Camille Roberts

Dr. Jocelyn Buckner

TH 498: Senior Seminar

9 Dec. 2020

How Color Psychology Informs the Emotionality of Live Entertainment

*Introduction*

 Color psychology is an integral part of our lives—this field can be seen in fast food marketing, clothing brands, personal wardrobe choices, and even what aspects of nature we gravitate toward. These associations with differing shades and hues of colors subconsciously evoke specific emotional reactions—and have done so for all of human history. Whether conscious or subconscious, people surround themselves with and gravitate toward certain colors because of both the emotional response they evoke, and also their own personal connections to them. While every individual has their own preferences and experiences which cause them to process certain colors with different meanings and significances, general color associations are a function of social learning, and are thus a widespread way to access subconscious messaging. By understanding how color psychology impacts subconscious processing, lighting designers can make more informed choices in their designs and implement the message of a production with greater success.

 I have chosen to delve into this aspect of lighting design because while a nuanced understanding of the technical elements of design are crucial—from more tangible, hard skills such as programming and power to the necessity of face light and angles—learning the subconscious messages that certain colors can signal to audience members can help a designer craft their work in a more informed light. Further, in projects where lighting is implemented earlier in the process, color choice can be influential on the quality of the performance itself. By understanding the connections between colors and emotional (and, in some cases, physical) reactions, lighting designers can choose to heighten the tension in a scene, to drown the stage in a specific vibrant color, or to completely desaturate the look. This insight—combined with the emotionality of the actors’ performances, the directorial vision, and the text itself—creates poignant scenes that can stay with audience members long after a show has ended, and has the potential to not only impact the audience, but also the performers themselves.

 In order to craft this deepened understanding, I have implemented research into the specifics of color psychology and color associations—namely, the history of color psychology, an overview of the biology of the human eye, and how varying shades of colors can impact an individual on both a biological and psychological level. I have focused the scope of this work on modern color associations in Western society; however, I have briefly researched the history of color psychology on a global scale, in order to understand how pervasive these associations are. Further, I have crafted two tangible examples of my lighting designs in order to articulate how color psychology not only impacts audience perception, but also the quality of the performers themselves. By implementing the aforementioned research in this thesis, I have gathered the knowledge necessary to make more informed choices in my lighting designs and have a deeper understanding of how the colors around us consciously and subconsciously impact our collective emotional experience.

*Literature Review*

 The link between color association and emotion has stemmed both from societally programmed associations and individual factors. In order to heighten my own understanding of the strong relationship between color choice and psychological impact, I have explored various sources on color psychology and incorporated them into my project. Specifically, I have delved into the historical context of color associations, the science of colors and subsequent impact on human perception, and the individual societal associations of varying shades of colors. I have further implemented this knowledge into a tangible aspect of this project. While this will be discussed further in depth in a later section, I have integrated my newfound knowledge on color psychology in two distinct performance pieces, both set in different lighting looks, to highlight the emotional discrepancies in audience interpretation. The purpose of this example is to prove the thesis of my essay: that color choice is crucial in heightening the emotionality of live entertainment, both for the audience perception and performance quality, and that a more nuanced understanding of color psychology can be indispensable for lighting designers to create the most impactful work they can.

 Understanding the history of color psychology is crucial in revealing the subconscious associations that the collective consciousness imbues on certain colors. Andre J. Elliot and Markus A. Maier’s *Color Psychology: Effects of Perceiving Color on Psychological Functioning in Humans* has been my primary source for cultivating an understanding on the history of color psychology and color associations. Elliot and Maier discussed the origin of this field, which can be attributed to Johann Wolfgang van Goethe, and gave a brief look at the history of color psychology. With this context, they further delved into a brief overview on the impact of color psychology and highlighted that “color can carry meaning and have an important influence on affect, cognition, and behavior” (Elliot & Maier, 108). With this in mind, I have implemented the historical context of color psychology in my project and aimed to reveal how impactful associations in our society have affected humans in the past. Further, I have included knowledge on ancient color associations. In order to do so, I have chosen *Color Psychology and Color Therapy* by Faber Birren as my main source in this avenue. This text firstly explores ancient color associations, in the context of Greeks, Druids, Brahmans, and many other cultures. These subconscious associations have often times carried over into modern day color psychology, and thus understanding past color associations is crucial in this field. While a true analysis of these implications across all nations is out of the scope of my project, an understanding on important color contexts can be incredibly well implemented in the field of lighting design.

 In addition to historical context, I have also researched the biology and science behind the human eye, and how we are truly able to perceive color, in order to more fully understand how we view the world around us. To do so, I have used a multitude of sources, first of all being “Rods and Cones” by CJ Kazilek and Kim Cooper. This text details the science behind the photoreceptors in our eye and explains how each aspect comprises our vision. I have also gleaned information from “The Eye” from the Blue Con Monochromats Families Foundation. This explanation delves into the science behind cones, and how each type of cone impacts our vision and comprises of our full color perception. By garnering an understanding on how cones and rods impact our ability to see, as well as learning the ratio of which cones are more present in our eyes, I have a more well-rounded understanding on how humans process colors. This then prompted me to think on how a lack of certain cones might impact audience perception. And I thus delved more into colorblindness and how this alters an individual’s perception of the world. For this segment, I have used two detailed sources: “How does colorblindness work?” by Claire Maldarelli and “Colorblindness is surprisingly widespread in America” by Greg Hudson. Both texts detail the science behind colorblindness, as well as how pervasive it is in our society, and have thus informed my understanding on how perceiving colors impacts an individual’s emotional response to a piece.

 With historical context and biological mechanisms in mind, I have then delved deeply into sources on color psychology and color associations. To begin with, I have researched the concept of spreading activation, and the role that this plays in color associations. To do so, I have included “Spread of Activation Theory” by F. Crestani as my main source for this avenue. In the realm of specific color associations, I have implemented knowledge garnered from *Color Psychology: An Enormous Guide* by Nick Kolenda. this article is a culmination of 50 academic sources on color theory and highlights the importance of color psychology through more of a marketing lens; while marketing is not the focus of my project, the scientific data that is included in this article carries over to all fields that employ color psychology. Several topics in this article have informed my understanding of color psychology, including the societal associations of colors that have been signed to us since childhood, the impact of light waves on our biological processing, and thus the importance of emotional and semantic meaning in color effectiveness. I will also be employing the research I have garnered from Emmett FitzGerald’s review and summary of *The Secret Lives of Color* in my project. This work highlights the historical and modern contexts for various shades of colors and explains the reason why many people have subconscious associations of emotions with these colors. I have found specific resources for each hue in a multitude of different sources, first of all being “Color Psychology: Does It Affect How You Feel?” by Kendra Cherry. This article details common associations with each hue, and details certain societal programming and biological reasonings for these associations. Further, I have implemented knowledge from “The Psychology of Colors and their Meanings,” which similarly breaks down color associations by hue.

 I have further enhanced this knowledge of color associations by integrating information on the theory behind color mixing in Clifton Taylor’s *Color & Light.* This book not only integrates information on color psychology, but also shows concrete methods of how to achieve specific shades that are aesthetically pleasing to the eye. By refreshing my knowledge on topics such as the Kelvin scale, saturation and color fatigue, and color dominance, I have coherently integrated my newfound knowledge of color psychology into my tangible designs. Further, this book discusses how specific color mixes can appear on costumes and scenic pieces and highlight the importance of considering these aspects when establishing a lighting look.

 With the research I have conducted at hand, I have implemented this knowledge and understanding into two separate projects, which will be discussed in further detail later in the paper. The purpose of this example is to highlight the extent in which color choice alone can inform an audience’s emotional response to a piece, as well as how it can affect the quality of the performance itself. This was framed less as an experiment, as gathering unconfounded data from unbiased audience members is not the purpose, and rather served as a demonstration of the impact of color psychology in live entertainment.

*History of Color Psychology*

 Since the dawn of human existence, colors have pervaded our experience. The ability to quickly and accurately see red had a greater adaptive significance for foragers, and thus those who gathered might have had a greater subconscious bias toward red than those who hunted. Dark blue was usually tied to nighttime, and thus passivity and relaxation, while yellow was linked more to sunlight and arousal (Kolenda). Though these connections might have altered and shifted throughout our history, it is important to understand just how pervasive color associations are.

 Color associations have been formed both through necessity, such as the aforementioned example, and also human prescription. As a manifestation of light, color often held divine meaning in several cultures across the globe. Egyptians included a vast amount of color symbolism in their culture, in which rainbow hues pervaded their artwork and overall society. Greeks believed that color highlighted universal harmony and was often associated with godly myths and legends. Druids in England worshiped the sun and its light, employing it in more mystical ceremonies. Brahmanism believed that yellow was a sacred color, and Buddha similarly was often represented in yellow or gold (Birren). There are multitudinous cultures and religions that entrenched themselves in the meaningfulness of colors, and while these associations often varied from region to region, the overall understanding of color associations was a global phenomenon.

 While the subconscious messages that colors signal have been present for millennia, the field of color psychology itself was not actualized until much later in our collective existence. Historically, color psychology can be traced back to Johann Wolfgang von Goethe, whose book “Theory of Colours” began the field of color psychology in 1810. This work offered “intuition-based speculation on the influence of color perception on emotional experience” (Elliot & Maier, 97). These theories were then expanded upon by Kurt Goldstein, who integrated clinical observations that showcased how color perception elicits a physiological reaction that manifests in one’s emotions, cognitive focus, and motor behavior. Following this, many scientists have contributed their own theories to the field of color psychology, fleshing it out into the comprehensive science that it is today. Advances in the field of color psychology have seen great leaps in the past decade, specifically as biological research has advanced drastically.

 Color associations have been present throughout all of human history and vary drastically based on time-period and culture. For the scope of this thesis, however, I will be focusing on modern color associations in Western society—specifically, the United States. It is nevertheless important to understand just how vastly color associations have permeated human existence, in order to truly comprehend the scope of how color can impact mood. Thus, with this historical context in mind, I will be able to more fully understand modern color associations in our society.

*The Human Eye*

 Before delving into the psychology behind color associations, however, it is important to understand how we perceive color in the first place. The human eye performs incredible feats in order to view the world, largely due to the photoreceptors and nerves in the retina. Rods and cones, the two types of photoreceptors, are what comprise our ability to process what we see and contextualize it, and the nerves subsequently tell the brain what the photoreceptors can see (Kazilek & Cooper). Rods operate at low levels of light, being activated by only few photons to help dictate spatially where things are in our vision. We have 120 million rods, on average, and they are both responsible for our peripheral vision and our ability to see in very low light. They don’t perceive color at all, which is why looking at things in low light often diminishes the color. When we look up at the night sky, for example, we typically only see in grayscale, unless a certain star or planetary object is closer or brighter.

 Cones, on the other hand, operate under brighter light and are the vehicle through which we see color and perceive sharpness and detail. We have 6 to 7 million cones in our eyes, and they are separated into three different types: red, green, and blue. Red cones, also known as L-cones, account for 64% and are sensitive to the longest wavelengths of light. Green cones, or M-cones, account for 32% and are sensitive to medium light wavelengths. Lastly, blue cones, or S-cones, account for 2-7% and are sensitive to the shortest wavelengths (Blue Cone Monochromats). At first glance, one might assume that due to the strict divide between these three cones, we should only be able to see red, green, or blue. So then, how is it possible for us to see millions of other color combinations? The overlapping of cones, and subsequent signals that our brain is able to integrate, allows us to see all the “in-between” colors.



(Blue Cone Monochromats)

 If one or more of the types of cones are absent or damaged, then an individual perceives colors differently than if all of them were fully operational. There are three main types of color blindness—anomalous trichromacy, in which all three cones are present but one is defective, dichromacy, where one type of cone is completely missing, and monochromacy, where two of the three cones are missing. This then prompted the question, do individuals with color-blindness feel emotion evoked by color differently than I do? Evans Ford, a colorblind musician, argues that “[color] is an artifact of perception; it doesn’t exist separately from the person who is experiencing it” (Maldarelli). My interpretation of this insight is that even though those who experience colorblindness perceive colors differently than I do, that doesn’t impact the way that they attach color associations to varying shades. Even though one might see red differently, it is still red, and thus still has the societal associations across the board. This is an important consideration to make, as approximately 8% of men and 0.5% of women experience colorblindness in the United States (Hudson). While this might not impact specific designs choices made, it is definitely an important facet of how color associations in our society impacts everyone on an individual scale, and how one’s perspective, regardless of the collective view, can vary drastically.

*Color Associations—A General Overview*

 Now that we have both historical context and biological research on hand, we can begin delving into the psychology of color associations. Subconscious associations play a huge role in color psychology; research has shown that merely thinking about a specific color induces the same neurological reaction to actually seeing it (Kolenda). Thus, established associations are biologically and societally pervasive. This is not to say that color associations are universal—rather, we attribute specific meanings to colors based on our own experiences with them, and this contributes to our associative network. The associative network theory, in plain terms, is as follows: each new experience we undergo creates new nodes and connections in our brain that strengthen or weaken our subconscious associations with certain things. For example, one might have a strong positive association with orange if they have many happy memories in autumn amidst falling orange leaves, while someone else might have a negative association if they were hit by an orange car. As new experiences crop up, our associative network ebbs and flows, altering itself and establishing connections that match up with our experiences. Everyone’s lives are drastically different, and thus no two associative networks are exactly the same.

 Spreading activation also plays a large role in color associations. In simple terms, spreading activation is the theory that certain search nodes that are linked to the source node. When certain associated stimuli are presented at the same time, individuals are typically able to process faster and with more efficacy (Crestani). This applies to color psychology because of the large role that color associations play in neurological processing, and how certain associations can impact how an individual processes what they are seeing. “Colors are influential because of our conceptual knowledge. Hues are almost meaningless. Color meanings (and their subsequent influence) depend on the emotional and semantic meanings that we associate with a color” (Kolenda). Thus, it is not only the specific ratio of red, green, and blue in a color that stimulates our emotional responses, but the memories we have that are attached to certain colors that impacts our subconscious associations.

 Color itself varies on multiple attributes—hue, value, and chroma—and each of these may influence an individual’s psychological functioning. Hue is the wavelength on the visible spectrum, and what people most commonly think of when referring to a color; the general name, such as green, yellow, or purple. Value is the lightness and brightness of a color and denotes the white-to-black property of the hue. Chroma is similar to saturation and determines the vibrancy of a color—low chroma are paler, and high chroma are more vivid (Elliot & Maier, 98). With this in mind, a common misconception when discussing color psychology is to merely look at how hues impact one’s emotional processing, when in actuality, it relies on all three contributors to see just how a color impacts an individual. Thus, while many sources I’ve found explicitly discuss the impacts of hue, I will also be looking at how the value and chroma of each hue impacts color associations.

*Color Associations—In Depth*

 Perhaps the most detailed hue in color psychology is red. Due to its long wavelength, it is one of the most visible colors on the color spectrum and is thus incredibly effective at immediately catching the eye. High chroma reds are used in stop signs, fire trucks, and sirens for this very reason. Further, as a stimulating color, wearing or being exposed to red has been shown to elevate heart rate, respiration rate, and blood pressure to varying degrees. This biological response shows the efficacy with which red can be used to stimulate emotions. There are typically two very strong emotional connotations that people hold with red: danger/aggression and passion/desire (Cherry). In terms of danger and aggression, this response is not only due to the stimulating nature of the wavelengths, but also the associations of blood, fire, and other threateningly connotated occurrences that have a high chroma, high value hue of red. Further, testosterone surges in aggressive encounters produce a visible reddening of the face, which causes a subconscious association between red and dominance. Due to this, wearing red in competitive sports typically engages a dominance signal that might lead to enhanced performance (Elliot & Maier, 99). Desire and passion, on the other hand, are also most likely due to the stimulating wavelengths, but for different reasons. In several studies on the topic, women have found men to be more attractive when they are wearing red (Kolenda). Note that while this heteronormative example applies for all genders, in my opinion, I will be maintaining consistency with the study aforementioned for examples’ sake. when women are looking for a potential mate—say, for example, on a dating app—the nodes in their neurological associative network that are associated with passion and romance become activated. Once the romance node has been activated, “women temporarily perceive stimuli to be more congruent with passion and romance,” and as red has been societally programmed to represent passion and desire for many people, this node too becomes activated in relation (Kolenda). Thus, the brain is able to more fluently process men wearing red clothing because of the activated nodes, and a woman is able to infer (sometimes falsely) that he is more attractive. This can also be applied to the fact that often times, men are more attracted to women who wear red lipstick.

 Like all warm colors on the spectrum, orange is very vibrant and energetic—it has a similar wavelength to red, so one experiences a similar sense of stimulation. However, since orange is not as heavily associated with feelings of desire and romance, it does not stimulate spreading activation in the same way that red does. As a combination of yellow and red, high value and chroma orange is more heavily associated with high energy, grabbing attention, happiness, and enthusiasm (Cherry). This color is heavily dependent on an individual’s preferences, as it is often regarded as more controversial than others. “Orange is very blatant and vulgar. It makes you immediately start having feelings” (Cherry). Thus, it is heavily based in how an individual has perceived orange in the past—if you commonly see orange in sunsets or autumn leaves, you are more likely to have a positive association with it. Further, low chroma oranges, often found in objects like orange sherbet or sunrises, often elicit feelings of comfort and warmth, while low value oranges, which are more brownish than orange, give grounding and calming sensations.

Yellow is commonly viewed as a cheerful color, often eliciting feelings of warmth, brightness, energy, and is effective at drawing attention. Yellow is the most visible color due to its bright, almost reflective nature, and can often be seen in traffic signs to quickly catch the attention of drivers. However, because of the sheer amount of light it reflects (in high chroma yellow, specifically), it is the most fatiguing color to look at, and is thus not a hue that one can typically take in for long periods of time. “Fully saturated yellow is only good for brief exposure because its stimulating effect is so powerful that it can build up emotional energy quite quickly” (Cherry). While it is a very stimulating and reflective color, this can lead to feelings of frustration and irritation at how aggressively bold it is. The warmth and brightness of yellow can quickly turn abrasive and fatiguing. When used effectively, however, it can evoke cheerful reactions, as yellow is commonly associated with sunlight, flowers, and other typically positive elements in nature. Further, low chroma yellows are usually perceived as soft and light, whereas low value yellows can sometimes elicit a feeling of sickness and disgust, as it is commonly linked to the physical appearance of illnesses such as jaundice or malaria.

Moving into the cool colors, green is most commonly associated with a calming, grounding energy. Its heavy association with nature and plants leads to a strong connection with the soothing elements of nature. This hue is rather variant in its effect depending on chroma and value: low value greens are very soothing and grounding, whereas higher value greens, like lime green, are more exciting and visually stimulating. Additionally, low chroma greens—pastel green, for example—often evoke feelings of compassion and understanding. However, high value and chroma shades of green are also able to elicit a more negative emotional response—envy and jealousy. This is mostly due to the societal association of going “green with envy,” and thus this shade can subconsciously evoke this feeling. Further, green lighting can have a unique effect on how an individual is perceived—if a lighting designer employs the right ratio of high value and chroma green in combination with other, more subdued colors, it can make the performer appear nauseous and queasy. This triggers the association that most people have of going green when they feel sick and can thus signal this message to audience members.

At its forefront, blue is a very calming and serene color. Lapping lakes, calm skies, and a picturesque ocean landscape all tend to elicit feelings of relaxation and tranquility. It is often considered a color of stability and is thus typically used in marketing by companies who want to project an image of security. On the other hand, blue is also commonly associated with sadness and grief—feeling blue, blue-faced, and other common expressions clearly outline this connection. The serene nature of blue, as well as its cooler appearance, can often lead to an association with emotional distance and sadness. Lighter values of blue can appear especially aloof, and in certain contexts can be viewed as almost haunting (“The Psychology of Colors and their Meanings”). In the more scientific realm, blue has been seen to lower one’s heart rate and is typically used to decorate offices, as it stimulates productivity. It is also believed that blue light has an endocrine-based strengthening effect on muscle functioning and is thus a very restorative color (Elliot & Maier, 97). Lastly, blue is considered a very unappetizing color, due to how few blue foods there are in nature, and is thus not often used in fast food marketing.

Purple both calms and stimulates the body, given its proximity to both blue and red. Due to this, it is often associated with spirituality, as it allows one to be in a state of insightful peace for meditation and reflection. Further, as purple is one of the least commonly occurring colors in nature—specifically in large quantities, like a vast blue sky or a large swath of green foliage—it is usually associated with fantasy and is viewed as rare and intriguing (Cherry). Purple is often associated with royalty and regality—in ancient times, dyeing fabrics was a sign of luxury and expense. As purple is not commonly occurring in nature, the cost of purple dye was far greater than most other colors; thus, purple clothes were a strong indicator of prestige and wealth (Cherry). Scientifically, violet has one of the strongest wavelengths, a few wavelengths up from x-rays and gamma rays. As purple leans more to red wavelengths while indigo leans more to blue, purple is slightly more visible and appears more natural. Due to this, indigo light often gives a stronger sense of fantasy and intrigue than pure purple, as it is closer to the edge of the visible spectrum.

Magenta is a unique color because it technically doesn’t exist on the visible color spectrum. Rather, our brains create it when the red and blue detection cones are stimulated at similar levels of intensity (Taylor, 34). Due to this, magenta gives similar signals of passion and romance that red does, while also retaining the introspection and quiet energy of purple. It is often associated with universal love and compassion and is very gentle, promoting optimism and cheerfulness. Large quantities of magenta for long periods of time can be very overwhelming, however, and can usually be balanced out by shades of green. The high contrast between these two hues is not only seen in nature—the fuchsia flower with vibrant green leaves—but also balances out the calming effect of green with the more stimulating effect of magenta.

*Color Associations—Why Are They Important?*

While color associations are highly individual and depend on each person’s own experience with various colors, large similarities can be seen in the general perception of color. As stated in the previous section, warmer colors tend to be more stimulating and signal more aggressive, loud emotions, while cooler colors are more relaxing and soothing. Each hue, and their subsequent values and chroma, have unique associations that pervade our society. This, coupled with the biological response that certain hues stimulate, leads to strong color associations that impact how one perceives the world around them.

Understanding color associations in a more tangible framework is incredibly helpful in the realm of lighting design. Since gaining this nuanced knowledge, I have looked back at my past designs and sought to find where my design choices have aligned with the principles of color psychology. Surprisingly (or not so surprisingly) my instincts as a designer are fairly congruent with what research has shown in this field. But if my designs are already aligned, then why is it important to learn about color psychology in the first place? With a more complex understanding on how colors impact both audience’s perception and performance quality, I will have the ability to be more precise and intentional in my work. I can employ subconscious signaling of color choices in order to make a message more effectively received by the audience.

 The concept of color juxtaposition, which was touched on lightly when discussing magenta, can help us garner an understanding on individual color associations and thus develop our own understanding of how certain colors can enhance one another in a performative setting. For example, a color combination that I often gravitate to is orange and indigo. Now, with my enhanced knowledge of color psychology, I can comprehend the reasonings behind this intuition. Orange, an attention grabbing, expressive color, can be framed by indigo to create a warm, and yet fantastical, whimsical picture. By crafting informed color combinations, lighting designers can have increased efficacy in the purpose of their designs, and I have not only attempted to do so with my own designs, but have also seen this articulated beautifully firsthand.

Nearly a year ago, I had the privilege of seeing *Ocean at the End of the Lane* at the National in London. One scene from this show in particular has stayed with me ever since, and has imprinted how a truly effective and beautiful lighting design can move audience members deeply. The show in and of itself was fantastical with deep messages interweaved into the beauty of its complex storyline. In the specific scene I am referencing, a boy stepped into a small bucket, and with the enhancements of technology, it expanded into a vast ocean. The sharp transition from unsaturated, warm colors to bright, vivid teals and blues drew attention to the small, glowing yellow puppets that served to represent the main characters. Rich silk fabrics were strewn through the air so beautifully that it made it seem that the audience was in the ocean itself. I vividly recall my breath catching in my chest as I viewed this spectacular scene, even though I did not know how strongly the color choice impacted my reception of the piece. Looking back now, I can comprehend what subconscious messages were being signaled to me. The high chroma teals and blues portrayed an air of serenity and peace, shrouding the space in an induced calm. The bright, yellow puppets not only employed the eye-catching nature of yellow, but also the cheerful, innocent associations that many people have with the color. Thus, the lighting designer employed their own design instincts to tap into the psychological impacts that color choice has on audience perception.

*A Tangible Example*

 In order to apply this newfound knowledge and confirm my own understanding on how this insight can positively impact my design choices, I have chosen to create to tangible examples to see in real time how a simple a tweak as color choice can drastically impact not only the audience’s perception of a piece, but the motivations behind the performance itself. I have chosen both a dance piece and a monologue and have recorded both of the pieces set in drastically different lighting looks. As my main areas of focus in live entertainment are dance and theatre, I wanted to juxtapose both of these mediums to analyze what extent the performance quality changed dependent on the lighting atmosphere. In a typical design process, the integration of lighting would take place at the tail end, once blocking and choreography has been set in stone. For the sake of this example, however, I have introduced the lighting at a much earlier stage and allowed the performers the creative freedom to take many motivational choices on their own, dependent upon how the lighting made them feel. I will speak more on the reasonings behind this choice after I analyze both of the performance mediums, and will detail the conclusions that I draw from each performance as well.

Beginning with the monologue, I have chosen a piece from *Scenes with Girls* by Miriam Battye, performed by Madison Macloud. I gave her very limited direction beforehand, instead asking her to infer her emotionality from the text and her understanding of the play as a whole, and once she was in the space, I then directed her to infer emotionality from the lighting atmosphere. The first recording of this monologue was set with a soft pink key light and a deep red fill light. The key light was a low chroma in order to highlight the facial expressions, and I chose the color pink to represent a soft, innocent type of love and affection. The deep red, on the other hand, served both as a stimulating color as well as a driver for passion and aggression. The second recording, on the other hand, was set with a light lavender key light and a deep blue fill light. The lavender key light served a similar purpose to the pink light of the first recording but was set in a cooler color that has less of a stimulating quality. Further, the blue was a high chroma shade, which gave a noticeable heaviness and darkness to the atmosphere.

In the first performance, Madison performed in a largely external manner, with noticeable physicality and large jumps in vocal inflections. She is clearly lashing out at the character she is speaking to and directing the pain that is underscoring the speech in an aggressive, angry manner. The second performance, however, was performed in a more internal manner. There were less obvious physical and vocal shifts, and the monologue itself was drenched in empathy and an internal struggle. This performance feels more impactful to me as, given that the audience is in the position of who her character is speaking to, I feel more understood and seen. The intertwining effects of color choice on Madison’s performance, and thus on the audience’s interpretation of the piece, is striking in this example.

The dance piece was crafted in a similar manner to the monologue. I have chosen the song “Seasons” by Grayson Chance, choregraphed and performed by Brandon Maxwell. Similar to the theatrical piece, I gave him limited direction on the style of the performance and guided him to choregraph what the music signed to him. I asked him to set specific moments that would remain consistent across both recordings, but allowed pockets of improvisation to allow for more creative freedom in both pieces. The first performance was set with gold key light and a light pink fill light. The gold, as a combination of yellow and orange, highlighted happiness and cheerfulness. The light pink, on the other hand, served to influence a soft, innocent feeling of love and compassion. The second recording, however, was set with a blue key light and a deep magenta fill light. The blue key light provided a heaviness that contrasted with the gold from the previous recording. The magenta fill served a similar purpose to the light pink, but the high chroma of this shade provided a more intense and heavy atmosphere.

In the first performance, Brandon’s movement was lighter and bouncier, and the energy of the piece radiated joy and wonder. The lighting atmosphere coupled with his lighter movement style made the piece feel light and airy, emphasizing the cheerfulness that I sought to bring about. The second performance, however, was more grounded and heavier, and I could feel the tension and internal thought processes as he was performing. Similar to the second performance of the monologue, this performance felt more internal and emotionally steeped, and the deep saturation of the shades I chose emphasized the grounded nature of Brandon’s movement style.

While integrating the lighting at an earlier stage is not the typical methodology for professional performances, I have decided to use this approach in order to see the efficacy in which color choice can have on performance motivation. Not only did the atmospheric change of the lighting alter how I, and those I have shown these pieces to, interpreted the messages behind the performances, but it also altered the stylistic choices that both performers made in the moment. Through this example, I have read the effects of color choice on the stylistic and emotional choices that the performers made in each iteration of the piece, and thus have also been able to see the tangible impacts that both lighting and performance tweaks have on the audience’s perceptions.

*Conclusion*

 Color associations permeate human existence—even for those who do not know the psychological reasonings behind these associations, almost anyone can clearly understand that certain colors have the capacity to evoke specific emotions. And while certain preferences are established by individual experience, social learning has established certain connections that we implicitly feel across the nation. Understanding how pervasive this has been throughout our history allows us to truly comprehend the gravity of color psychology in our own modern context.

 I have not only employed research into the historical and scientific contexts that explain how we perceive color and how that impacts emotional responses, but I have also delved into the psychology of each hue in order to craft a detailed, nuanced understanding of how color impacts an individual’s perception. I have learned the stimulating nature of red and how its connection to desire and aggression trigger strong emotional responses, whereas orange is more enthusiastic and energetic, drawing more from individual perceptions than societal programming. Yellow, the last of the warm hues, is dynamic in its efficacy depending on value and chroma and can elicit emotions ranging from joy and cheer to disgust and sickliness. Green is soothing and calm, sometimes eliciting envy while other times bringing a feeling of peace, whereas blue is both serene and also distant and cold. At the end of the visible spectrum, purple is associated with spirituality and fantasy, while also giving the appearance of wealth and stature. And lastly magenta, not on the visible spectrum at all, straddles the line between stimulating red and soothing purple. This pared down summary merely scratches the surface of the psychological impacts that colors have on an individual’s perception, and I believe that knowledge of this is crucial in order to create effective lighting design.

 The integration of color psychology in lighting design is crucial for creating effective and impactful designs. By honing an understanding on the associations that people have with various hues, designers can implement this knowledge into their work. I have contextualized my own understanding and intuition on color choice with this newfound knowledge, and in order to illustrated, I crafted two example pieces with the intention of highlighting the impact that color choice has not only on audience perception, but on performance style itself. While this methodology of integrating lighting designs early in the process is not typical, by highlighting the efficacy with which color can inform emotionality, I have illustrated the importance that color psychology has on performance. In the future, I hope to be able to work on projects with this type of experimental approach, as I believe that integrating color choice early on can have a strong positive impact on the performance quality as a whole.

By honing our knowledge of color psychology, lighting designers are able to create more emotionally impactful pieces, and craft poignant scenes that stay with audience members long after the show has ended. Just like my experience with *Ocean at the End of the Lane,* I hope to create art that is just as moving, just as impactful, and can truly heighten the emotionality of a text in its real-world actualization. Color choice in design is an intuitive, guttural process in which designers employ choices that they innately believe evoke the emotions they seek to emulate. With the framework of color psychology in mind, however, designers can be more intentional in their process, and use these guidelines to enhance their own intuition, thus crafting work that truly emulates the emotionality that needs to be articulated to the audience.

Works Cited

Birren, Faber. *Color Psychology and Color Therapy: A Factual Study of the Influence of Color on Human Life.* Pickle Partners Publishing, 2016.

Cherry, Kendra. “Color Psychology: Does It Affect How You Feel?” *Very Well Mind.* <https://www.verywellmind.com/color-psychology-2795824>

Crestani F. “Spread of Activation Theory.” *Encyclopedia of the Sciences of Learning.* Springer, Boston, MA. Doi: 10.1007/978-1-4419-1428-6\_76

Elliot, Andrew and Maier, Markus. *Color Psychology: Effects of Perceiving Color on Psychological Functioning in Humans.* <https://www.annualreviews.org/doi/full/10.1146/annurev-psych-010213-115035>

FitzGerald, Emmett. *The Secret Lives of Color.* 05 Feb. 2019. <https://99percentinvisible.org/episode/the-secret-lives-of-color/>

Hudson, Greg. “Colorblindness is surprisingly widespread in America.” *Changing America.* https://thehill.com/changing-america/respect/466976-colorblindness-is-surprisingly-widespread-in-america

Kazilek, CJ, and Cooper, Kim. “Rods and Cones.” *ASU – Ask a Biologist.* 06 Jan 2010*,* https://askabiologist.asu.edu/rods-and-cones

Kolenda, Nick. *Color Psychology: An Enormous Guide.* https://www.nickkolenda.com/color-psychology/

Maldarelli, Claire. “How does colorblindness work?” *Science Line.* 28 Jul. 2014, https://scienceline.org/2014/07/how-does-colorblindness-work/

Taylor, Clifton. *Color & Light: Navigating Color Mixing in the Midst of an LED Revolution, A Handbook for Lighting Designers.* Quite Specific Media Group, 2011.

“The Eye.” *Blue Cone Monochromats Families Foundation.* <http://www.blueconemonochromacy.org/how-the-eye-functions/>

“The Psychology of Colors and their Meanings.” *Color Psychology.* https://www.colorpsychology.org/