

“How does lighting design and programming impact an audience?”

by

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Abstract

This study aimed to explore the effect of lighting design and programming on the emotion, attention and experience of the audience in live events. While existing studies have examined the topic of colour theory, time-coded automation and the psychology of the audience, there is limited research linking these areas together. This research study addresses that gap by exploring the connection between the mentioned topics and the experience of the audience by using the Pleasure, Arousal, and Dominance model. A mixed-methods approach was used, combining a literature review, survey data, and a controlled A/B experiment. The experiment focused specifically on colour as the independent variable, comparing warm and cool lighting states across different stimuli. The findings show that colour has a measurable impact on perceived happiness, excitement, and control, particularly when isolated from other influencing factors.

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Acknowledgements

AI has been used in this document for research and follow-up questions. Please see the details on AI uses below.

Name	Publisher	URL	Description of use
ChatGPT 4/5	OpenAI	https://chatgpt.com	Research and source finding with personal validation follow up and asking for perspectives.
Microsoft Copilot	Microsoft	https://copilot.microsoft.com	

1.1. Introduction

The literature review was carried out to explore lighting design and programming and their effect on an audience, focusing on how lighting techniques and design choices can influence feelings and experiences. It examined how lighting manufacturers can use their technology to impact an audience from a psychological and physical perspective.

Focusing on timecode, as described by MA Lighting (2025), it is a signal that can trigger cues and playbacks automatically by using an external source. On Stage Lighting (2017) defines busking as a real-time control and spontaneous responses to the live situation. By using service dominant logic, a route can be followed from the effect of timecode and busking through to the audience. Value from the designer, technology and audience can be linked through the use of service dominant logic.

Lusch, Robert & Vargo, Stephen (2014)

Colour is an important factor in any lighting setup, it can tell a story and portray a mood and feeling to an audience without words. Rutherford, C. (2020). Colour is different wavelengths of light that trigger a response of emotion showed by heart rates, moods and can even portray a message.

Creative Day (2025). The use of different colour combinations can even trigger a mood by making a conscious decision about the use of a particular colour combination. Taraczközi, D (2023)

The importance of event stakeholders was also highlighted in this study, ranging from the lighting designer to the audience. The audience's perspective was also evaluated, and showed the need to combine technical precision with emotions in lighting design. The market for intelligent lighting (including programmable automation) is predicted to grow from \$5 billion in 2025 to \$7.3 billion in 2030. Modor Intelligence (2025). The aim of this study was to create a framework that connected programming decisions to audience responses, helping designers produce engaging shows. Past studies have shown that lighting can influence emotions, direct attention, and storytelling. Sokari, Ibifuro. (2022) but there is limited research connecting these effects directly to other areas of events and programming techniques.

1.2 Literature Review

The literature review was carried out to research the influence of how lighting design and programming could affect an audience by looking at multiple areas: lighting effects and techniques, audience psychology, lighting automation, cross-department integration and music psychology. Various literature sources were used in this review, including academic research, technical documents and industry professionals. The review aimed to identify key themes in any frameworks and create a guide for making a lighting show the most effective to an audience.

Literature suggested that the impact of the lighting effects would be more pronounced for the audience when coordination occurred with colour, movement and intensity rather than being random. For instance, with the use of pixel mapping techniques, complex visual effects were more suitable for the music. Schiller, B (2021) This relates to the idea from Vello (2025) that effective lighting design is not purely aesthetic, but also depends on structured programming and design used by lighting professionals. This aligns with Gestalt principles of perception, where humans naturally seek patterns and coherence, suggesting that synchronised lighting enhances cognitive processing and audience engagement. IxDF - Interaction Design Foundation (2016) This can be explained by the fact that the human brain prefers structured information over a random input. When lighting is

synchronised, it reduces the brains cognitive function and makes it easier for the audience to process what they are seeing therefore increasing engagement. Ware, C (2012)

An objective of the literature review was to see beyond the classic descriptions of lighting techniques and technologies and to instead see how different strategies influenced audiences' emotion, attention and engagement. Previous studies have often discussed colour, design, automation and other lighting techniques as independent elements rather than acknowledging cross-department integration. This creates a limitation because in real life events these elements are never used on its own but rather alongside other sectors with colour in video and design in sound.

The review showed the need for research that linked technical programming to choices of colour and other techniques. While previous studies have referenced audience emotions, attention, and engagement. Within the industry, from my perspective, lighting designers have been doing the same thing for years and only adapting the lighting depending on the technology and it has become increasingly difficult to affect an audience that has become accustomed to the extreme stimulation of the modern world. By researching and evaluating techniques to improve current and potentially new audience experience and to capture their attention. This reflects the media saturation theory, where audiences require increasingly complex and stimulating content to achieve the same level of engagement. B, Kriger (2025) This raises the question of whether technology alone is enough to improve audience experience. If audiences are already used to high levels of stimulation, then simply adding more technology may not increase engagement without changing how it is used.

Colour in lighting design is an important factor to be able to tell a narrative and to portray a mood. Rutherford, C. (2020) gave a wide review of colour theory, mentioning that it is important to consider your audience when designing colour. The use of "*colour associations*" can communicate themes to the audience. For example, red meaning danger, passion and love and blue meaning sadness, calmness and trust. Portraying these colours can immerse the audience within the performance. However, the article also states that colour can also be an aesthetically pleasing choice, for example, a green album cover may symbolise a "green" theme or identity for the release. Additionally, research in environmental psychology suggests that colour can influence physiological responses such as heart rate and alertness, further reinforcing its importance beyond visual aesthetics. Weijs, M. L., Jonauskaite, D., Reutimann, R., Mohr, C., & Lenggenhager, B. (2023) This suggests that colour works on both conscious and subconscious level. Even if the audience is not actively thinking about it, it can still influence their emotions.

An individual colour never necessarily means that a story is being told. Hannele Kauppinen-Räsänen, Marie-Nathalie Jauffret (2018) The use of colour combinations like red and green for Christmas demonstrates how meaning is constructed through combination rather than isolation. Lavrenova, O. (2023). The effect of the red and green combination can be linked to the use of complementary colours and the fact that the combination is an aesthetically pleasing colour combination resembling Christmas. Mohr, M., & Jonauskaite, D (2020) Complementary colour theory also increases visual contrast, making scenes more visually striking and improving perceptual clarity for the audience. This shows that context is important for how colour is understood. Without context, colour may not have a clear meaning, but when combined with other elements it can make strong associations.

PAD or Pleasure Arousal Dominance is an emotional state model founded by Albert Mehrabian and James A. Russell. Mehrabian, A (1980). It is a measurement of the 3 faces of emotions. Pleasure indicates how pleasant or unpleasant a feeling is. Arousal measures the level of emotion, like calmness or excitement, and dominance measures the feeling of power. Mehrabian, A (1996). The PAD framework has been applied to study the psychology of lighting, colour, and spatial environments. The model is particularly useful in lighting design as it allows subjective emotional responses to be quantified, making it easier to evaluate audience reactions in structured studies.

The use of the PAD model was supported by its continued use in lighting and environmental psychology research. The model provided a structured way to measure emotional response through pleasure, arousal and dominance, and had been widely applied in studies examining lighting conditions. Yipin Zhu, Lixiong Wang, Tianyi Chen, Guangyan Kong, Fengrui Ma (2025)

Making an event an interactive experience can greatly improve an audience's experience. Alt Enter (2025). Using reactive wristbands can make an event more interactive as they can bring more energy to the audience and give them a sense of togetherness. It can create unforgettable moments with thousands of twinkling lights all in sync and can act as a piece of memorabilia if the spectator chooses not to recycle it. Ticket Fairy (2025). In 2023, Britain's Got Talent used LED wristbands as part of their show. LSi Online (2023). By using 3000 reusable wristbands over 6 shows, they reported the audience had higher energy. As noted by Riley, B. (2025), large scale concerts like Coldplay successfully use this technology to make a sense of togetherness and make audiences feel actively involved in the performance. This concept aligns with the social identity theory, where shared experiences strengthen group cohesion and collective emotional response. McLeod, S (2023)

However, having wristbands can come at a cost, with them needing to be transported between shows if people decide to recycle them. Transporting enough wristbands for 20,000 people can be costly. Tia (2025) from KB Event highlighted the fact that although a significant percentage of the wristbands have been returned for re-use (75%). This introduces logistical and environmental problems and things to consider, especially in large scale touring. This shows that while interactive lighting can improve experience, it also introduces practical limitations that need to be considered.

Colour psychology has been historically seen as a way to engage and influence emotions. Within lighting design, colour functions as not just an aesthetic choice but as a trigger for audience mood, attention and perception. Elliot, A.J. & Maier, M.A. (2014). The Pleasure, Arousal, Dominance (PAD) framework has been used to measure emotional responses with colour. Studies using the PAD scale have found that coloured lighting significantly altered pleasure and arousal scores when compared to neutral lighting. Bakker, Iris & Van der Voordt, Theo & Boon, Jan & Vink, Peter. (2014).

Colour is not a fixed or worldwide interpretation. Mohr, C. and Jonauskaite, D. (2020) argued that colours have meanings that are dependent on context and shaped by cultures and situations. In live performances, colours are interpreted as either part of the narrative or for aesthetic choices. For example, red lighting might signify passion, but adding green with red, some people may interpret this as Christmas.

A Reddit post published by the writer in the lighting design subreddit (Appendix AA) asked broad questions with the option to be specific. The aim was to see how broad people go with their

responses and if anyone thought of a particular scenario where they would go very specific with their answer. One participant stated that the response to all three questions would depend on context. The participant stated the fact that the methods in the selection and programming of colour are influenced by personal preference, in addition to the expectations of the client. The event type, whether it is a community festival, corporate event, or music festival, also greatly influences the decisions made. The participant also stated that the response to the question regarding the use of timecode or busking would also depend on the context. The response would depend on the goal that the designer wants to achieve with the show and the goals established between the designer and the client. The participant stated that the questions were wide-ranging and that no definitive response could be made without the context of the production. (Appendix AB)

Previous studies have reported that automation in lighting can open new possibilities. Lucero A. (2012) paper on designing interactive lighting solved the problem of the growing number of lighting systems in the industry. Written in 2012, when automated lighting systems were not common, it explored the possibility of “*intelligent and autonomous lighting control*” It has evidently been shown that since these automated lighting systems have come a long way since 2012, from motion-activated lights in your home to the Avolites Synergy system. (Appendix A)

Timecode automation in lighting has become ever more popular as it allows designers and programmers to do things that would be impossible with human hands. LimeLight (2025) Timecode programming can give better precision in lighting and can enable the option to have cross-department collaboration with audio, media and SFX. Lighting designers tend to try to use timecode wherever possible; however, timecode can cause a lack of operator attention during a show due to the console doing the work. PSLN (2016) Psychologically, timecode can up the precision of a show, which is shown to enhance pleasure in an audience. Norman, D.A. (2013) This precision can give the event a more engaging lighting design as well as a more visually appealing experience, according to past studies.

Busking, compared to timecode, is a way to operate lights based on real time decision making. Reid, F. (2019). Research has shown that audiences interpret live responses, such as busking, can represent authenticity. Sawyer, R.K. (2011). From a PAD perspective, busking may increase arousal from producing uncertainty and variability from the imperfect and random lighting. Timecode systems allow multiple departments such as lighting, sound and video to remain synchronised with a high level of accuracy, ensuring that cues are triggered at the exact same moment in every performance. Woodward, S (2024) This difference highlights a trade-off between control and variation. Busking introduces a human input and unpredictability which can make a performance feel more unique while timecode prioritises consistency and precision. This can impact how the audience perceives the show as some may value different aspects like authenticity or perfection.

Hardware solutions like ENTEC’s smart light show controllers can make cross-department integration much easier. While providing a link with DMX, OSC and Art-Net protocol, it allows systems to talk to each other and allows for automated sequences to be synchronised with non-lighting hardware. ENTTEC (2024) Hardware like this allowed for automation to evolve into fully automated shows and cross-department integration.

Integrations between lighting and other departments have had a huge impact on a show and its audience. Schiller, B. (2021). According to Huntington, J. (2023), the benefits of a show being

integrated through different departments were to increase precision in cues, increase productivity and allow for interactive experiences with the audience or cast if needed.

Pixel mapping is a way to effectively control multiple lights by controlling the pixels within a fixture or by using a fixture as a pixel. It can “*extend video beyond the screen*”, according to Green Hippo (n.d.). Using a media server plugin like Avolites Synergy can not only improve the accuracy of a pixel map effect, but the representation of the lights in the video will be far more accurate. Schiller, B. (2021) identifies that when a lighting designer has 500 lights, pixel mapping can make those lights easier to program with pixel mapping and media servers. According to Marslite (2025), a choreographed lighting show with pixel mapping involved can create a stunning visual experience.

According to research by Bauer, A (2014), humans responded more strongly to events where lighting and sound were cued simultaneously. In live shows, lighting cues that are triggered with sound cues give a more emotional response. From an audience perspective, cross-department integration appeared to enhance emotional coherence rather than just being a novelty.

Cross department integration can be linked to heightened audience emotions and responses; this added a rationale needed for the study, which examined how integrated control strategies influenced an audience’s perception. Integration had also increased complexity between departments, meaning that any technical issues in one department can affect the other and limit the department’s independence.

Music has a huge psychological impact on listeners because it interacts directly with brain functions such as emotion, stress and cognitive functions. Listening to music triggers the release of dopamine, a neurotransmitter associated with pleasure and reward, and can reduce cortisol, the body’s stress hormone, which helps lower anxiety and can elevate mood levels. Classical-music.com (2025). Classical music can engage the brain networks simultaneously and can be associated with relaxation. Classical music can also have a larger musical effect with its large variations of tempo and volume, which can reflect on improved self-confidence and higher emotions. Ungvarsky, J (2024) Adding to this, research shows that music does not just create emotion but can actively shape how other stimuli, such as lighting, are perceived. S.E. Palmer, K.B. Schloss, Z. Xu, & L.R. Prado-León (2013)

Adding to this, research shows that music does not just create emotion in but can actively shape how other stimuli, such as lighting are perceived. Studies have shown that emotional responses to music are linked to changes in brain activity, particularly in areas associated with reward and emotion, with shifts in tempo, intensity and structure creating tension and anticipation in listeners. Arjmand, H. A., Hohagen, J., Paton, B., & Rickard, N. S. (2017) This is important as it suggests that music is not static, but constantly changing emotions in real time. Furthermore, research into lighting and music environments found that when both elements are emotionally considered, such as warm lighting with positive or major key music, the emotional response is significantly stronger, increasing arousal and empathy within the audience. The Emotional Interaction between Lighting and Music. (2021)

1.3. Methodology

The study's philosophy was designed to investigate how lighting design and programming affect the audience. It used a mixed range of methods to come to a conclusion, as no one method would. By using a mixed method approach of colour experiment, survey research and a qualitative case study, I achieved a framework between timecode and busking, colour theory and storytelling by lighting.

The study ensured that both qualitative and quantitative data were gathered as it measures the audience's feelings and emotional response. The study allowed a link between the real-world programming and the survey audience responses.

The methodology was made to meet the following aims:

- To examine how different lighting design/programming approaches affect the audience's emotions.
- To understand how lighting synchronisation with timecode can differ from busking.
- To identify how designers and programmers justify their programming decisions.
- To explore how an audience's attention can be shifted using lighting.

For the survey, Microsoft Forms was used to align with my university's data protection policy. The account is linked with my university email address and will be automatically deleted after I have completed my course.

The survey was aimed at gathering information on what people think about lighting design, colour and colour combinations, narrative lighting design and the overall importance of lighting within events. The survey aimed to gain qualitative and quantitative data in conjunction with the case study to see if there were emerging trends with people's perception and opinion.

The survey opened with an introduction showing details about the survey and what is included as part of the informed consent. They could also have left their email if they were ok in being contacted for further questions. (Appendix B1)

The questions then go as follows:

- 1) What is your gender? (Appendix B2)
- 2) What is your age? (Appendix B3)
- 3) Do you have epilepsy (Appendix B4)
- 4) Are you colour blind? (Appendix B5)
- 5) Do you work in the events industry? If so, what's your role? (Appendix B6)
- 6) On average, how many events do you attend every year? (Appendix B7)
- 7) How much would you be willing to spend on a single event ticket? (Appendix B8)
- 8) What type of event do you attend the most? (Appendix B9)
- 9) On a scale of 1-10, how important is stage lighting within an event to you? (Appendix B10)
- 10) On a scale of 1-10, how much do you tend to notice or look at the lighting at an event? (Appendix B11)
- 11) On a scale of 1-10, how much do you agree with this statement? "Lighting can emphasise mood and feelings" (Appendix B12)
- 12) On a scale of 1-10, how much do you agree with this statement? "Lighting can direct an audience's attention" (Appendix B13)

- 13) Rank each event sector in order of importance to you, with no. 1 as the ‘most important’ item, to no. 6 as the ‘least important item’ (Appendix B14)
- 14) Does a high-quality lighting design make an event feel more professional? (Appendix B15)
- 15) How much do you agree with these statements? (Appendix B16)
 - “Lighting has made me feel immersed in an environment”
 - “I have been emotionally connected to the performance because of the lighting”
 - “Changes in brightness affect my level of attention”
 - “Dark scenes increased feelings of suspense or tension”
 - “Warm colours such as red or amber make the atmosphere feel more intimate”
 - “Cool colours such as blue or white make the atmosphere feel more dramatic or distant”
 - “It’s important for lighting colours to match the performer’s costume”
- 16) Do you have any open comments regarding any of the statements in the previous question? (Appendix B17)
- 17) Have you ever found lighting distracting or overwhelming? (Appendix B18)
- 18) If ‘Yes’ to previous question, please explain: (Appendix B19)
- 19) Has there been a memorable experience where lighting has had a strong impact on you? (Appendix B20)
- 20) What role do you believe lighting plays compared to sound, video or pyrotechnics in creating an atmosphere? (Appendix B21)

The survey provided a basis for data to be collected on the participants’ opinions on lighting in events in general, and the importance of lighting mood and feelings, and audience attention.

The experiment is designed to see if colours with lighting can affect an audience’s mood and feelings without needing context or a stimulus. There will be 3 rounds in total, each round will have a different stimulus: Music, Speech and then nothing. Each round will have 2 lighting states, each one being opposite to the other.

A/B Colour Experiment													
		February				March				April			
Task	Description	W/B 02/02/26	W/B 09/02/26	W/B 16/02/26	W/B 23/02/26	W/B 02/03/26	W/B 09/03/26	W/B 16/03/26	W/B 23/03/26	W/B 30/03/26	W/B 06/04/26	W/B 13/04/26	W/B 20/04/26
Proposal & Design	Create and come up with the experiment proposal, design and aims.												
Literature Review	To study and evaluate previous studies and to look at the theory behind the experiment												
Lighting Design	To design the lighting setup and prepare a plan for the lighting states.												
Audio Preparation	To gather and collect the music and speech files and prepare a means of playing them.												
Recruitment and Ethics	To recruit participants for the experiment and to look over and evaluate the ethics for the experiment.												
Data Preparation	To create the survey participants will complete during the experiment.												
Presentation preparation	To prepare an introduction speech before the presentation to inform the participants on what is about to happen.												
Data Collection	To run the experiment with the participants and gather the data.												
Final Documentation	To evaluate and conclude the data given from the experiment and document the collection process.												

Figure 1

Each stimulus had the same design in lighting, movement, intensity, position and time. The only variable changed was the colour, which allows the participants’ attention to be directed to the colour, most likely boosting the effectiveness of the impact.

There were 2 study groups. One group will experience warm and happy colours, and the other will experience cool and sad colours. The participants didn’t know if they were the cool or warm group, only given a group A or B label. Group A was warm, and Group B was cool.

The timeline of the experiment was as follows:

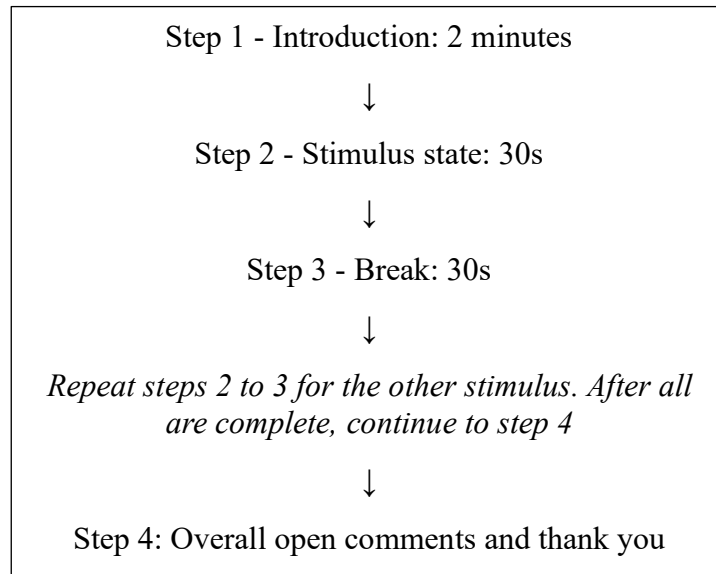


Figure 2

The reason for having a silent stimulus and to have nothing but lighting is to make a base and control to compare to situations where there is a stimulus. A silent background allows the participants to focus on the lighting directly and to come up with a raw opinion purely based on the lighting. As a base for the lighting, a CTO (Colour Temperature Orange) state was shown for the warm, which is a warm white and will also act as a control for the lighting. For the cool group, a CTB (Colour Temperature Blue) state was shown, as this is a cool white.

A music stimulus will help add some context to the lighting, depending on how the participant interprets it. The music chosen is Mozart's "Symphony no. 40 in G minor, K. 550 - I. Molto Allegro" This is because, as in the literature review, classical music can have a bigger impact on an audience. It is also in the public domain. Mozart, W.A. (1778)

A speech stimulus was implemented to see if there was a difference between music and human speech when it came to lighting colours, to see if the colour could influence feelings and mood. The speech chosen was a 1-minute clip from Winston Churchill's "We shall fight them on the beaches" speech from 1940. It is in the public domain and free to use. Churchill, W (1940)

The lighting design will be a simple 4-wash setup, as keeping it simple with simple fixtures that have RGB capabilities will allow for more options when it comes to colour, rather than distracting the participants. The washes used were Martin MH6 Rush Washes. (Appendix C) The console of choice was an Avolites Tiger Touch 2 (Appendix D)

Each state was the same in position, no movements or effects were running, the zoom was kept the same, the only changing variable was the colour. This helps direct the participant's attention to the colour directly. The plot was a simple design allowing for full colour capabilities and good intensity values. (Appendix E) (Appendix F)

The programming was a simple cue list changing the colour of the lights, which I will do at the same time I cue the audio. On the other hand, the lighting design is justified as for the experiment, I don't want the participants to focus on the movement or position of the lights or to be analysing the timecode or effect, but instead to fully focus and take in the colour.

The audio preparation was an easy choice as the versions were able to be downloaded publicly, as both the Mozart track and the Churchill speech were in the public domain. Choosing these was a combination of what could help emphasise the lighting but also research done in the literature review on classical music and its effect on an audience. The audio quality was kept as high as possible, as the speech is old audio; there is a limitation, the Mozart number is a modern recording in the public domain, making it more accessible and higher quality. The music is going to be operated on Qlab 5 on a cue-by-cue basis.

To recruit the participants, the cohort of students to participate from my class was my first choice. All the students involved as well as a tutor are all involved in the industry so, it was important to bear in mind that the responses may be exaggerated due to industry bias as well as previous experiences. Ethically, there was no concern as there were all from the industry, so all the results were compared equally without any participants being from outside the industry circle.

To keep the experience comfortable, I took the following measures:

- Making the lighting the same intensity throughout.
- Keeping the decibel volume at no more than 90db.
- Informing the participants that bright lights and haze will be used.

The participants were split randomly into Group A and B and given a timeslot on when their group's experiment would take place. Before the experiment took place, for each group, I did a small introduction talking about the lighting being used, the stimulus being used and the expected timeframe. I also mentioned the use of haze and highlighted the option to opt out at any time.

To recruit participants, I sent a message on our Teams group chat to my student peers. (Appendix G)

To collect the data, I created a survey on Microsoft forms like my public survey. They completed this survey live, as the experiment was going on. And opened with some information and details about the survey and experiment. (Appendix H1)

To start the survey, the participants first answered the following questions:

- 1) What is your age (Appendix H2)
- 2) What is your gender (Appendix H3)
- 3) Are you colourblind? (Appendix H4)

For each stimulus, they answered the following questions:

- 4) Was the colour being used the colour you would have chosen? If not, what would you have picked? (Appendix H5)
- 5) On a scale of 1-10, how happy did that make you feel? (Appendix H6)
- 6) On a scale of 1-10, how excited did that make you feel? (Appendix H7)
- 7) On a scale of 1-10, how much in control did you feel? (Appendix H8)
- 8) Do you have any open comments? (Appendix H9)

Before the experiment began, I planned a quick script to read to the participants to inform them of the process and what would happen. This is an important process of the informed consent and ethics of the experiment and will be an ice breaker before it begins. The speech (Appendix I) is written in

my note app for easy access. It mentions the use of haze and that there will be bright lighting involved.

The lighting states were as follows:

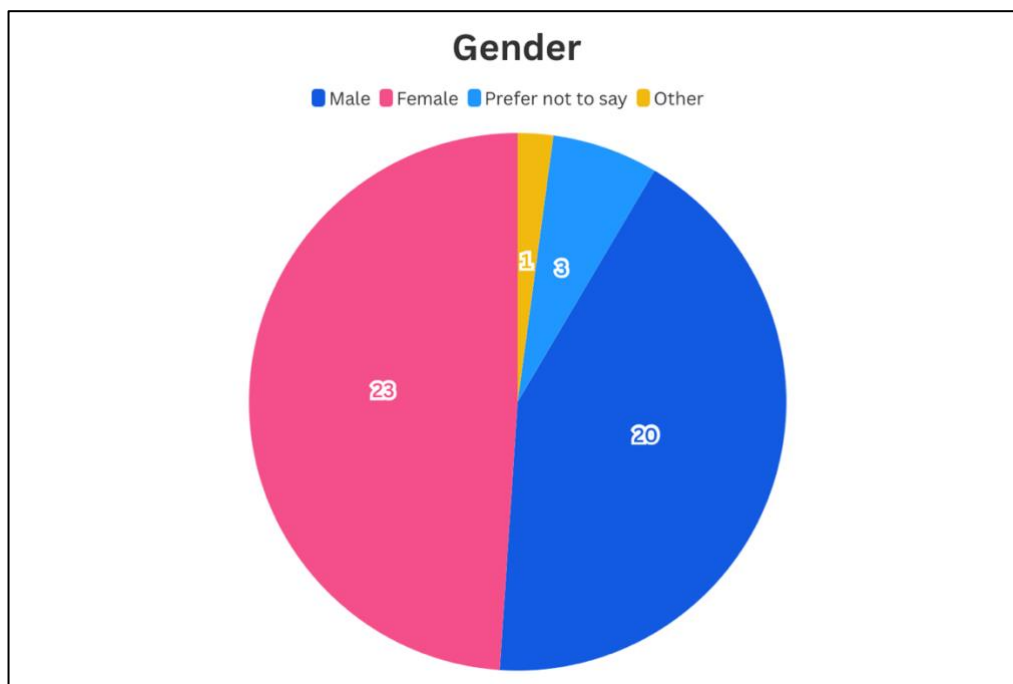
Group A had light cool colours with 3 states consisting of CTB, blue and green. (Appendix J1-J3)

Group B had warm colours with 3 states consisting of CTO, red and yellow. (Appendix J4-J7)

1.4. Results

Questions one and two on the public survey confirm consent and to ask for an email if the participant doesn't mind not being anonymous.

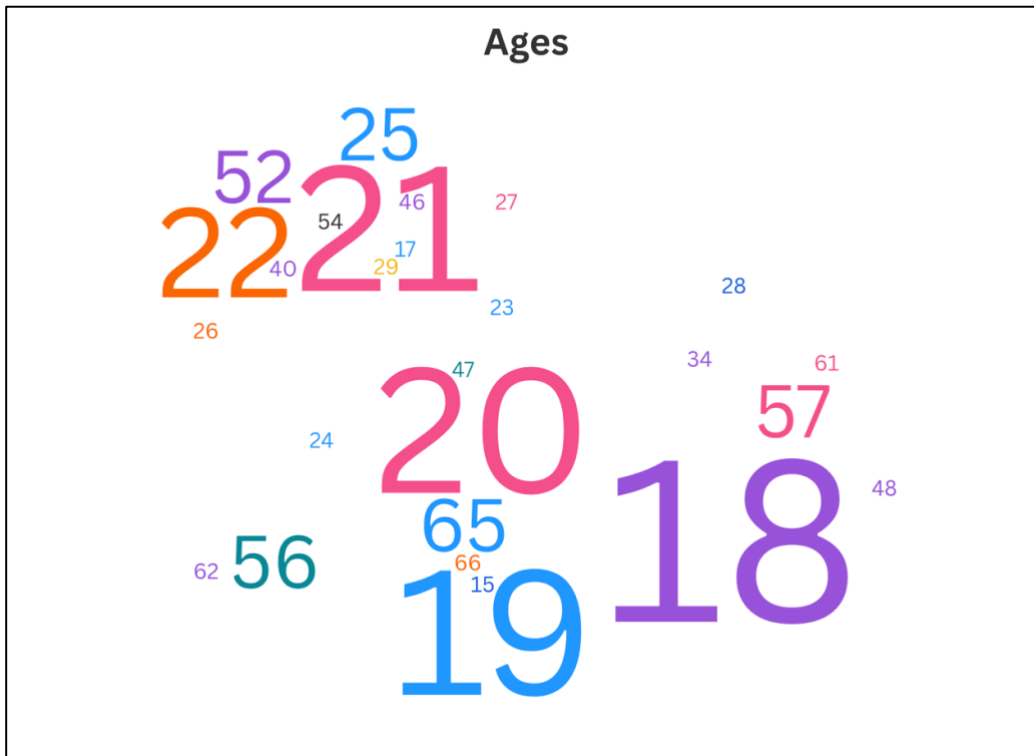
Question 3: What is your gender?



Most participants were evenly distributed, with a slight lead among females.

Graph 1

Question 4: What is your age?



Heavy on the 18-22 range as well as late 50s early 60s, a broad range of ages with young ages favoured.

Graph 2

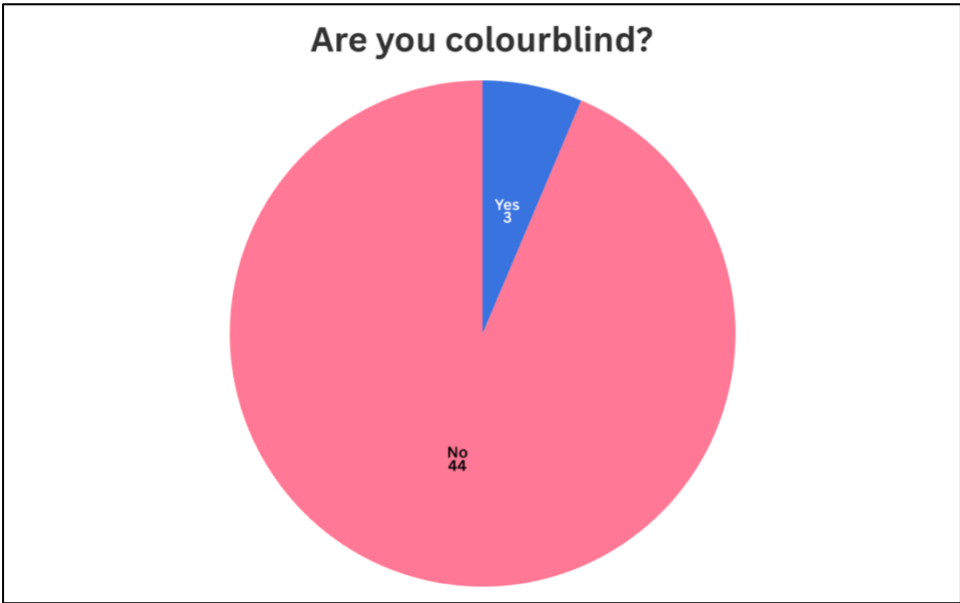
Question 5: Do you have epilepsy?



A vast majority are not epileptic, with one saying they are.

Graph 3

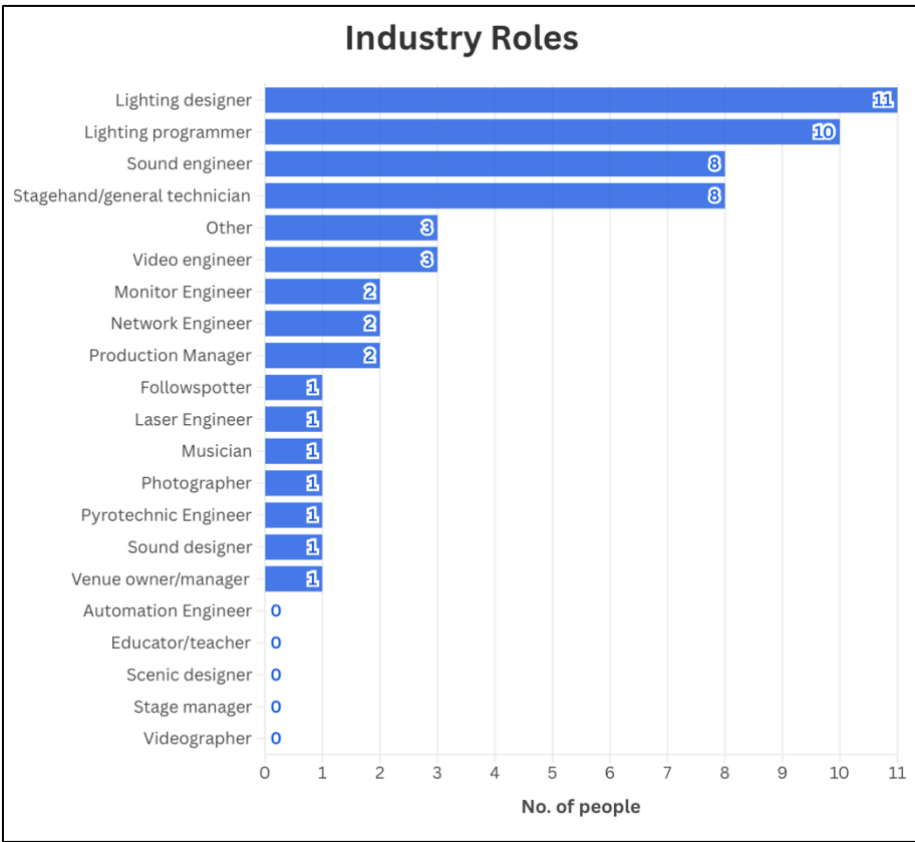
Question 6: Are you colourblind?



Most are not colourblind, with only 3 (6.3%) saying they are.

Graph 4

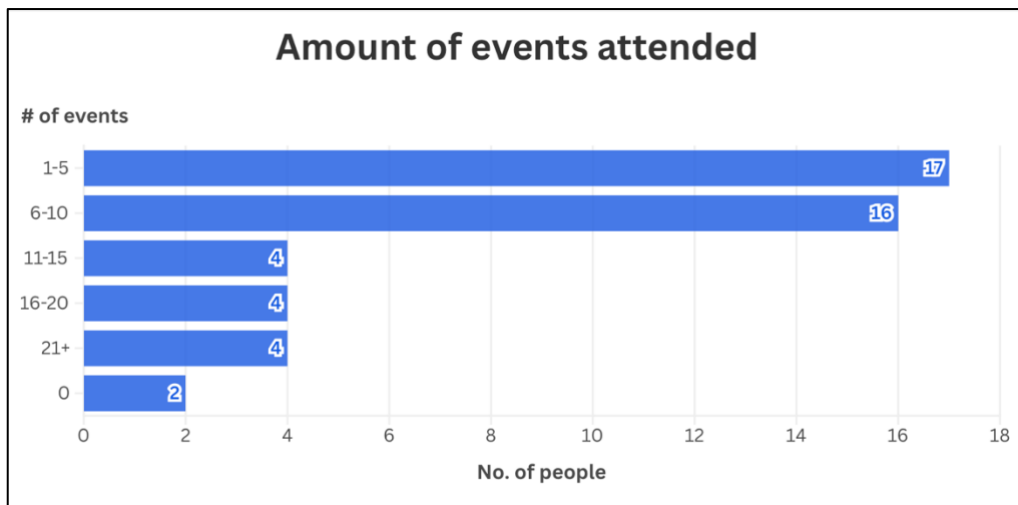
Question 7: Do you work in the events industry? If so, what's your role?



Heavy on the lighting designer and programmer. Shown from most popular to least.

Graph 5

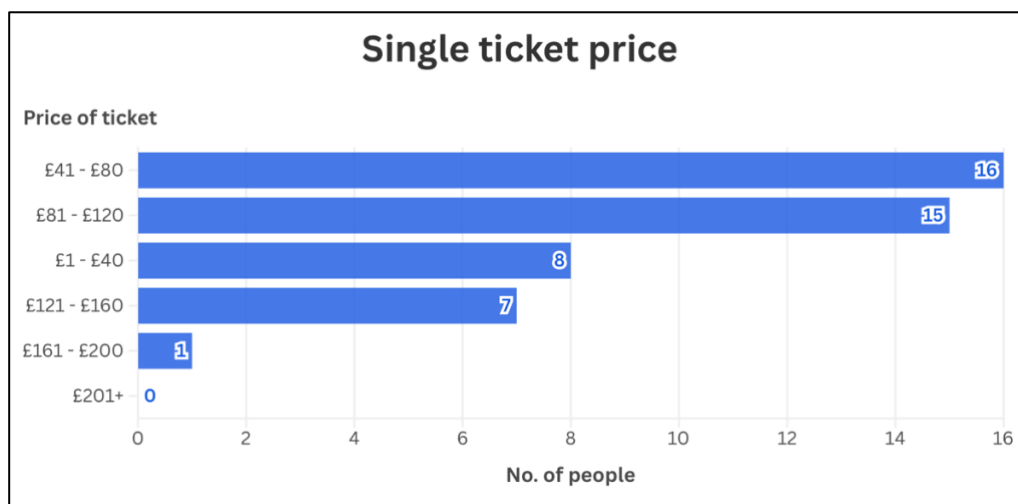
Question 8: On average, how many events do you attend every year?



Graph 6

Shows a heavy favour to 1-10 events attended every year, with the majority going to 1-5. Organised from most popular to least.

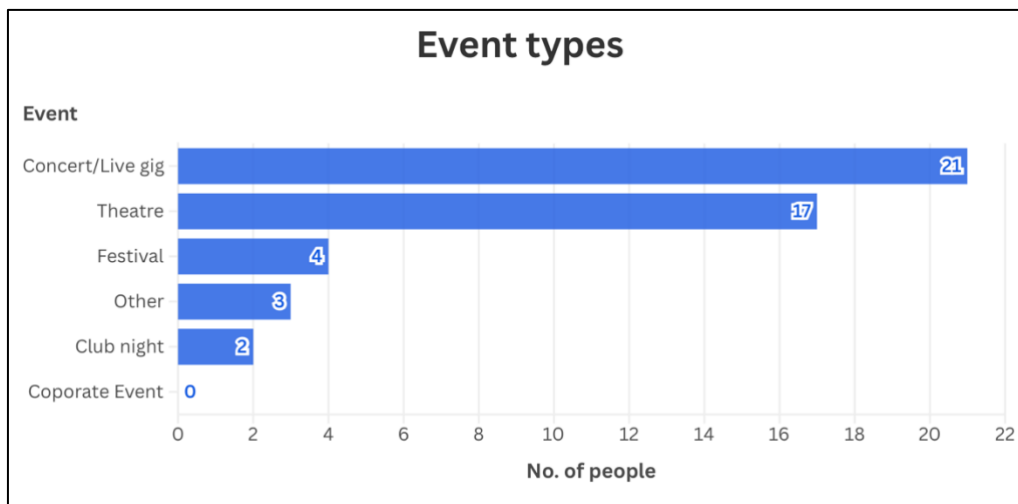
Question 9: How much would you be willing to spend on a single event ticket?



Graph 7

Heavy favoured in the low to mid-price range, with no one willing to spend over £201 for a ticket. Organised from most to least popular.

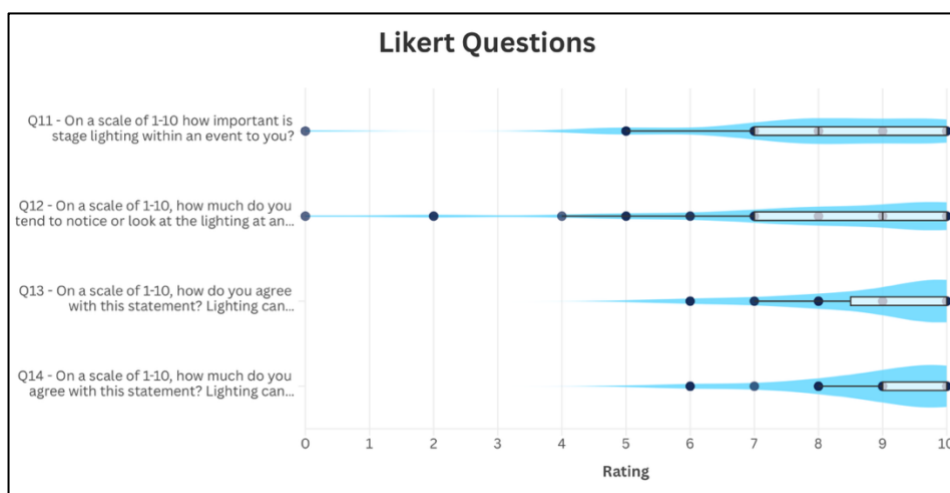
Question 10: What type of event do you attend the most?



Most participants attend concerts/live gigs and theatre with a few attending festivals, club nights and others. No one attends corporate events.

Graph 8

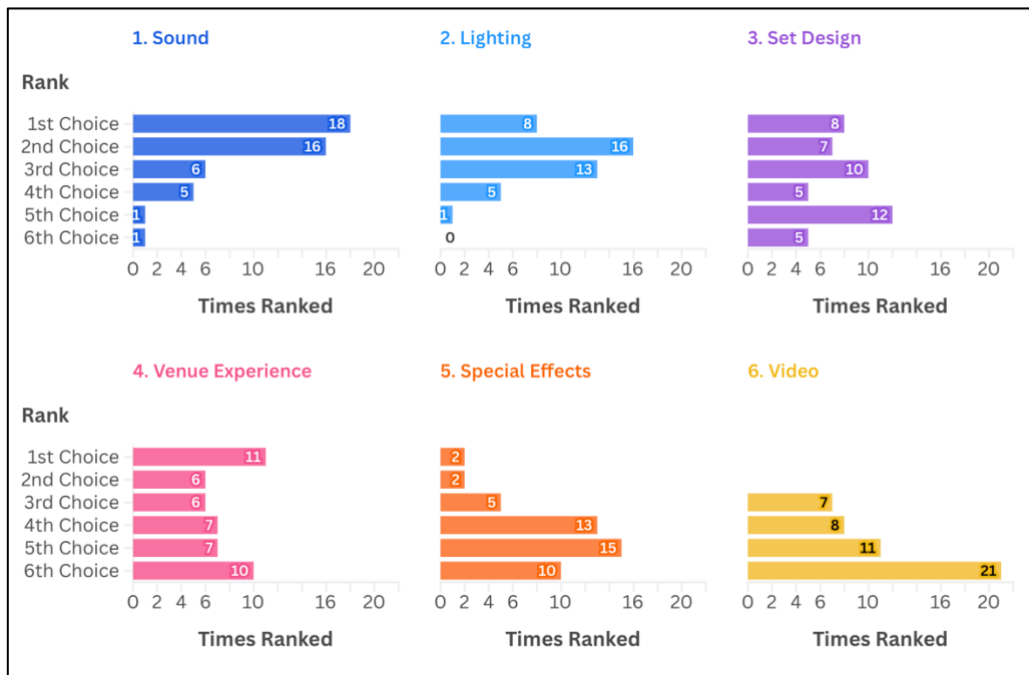
Question 11, 12, 13 & 14:



A large number of promoters for Q13 & Q14 with a large spread. Q12 has a more compact outcome with tighter results.

Graph 9

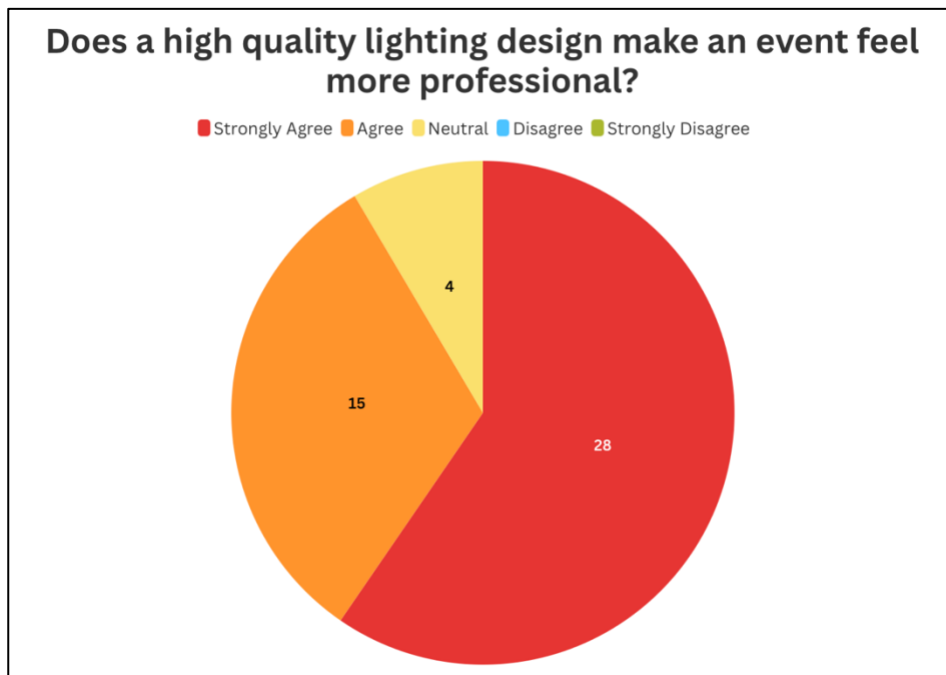
Question 15: Rank each event sector in order of importance to you, with no. 1 as the 'most important' item, to no. 6 as the 'least important' item.



Most popular sound followed by lighting, least is video, which no one ranked at 1 or 2.

Graph 10

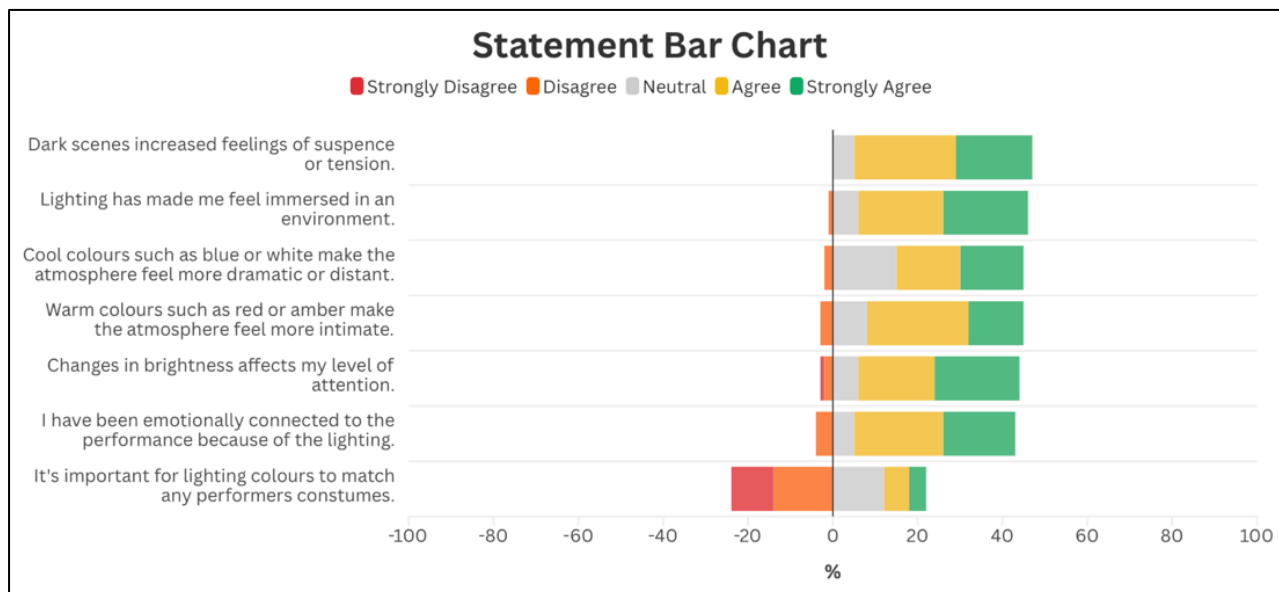
Question 16: Does a high-quality lighting design make an event feel more professional?



Large number of participants agree, with no one choosing to disagree or strongly disagree.

Graph 11

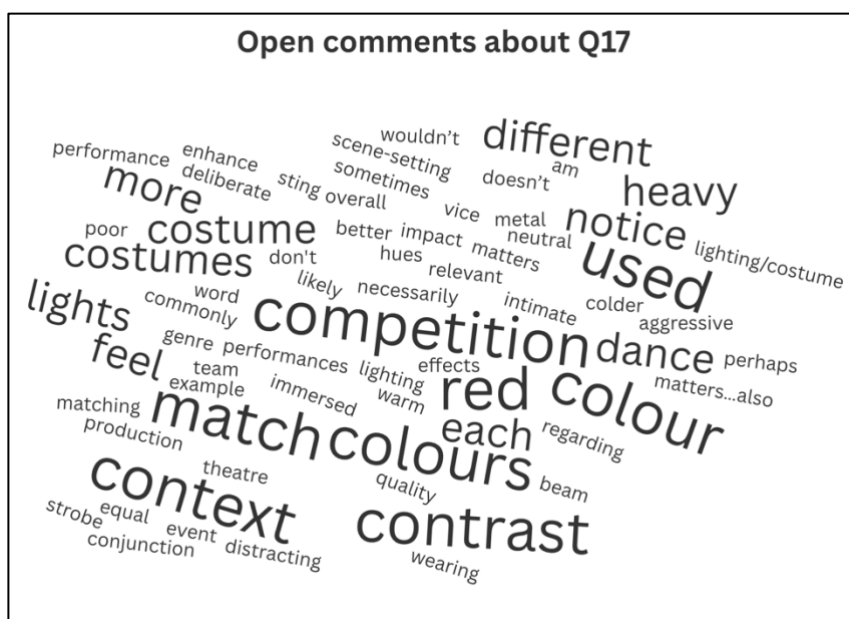
Question 17: How much do you agree with these statements?



Graph 12

This shows a favourable negative response to the colour-matching outfit statement; most participants agree with others. The chart is organised from the most popular to the least popular statement. The clear negative response to the statement “It’s important for lighting colours to match any performers costumes” as well as a few positive responses to the question indicated that there is a split between the participants.

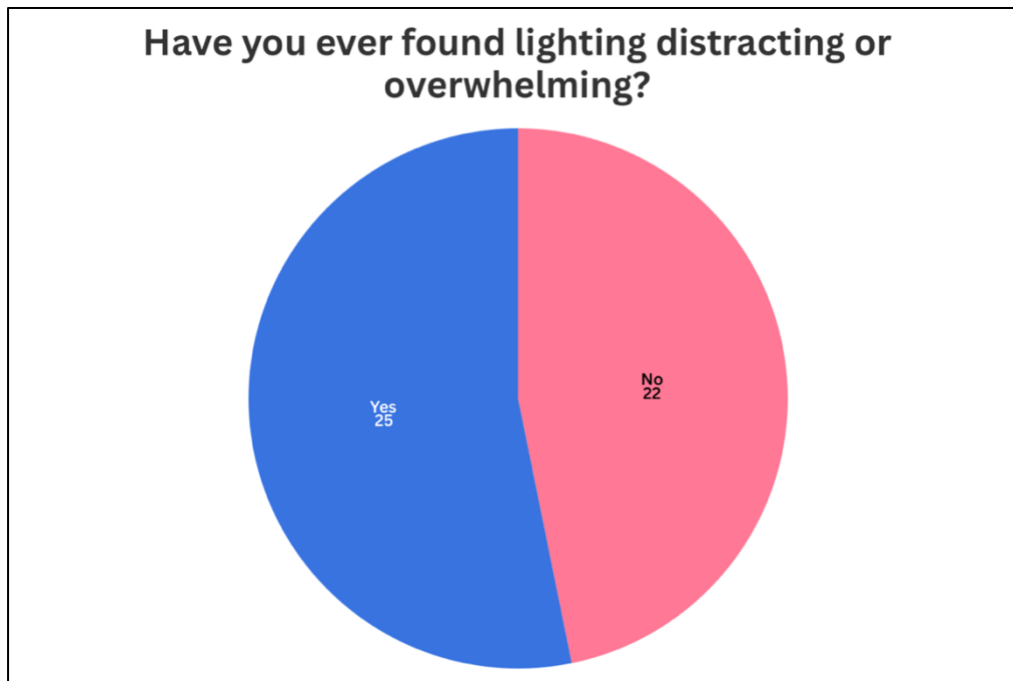
Question 18: Do you have any open comments regarding any of the statements in the previous question?



Graph 13

A lot of mention about contrast,
and it depends on context.
Small points about scene setting
and distraction.

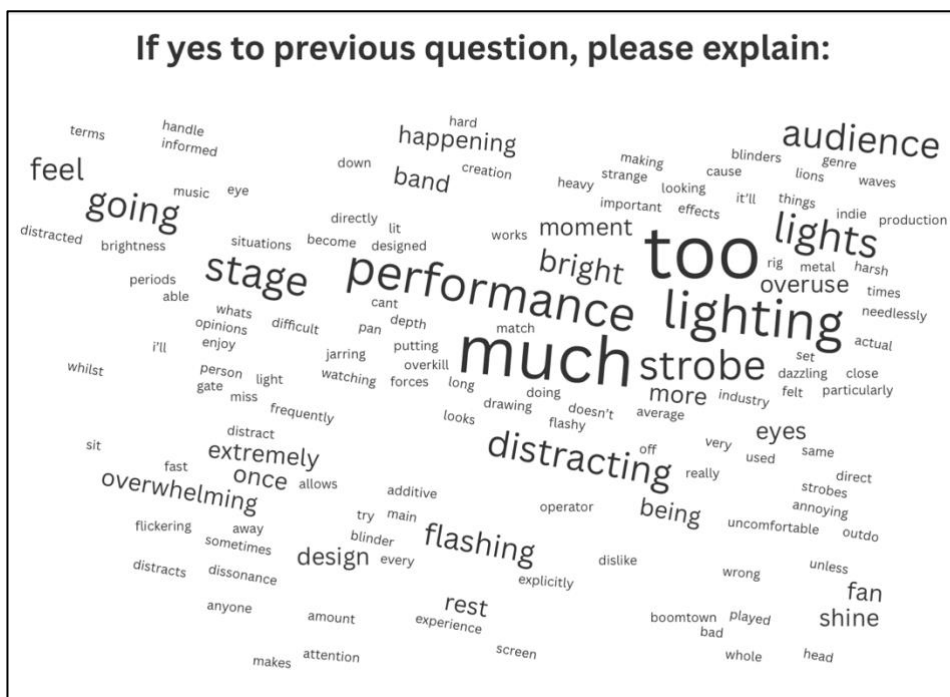
Question 19: Have you ever found lighting distracting or overwhelming?



Graph 14

Only 3 more people find lighting distracting. With an even split of participants finding lighting distracting it's clear that it can have a negative impact.

Question 20: If 'Yes' to previous question, please explain:

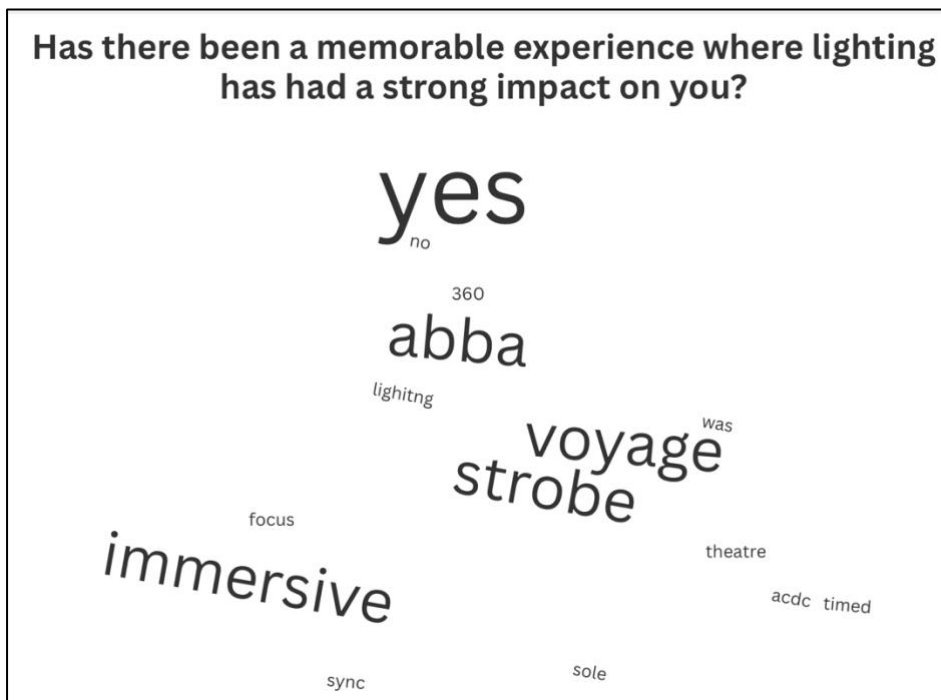


Graph 15

“Too much” is quoted a lot, and “strobe”

Distractions and flashing lights seem to be the pattern.

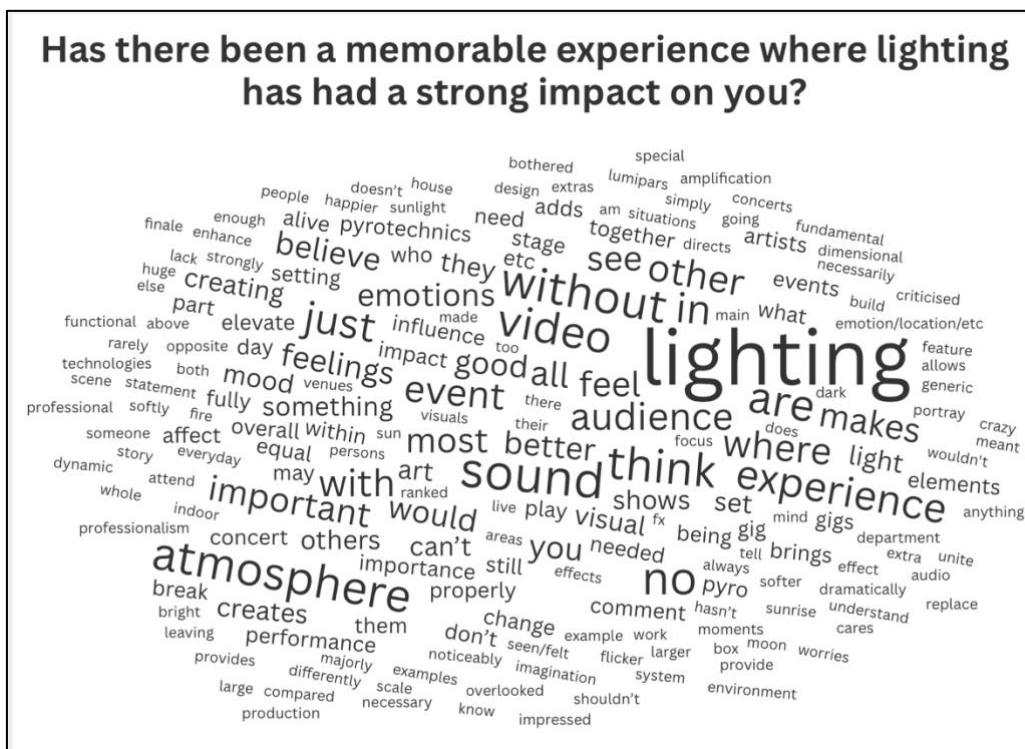
Question 21: Has there been a memorable experience where lighting has had a strong impact on you?



Graph 16

Most commented “yes” as well as mentioning specific events like the Abba voyage and ACDC. Other trends are immersive and 360. Limited information to due lack of responses on the question.

Question 22: What role do you believe lighting plays compared to sound, video or pyrotechnics in creating an atmosphere?



Graph 17

The common theme is atmosphere and feelings, as well as mood. With a lot of mention on points like “professionalism” and “experiences”

For the A/B experiment, the results are a separate for group A and group B for clear comparison.

Question 2: What is your age?

In group A there is a 20-year-old, 21-year-old and a 22-year-old. In group B there is two 20-year-olds and one 49-year-old.

Question 3: What is your gender?

All the participants are male in group A, and there are 2 males in group B with one saying they prefer not to say.

Question 4: Are you colourblind?

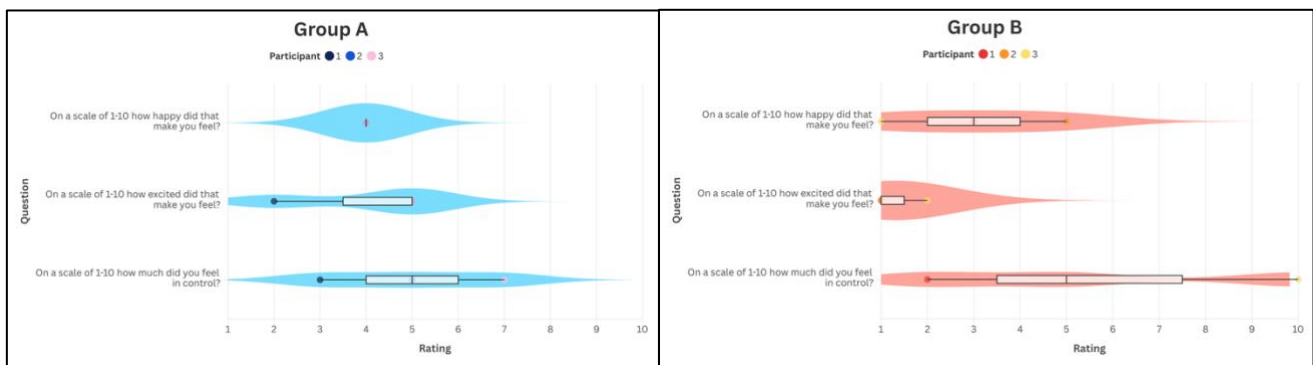
No participant is colour blind in any shape or capacity in either group.

Question 5: Was the colour being used the colour you would have chosen? If not, what would you have picked?

Group A	Group B
“Yes”	“Yes?”
“Yes, it matches the silence. Cold and empty”	“Pink”
“No. Probably would have been blue or red... more mysterious for silence”	“Yes”

Most of the participants agree with me, there are a few other opinions such as “pink” and “blue or red”, with one participant saying it matches the feeling of “cold and empty”

Question 6, 7 & 8: On a scale of 1-10, how (happy, excited, in control) did that make you feel?



Graph 18a

Graph 18b

Question 6 and 8 have similar answers and ranges while group B with question 2 have a lower score on excitement than group A.

Question 9: Do you have any open comments?

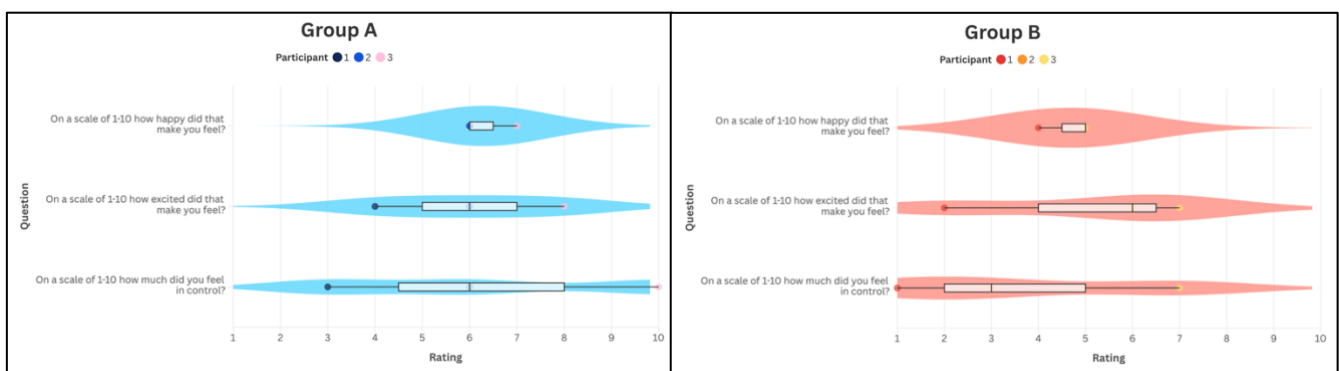
Group A	Group B
“No”	“No”
“No”	“N/A”
“N/A”	“No”

Question 10: Was the colour being used the colour you would have chosen? If not, what would you have picked?

Group A	Group B
“No, I would’ve chosen a brighter colour, maybe red or orange”	“Yes”
“Yes”	“Yes”
“Yes”	“Yes”

Most of the participants agree with the colour chosen, one participant said “maybe red or orange”

Question 11, 12 & 13: On a scale of 1-10, how (happy, excited, in control) did that make you feel?



Graph 19a

Graph 19b

Questions 2 and 3 have similar scores across both groups, with Group B scoring higher on question 1. Large differences in questions 1 and 2 indicated polar opinions from the participants.

Question 14: Do you have any open comments?

Group A	Group B
“No”	“Very bright”
“No”	“It evokes a sense of excitement”
“N/A”	“Nope”

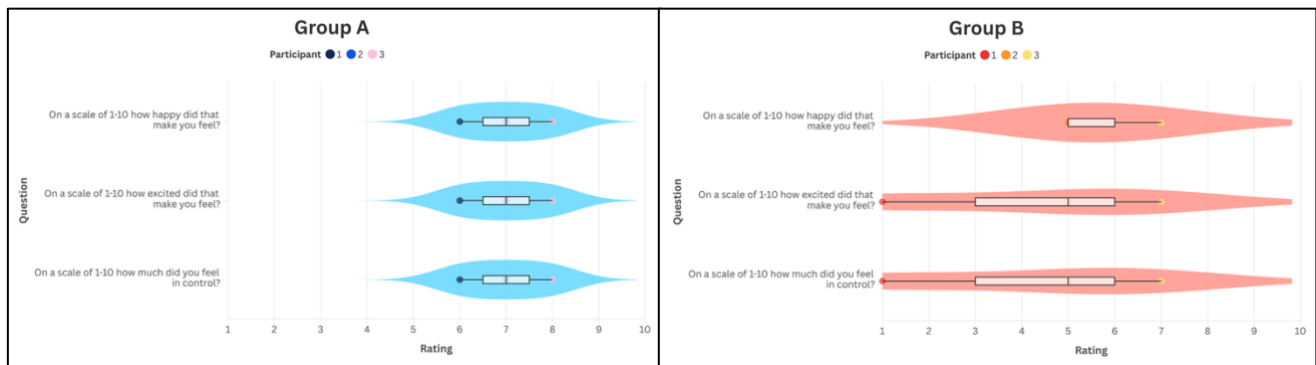
A participant mentioned it was “very bright” and another mentioned it “evokes a sense of excitement”

Question 15: Was the colour being used the colour you would have chosen? If not, what would you have picked?

Group A	Group B
“Yes”	“No, CTO or something a bit more orange”
“Yes”	“Good colour choice”
“No. Probably would have been something like CTO or beige”	“No a soft blue I would have used”

Even split between the participants with 2 participants from different groups, both mentioning to use “CTO”, with another participant saying “soft blue”

Question 16, 17 & 18: On a scale of 1-10, how (happy, excited, in control) did that make you feel?



Graph 20a

Graph 20b

Group A have identical answers for every question, which matches similarly with group B’s answer for 2 and 3; however, group B answered higher for question 1.

Question 19: Do you have any open comments?

Group A	Group B
“No”	“I don't entirely understand why I would be happy from this”
“No”	“I like it. Very inspiring”
“N/A”	“No”

One participant commented they don’t know why they’ll be excited, while another mentioned it’s “Very inspiring.” All other participants had nothing to add.

1.5. Data Analysis

This survey explored ‘how lighting design and programming impacts an audience?’ and asks questions aimed to gather information and data on how people interpret stage lighting and what it means to them. The questions were a mix of open and closed questions with themes gained from the survey relating to the importance of stage lighting within events like lighting affecting mood and feelings and the willingness to spend correlates with the event attending. Themes for the A/B experiment warm and cool lighting having their own effect, that the context of the stimulus matter as changes interpretations of the lighting and a relationship between the control feeling and stimulus.

Theme 1 in the survey was the importance of lighting within the events industry. In Q11 most people ranked lighting high in importance to them. Also, in Q15 where people ranked different event sectors lighting was ranked number 2, but no one ranked it as the least important. This shows an overall trend of people showing that they think lighting is overall important. Q16 shows that this may be because most people think that a high quality of lighting design make an event feel more

professional. Q21 also suggests that lighting is vital to having a positive experience within an event. This may be because linking back to the literature review where research into the audience psychology is showing a common theme among lighting and the way it can positively impact mood and feelings with drastic fluctuation.

Theme 2 was that lighting can affect mood and feelings. There is evidence in the survey that lighting can affect mood and feelings with Q17, statement 1 and 6. The responses to these statements are overwhelmingly positive, the common theme of people saying that their mood can be affected by lighting is shown throughout the survey as well as the literature review where research by Bauer, A (2014) shows the effect on lighting during cross department integration as well as Rutherford, C. (2020) research into lighting and the effect on certain aspects like colour. As well as Q22 shows that in open comment scenarios people refer to words like “mood, emotion and atmosphere” this may be because lighting is directly linked to emotions and mood with a vast array of opinions and viewpoints. This may be because lighting interacts with psychologically and physiologically, where elements such as colour, intensity and movement can stimulate emotional responses and alter levels of arousal. From a psychological perspective, frameworks such as pleasure, arousal and dominance suggest that environmental stimulus like lighting can shift emotional states by increasing or decreasing arousal and influencing how pleasant a space feels. Additionally, lighting works as a non-verbal cue, helping audiences interpret atmosphere, which explains why participants consistently associated it with mood and emotion.

The 3rd theme is the willingness to spend correlates with the event attending. The majority on Q9 says that £41-£80 is what they are willing to spend on a single ticket. This is in conjunction with the most attended event type on Q10 with most people saying concert/live gigs. However, on the other side the least common is from £121 through to £201+ with correlation on the least attended events being festivals, club nights. The average prices of the events people attend influence how much they are willing to spend. About lighting, the theme went back to the overall rating on the importance of lighting, if this survey was to question people who mainly go to cooperate, club nights or festivals, lighting may not be as important to them, due to the context and needs of the event their attending. So therefore, the overall willingness to spend on an event can directly influence the importance of lighting as the event as well as additional costs to put on events compared to a festival and club night, ticket prices reflect the event and what the audience expect to get out of it.

The 1st theme linked to the A/B experiment was that warm and cool lighting makes a difference between certain feelings depending on stimulus context. Q6-8 shows people have different perceptions of warm and cool colour even when nothing is playing. In the graph you can see a slight difference of perception in PAD scales between a warm and cool colour on its own. Q11-13 shows that with music there is little but still some difference in the perception of cool and warm colours. Graph 19a and 19b show a similar rating between the colours when a speech is playing, this is significantly less difference compared to music and silence.

The 2nd theme in the A/B experiment was that the context of the lighting matters. The stimulus directly affects the perception and opinion of those exposed to the lighting. Q19 shows one person in Group B doesn't understand why'd they would feel happy, this is directly affected by the stimulus, and no other comment was made by anyone for any other stimulus. On all the PAD scale questions it shows that some rank 0 when measuring feelings depending on the stimulus. Only with warm colours did a participant rank 0. In this case warm colours may not correlate to the stimulus

compared to what a cool colour might. People also have an opinion on colour when they have something to compare it to, with silence there was no other suggestions for colours but with music and speech there was always one suggestion or opinion, this may be because when someone is given context to the lighting they can form their opinion depending on their perception of the stimulus and may subconsciously have a suited colour in their heads. Mohr & Jonauskaite (2020) shows this as colour is not a fixed interpretation but dependant on context.

The 3rd theme in the A/B experiment data, was that there is an interesting relationship between control (dominance) and the type of stimulus. In silence, participants seemed to rely purely on the lighting to form an opinion, leading to clearer differences between warm and cool colours as shown in Q6, 7, and 8 of the A/B experiment. However, when music or speech was introduced, the sense of control became more stable across both groups. This may suggest that external stimulus reduce the reliance on lighting for emotional interpretation, as attention is shared between multiple inputs. Lighting still contributes, but its influence may be diluted when combined with another strong stimulus like in the literature review where research by Bauer (2014), showed that humans responded stronger to events where lighting and sound were cued simultaneously.

1.6. Conclusion

This study set out to explore how lighting design and programming impact an audience, with a focus on emotion, attention and experience. By combining literature, survey data and a controlled A/B experiment, a link has been established between technical lighting decisions and audience perception. The findings overall suggest that lighting is not just a supporting element within live events, as 7% ranked lighting the most important and 34% and the second most important area in events. But a core driver of how an audience feels, engages and interprets a performance.

The results from this study show that lighting is consistently viewed as important by audiences. The survey results showed that lighting ranked highly across multiple questions, particularly in relation to professionalism and atmosphere. This supports the idea that audiences may not always consciously analyse lighting, but they still feel its impact. When lighting is done well, it improves the event experience, and when it is poor or distracting, it can reduce it, this shows with 60% saying they strongly agree that a high-quality lighting design make an event feel mor professional. This links directly back to the literature by Elliot & Maier (2014) where lighting is described as a tool for shaping mood, attention and narrative. From both the research and collected data, it is clear that lighting plays a significant role in defining the quality of an event.

Another key finding is that graph 18a through 20b show a difference in cool and warm lighting and the stimulus used in context. The survey responses repeatedly referenced mood, feeling and atmosphere, which aligns with the pleasure, arousal and dominance (PAD) framework used throughout this study. The A/B experiment further supports this, showing that even when all other variables are controlled, colour alone can influence how participants feel. Differences between warm and cool colours were noticeable across happiness, excitement and control levels, even in silence. This suggests that colour is a vital variable, that can influence emotional response.

However, the study highlights that context plays a major role in how lighting is interpreted. When music or speech was introduced in the experiment, the differences between warm and cool lighting became less consistent. This indicates that lighting does not operate in isolation. Instead, it works alongside other sectors such as audio, video and stage design. In some cases, participants expected certain colours to match the stimulus, and when this did not happen, it created confusion or reduced emotional impact. An average difference in 1-3 points in PAD rating during the silent stimulus shows a clear divide between participants and the way they interpret lighting on its own. This highlights the point that cross-department integration that I researched in my literature review, especially the research by Huntington, J. (2023) showing the importance of cross department integration and the effect it can have on an audience. Lighting decisions should not be made independently, but rather in coordination with sound, video and other technical areas to improve overall experiences.

While not directly tested in the experiment, the literature and survey responses suggest that both approaches offer different advantages. Timecode allows for precision and synchronisation, which can enhance emotional responses and professionalism. The literature reviewed sources such as Norman, D.A. (2013) stating that timecode can have a positive impact on a audiences experience. On the other hand, busking introduces variation and uniqueness, which may increase excitement and authenticity. From an audience's perspective, both approaches can be effective depending on the context of the event. This reinforces the view that there is no single "correct" method, but rather that programming decisions should be guided by the intended audience experience.

A further point identified in this study is that audiences are becoming harder to impress. As mentioned in the literature review, modern audiences are exposed to high levels of stimulation, meaning that basic lighting techniques may no longer have the same impact. This places more importance on thoughtful design, creative programming and integration with other departments. Techniques such as pixel mapping, interactive elements and synchronised cues can enhance engagement, but only when used with purpose. Overuse or poor stage lighting can lead to distraction, as shown in the survey where in Q19, graph 14 shows that 46.81% of the participants found lighting distracting in some form with a few mentioning issues such as excessive brightness or strobing.

There are also some limitations within this study that should be acknowledged. The sample size for the A/B experiment was relatively small and mainly consisted of participants within a similar age range and background. This may limit how widely the findings can be applied. Additionally, the experiment focused only on colour as the changing variable, meaning that other important aspects of lighting such as movement, intensity and position were not explored in depth.

Future research could expand on this by testing multiple variables at once or by using larger and more diverse participant group. Despite these limitations, the study successfully achieved its aim of linking lighting design and programming decisions to audience response. It has shown that lighting can influence emotion, direct attention and enhance overall experience, but only when it is used with consideration of context and integration. The findings support the idea that lighting design should be approached as both a technical and creative asset, where decisions are not only based on what is possible, but on what will have the most impact on the audience.

In conclusion, because of literature and research, lighting design and programming have a direct and significant impact on an audience. Colour plays a key role in shaping emotional response, but its effectiveness is influenced by context, stimulus and integration with other elements. Precision through timecode and through busking both offer value, depending on the goals of the show. Ultimately, the most effective lighting design is one that balances technical accuracy with emotions, creating an experience that feels both creative and engaging. This study provides a framework that connects these elements, offering a clearer understanding of how lighting can be used to influence and improve an audience's experience in live events.

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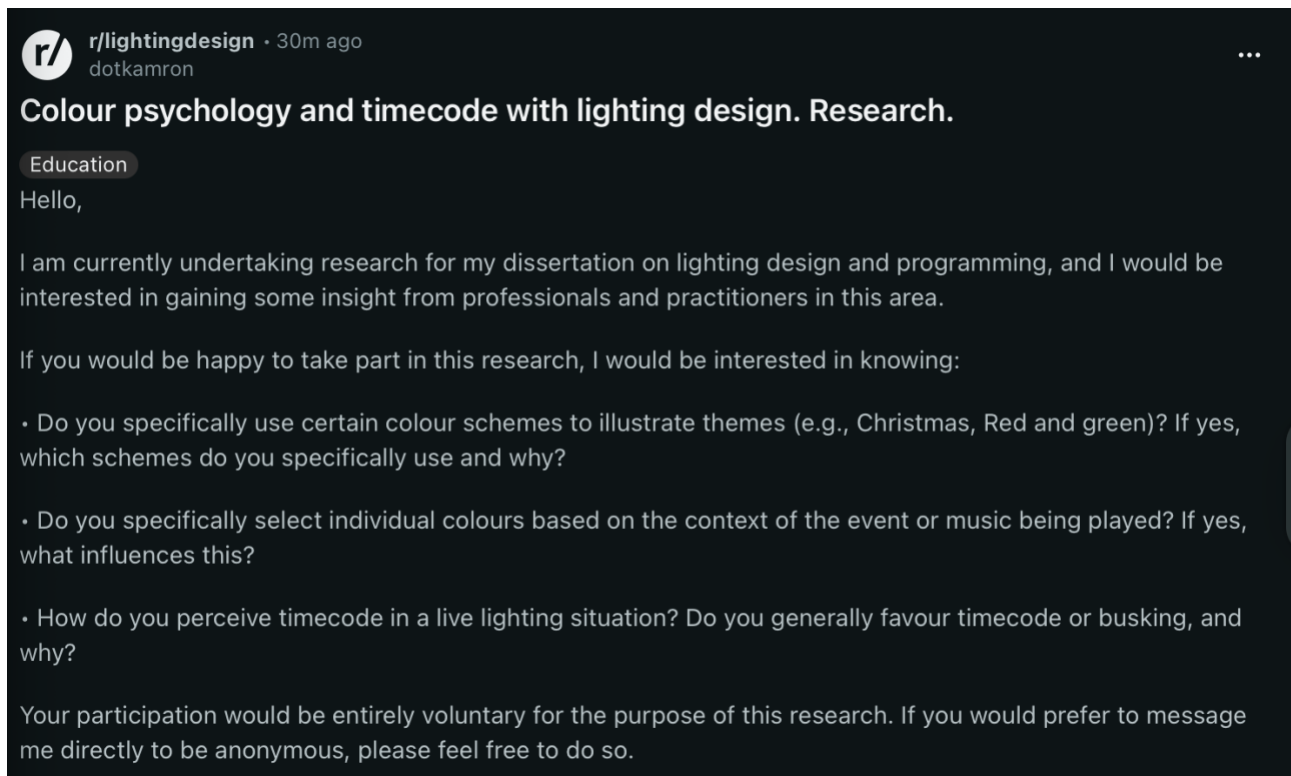
<https://www.researchgate.net>

<https://www.tpimagazine.com>

<https://www.youtube.com>

3.1. Appendixes

Appendix AA - Reddit post



The screenshot shows a Reddit post from the subreddit r/lightingdesign, posted 30 minutes ago by user dotkamron. The post is titled "Colour psychology and timecode with lighting design. Research." and is categorized under "Education". The text of the post is as follows:

Hello,

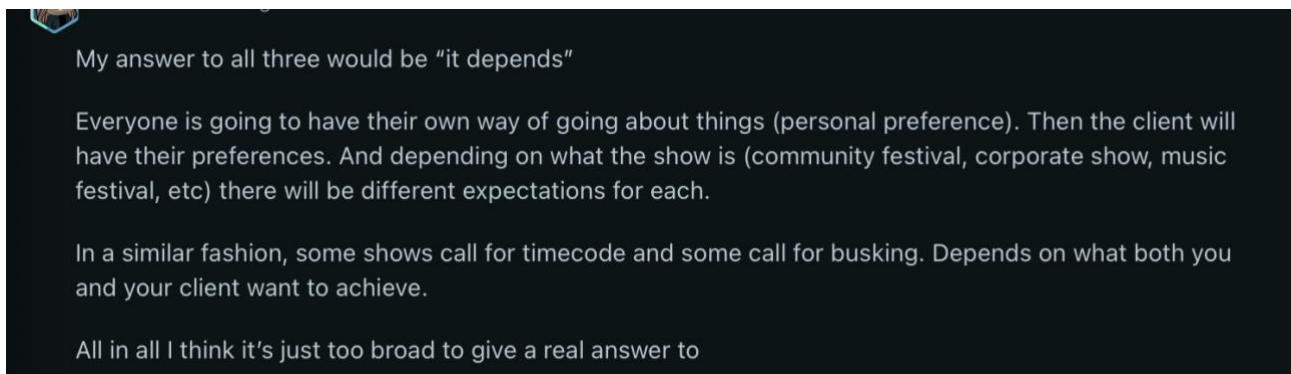
I am currently undertaking research for my dissertation on lighting design and programming, and I would be interested in gaining some insight from professionals and practitioners in this area.

If you would be happy to take part in this research, I would be interested in knowing:

- Do you specifically use certain colour schemes to illustrate themes (e.g., Christmas, Red and green)? If yes, which schemes do you specifically use and why?
- Do you specifically select individual colours based on the context of the event or music being played? If yes, what influences this?
- How do you perceive timecode in a live lighting situation? Do you generally favour timecode or busking, and why?

Your participation would be entirely voluntary for the purpose of this research. If you would prefer to message me directly to be anonymous, please feel free to do so.

Appendix AB – Reddit user answer



The screenshot shows a user's answer to the Reddit post. The text of the answer is as follows:

My answer to all three would be "it depends"

Everyone is going to have their own way of going about things (personal preference). Then the client will have their preferences. And depending on what the show is (community festival, corporate show, music festival, etc) there will be different expectations for each.

In a similar fashion, some shows call for timecode and some call for busking. Depends on what both you and your client want to achieve.

All in all I think it's just too broad to give a real answer to

Appendix A - What is pixel mapping, and how does it work with LED lights? Available at:
<https://www.essentialphoto.co.uk/blogs/news/what-is-pixel-mapping-and-how-does-it-work-with-led-lights> [Accessed 1st Feb 2026]

Appendix B1 – Survey Intro

This survey is being conducted to understand how lighting design and programming can impact an audience through colour, programming techniques, and design to improve an event.

The research is being carried out by me, Kamron Beheshti, supervised by Andy Atkin of Nottingham Trent University School of Art and Design, as part of my dissertation for my BSc Event Production course.

This survey asks some personal questions related to identity and health. To read more about what is asked and a more in-depth overview of the survey and dissertation, please read the following document: https://myntuac-my.sharepoint.com/:w:/g/personal/n1206568_my_ntu_ac_uk/IQDRATDhVYCqSKeXRW7PQm5dATz9Wtf6d968VqXF4A8Hih4?e=Twefx8

You can opt out at any time by exiting the survey. Once submitted, anonymous responses cannot be deleted unless you have provided your email address for identification purposes. Any anonymous responses where you didn't provide your email below can't be deleted after submission.

If you have any questions, feel free to contact me at N1206568@my.ntu.ac.uk

Survey timeframe: 10 mins

When you submit this form, it will not automatically collect your details like name and email address unless you provide it yourself.

* Required

1. Do you confirm that you have read the survey information and consent to your response being collected for research purposes only? *

☐ I Confirm

2. Provide your email below if you consent to being contacted for further questions. Leave blank if you wish to remain anonymous.

Please enter an email

Appendix B2 – What is your gender?

3. What is your gender? *

☐ Male

☐ Female

☐ Prefer not to say

☐ Other

Appendix B3 -

4. What is your age? *

e.g. 13 or 59

Number must be between 13 ~ 122

Appendix B4 -

5. Do you have epilepsy?

☐ Yes

☐ No

Appendix B5 -

6. Are you colourblind?

e.g, Colour Deficiency, Red-Green Colour Blindness, Blue-Yellow Colour Blindness or Complete Colour Blindness

☐ Yes

☐ No

Appendix B6 –

7. Do you work in the events industry? If so, what's your role? *(Select all that apply)*

- ☐ Automation Engineer
- ☐ Educator/teacher
- ☐ Followspotter
- ☐ Laser Engineer
- ☐ Lighting designer
- ☐ Lighting programmer
- ☐ Monitor Engineer
- ☐ Musician
- ☐ Network Engineer
- ☐ Photographer
- ☐ Production Manager
- ☐ Pyrotechnic Engineer
- ☐ Scenic designer
- ☐ Sound designer
- ☐ Sound engineer
- ☐ Stagehand/general technician
- ☐ Stage manager
- ☐ Venue owner/manager
- ☐ Video engineer
- ☐ Videographer
- ☐ Other

Appendix B7 -

8. On average, how many events do you attend every year?

*

e.g. Live gigs, Theatre, Festivals, Conferences, Esports, Dance.

- ☐ 0
- ☐ 1 - 5
- ☐ 6 - 10
- ☐ 11 - 15
- ☐ 16 - 20
- ☐ 21+

Appendix B8 -

9. How much would you be willing to spend on a single event ticket? *

- ☐ £1 - £40
- ☐ £41 - £80
- ☐ £81 - £120
- ☐ £121 - £160
- ☐ £161 - £200
- ☐ £201+

Appendix B9 –

10. What type of event do you attend the most? (*Pick one*) *

If not a regular event attendee, use the last one you attended. Does not count any events you worked at.

- ☐ Concert/Live gig
- ☐ Theatre
- ☐ Festival
- ☐ Club night
- ☐ Corporate Event
- ☐ Other

Appendix B10 -

11. On a scale of 1-10, how important is stage lighting within an event to you? *

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all important

Extremely important

Appendix B11 -

12. On a scale of 1-10, how much do you tend to notice or look at the lighting at an event? *

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all All the time

Appendix B12 –

13. On a scale of 1-10, how much do you agree with this statement? *

"Lighting can emphasise mood and feelings"

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Strongly disagree Strongly agree

Appendix B13 -

14. On a scale of 1-10, how much do you agree with this statement? *

"Lighting can direct an audience's attention"

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Strongly disagree Strongly agree

Appendix B14 -

15. Rank each event sector in order of importance to you, with no. 1 as the 'most important' item, to no. 6 as the 'least important' item. *

Drag and drop items to reorganise

Set design

Video

Venue experience

Lighting

Special Effects

Sound



Appendix B15 -

16. Does a high quality lighting design make an event feel more professional? *

High quality is defined as stage lighting in an event that is on a professional scale, done by professionals. *e.g. Eurovision, Olympics opening ceremony or Broadway.*

- ☐ Strongly agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly disagree

Appendix B16 –

17. How much do you agree with these statements? *

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Lighting has made me feel immersed in an environment.	☐	☐	☐	☐	☐
I have been emotionally connected to the performance because of the lighting.	☐	☐	☐	☐	☐
Changes in brightness affects my level of attention.	☐	☐	☐	☐	☐
Dark scenes increased feelings of suspense or tension.	☐	☐	☐	☐	☐
Warm colours such as red or amber make the atmosphere feel more intimate.	☐	☐	☐	☐	☐
Cool colours such as blue or white make the atmosphere feel more dramatic or distant.	☐	☐	☐	☐	☐
It's important for lighting colours to match any performers costumes.	☐	☐	☐	☐	☐

Appendix B17 -

18. Do you have any open comments regarding any of the statements in the previous question?

Enter your answer

Appendix B18 -

19. Have you ever found lighting distracting or overwhelming? *

☐ Yes

☐ No

Appendix B19 -

20. If 'Yes' to previous question, please explain:

Enter your answer

Appendix B20 -

21. Has there been a memorable experience where lighting has had a strong impact on you?: *

Enter your answer

Appendix B21 -

22. What role do you believe lighting plays compared to sound, video or pyrotechnics in creating an atmosphere? *

Enter your answer

Appendix C - Martin Rush MH6 Wash. Martin Website.



MARKETS ▾ PRODUCT TYPES ▾ PRODUCT RANGES ▾ NEWS ▾ ABOUT US ▾ LEARNING ▾ SUPPORT ▾

[HOME](#) > [PRODUCTS](#) > [PRODUCT RANGES](#) > RUSH MH 6 WASH



RUSH MH 6 Wash

(discontinued)

COMPACT SINGLE LENS WASH
LIGHT WITH RGBW COLOR MIXING

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- SPECIFICATIONS
- DOWNLOADS
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LARGER IMAGES

The RUSH MH 6 Wash is an exciting adaption of the hugely popular RUSH PAR 2 RGBW Zoom, using the same LED

Appendix D – Avolites Tiger Touch 2. Avolites Website.



Lighting Media Software Support Academy #Avo50 Contact Us

Tiger Touch II

The iconic white console is now optionally available in a slick, modern grey & black finish

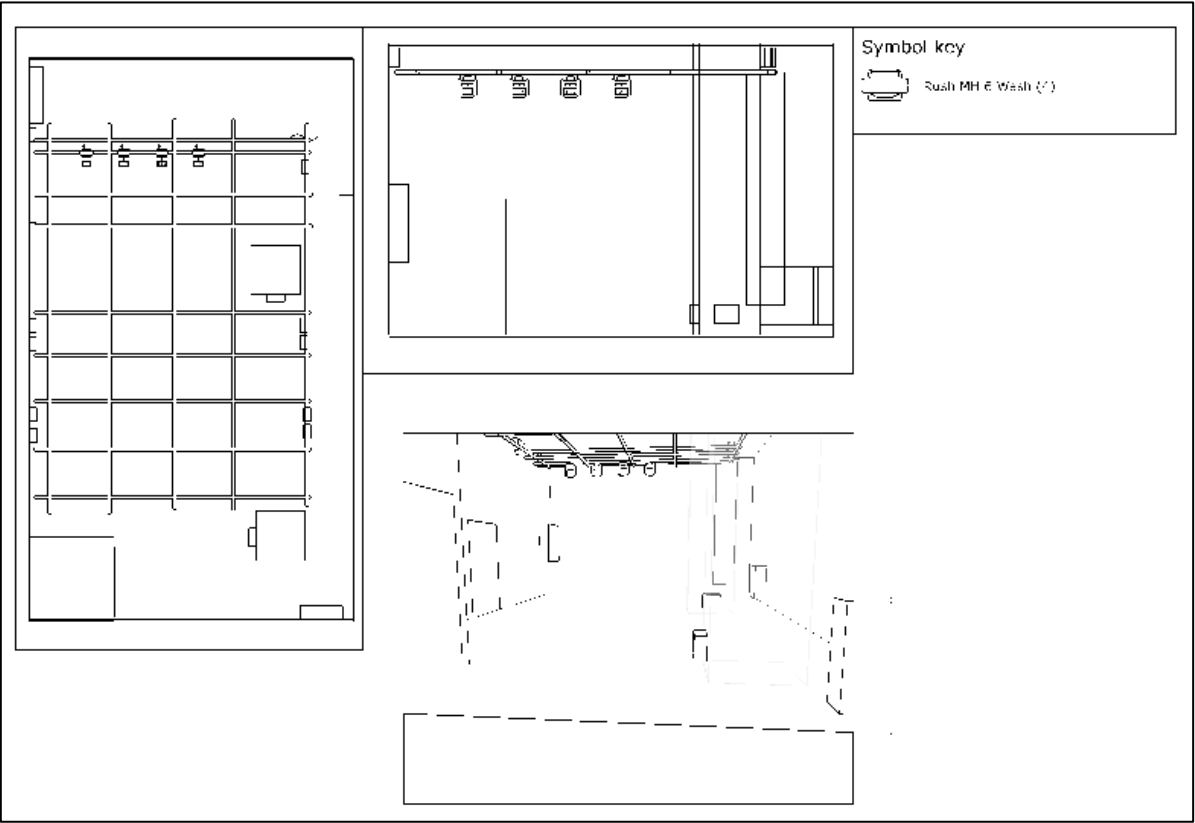
- ✓ Represents the perfect combination of power and portability.
- ✓ Small and light enough to fly in standard hold luggage.
- ✓ SMPTE timecode support and a redesigned button layout to match the entire Titan range

[Request a call](#) [See it in action](#) 



Overview Software Features In Focus Technical Specs Find Avolites Contact Us

Appendix E – Design Plot



Appendix F – Design Render



Appendix G: Teams recruitment message

A/B Experiment

Hello all, my dissertation experiment is to take place on Wednesday, 18th March, towards/at the end of Ben's session. **If you are coming in on this day and would like to take part, please let me know by reacting to this message with a thumbs up or another emoji.**

It is a colour experiment with 3 different stimuli (Silence, Music and a speech). It will take place in P3 and will have 2 different groups (*will let you know closer to the time which group you are in and the time*). The experiment will last between 5 and 10 minutes for your group.

Cheers,
Kamron

Appendix H1 – Experiment introduction

Colour A/B Experiment [GROUP A]

This survey aligns with my in-person A/B Colour experiment in P3.

The research is being carried out by me, Kamron Beheshti, supervised by Andy Atkin of Nottingham School of Art and Design, as part of my dissertation for my BSc Event Production course.
Your email is not collected unless you provide it yourself.

If you wish to opt out, your progress won't be saved, and you can leave the room at any time during the experiment.

To view more information and details about the experiment, open this document: https://myntuac-my.sharepoint.com/:w:/g/personal/n1206568_my_ntu_ac_uk/IQBFNFH2zD9_R6mofU9mQ8J7AS7WAaf-8iDdtVS90tIVMIA?e=oT5G4h
I will also introduce the experiment before I begin.

When you submit this form, it will not automatically collect your details like name and email address unless you provide it yourself.

* Required

1. Do you confirm you have read the information and consent in your responses being collected for research purposes only. * ☐

☐ I confirm

Appendix H2 – What is your age?

2. What is your age? * ☐

Number must be between 13 ~ 122

Appendix H3 – What is your gender?

3. What is your gender? * 

☐ Male

☐ Female

☐ Prefer not to say

☐ Other

Appendix H4 – Are you colour blind?

4. Are you colourblind? * 

e.g, Colour Deficiency, Red-Green Colour Blindness, Blue-Yellow Colour Blindness or Complete Colour Blindness

☐ No

☐ Yes

Appendix H5 - Was the colour being used the colour you would have chosen? If not, what would you have picked?

5. Was the colour being used the colour you would have chosen? If not, what would you have picked? * 

Appendix H6 - On a scale of 1-10, how happy did that make you feel?

6. On a scale of 1-10, how happy did that make you feel? * 

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Extremely Unhappy Extremely Happy

Appendix H7 – On a scale of 1-10, how excited did that make you feel?

7. On a scale of 1-10, how excited did that make you feel?

* 

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not excited at all

Extremely excited

Appendix H8 - On a scale of 1-10, how much in control did you feel?

8. On a scale of 1-10, how much in control did you feel?

* 

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Not at all in control

Extremely in control

Appendix H9 - Do you have any open comments?

9. Do you have any open comments?

* 

Enter your answer

Appendix I – Speech script before experiment

AB Experiment Introduction

WELCOME TO THE A/B EXPERIMENT. AS YOU ARE AWARE, THERE ARE TWO GROUPS, A AND B. YOU ARE GROUP **[TELL GROUP]**.

THE QR CODE HERE **[SHOW CODE]** WILL TAKE YOU TO THE SURVEY TO COMPLETE AS THE EXPERIMENT IS GOING ON. FIRST THERE ARE SOME PERSONAL QUESTIONS TO GET A VIEW OF WHO IS IN THE ROOM

THE EXPERIMENT WILL WORK AS FOLLOWS,

THERE WILL BE **3 DIFFERENT ROUNDS WHERE YOU WILL BE SHOWING A SINGLE LIGHTING STATE. THIS WILL LAST FOR 30seconds EACH. 1 MIN GAP BETWEEN EACH ROUND.**

EACH STATE WILL HAVE A STATIC LIGHTING STATE AND THE ONLY THING CHANGING WILL BE THE COLOUR. AS THE ROUND IS GOING ON, COMPLETE THE SURVEY ANSWERING THE QUESTIONS WITH WHATEVER FIRST COMES TO YOUR MIND.

EACH ROUND WILL HAVE A DIFFERENT STIMULUS,

THE FIRST ONE IS SILENCE, THIS IS WHERE I SHOW YOU A COLOUR WITHOUT ANY CONTEXT TO GET YOUR INTERPRETATION AS A CONTROL.

THE SECOND ONE IS MUSIC, THE TRACK PLAYING IS **MOZART'S SYMPHONY NO. 4 IN G MINOR**. THIS IS AS IT IS IN THE PUBLIC DOMAIN, AND MY RESEARCH HAS SHOWN CLASSICAL MUSIC CAN HAVE A GREATER EFFECT ON THE BRAIN.

THE LAST ONE IS A SPEECH, THE SPEECH WILL BE **WINSTON CHURCHILL'S "WE SHALL FIGHT THEM ON THE BEACHES" SPEECH FROM 1940**. THIS IS ALSO IN THE PUBLIC DOMAIN AND ONE OF THE MOST POWERFUL AND FAMOUS SPEECHES KNOWN.

AFTER THE EXPERIMENT IS OVER, THERE WILL BE A CHANCE TO TELL ME ABOUT ANY OPEN COMMENTS OR POINTERS.

YOU CAN OPT OUT AT ANY TIME BY WALKING OUT OF THE ROOM. HAZE WILL BE USED, AND THERE WILL BE NO STROBE, BUT THERE WILL BE BRIGHT LIGHTING.

Appendix J1 – CTB State (Doesn't show well on camera)



Appendix J2 – Blue state



Appendix J3 – Green state



Appendix J4 – CTO state



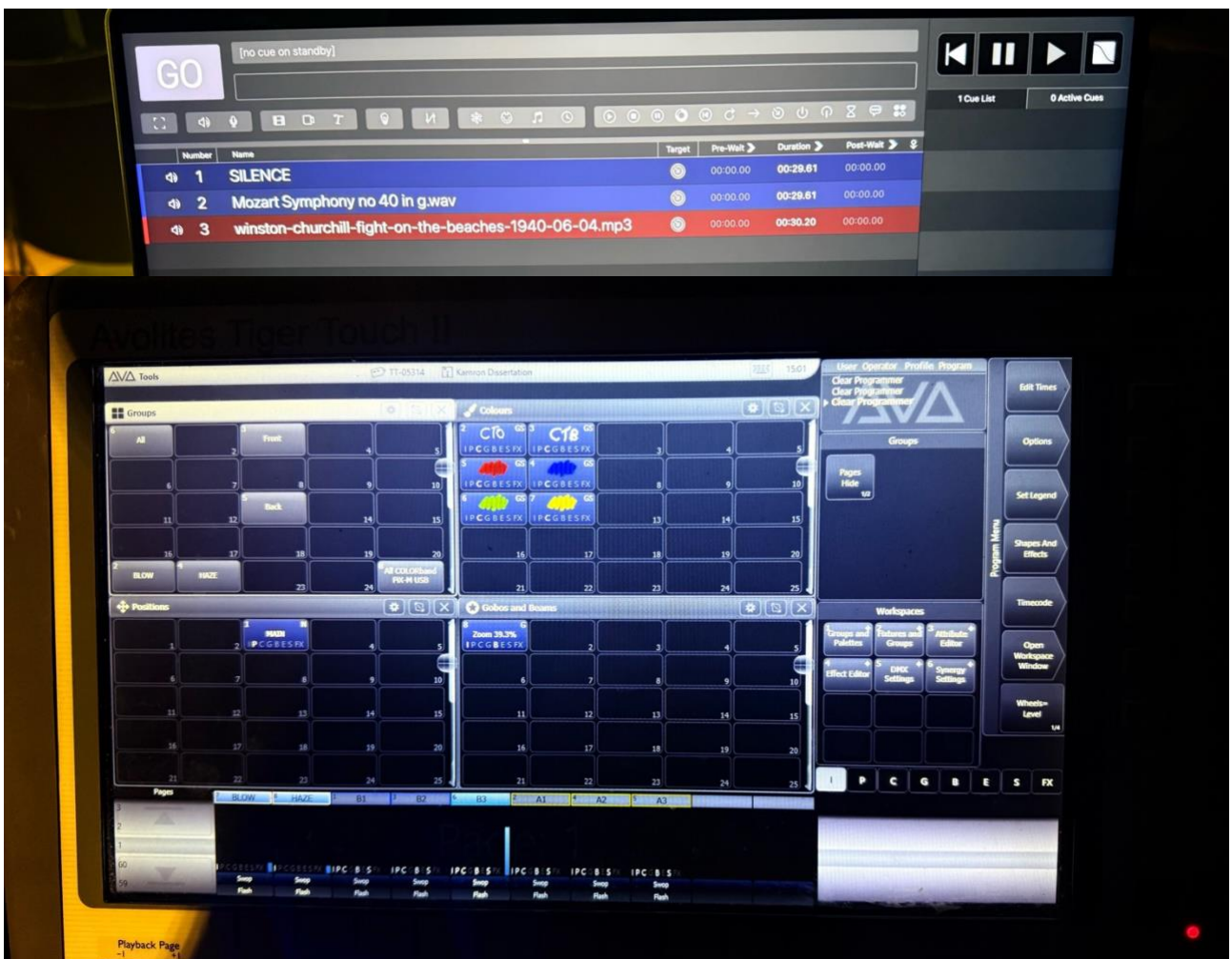
Appendix J5 – Red state



Appendix J6 – Yellow state



Appendix K – Lighting console and sound console setups for A/B experiment



Appendix K, continued:

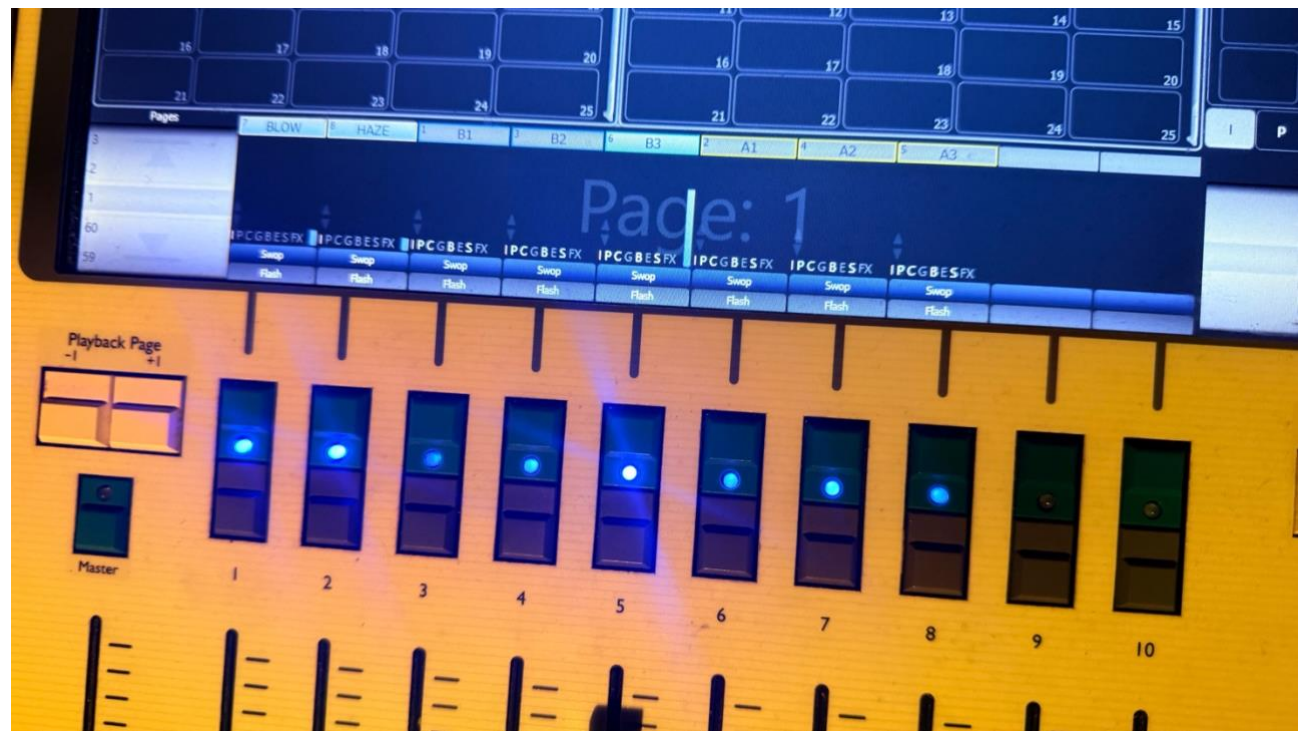






Figure 1 – Experiment timeline Gantt chart:

A/B Colour Experiment													
Task	Description	February				March				April			
		W/B 02/02/26	W/B 09/02/26	W/B 16/02/26	W/B 23/02/26	W/B 02/03/26	W/B 09/03/26	W/B 16/03/26	W/B 23/03/26	W/B 30/03/26	W/B 06/04/26	W/B 13/04/26	W/B 20/02/26
Proposal & Design	Create and come up with the experiment proposal, design and aims.												
Literature Review	To study and evaluate previous studies and to look at the theory behind the experiment												
Lighting Design	To design the lighting setup and prepare a plan for the lighting states.												
Audio Preparation	To gather and collect the music and speech files and prepare a means of playing them.												
Recruitment and Ethics	To recruit participants for the experiment and to look over and evaluate the ethics for the experiment.												
Data Preparation	To create the survey participants will complete during the experiment.												
Presentation preparation	To prepare an introduction speech before the presentation to inform the participants on what is about to happen.												
Data Collection	To run the experiment with the participants and gather the data.												
Final Documentation	To evaluate and conclude the data given from the experiment and document the collection process.												

Figure 2 – Experiment data collection timeline

