therefore proves achievable for any scale of production. Below is an example of how, during the mastering of the film's audio, the stems could be changed to provide greater accessibility or represent a particular group or individual's listening experience, based on the changes I made when mixing *Processing* (Figures 5.3, 5.4, 5.5).

Figures 5.3, 5.4 and 5.5 represent rough estimates of the differences between *Processing*'s alternate mixes, not exact differences.

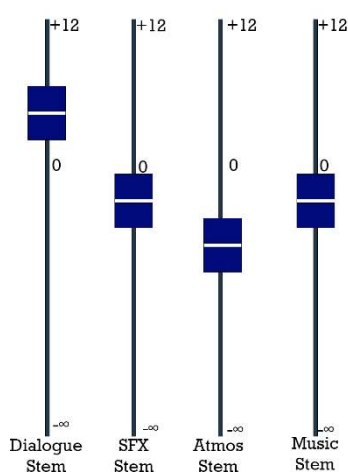


Figure 5.3: A graphic example of mixing sliders showing different audio levels of audio stems representing the traditional film mix.

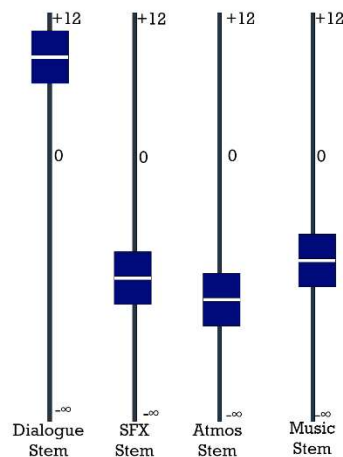


Figure 5.4: A graphic example of mixing sliders showing different audio levels of stems representing the accessible film mix.

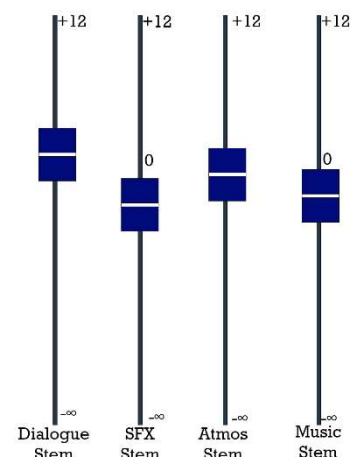


Figure 5.5: A graphic of mixing sliders showing different audio levels of stems representing the representative film mix.

When this research began, the following research questions were asked:

- RQ1: What is succeeding and failing with autism representation within film and television?
- RQ2: How can Interactive Cinema be used for educative and representative content of autistic people?

- RQ3: What features would an accessible audio mix for autistic audiences need to have and how can they be incorporated to audio postproduction processes through the use of alternate mixes?
- RQ4: What features of a representative audio mix would autistic people want to portray their listening experiences?

RQ1 was answered within the literature (see 2.3) and in the focus group (see 3.4), where a clear lacking in diverse portrays of autism is present in media. RQ2 was supported by the literature and found to be effective through the test screenings of *Processing* (see 2.5, 2.6, and 4.3). Through the focus groups discussion with autistic participants, RQ 3 and 4 asked for individual inputs on autistic experiences in order to design a mix of both how autistic want film sound, for their accessibility (RQ3) and a mix that can best to represent their listening experiences (RQ4). While supported with critical analysis of the literature covering these topics, participatory engagement from the autistic community as well as test-screening participants viewing *Processing*, this research successfully answers all of these. The outcome of this is both the interactive short film, *Processing*, and the three mixes designed to support the RQs, that can both represent how autistic people may hear the world around them as well as be a film that is accessible for the autistic community. The research also opens up future discussion on designed accessibility for autistic film audiences, and the importance of personalisation.

5.3 Future Research

Personalisation has been at the centre of the work conducted in this thesis. Both discussed through EAD (Lopez, Kearney and Hofstädter, 2021) and OBM (BBC, 2013), personalisation allows audiences to tailor accessibility to their own preferences. As shown in Chapter 3 through the focus group and in Chapter 4 in the test screenings, there are differing preferences when it comes to access requirements among different autistic people. Specifically, when it

comes to audio accessibility, further research should focus on developing methods that support ways to fulfil a filmmaker's aims while supporting access to varied audiences. With OBM, there could be a future where all audio streams could be changed at the point of consumption allowing for more nuanced approaches to accessibility through audio.

On the side of autistic research specifically, expansion on participatory research by autistic people and with autistic people, particularly autistic adults, is crucial. This should also account for media designed to represent autistic people, in order to communicate the wide spectrum of experiences autistic people have and reduce the stigma and harm unvaried and stereotypical representation has had on autistic people.

Combining both accessibility through personalisation and autistic perspectives would be crucial to autistic people's media access, supporting a design of accessible media that directly and immediately supports their needs, as well as the needs of other disabled people. It is worth noting that, as has been advocated through concepts such as Universal Design, it is likely that alternate mixes for accessibility also benefit wider communities, as well as form new communities, across different disabilities and disabled experiences, that intertwine the strands that connect different accessibility tools, techniques and movements.

5.4 Final Notes

Coming across nascent fields of intersectionality, such as *neuroqueer*, stood out to me, presenting new ways that intersectional experiences can benefit individual experiences.

Autistic audio accessibility, that has been the focus of this thesis, and how it both supports and is supported by research into media accessibility for other disabled groups is something I find of particular importance. Diversifying autism, in media, as well as for the media representation for marginalised communities, will be essential in driving the future of social change. When looking to develop further accessibility research, the consideration of how it may apply to more groups than the intended ones should be of key interest in order to broaden the potential benefit of the research.

While built around my own experiences as an autistic person, my research has been shaped through crossing intersectional walls with my positionality as a neuroqueer person, and through exploring audio accessibility beyond that for autistic people. From attending my first EAD presentation (Lopez and Kearney, 2024) to completing this project, my perspective on audio accessibility is continuously expanding, with comparing what may or may not work for autistic audio accessibility against other examples of Media Accessibility developing further intersectional connections in disability research.

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Media

"Atypical" (2017-2021) [TV Series], Created by Robia Rashid. USA: Netflix

"Black Mirror: Bandersnatch" (2018) [Film], Directed by David Slade. USA: Netflix

"Breaking the Code" (1996) [Film], Directed by Herbert Wise. UK: BBC

"Detroit: Become Human" (2018) [Video Game], Directed by David Cage. France: Quantic Dreams

"God of War" (2018) [Video Game], Directed by Cory Barlog. US: Santa Monica Studios

"House" (2004-2012) [TV Series], Created by David Shore. US: Fox

"Kaleidoscope" (2023) [TV Series], Created by Eric Garcia, Directed by Everardo Gout, Robert Townsend & Mairzee Almas. USA: Netflix

"Laser Gun" by M83. From the album *Junk* (2016) [Song], Created by Anthony Gonzales, France: Naïve Records

"Love on the Spectrum" (2022-present) [TV Reality], Directed by Cian O'Clery. UK: Netflix

"Marcel" by Her's. From the album *Songs of Her's* (2017) [Song], Created by Stephen Fitzpatrick and Audun Laading, UK: Heist or Hit.

"Mayonakano Joke" by Takako Mamiya. From the album *Love Trip* (1982) [Song], Created by Takako Mamiya. Japan: Kitty Records

"New Girl" (2011-2028) [TV Series], Created by Elizabeth Meriwether. US: Fox

"Rhythm 0" (1974) [Performance], Performed by Marina Abramović. Italy: Galleria Studio Mora

"Sherlock" (2010-2017) [TV Series], Created by Mark Gatiss and Steven Moffat. UK: BBC

"Spines" (2023) [Film], Directed by Joesph Innman. UK

"Stepping Through Interactive" (2021) [Film], Directed by Simona Manni. UK: University of York

"Stockholm: An exploration of True Love" (2009) [Video Game], Directed by Stanton Audemars. USA: Rattled Films

"The Big Bang Theory" (2008-2019) [TV Series], Created by Chuck Lorre and Bill Prady. USA: CBS

“The Curious Incident of the Dog in the Night-Time” (2003) [Novel], Written by Mark Haddon. UK: Jonathon Cape and David Fickling Books

“The Curious Incident of the Dog in the Night-Time” (2012-2017) [Stage-play], Adapted and written by Simon Stephens. UK: National Theatre

“The Good Doctor” (2017-2024) [TV Series], Created by David Shore. USA: ABC

“The Rosie Project” (2013) [Novel], Written by Graeme Simsion. Australia: Text Publishing

“The Undateables” (2012-2020) [TV Reality], Directed by Clare Bradbury. UK: Channel 4

“The Walking Dead” (2012) [Video Game], Directed by Dennis Lenart and Sean Ainsworth. USA: Telltale Games

“Thirty Two Short Films About Glenn Gould” (1993) [Film], Directed by François Girard. Canada: Rhombus Media, The Samuel Goldwyn Company

“(We indulge in) a bit of roll play” (2026) [Stage-play], Directed by Robert Softley Gale. UK: Birds of Paradise

Appendix

Appendices for Chapter 3

Appendix 3.1

Processing Stornaway Viewing Link (Traditional Mix)

<https://player.stornaway.io/watch/54186e85>

Please be aware this link will only be active until 28/4/2026.

Appendix 3.2

Processing Stornaway Viewing Link (Representative Mix)

<https://player.stornaway.io/watch/a4f1024e>

Please be aware this link will only be active until 28/4/2026.

Appendix 3.3

Processing Stornaway Viewing Link (Accessible Mix)

<https://player.stornaway.io/watch/54186e85>

Please be aware this link will only be active until 28/4/2026.

Appendix 3.4

Processing Nodes Google Drive File

<https://drive.google.com/drive/folders/1NnxWGBjU1RyV3EzCQkyrGeviejsN7ffh?usp=sharing>

Appendix 3.5

Blank Memorandum of Understanding

Processing

UNIVERSITY *of York*

School of Arts and Creative Technologies

Contributor Information Sheet

Project background

The University of York would like to recognise your contribution towards the following project: **Processing**,

Before agreeing to take part, please read this information sheet carefully and let us know if anything is unclear or you would like further information.

What is the purpose of the project?

This project is being conducted by Eden Hutton (tnh508@york.ac.uk) who is an MSc Interactive Media by Research student at the University of York. This project is supervised by Professor [Mariana Lopez](#) (mariana.lopez@york.ac.uk).

The work is being conducted according to restrictions that have been subject to approval by the ACT Ethics committee. The Chair of the ACT Ethics committee can be contacted on ACT-ethics@york.ac.uk.

At present, you are acting as co-writer alongside Eden Hutton to create the script for the interactive short film *Processing*.

The production we are creating is a fictional film based around the experiences of an autistic character, Andy, navigating the pressures of a day out of the norm.

If you have any concerns about the topics that may be covered in the production, or that may be discussed in the filming, please raise these concerns with the producer.

Your contribution to this project is voluntary. If you wish, we will provide you with access to the edited film and/or the report that we submit after our marks have been confirmed. If you would like to receive access to these, you can indicate as such on the consent form.

Why have I been invited to take part?

You expressed interest in co-writing *Processing*.

Do I have to take part?

No, participation is optional. If you do decide to take part, you will be given a copy of this information sheet for your records and will be asked to complete a

contributor release form. If you change your mind at any point during the filming, you will be able to withdraw your participation without having to provide a reason. To withdraw your involvement in the project you need to let the producer (Eden) know as soon as possible.

Privacy Notice

This section explains how personal data will be used by *Processing* at the University of York.

For this project, the University of York is the [Data Controller](#). We are registered with the Information Commissioner's Office. [Our registration number](#) is Z4855807.

What is our legal basis for processing your data?

Privacy law (the UK General Data Protection Regulation (GDPR) and Data Protection Act 2018) requires us to have a legal reason to process your personal data. Our reason is we need it to perform a public task.¹

This is because the University has a [public function](#), which includes carrying out research projects.² We need to use personal data in order to carry out this research project.

Information about your health, ethnicity, sexual identity and other sensitive information is called "[special category](#)" data. We have to have an additional legal reason to use this data, because it is sensitive. Our reason is that it is needed for research purposes.³ All research projects at the University follow our [research ethics policies](#).

Who do we share your data with?

The film may be uploaded to public platforms, such as YouTube.

¹This refers to [UK GDPR Article 6 \(1\) \(e\)](#): processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller

² [Our charter and statutes](#) states: 4.f. To provide instruction in such branches of learning as the University may think fit and to make provision for research and for the advancement and dissemination of knowledge in such manner as the University may determine.

³This refers to [UK GDPR Article 9 \(2\) \(i\)](#): processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

As well as this, we use computer software or systems to hold and manage data. Other companies only provide the software, system or storage. They are not allowed to use your data for their own reasons.

We have agreements in place when we share data. These agreements meet legal requirements to ensure your data is protected.

How do we keep your data secure?

The University is serious about keeping your data secure and protecting your rights to privacy. We don't ask you for data we don't need, and only give access to people who need to know. We think about security when planning projects, to make sure they work well. Our IT security team checks regularly to make sure we're taking the right steps. For more details see [our security webpages](#).

How do we transfer your data safely internationally?

If your data is stored or processed outside the UK, we follow legal requirements to make sure that the same level of privacy rules still apply.

How long will we keep your data?

The University has rules in place for [how long research data can be kept](#) when the research project is finished. For this project, data will be kept until the submission deadline in March 2026.

What rights do you have in relation to your data?

[You have rights over your data](#). This sheet explains how you can stop participating in the study, and what will happen to your data if you do. This information is in the section 'Do I have to take part?'

If you want to get a copy of your data, or talk to us about any other rights, please contact us using the details below.

Questions or concerns

If you have any questions or concerns about how your data is being processed, please contact Eden Hutton.

If you have further questions, the University's Data Protection Officer can be contacted at dataprotection@york.ac.uk or by writing to: **Data Protection Officer, University of York, Heslington, York, YO10 5DD.**

Right to complain

If you are unhappy with how the University has handled your personal data, please contact our Data Protection Officer using the details above, so that we can try to put things right.

If you are unhappy with our response, you have a right to [complain to the Information Commissioner's Office](#). You can also contact the Information Commissioner's Office by post to **Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF** or by phone on **0303 123 1113**.

A consent form from the University of York's School of ACT

Processing

UNIVERSITY *of York*

School of Arts and Creative Technologies

Memorandum of Understanding

Thank you for your interest in this project. Your contribution in this project will be used in an interactive short film which is part of the research outlined for an MSc Interactive Media by Research thesis at the University of York.

Name of Producer or Production Company:

Description of Contribution:

.....

Date(s) of Contribution:

Please read the following statements carefully and tick the appropriate box:

	YES	NO
I have read the information sheet about this project		
I agree to take part in this project		
I consent to being filmed and audio recorded for this project		
I consent to being featured in the edited film		
I understand that I will be identifiable in the edited film		
I understand how the edited film may be distributed		
I am over the age of 18		

In consideration of the Producer / Production Company agreeing that I contribute to and participate in the above project, the nature and content of which has been fully explained to me, I hereby consent to the use of my contribution in the above project in accordance with the terms and conditions listed overleaf.

Terms & Conditions

I hereby agree that the copyright and all other rights, including so-called moral rights, in respect of my contribution shall vest in and is hereby assigned to the Producer / Production Company (and this assignment shall operate to the extent necessary as a present assignment of future copyright) and the Producer / Production Company shall have unfettered right to deal with the programme containing such contribution or any part of it in any way it thinks fit. Accordingly I agree that the Programme incorporating my contribution or any part of it may be exhibited or otherwise used or exploited (and this may include the exploitation of ancillary rights there in) in all media and formats throughout the universe for the full period of copyright and all renewals and extensions and thereafter as far as may be possible in perpetuity.

Contributor Name:

Contributor Signature:

Date:

___/___/___

Producer Name:

Producer Signature:

Date:

___/___/___

If you wish to receive access to the edited film created in this project, please provide your email address:

Appendix 3.6

Processing Script

PROCESSING

Written by

Nia Parker & Eden Hutton

A film for the MSc Interactive Media by Research Project-

"Interactive Cinema and the Use of Alternate Mixes in Better
Representing Autistic Listening Experiences"

The University of York

Supervisor- Professor Mariana Lopez

1

INT- BATHROOM, DAY

ANDY stands under a hot, fierce shower, letting the water engulf the. Rushing water drowning out the world around them. A loud thudding rings at the door, breaking ANDY peace.

HOUSEMATE

I've got work in twenty minutes, hurry up in there!

INT- ANDYS BEDROOM, DAY

ANDY sits in front of a mirror, drying their hair. They glance at the Callender, the date circled in red marker pulling their focus. They rush around their room frantically, rooting through drawers and stuffing items into their bag.

CHOICE 1- Search drawer , Search bag

EXT- STREET, DAY

Andy walks out of their house, throwing on their jacket and quickening their pace to the bus stop.

BUS SCENE/WALK IN CITY

ANDY looks in their bag, realising they forgot their headphones- struggles with overstimulation because of a lack of headphones/ ANDY retrieves their headphones putting them on, comforted by their music are their surroundings grow nosier.

EXT- CD SHOP, DAY

They pace carefully down the aisle, looking up and down at the different options. ANDY looks through messages on their phone.

NADIA (text)

Have you listened to [ALBUM NAME]

2

SAM (text)

YESSSSS

ANDY (text)

From a few weeks ago?

NADIA (text)

ASJHFGJ I wanna go baaack

JESS (text)

OMG not yet! No spoilers, trying to find [ANOTHER ALBUM] atm but I'll put it on my list!

CHOICE 2- ANDY raises Band 1/ Band 2 CD above the other and nods to
themselves

INT- COFFEE SHOP, DAY

ANDY rushes in, slightly out of breath, spotting their friend at a table. They sit down opposite them, shucking off their jacket.

NADIA

The barista keeps side eyeing me but I guess that's normal when you take up a table for twenty minutes without ordering anything.

ANDY

Oh my God I'm so sorry! We can get coffee someplace else if you want.

NADIA (LAUGHING)

No, no I'm kidding, I got here like two minutes ago, I'm just glad I'm not the late one for once.

NADIA glances at the shopping bags at ANDY's feet.

NADIA

Have you literally just bought that?

Andy nods sheepishly.

NADIA

Well you're a better friend than me, I haven't bought anything yet, what is it?

ANDY

The BAND 1/ BAND 2 CD

NADIA

Damn, I was gonna get that, you totally stole my idea/ ~~Wow, rouge choice, I'm sure she'll appreciate it no matter what.~~

ANDY

What if someone else already got her it?

NADIA

Don't worry, it's perfect, now I've got to get creative.

A waiter approaches the table.

WAITER(TO NADIA)

Hey guys, what can I get for you today?

NADIA

Can I get an iced caramel latte with oat milk, please and thank you.

WAITER(TO ANDY)

And for yourself?

Andy panics slightly, looks between the menu and NADIA.

CHOICE 3- CHOOSE FROM THE MENU/SIGNAL NADIA

ANDY

Uh I'll just have a um chey latte please?

WAITER

Chai latte?

ANDY

Yup, thanks.

NADIA

They'll take a hot chocolate, cream, not marshmallows. Thanks!

ANDY(MOUTHING TO NADIA)

Thank you.

WAITER

Coming right up!

NADIA

Are you going to be okay tonight?

ANDY

Of course, I mean there's only like 10 people going right?

NADIA

Well yeah but it's an open bar, we haven't got the whole place booked out.

ANDY

So it's going to be full of strangers? Anyone could just join us?

NADIA

It's a Tuesday's night, it won't be packed out, don't worry. There'll probably just be a few other people there who we don't know.

ANDY

But we don't have our own space, what if people come and sit with us?

NADIA

5

You know what Jess is like, she's going to want to sit downstairs all night so we'll camp out on the sofas as if we own them.

ANDY

Do you think the music will be loud or what if everyone gets shitfaced or someone throws up or-

NADIA

It's a nice bar, we've agreed it's going to be chill, you don't have to worry. You're imagining the worst case scenario but I promise you, it's going to be totally fine.

Andy takes a big deep breath, relaxing back into their chair.

WAITER

And here's our drinks guys, can I get you anything else?

They both smile and shake their heads.

WAITER

All good? Enjoy.

Andy takes a sip of their drink.

Andy takes a hesitant sip.

NADIA

How's the panic order?

ANDY (GRINNING)

It's actually really, really good.

INT- ANDYS BEDROOM, AFTERNOON.

ANDY sulks into the bedroom. Throwing their bag onto the floor and flopping down into the bed. They close their eyes for a brief moment when their phone buzzes with a text from NADIA.

NADIA (TEXT)

6

'What are you wearing?'

Andy begins typing, confused.

NADIA (TEXT, cont)

'TONIGHT'

Andy (TEXT)

'fuck'

ANDY giggles, sitting up and observing the piles of clothes littering the floor, they roll their eyes, flopping back down on the bed.

OUTFIT MONTAGE.

EXT- OUTSIDE THE BAR, EVENING.

Andy stands outside the bar, nervously shifting weight from one foot to another, checking their phone, a string of texts to NADIA unanswered.

CHOICE 4- WAIT FOR NADIA/ GO IN ALONE

NADIA open the front door of the bar, waiving Andy over.

NADIA

What are you waiting for, the party's in here!

Andy enters and NADIA links arms with ANDY, leaning into their ear.

NADIA

I'll show you to the bar, I'm going to go say hi to someone from uni, ill be right back. Get yourself a drink and I'll walk you down to join the others.

Andy shuffles nervously toward the door and opens it, slinking inside. They stand for a moment overserving their surroundings, spotting NADIA further back, enthralled in conversation with someone. Noticing everyone has drinks, they shuffle towards the bar, standing nervously off to the side, looking at the drink options.

7

A group of men stand at the bar with drinks, one spinning around quickly, knocking into Andy, some of the man's drink spilling over them. This pulls NADIA attention in the distance.

ANDY takes a step back nervously, the feeling of overwhelm building. The drunk man peruses Andy attempting to apologise, placing his hands on ANDY's shoulders to look at them, trying to emphasise how sorry he is.

DRUNK MAN

Awe mate I'm so sorry. Genuinely though it was an accident, my bad I wasn't looking where I was going.

NADIA appears and scoops Andy up walking them away from the group of men, turning back with a glare.

DRUNK MAN (DISTANTLY)

What's her problem?

NADIA pulls Andy into a toilet cubicle.

NADIA

What a dickhead.

NADIA pulls tissues from the dispenser dabbing at the spillage on Andy's clothes, ANDY still somewhat vacant.

NADIA (CONT'D)

Are you okay?

ANDY

I don't think it soaked through to my t-shirt.

ANDY begins taking off their jumper.

NADIA

Do you need to leave? I can call you an uber, I understand if it's too much. I'm so sorry I wasn't at the bar with you!

ANDY

I think I'm okay.

NADIA gives ANDY a once over.

8

NADIA

I think you're good, it only got your jumper.

NADIA straightens out ANDY shirt

NADIA (CONT'D)

Cute outfit by the way, you ready?

ANDY

Let's do it.

They leave the toilet together, hand in hand and make their way to the BASEMENT.

INT, BASEMENT- EVENING.

The group in the corner laugh, drink and chat, noticing NADIA and ANDY, they wave them over. ANDY shadows NADIA as she confidently struts back to the group, taking a seat and offering a space to ANDY. The small conversations between the group continue, JESS smiles warmly at ANDY.

JESS

Thank you for coming Andy, and bringing Nadia back with you, we lost her for like thirty minutes to some randos upstairs.

ANDY

Happy Birthday Jess.

ANDY hands JESS her present. JESS opens the present, looking back up at ANDY.

JESS

Oh my goodness, I've had my eye on this for a while, how did you know! Thank you so much Andy, it's perfect.

This reaction draws the attention of other members of the group fawning over the gift, quite compliments of ANDY's gift scattered around in conversation.

ANDY (SHEEPISHLY)

You're welcome.

JESS is pulled away into birthday selfies and laughter, ANDY looks for NADIA's attention once again finding her chatting away happily to the girl next to her, ANDY smiles, peacefully observing the group.

ROWAN

I like your pin badge.

ANDY turns their attention to the source of the compliment, a shy looking person sat opposite, admiring ANDY badges.

ANDY

You know [FANDOM NAME]

-fade out-

INT, BASEMENT- LATER.

The whole group laughs and chats, ANDY and NADIA retelling stories of their early uni years.

JESS

Andy, I've always wanted to know, did you and Nadia really meet when she did a handstand in the club and kicked you in the head.

ANDY

No actually, we met in the queue and I'm the one who bet she couldn't do a handstand.

The group laughs.

ROWAN

Hey this place is getting a bit crowded, were you guys on about heading somewhere else for another drink.

JESS

10

Yeah definitely, let's head out!

The group begins gathering their things, standing up and heading towards the door. Andy remains seated, unsure of what to do. As JESS passes them-

JESS

Andy, you want to come with? No pressure but I think you'd really like the vibe of the place we're going, it's really chill.

The group turn around, noticing ANDY is still seated, they all simultaneously encourage them to join the group.

CHOICE 5- JOIN THE GROUP/GO HOME NOW.

ANDY

Absolutely!

The group and Andy make their way out of the bar together.

ANDY

It's been a heavy day, I'm gonna head out but it's been a great night, you guys have a good time.

ANDY heads out alone, walking down the street corner.

EXT- BENCH, NIGHT

ANDY slumps down on the bench, huffing loudly and smiling, appreciating the view and sounds. They gulp from a half-drunk water bottle and consider the events of the day.

ANDY sits down on the bench, appreciating their surroundings and sounds, happy and energised from the day.

Appendix 3.7

Call Sheets

Call Sheet
7/09/2025

Processing Call Sheet and Schedule

Directors: Nia Parker & Eden Hutton Producer: Eden Hutton Director of Photography: Mia Wedgewood	Processing Shoot Day #1	06/09/2025
Nearest Hospital: York Hospital Wiggington Road, Clifton, York, YO31 8HE Fire Assembly Point: Pasture Farm Close (opposite the house) Sunrise: 06:24 Sunset: 19:40 Lows of 13 degrees Highs of 18 degrees Light rain.		
Producer: Eden Hutton [REDACTED]		

Location #	Location	Address	Parking	Contact
1	House/ Bedroom	[REDACTED]	On street (Main Street)	Eden Hutton [REDACTED]

#	Character	Artist	Call Time	Set Time
1	Andy	Andrew Powell	10:00	10:00
	Crew	Role	Call Time	Set Time
2	Nia Parker	Co-director, Script supervisor	9:30	9:30
3	Eden Hutton	Co-director, producer	9:30	9:30

Call Sheet
7/09/2025

4	Alden Mills	DoP	9:30	9:30
5	Josh Pickering	Gaffer	9:30	9:30
6	Emily O’Gorman	Sound Recordist	9:30	9:30
7	Luis Bayonetta	Stills Photography	Whenever Possible	

FURTHER INFORMATION

(Costume - Covid - Schedule - Reimbursement - Directions)

Costume:

Andy: A variety of outfits. 1 casual outfit to be worn for scenes 2, 3, 4, 5, 6, 7 and 1 party outfit (with a layer over the top such as overshirt, hoodie, sweater) to be worn for scenes 8, 9, 10, 11, 12, 13.

Background:

N/A

Crew:

Anything comfortable.

Behind the Scenes shooting:

We will be documenting as much of the production as possible. If you don’t want to be captured on camera or featured in the documentary, please let Eden know ahead of shooting.

Covid:

Sanitiser will be provided so please make sure you use it regularly.

If you feel unwell or exhibit any Covid-19 symptoms, please inform Eden before you arrive on set.

Schedule:

Call Sheet
7/09/2025

Start at 00:00					
09:30	Location		Crew arrive and Setup		Est Time: 1:00
10:00	Location		Andy ready		Est Time: 00:30
Turnover at 10:30					
10:30	Scene 1 Slate 1	INT DAY	Bathroom		Est Time: 00:20
10:50	Scene 1 Slate 2	INT DAY	Bathroom		Est Time: 00:20
11:10	Scene 1 Slate 3	INT DAY	Bathroom		Est Time: 00:20
Bedroom Setup at 11:10					Est Time 00:20
11:30	Scene 2 Slate 4	INT DAY	Bedroom		Est Time: 00:20
11:50	Scene 2 Slate 5	INT DAY	Bedroom		Est Time: 00:20
12:10	Scene 2 Slate 6	INT DAY	Bedroom		Est Time: 00:20
12:30	Scene 2 Slate 7	INT DAY	Bedroom		Est Time: 00:20
12:50	Scene 2 Slate 8	INT DAY	Bedroom		Est Time: 00:20
13:10	LUNCH 1 hour				1:00
14:10	Scene 2 Slate 9	INT DAY	Bedroom		Est Time: 00:20
14:30	Scene 2 Slate 10	INT DAY	Bedroom		Est Time: 00:20
14:50	Scene 2 Slate 11	INT DAY	Bedroom		Est Time: 00:20
15:10	Scene 2 Slate 12	INT DAY	Bedroom		Est Time: 00:20
15:30	Scene 2 Slate 13	INT DAY	Bedroom		Est Time: 00:20
15:50	Scene 2 Slate 14	INT DAY	Bedroom		Est Time: 00:20
16:10	Scene 3	EXT DAY	Street		Est Time:

Call Sheet
7/09/2025

	Slate 15				00:45
16:35	Break (20 minutes)				00:20
15:55	Scene 7 Slate 16	INT Evening	Bedroom		Est Time: 00:45
16:40	Scene 7 Slate 17	INT Evening	Bedroom		Est Time: 00:20
17:00	Scene 7 Slate 18	INT Evening	Bedroom		Est Time: 00:20
17:20	Scene 7 Slate 19	INT Evening	Bedroom		Est Time: 00:20
17:40	MOVE TO RIVERSIDE				Est Time: 01:30
19:10	Scene 13 Slate 20	EXT NIGHT	Riverside		Est Time: 00:15
19:25	Scene 13 Slate 21	EXT NIGHT	Riverside		Est Time: 00:15
19:40	Scene 13 Slate 22	EXT NIGHT	Riverside		Est Time: 00:15
19:55	Scene 13 Slate 23	EXT NIGHT	Riverside		Est Time: 00:15
20:10	Scene 13 Slate 24	EXT NIGHT	Riverside		Est Time: 00:15
20:25	WRAP				

Reimbursement:

If anyone needs to claim travel expenses, please contact Eden in order to arrange reimbursement. Please keep any receipts you may receive that you wish to claim back.

Food:

Food will be provided. If you haven't already, please let Eden know if you have any food allergies/intolerances.

Food on this day will be Jacket Potatoes with a variety of toppings, such as egg mayo, tuna mayo, beans and cheese. If you cannot have this for any reason, please let Eden know as soon as possible.

Alternate food options: If crew would like to purchase their own food, there are shops a 10-minute walk from [REDACTED]. There is also a Big Bite <5 minute walk away. If crew would like to bring their own food, you may use the facilities in the house (microwave, oven, ect) if you need to heat or prepare food.

Call Sheet
7/09/2025

ALLERGIES AND INTOLERANCES ON SET

Currently, there are no known allergies or intolerances on set. If this is wrong, please inform Eden.

Directions to Set:

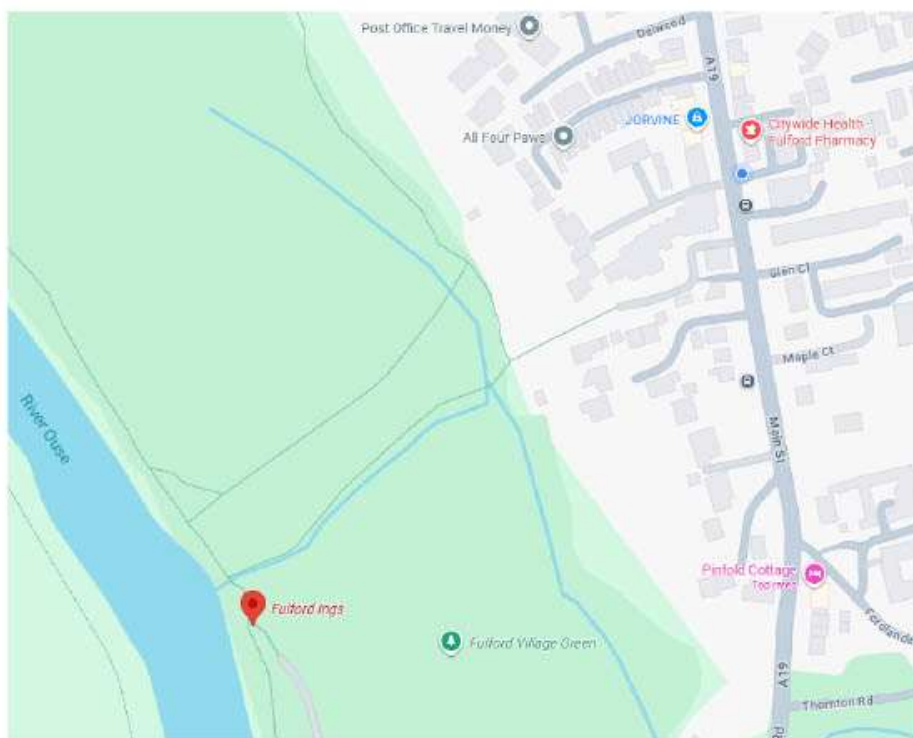
██████████ is off Main Street, Fulford. Those coming by car from York should travel south from the city until you arrive. Those coming by car from Leeds should enter Fulford from the A64.

If traveling by bus, there are stops opposite ██████████. The 7, 415 and 42 bus routes are recommended. Please observe local bus routes to plan ahead.



It is then a short <5 minute walk to the location Riverside, in the Fulford Ings.

Call Sheet
7/09/2025



Call Sheet
9/09/2025

Processing Call Sheet and Schedule

Directors: Nia Parker & Eden Hutton Producer: Eden Hutton Director of Photography: Mia Wedgewood	Processing Shoot Day #3	09/09/2025
Nearest Hospital: York Hospital Wiggington Road, Clifton, York, YO31 8HE Fire Assembly Point: On Street, outside locations Sunrise: 06:27 Sunset: 19:35 Lows of 12 degrees Highs of 19 degrees Cloudy, chance of patchy rain.		
Producer: Eden Hutton [REDACTED]		

Location #	Location	Address	Parking	Contact
1	Fossgate Social	25 Fossgate, York YO1 9TA	Peel Street Car Park, Peel St, York YO1 9PZ (paid parking) Or Belle Vue Street (free, on street) Or Main Street, Fulford/ [REDACTED] [REDACTED] (bus in)	
2	Ippuku Teahouse	15 Blake Street, York, YO1 8QJ	24 Queen St, York YO24 1AD Or Main Street,	Eden Hutton [REDACTED]

Call Sheet
9/09/2025

			Fulford	
--	--	--	---------	--

#	Character	Artist	Call Time	Set Time
1	Andy	Andrew Powell	09:00	09:00
2	Nadia	Grace	09:00	09:00
3	Drunk Man	Tez	09:00	09:00
4	Jess	Ellanie Havercroft	12:00	12:00
5	Rowan	Luke Winters	12:00	12:00
6	Bar Background Artists		09:00	12:00
7	Basement Background Artists		12:00	12:00
	Crew	Role	Call Time	Set Time
8	Nia Parker	Co-director, Script supervisor	09:00	09:00
9	Eden Hutton	Co-director, producer	09:00	09:00
10	Alden Mills	1st AD	09:00	09:00
11	Mia Wedgewood	DoP	09:00	09:00
12	Josh Pickering	Gaffer	09:00	09:00
13	Emily O'Gorman	Sound Recordist	09:00	09:00
14	Chino Bayoneta	Stills Photographer	09:00	09:00

FURTHER INFORMATION
(Costume - Covid - Schedule - Reimbursement - Directions)

Call Sheet
9/09/2025

Costume:

Andy: Party outfit (with a layer over the top such as overshirt, hoodie, sweater) to be worn for scenes 8, 9, 10, 11, 12, 13. Casual, same as scenes 2, 3, 4, 5, 6, 7

Nadia: Can bring one outfit. Anything fun. Can bring two outfits if desired.

Drunk Man: anything, something boisterous

Jess: Party clothes.

Rowan: Casual clothes.

Waiter: Work clothes

Background:

Anything comfortable, going-out clothes.

Crew:

Anything comfortable.

Behind the Scenes shooting:

We will be documenting as much of the production as possible. If you don't want to be captured on camera or featured in the documentary, please let Eden know ahead of shooting.

Covid:

If you feel unwell or exhibit any Covid-19 symptoms, please inform Eden before you arrive on set.

Schedule:

Start at 08:30					
09:00	Location 1		Crew arrive and Setup		Est Time: 1:00
09:30	Location 1		Cast and bar background artists arrive		Est Time: 00:30
Turnover at 09:30					
09:30	Scene 8 Slate 39	EXT NIGHT	Outside Bar		Est Time: 00:15
09:45	Scene 8	EXT	Outside Bar		Est Time:

Call Sheet
9/09/2025

	Slate 40	NIGHT			00:15
10:00	Scene 9 Slate 41	INT NIGHT	Bar		Est Time 00:20
10:20	Scene 9 Slate 42	INT NIGHT	Bar		Est Time 00:15
10:35	Scene 9 Slate 43	INT NIGHT	Bar		Est Time 00:20
10:55	Scene 9 Slate 44	INT NIGHT	Bar		Est Time 00:10
11:00	Scene 9 Slate 45	INT NIGHT	Bar		Est Time 00:10
11:10	Scene 9 Slate 46	INT NIGHT	Bar		Est Time 00:15
11:25	Scene 10 Slate 47	INT NIGHT	Bathroom		Est Time 00:20
11:45	Scene 10 Slate 48	INT NIGHT	Bathroom		Est Time 00:10
11:55	Scene 10 Slate 49	INT NIGHT	Bathroom		Est Time 00:10
12:00	Location 1		Basementcast and background artists arrive		
12:20			BREAK 00:15		
12:10	Scene 11 Slate 50	EXT NIGHT	Garden		Est Time 00:10
12:35	Scene 11 Slate 51	EXT NIGHT	Garden		Est Time 00:10
12:50	Scene 11 Slate 52	EXT NIGHT	Garden		Est Time 00:15
13:05	Scene 11 Slate 53	EXT NIGHT	Garden		Est Time 00:15
13:20	Scene 12 Slate 54	EXT NIGHT	Garden		Est Time 00:15
13:35	Scene 12 Slate 55	EXT NIGHT	Garden		Est Time 00:15
13:50	Scene 12 Slate 56	EXT NIGHT	Garden		Est Time 00:15
14:05	Scene 12 Slate 57	EXT NIGHT	Garden		Est Time 00:15
14:20			MOVE LOCATION & BREAK 01:40		Est Time 01:30

Call Sheet
9/09/2025

16:00	Scene 6 Slate 70	INT DAY	Cafe		Est Time 00:20
16:20	Scene 6 Slate 71	INT DAY	Cafe		Est Time 00:15
16:40	Scene 6 Slate 72	INT DAY	Cafe		Est Time 00:20
17:00	Scene 6 Slate 73	INT DAY	Cafe		Est Time 00:20
17:20	Scene 6 Slate 74	INT DAY	Cafe		Est Time 00:15
17:35	Scene 6 Slate 75	INT DAY	Cafe		Est Time 00:10
17:45	Scene 6 Slate 76	INT DAY	Cafe		Est Time 00:10
17:55	Scene 6 Slate 77	INT DAY	Cafe		Est Time 00:10
18:05	Scene 5 Shot 21	INT DAY	Retail shelves (in cafe)		Est Time 00:15
18:20	Scene 5 Shot 21	INT DAY	Retail shelves (in cafe)		Est Time 00:15
18:35	Scene 5 Shot 22	INT DAY	Retail shelves (in cafe)		Est Time 00:15
18:50	Scene 5 Shot 23	INT DAY	Retail shelves (in cafe)		Est Time 00:15
19:05	Scene 5 Shot 24	INT DAY	Retail shelves (in cafe)		Est Time 00:15
19:20	Scene 5 Shot 25	INT DAY	Retail shelves (in cafe)		Est Time 00:15
19:35	Scene 5 Shot 26	INT DAY	Retail shelves (in cafe)		Est Time 00:15
19:50	Scene 5 Shot 27	INT DAY	Retail shelves (in cafe)		Est Time 00:15
20:05	Scene 5 Shot 28	INT DAY	Retail shelves (in cafe)		Est Time 00:15
20:20			WRAP		

Reimbursement:

If anyone needs to claim travel expenses, please contact Eden in order to arrange reimbursement. Please keep any receipts you may receive that you wish to claim back.

Call Sheet
9/09/2025

Food:

Food will be provided. If you haven't already, please let Eden know if you have any food allergies/intolerances.

There will be snacks for all at Mickelgate Social. Lunch will be provided for Andy, Nadia, and crew. Snacks will also be available at the second location, after lunch.

Food on this will be fried tofu, teriyaki and rice. (allergens: soy, sesame. The teriyaki contains alcohol). If you cannot have this for any reason, please let Eden know as soon as possible.

If there are changes to the food available on the day, Eden will get in contact with the crew in rearranging the options.

Alternate food options: If crew would like to purchase their own food, the location is in York city centre and thus has a wide variety of options.

ALLERGIES AND INTOLERANCES ON SET

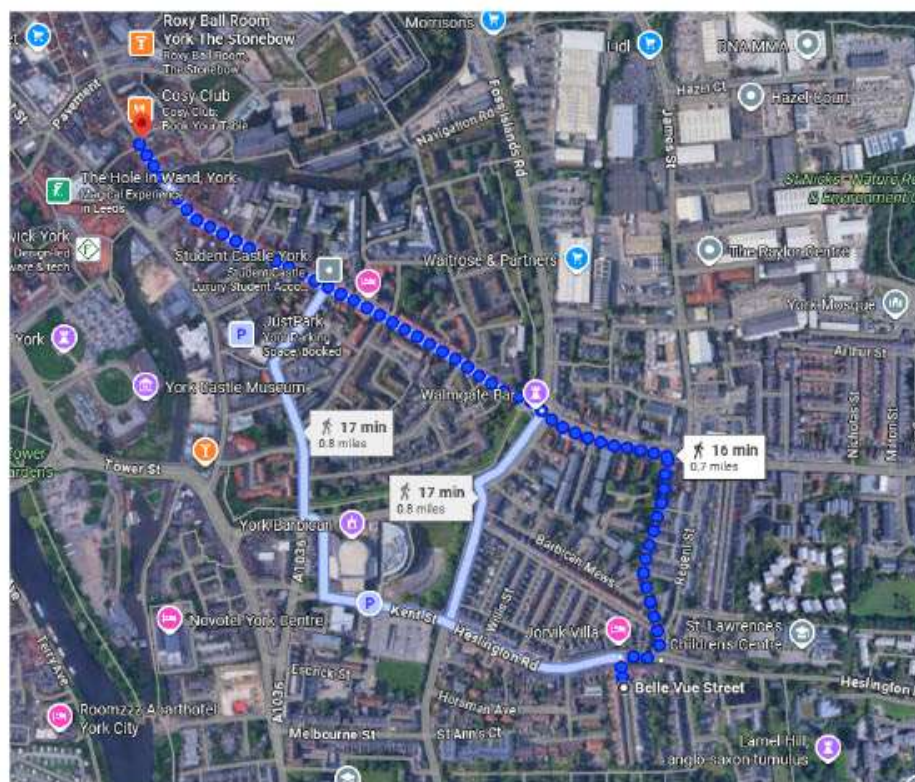
Currently, there are no known allergies or intolerances on set. If this is wrong, please inform Eden.

Directions to Set:

Parking in the city is limited and expensive, if driving in please contact Eden if you wish to park closer and they can recommend locations to park, for free, near the city.

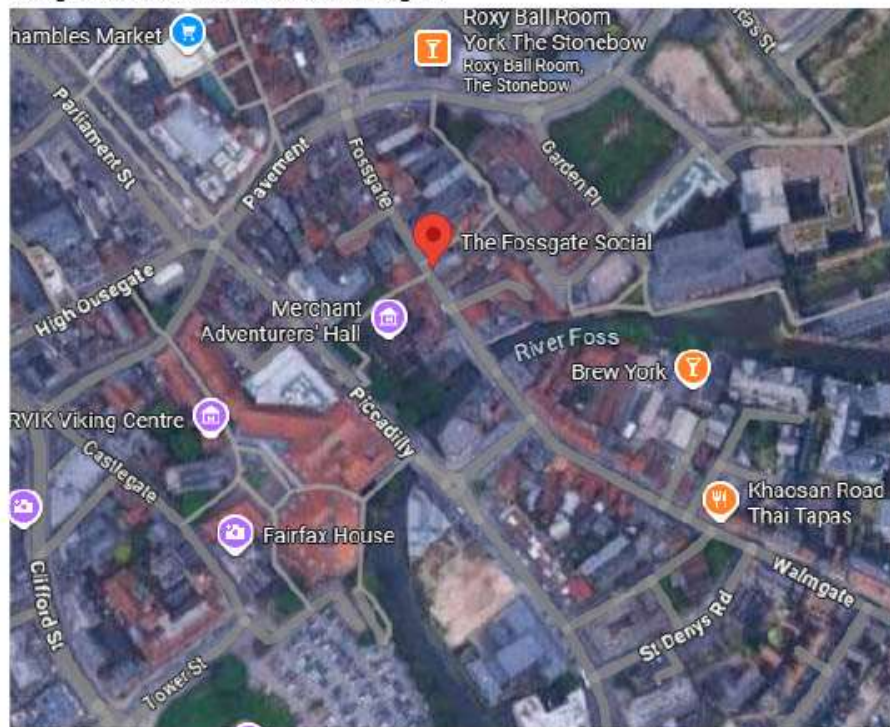
Parking near Pasture Farm Close, and getting public transportation in, is recommended but Peel Street car park is just around the corner from Fossgate Social and approximately 15 minute walk from Ippuku Tea House.

Call Sheet
9/09/2025



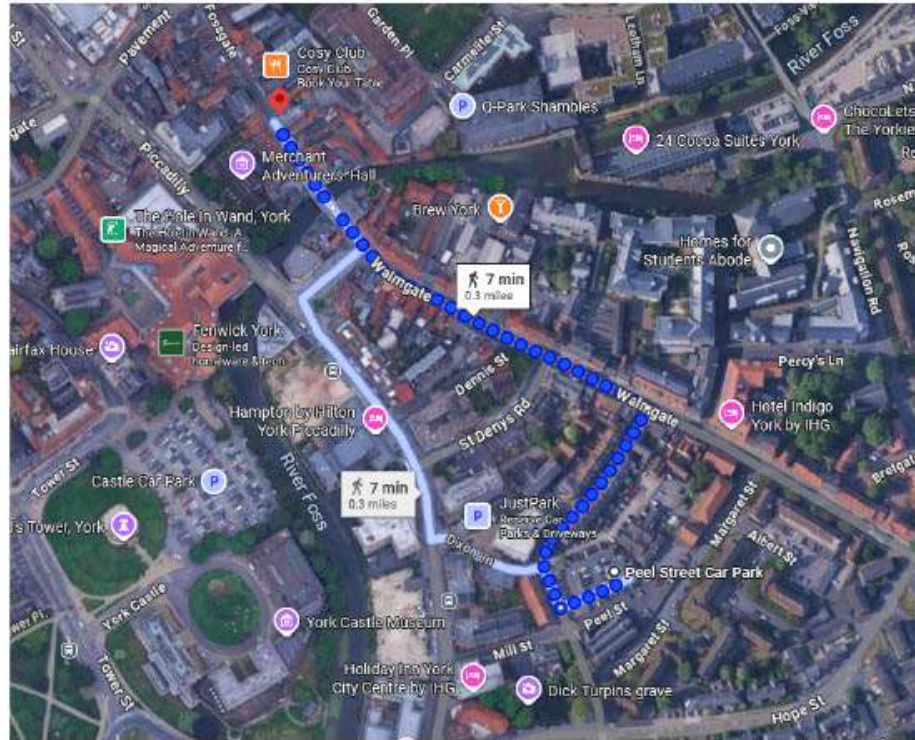
Call Sheet
9/09/2025

Fossgate Social is in the middle of Fossgate



Call Sheet
9/09/2025

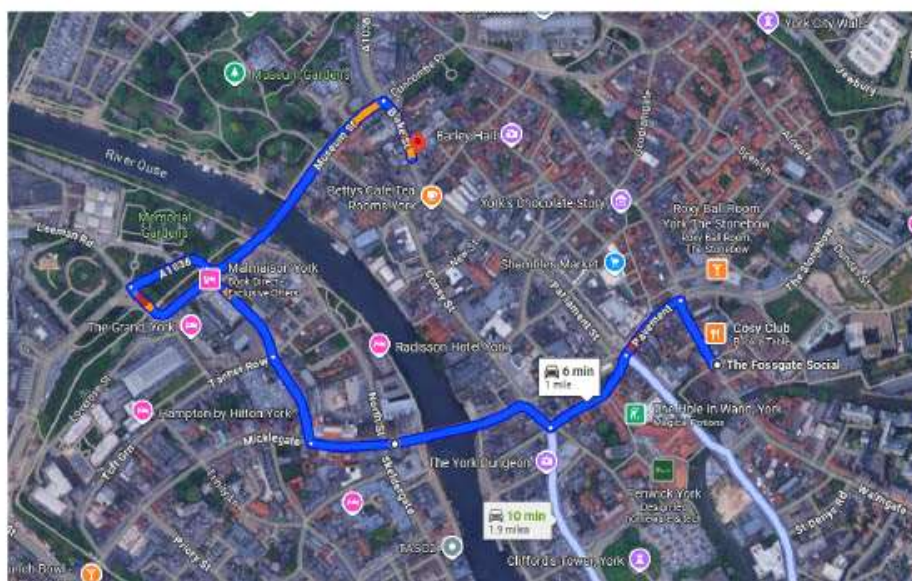
Fossgate Social is a short walk from Peel Street car park. After dropping kit, crew with cars can park here



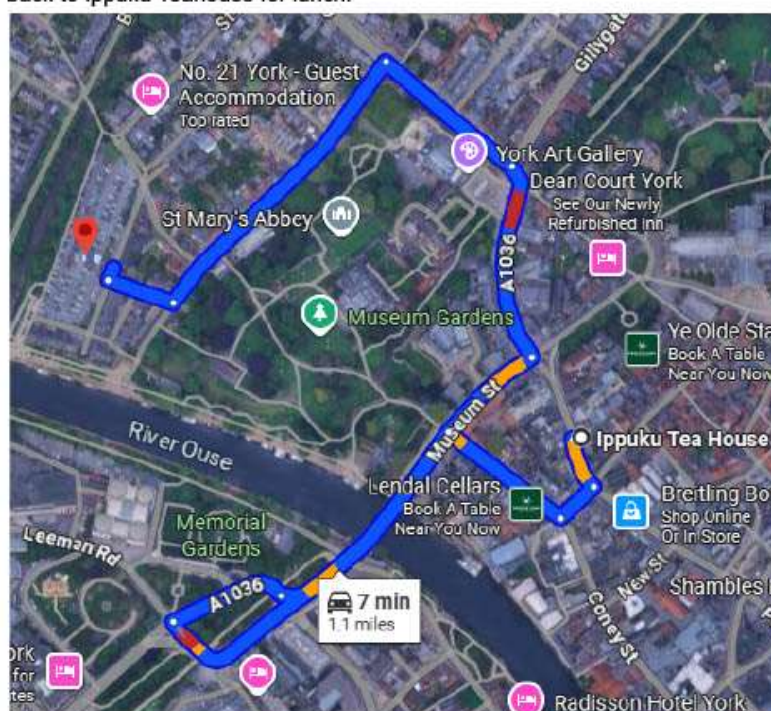
The cast and crew, needed at the second location, will then walk to Ippuku Teahouse on Blake street.

Those who can, will help drive the kit from Fossgate to Blake Street. They will have to pay for parking before leaving the car park, as it is a pay-after-stay car park

Call Sheet
9/09/2025



After dropping kit at Ippuku Teahouse, please park at Marygate Car park, before walking back to Ippuku Teahouse for lunch.



Appendix 3.8

Easy Read Sheet

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

Online Focus Group Information Pack

Thank you for being interested in my project! This information pack will hopefully answer any questions you may have about the project and around the focus group with the researcher, Eden Hutton. The focus group will take place online, via Zoom, on Tuesday 30th September 2025 (30/09/2025) from 6PM (18:00) to 8PM (20:00).

Please note:

You do not need to read this unless you want to. The pack aims to help inform you and answer any questions you might have, but reading it is completely optional.

This Information Pack will tell you:

1. Who will be present at the focus group.
2. How you will be able to join the focus group.
3. What will happen during the focus group.
4. What will happen after the focus group.

If you have any questions please contact Eden Hutton at tnh508@york.ac.uk.

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

2. How to join the focus group.

We will use Zoom to run the focus group. This will be sent, via email, to all participants who have registered interest and signed consent forms. These are needed to take part so that the University of York knows you have agreed to take part in the focus group.



If you have any trouble downloading or using Zoom, please get in touch with us at tnh508@york.ac.uk

I'm happy to help with any technical issues you might experience.

You will be asked to have your camera on during the group chat. This helps everyone feel safe and connected.

If you feel uncomfortable using the camera, you are welcome to have your camera on or off during the session, depending on what feels most comfortable for you. You are also free to turn your camera on or off at any point during the conversation. You may also choose to contribute by speaking through your microphone or by typing your comments in the chat section of Zoom.

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

1. Who will be present at the Focus Group

This focus group will take place online and will be facilitated by one researcher from the University of York.

Eden Hutton

(Researcher/ Project Leader)



There will also be other participants taking part, people who, like you, have been invited to share their thoughts and experiences in a relaxed and supportive space.

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

3. What will happen during the focus group?

The focus group will last about 2 hours



- We will start by each saying our name, and if you like, a little bit about why you decided to take part in this research.

- We will talk through some shared guidelines to help create a safe and supportive space for conversation. These are:



- We will listen to each other and make sure everyone can be heard and take part in the conversation.
- We will respect each other's views, even if they are different from our own.
- We will share a confidential space. We will respect people's privacy and not share others' stories from the group or any discussed information.
- We will not take photos or record the focus group without consent.
- No one is expected to share or disclose anything that they do not want to.
- Anyone can step away at any time they need to, whether that's to get a drink, or just to take some time to yourself if you need it.

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

We will then start the conversation about your experiences as autistic people. This is when we will start sound recording the conversation. The recording is used so we don't miss anything you say. Everything you talk about will be anonymised e.g. names and place names removed so nobody could identify you.

In the focus group we will discuss autistic representations in media, listening experiences, feelings around accessibility functions for media.

Some of the things we might ask include:

- **What do you like/ dislike about certain representations of autism in media**
- **What characters do and don't work in representing autistic people**
- **How your listening experience is as an autistic person, and how it may differ from a non-autistic person**
- **What you would want from more accessible audio in media**

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

There are no right or wrong answers, we simply want to understand your perspective and experiences.

Please don't feel you need to prepare any answers in advance; we're only sharing the questions here in case you'd like to know what to expect.

Halfway through the session we will have a break.



If you decide to leave the focus group at any point, you are free to do so and you don't need to give a reason.

I kindly ask, if possible, you send a quick private message to myself (Eden) to let us know you're leaving - just so I know you're okay. If someone leaves without letting us know, we will follow up with a brief message afterwards to make sure all is well.

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

4. What will happen after the focus group.

After the session, we'll send you a thank-you message via email along with a support sheet that includes useful contacts, in case you'd like to speak to someone or need any support following our conversation. You will receive your £5 cash for participating, and sign a small slip of paper confirming you have received it, as a thank-you for your time and contribution.

Later on, we can share a newsletter with you to let you know what the research found out and what the next steps are, if you would like.

**THANK
YOU**

Appendix 3.9

Focus Group Information Sheet

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

UNIVERSITY *of York*

School of Arts and Creative Technologies

Participant Information Sheet –Anonymous Research

Project background

The University of York would like to invite you to take part in the following project: *Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences*.

Before agreeing to take part, please read this information sheet carefully and let us know if anything is unclear or you would like further information.

What is the purpose of the project?

This project is being conducted by Eden Hutton (tnh508@york.ac.uk), a research student on the MSc Interactive Media by Research course at the University of York. The project is supervised by Professor Mariana Lopez (mariana.lopez@york.ac.uk)

The work is being conducted according to restrictions that have been subject to approval by the ACT Ethics committee. The Chair of the ACT Ethics committee can be contacted on ACT-ethics@york.ac.uk.

For this research project, we are interested in discussing autistic experiences, in particular autistic listening experiences, for informing choices in an interactive short film that aims to use alternate mixes to better represent autistic audiences. The project hopes to also use this representation to help educate non-autistic audiences in understanding how autistic people perceive the world around them. Your participation in this project will involve discussing your personal experiences as an autistic person on a Google Form as well as in an online video call, on Zoom, with other autistic people and what experiences you may share or differ.

Please note that to comply with the approved Ethics requirements of this work, we do not intend to discuss sensitive topics with you that could be potentially upsetting or distressing. If you have any concerns about the topics that may be covered in the research study, please raise these concerns with the researcher.

Your participation in this project is voluntary. If you wish, we will provide you with access to the finished thesis and the interactive short film after

submission and when results have been confirmed. If you would like to receive access to these, you can indicate as such on the consent form.

Why have I been invited to take part?

You have identified yourself as an autistic person and have expressed interest in being involved in the project.

Do I have to take part?

No, participation is optional. If you do decide to take part, you will be given a copy of this information sheet for your records and will be asked to complete a participant consent form. If you change your mind at any point during the research activity, you will be able to withdraw your participation without having to provide a reason. To withdraw your participation, you need to contact the project lead (tnh508@york.ac.uk) as soon as possible. Some discussed experiences may not be able to be removed if withdrawal is requested during or after the post-production of the interactive short film (30th November 2025) but can be removed from the written thesis. Information within the thesis will be removable until the paper is prepared for submission (1st February 2026).

Will I be identified in any outputs?

No. Your participation in this research activity will be treated anonymously and you will not be identified in any outputs.

Privacy Notice

This section explains how personal data will be used by *Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences* at the University of York.

For this project, the University of York is the [Data Controller](#). We are registered with the Information Commissioner's Office. [Our registration number](#) is Z4855807.

What is our legal basis for processing your data?

Privacy law (the UK General Data Protection Regulation (GDPR) and Data Protection Act 2018) requires us to have a legal reason to process your personal data. Our reason is we need it to perform a public task.¹

¹This refers to [UK GDPR Article 6 \(1\) \(e\)](#): processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller

This is because the University has a [public function](#), which includes carrying out research projects.² We need to use personal data in order to carry out this research project.

Information about your health, ethnicity, sexual identity and other sensitive information is called "[special category](#)" data. We have to have an additional legal reason to use this data, because it is sensitive. Our reason is that it is needed for research purposes.³ All research projects at the University follow our [research ethics policies](#).

How do we use your data?

Data will be used to help further research into autism and autistic listening, interactive cinema and film mixes.

Who do we share your data with?

This data will be used for a MSc by Research thesis and accompanying interactive short film. The raw data will only be available to the main researcher (Eden Hutton) and the supervisor. Personal data, such as names or contact details, will not be provided to anyone except the project lead. Such information will be destroyed at the end of the project, once the outcome of the thesis examination has been confirmed.

The data in an anonymous format will be incorporated into outputs, such as the written thesis and the interactive film, as well as other forms of dissemination such as academic publications and events and public engagement activities.

As well as this, we use computer software or systems to hold and manage data. Other companies only provide the software, system or storage. They are not allowed to use your data for their own reasons.

We have agreements in place when we share data. These agreements meet legal requirements to ensure your data is protected.

How do we keep your data secure?

² [Our charter and statutes](#) states: 4.f. To provide instruction in such branches of learning as the University may think fit and to make provision for research and for the advancement and dissemination of knowledge in such manner as the University may determine.

³This refers to [UK GDPR Article 9 \(2\) \(i\)](#): processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

The University is serious about keeping your data secure and protecting your rights to privacy. We don't ask you for data we don't need, and only give access to people who need to know. We think about security when planning projects, to make sure they work well. Our IT security team checks regularly to make sure we're taking the right steps. For more details see [our security webpages](#).

How do we transfer your data safely internationally?

If your data is stored or processed outside the UK, we follow legal requirements to make sure that the same level of privacy rules still apply.

How long will we keep your data?

The University has rules in place for [how long research data can be kept](#) when the research project is finished. Your information will be kept until the final assessment of the thesis is completed, and after this time an anonymised version will be kept. As this will be fully anonymous, it will not be possible to identify you in any way from this data.

What rights do you have in relation to your data?

[You have rights over your data](#). This sheet explains how you can stop participating in the study, and what will happen to your data if you do. This information is in the section 'Do I have to take part?'.

If you want to get a copy of your data, or talk to us about any other rights, please contact us using the details below.

Questions or concerns

If you have any questions or concerns about how your data is being processed, please contact Eden Hutton, project lead (tnh508@york.ac.uk), or Professor Mariana Lopez, project supervisor (mariana.lopez@york.ac.uk), at the University of York.

If you have further questions, the University's Data Protection Officer can be contacted at dataprotection@york.ac.uk or by writing to: **Data Protection Officer, University of York, Heslington, York, YO10 5DD.**

Right to complain

If you are unhappy with how the University has handled your personal data, please contact our Data Protection Officer using the details above, so that we can try to put things right.

If you are unhappy with our response, you have a right to [complain to the Information Commissioner's Office](#). You can also contact the Information Commissioner's Office by post to **Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF** or by phone on **0303 123 1113**.

Appendix 3.10

Blank Consent Form from Focus Group

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

UNIVERSITY *of York*

School of Arts and Creative Technologies

Participant Consent Form

Thank you for your interest in this project. This research activity will be used to understand appropriate ways in which to represent the autistic listening experiences through audio production techniques.

Please read the following statements carefully and tick the appropriate box:

	YES	NO
I have read the information sheet about this project.		
I agree to take part in this project.		
I consent to my data being gathered through an online survey on autistic experiences, in particular listening experiences.		
I consent to my data being stored within a secure Google Drive.		
I consent to participating in the online discussion on autistic experiences, particularly autistic listening experiences.		
I consent to having audio of myself recorded within the online discussion.		
I understand my right to withdraw and/or have my data destroyed from this project at any time.		
I understand that my participation in this project will be treated anonymously.		
I am over the age of 18.		
I would like to be contacted to provide feedback on the interactive short-film.		

Participant Name:

Participant Signature:

Date:

__/__/__

Researcher Name:

Researcher Signature:

Date:

__/__/__

If you wish to be informed about the outcomes from this project, please provide your email address:

Appendix 3.11

Coding Data

Group- discuss their experiences as autistic people (whether diagnosed or not, how elements of either may mean to them)

CODES:

Late diagnosed

(AMAB) Sibling diagnosed first

Siblings later diagnosed after other diagnosis

Self diagnosed

Autistic/ neurodivergent parents (aware)

Autistic/ neurodivergent parents (unaware)

Masking

Negative/ unbelieving social perception of their autism

Non-typical presentation of their autism affecting social perception

Eccentricities

Social circles later diagnosed

Difficulties with being openly autistic/ neurodivergent outside of safe spaces

self diagnosed leading to formal diagnosis

Self diagnosis leading to self acceptance

diagnosis could have added protections (reasonable adjustments)

Formal diagnosis could have protected where self/ non-diagnoses couldn't. (reasonable adjustments)

Social Perception of autism confining for autistic people

Support within neurodivergent circles

Group- Feelings around autistic representations

CODES:

Preference for unofficially autistic characters

Officially autistic characters often stereotypes

Audience bias towards a labelled autistic character

Implied autism often shown as rude

Diverse representation can include negative portrayals

'Supercrip'

Limited female representation

Very rare official female representation

Visual representations, not just character personalities

Benefit of even off-handed mentions of official diagnosis

Autistic representation has no/ limited co-conditions or wider diversity

Cis, het, white portrayals rather than diverse.

No diverse portrayals of autistic relationships (usually het or ace)

Spectacularizing more visible autism

audience/ societal struggles understanding autistic people can be sexual/ intimate/ diverse sexual experiences or orientations

Infantilization of autism (the way love on the spectrum/ undatables use sound to make the people seem childlike)

Need for dignified ways to present autism

Group- talk about everyone's listening experience, how they may feel this connects to their autism ect

CODES:

Use of subtitles

Preference of subtitles due to additional information provided

Dislike of subtitles (due to the way theyre used/ inaccurate)

Dislike of subtitles (distracting)

Dislike of specific loud noises

Physical pain to noises

Struggle with unanticipated noise

Headphones to dampen audio in the wider world

Audio used to draw attention, rather than just build an environment. (Still build environment so it isnt uncanny)

Group- How sound can be better adapted for representation

CODES:

Film dialogue can be clearer than real life autistic listening of conversations

Group - How sound can better for accessibility for autistic listening

CODES:

Audio authenticity

Expected & unexpected sounds (eg. horror) are manageable, other genres less so

Editing in the process as well, to allow audiences to expect unexpected (building to whats to come vs sudden)

Immersion balanced with limitation

Appendix 3.12

Theming Data

THEMES:

The Diverse Experiences in being Autistic

- Masking
- Excentricities
- Subtitles vs no subtitles
- Different audio processing issues
- Non cis het white men
- Different representations in close family relations

The Sheldon Cooper Problem

- The stereotype, straight white cis rude savant
- Spectacle of 'visible' autism
- 'Supercrip'
- Damaging impact on perception of autism

Ways of representation

- Visual representations (even if there is no autistic look)
- Non-canon diverse autistic representations
- Be different and diverse (even if character isn't a good person)

In Making Accessibility for Autistic Audiences

- Specific things in sound
- Future in allowing choice

Information Overload

- Subtitles as distracting
- Too much noise as a distraction

Information as a Necessary Access Requirement:

- Subtitles as additional information
- Information, through friends or family, leading to diagnoses
- Diagnoses allowing access through information that can be provided

Importance of Labels

- Understanding granted by diagnosis (self and formal)
- Reasonable Adjustments
- Lack of understanding of others without clear labels

Appendices for Chapter 4

Appendix 4.1

Test Screening Information Sheet

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences



School of Arts and Creative Technologies

Participant Information Sheet: Anonymous Research

Project background

The University of York would like to invite you to take part in the following project:
Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences.

Before agreeing to take part, please read this information sheet carefully and let us know if anything is unclear or you would like further information.

What is the purpose of the project?

This project is being undertaken by Eden Hutton (tnh508@york.ac.uk), a Masters by Research student at the University of York. The project is supervised by Professor Mariana Lopez (mariana.lopez@york.ac.uk)

The work is being conducted according to restrictions that have been subject to approval by the ACT Ethics committee. The Chair of the ACT Ethics committee can be contacted on ACT-ethics@york.ac.uk.

For this research project, we are interested in understanding the effectiveness of alternate mixes in better representing autistic listening experiences, and providing better accessibility for autistic audiences. Your participation in this project will involve watching the interactive short film *Processing*, and listening to different mixes of the film. The film is approximately 10 minutes long, and you will have 45 minutes to view the film, and its alternate mixes, and respond to a short Google Form. The Google Form will ask you for feedback around your opinions of the alternate mixes, and whether or not you identify as autistic or with audio-processing conditions.

Please note that to comply with the approved Ethics requirements of this work, we do not intend to discuss sensitive topics with you that could be potentially upsetting or distressing. However, there is a mix of *Processing* that participants, particularly those who may struggle with audio-processing, may find distressing. No participant is required to listen to a mix they may find distressing. You may also stop listening to a mix at any time, for any reason. Participants may leave the study, or take a break, at any point. If you have any concerns about the topics that may be covered in the research study, please raise these concerns with the researcher.

1

Your participation in this project is voluntary. If you wish, we will provide you with access to the edited film and/or the report that we submit after our marks have been confirmed. If you would like to receive access to these, you can indicate as such on the consent form.

Why have I been invited to take part?

You have been invited to take part because you have expressed interest in attending the screening of the interactive short film *Processing*, and provide feedback of the alternate mixes.

Do I have to take part?

No, participation is optional. If you do decide to take part, you will be given a copy of this information sheet for your records and will be asked to complete a participant consent form. If you change your mind at any point during the research activity, you will be able to withdraw your participation without having to provide a reason. To withdraw your participation you need to email the researcher, Eden Hutton (tnh508@york.ac.uk) and request to have your data withdrawn from the study. Please note, it may not be possible to withdraw data if requested beyond the 28th February 2026. This is due to the submission deadline being in March 2026, and it may be too late to withdraw data from that point. Your contact information, to provide you with a report of the study, can be deleted at any point.

Will I be identified in any outputs?

No. Your participation in this research activity will be treated anonymously and you will not be identified in any outputs.

Privacy Notice

This section explains how personal data will be used by Eden Hutton, and the project 'Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences' at the University of York.

For this project, the University of York is the [Data Controller](#). We are registered with the Information Commissioner's Office. [Our registration number](#) is Z4855807.

What is our legal basis for processing your data?

Privacy law (the UK General Data Protection Regulation (GDPR) and Data Protection Act 2018) requires us to have a legal reason to process your personal data. Our reason is we need it to perform a public task.¹

¹This refers to [UK GDPR Article 6 \(1\) \(e\)](#); processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the controller

This is because the University has a public function, defined in [our charter and statutes](#), which includes carrying out research projects.² We need to use personal data in order to carry out this research project.

Information about your health, ethnicity, sexual identity and other sensitive information is called "[special category](#)" data. We have to have an additional legal reason to use this data, because it is sensitive. Our reason is that it is needed for research purposes.³ All research projects at the University follow our [research ethics policies](#).

How do we use your data?

Your data will be used to determine the effectiveness of *Processing's* alternate mixes. This data will be anonymous, and you will not be identifiable via the data.

Will AI be used to analyse my data?

No AI will be used, in any capacity, for the purpose of this research, such as for analysing your data.

Who do we share your data with?

Your anonymised data will be shared with the project supervisor Professor Mariana Lopez (mariana.lopez@york.ac.uk), and may be shared with any regular academic and publication routes, including journal articles, book chapters, conference talks and other forms of public engagement.

As well as this, we use computer software or systems to hold and manage data. Other companies only provide the software, system or storage. They are not allowed to use your data for their own reasons.

We have agreements in place when we share data. These agreements meet legal requirements to ensure your data is protected.

How do we keep your data secure?

² [Our charter and statutes](#) states: 4.f. To provide instruction in such branches of learning as the University may think fit and to make provision for research and for the advancement and dissemination of knowledge in such manner as the University may determine.

³ This refers to [UK GDPR Article 9 \(2\) \(f\)](#): processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

know. We think about security when planning projects, to make sure they work well. Our IT security team checks regularly to make sure we're taking the right steps. For more details see [our security webpages](#).

How do we transfer your data safely internationally?

If your data is stored or processed outside the UK, we follow legal requirements to make sure that the same level of privacy rules still apply.

How long will we keep your data?

The University has rules in place for [how long research data can be kept](#) when the research project is finished. Your information will be kept for 6 months and after this time an anonymised version will be kept. As this will be fully anonymous, it will not be possible to identify you in any way from this data.

What rights do you have in relation to your data?

[You have rights over your data](#). This sheet explains how you can stop participating in the study, and what will happen to your data if you do. This information is in the section 'Do I have to take part?'.

If you want to get a copy of your data, or talk to us about any other rights, please contact us using the details below.

Questions or concerns

If you have any questions or concerns about how your data is being processed, please contact the researcher, Eden Hutton (tnh508@york.ac.uk) or the project supervisor, Professor Mariana Lopez (mariana.lopez@york.ac.uk).

If you have further questions, the University's Data Protection Officer can be contacted at dataprotection@york.ac.uk or by writing to: **Data Protection Officer, University of York, Heslington, York, YO10 5DD.**

Right to complain

If you are unhappy with how the University has handled your personal data, please contact

our Data Protection Officer using the details above, so that we can try to put things right.

If you are unhappy with our response, you have a right to [complain to the Information Commissioner's Office](#). You can also contact the Information Commissioner's Office by post to **Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF** or by phone on **0303 123 1113**.

Appendix 4.2

Test Screening Consent Form

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

UNIVERSITY *of York*

School of Arts and Creative Technologies

Participant Consent Form: Anonymous

Thank you for your interest in this project. This research activity will be used to inform the conclusion for an Interactive Media MSc by Research thesis.

Please read the following statements carefully and tick the appropriate box:

	YES	NO
I have read the information sheet about this project		
I agree to take part in this project		
I consent to viewing the interactive short film <i>Processing</i>		
I consent to listening to multiple mixes of the interactive short film <i>Processing</i>		
I consent to my responses to be recorded within a Google Form.		
I consent to my anonymised data being deposited in data repository		
I understand my right to withdraw and/or have my data destroyed from this project at any time		
I understand that my participation in this project will be treated anonymously		
I am over the age of 18		

Interactive Cinema and the Use of Alternate Mixes in Better Representing Autistic Audiences

Participant Name:

Researcher Name:

Participant Signature:

Researcher Signature:

Date:

Date:

If you wish to be informed about the outcomes from this project, please
provide your email address:

Appendix 4.3

Blank Feedback Form from Test Screening

23/02/2026, 11:05

Screening Feedback Form

Screening Feedback Form

* Indicates required question

1. I have completed the sign up form, including reading the information sheet and agreeing to take part in the project *

Mark only one oval.

☐ Yes

☐ No

2. Please provide your email, so you can be sent the £5 gift card *

3. Neurodivergent Identity (Please note you do not need a formal diagnosis to answer as autistic or non-autistic neurodivergent) *

Mark only one oval.

☐ Autistic

☐ Non-autistic, but neurodivergent

☐ Neurotypical

Interactivity

23/02/2026, 11:05

Screening Feedback Form

4. Please leave a short description of your experience with the interactivity of the film *

5. How much do you feel like the interactivity made you more or less engaged than if it were a linear, non-interactive film? *

Mark only one oval.

1 2 3 4 5

not ☐ ☐ ☐ ☐ ☐ very engaged

Alternate Mixes

6. How much did you like having the option of alternate mixes? *

Mark only one oval.

1 2 3 4 5

Not ☐ ☐ ☐ ☐ ☐ Very interested

7. Which mix did you prefer *

Mark only one oval.

- ☐ Traditional mix
- ☐ Representative mix
- ☐ Accessible mix

23/02/2026, 11:05

Screening Feedback Form

8. Which of the mixes did you like (if any) *

Tick all that apply.

- ☐ Traditional mix
☐ Representative mix
☐ Accessible mix

9. Are there any specific alternate mixes you wish were present, that are not? *

10. What was your experiences of the alternate mixes?

11. Would you like more films to offer different ways of listening to films, beyond a traditional mix? *

Mark only one oval.

1 2 3 4 5
 Not ☐ ☐ ☐ ☐ ☐ Very interested

Optional questions on Representative and Accessible mixes

23/02/2026, 11:05

Screening Feedback Form

12. The representative mix was based around representing audio processing conditions, particularly what it may be like to hear as an autistic person, with sounds being more intense.

How much do you feel like it represented your listening experience?

Mark only one oval.

1 2 3 4 5

Did it ☐ ☐ ☐ ☐ ☐ Represented it exactly

13. Could changes be made to make it more represented to your listening experience?

14. The accessible mix was created to be more accessible for audiences with audio processing conditions, particularly autism, by making the dialogue clearer and background sounds less intrusive.

Did you find the accessible mix more accessible than the other mixes available?

Tick all that apply.

- ☐ More than the traditional mix
- ☐ More than the representative mix
- ☐ Equal to the traditional mix
- ☐ Equal to the representative mix
- ☐ Less than the traditional mix
- ☐ Less than the representative mix

23/02/2026, 11:05

Screening Feedback Form

15. Could changes be made to make it more accessible to your listening experience?

This content is neither created nor endorsed by Google.

Google Forms

Glossary

Term	Definition
Autism-Coded	A character that has traits typically associated with autism but is not explicitly described as autistic.
Decibels	A unit to measure the intensity of loudness.
Levels	Describes the volume of audio, based on dBFS.
Neurodivergent	A non-medical term for someone who's brain function, learn, or process information atypically
Neurotypical	A non-medical term for someone who's brain function, learn, or process information typically
Neuroqueer	An intersectional identity for people who identify as neurodiverse and queer.
Stems	A group of mixed tracks put together as a single file.

Abbreviations

Abbreviation	Full Title
ADHD	Attention Deficit Hyperactivity Disorder
ADR	Automated Dialogue Replacement/ Additional Dialogue Recording
AFAB	Assigned Female at Birth
AMAB	Assigned Male at Birth
AQ	Autism-Spectrum Quotient
ASD	Autism Spectrum Disorder
BBC	British Broadcasting Corporation
CRPD	Clinical Practice Research Datalink
dB	Decibels
dBFS	Decibels relative to full scale
EAD	Enhancing Audio Description
FG_P	Focus Group Participant
FSAF	Film Sound Analysis Framework
LGBTQ+	Lesbian, Gay, Bisexual, Trans, Queer, Plus (referring to other sexualities or gender identities not covered by the prior labels)
LUFS	Loudness Units Full Scale
NHS	National Health Service
OBB	Object-Based Broadcasting
OBM	Object-Based Media
OCD	Obsessive-Compulsive Disorder
RTA	Reflexive Thematic Analysis
SP	Sensory Profile
SPL	Sound Pressure Level
WASI	Wechsler Abbreviated Scale of Intelligence