

Ergonomic Colors and Glare to Reduce Fatigue and Increase Workforce Productivity

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ABSTRACT

Color and glare will cause fatigue, especially eye muscle fatigue. In addition, color can affect physical fatigue through visual fatigue and high or low contrast, as well as emotional fatigue through color psychology. This writing is designed descriptively, which is in the form of exposition. In this writing, data is taken from various opinions of experts or research results, which is commonly referred to as a literature study. The data from these opinions are then analyzed through comparison and subsequently presented. The conclusion is that ergonomic colors are those that can enhance productivity because the surrounding color, according to one's preference, improves mood, concentration, and perception. Then, ergonomic glare is glare that can help reduce eye strain. Furthermore, the eye's view of color and glare makes it less tiring, and labor productivity increases

INTRODUCTION

Colors and glare can cause fatigue, especially muscle strain in the eyes. Furthermore, colors can affect physical fatigue through visual fatigue and high or low contrast, as well as emotional fatigue through color psychology. Therefore, this writing will discuss colors and ergonomic glare to help reduce fatigue.

As Prambudi et al. (2020) stated, "the detection of fatigue levels based on color changes can be performed." In line with this, Anggita Budi Pratiwi et al. (2023) stated that "the color of the house walls can have a significant impact on mood and feelings. Some paint colors can make one feel energized, while others can make one feel fatigued." Furthermore, according to MediaStudi Trust (2025), "constantly staring at strong colors will confuse the light-sensitive cells in the eyes. These cells do not immediately recover when we shift our gaze."

Then, the eye fatigue is due to glare. As Ning Matul Qoiriyah (2012) stated, "eye fatigue caused by glare during the day and at night." According to Sari Eka Wahyuni et al. (2014), respondents exposed to high-intensity glare of light "experienced severe eye fatigue at 62%, moderate eye fatigue at 25%, and mild eye fatigue at 12.5%." Furthermore, Anto Maryadi (2025) said that "every increase in glare light intensity is followed by an increase in eye fatigue."

LITERATURE REVIEW

The impact of color on discomfort and eye fatigue. As stated by Rani Chantika et al. (2025), "color and typography greatly influence comfort when using digital interfaces. Dark background colors and sans-serif fonts with proportional sizes have proven to be choices that provide reading comfort and reduce eye strain." Furthermore, color affects daily life, particularly influencing emotions, shaping perceptions, and guiding behavior. As noted by Wiwik Handayani (2025), "the understanding of color psychology is not only an aesthetic domain but plays an important and complex role in daily life, especially in influencing emotions, shaping perceptions, and guiding behavior. Color not only has a visual impact but also a strong emotional and symbolic effect."

Then, the glare from the light causes several problems. As Siriusxie (2024) states, "glare causes visual discomfort and impaired vision. This includes an inability to see well and becoming fatigued." Also, Nanda L Prasetya (2021) states that "glare vision symptoms involve difficulty seeing light. The eyes become very sensitive to light, making it difficult to see overly bright light or even causing pain."

Therefore, it is necessary to address the issues of color and glare to prevent negative impacts. This writing emphasizes the need for ergonomic colors and glare to reduce fatigue.

METHODOLOGY

This writing is designed descriptively, which means it is a form of exposition. In this writing, data is taken from various experts' opinions or research results, commonly referred to as literature studies. The data from various opinions is then analyzed through comparison and subsequently presented. Finally, a deductive conclusion is drawn.

RESULTS AND DISCUSSION

Glare and Ergonomic Colors

In ergonomics, color is used to influence mood, concentration, and spatial perception, while glare refers to excessive light that is distracting, thus it should be avoided or controlled to prevent eye strain and maintain visual quality, especially in workplace lighting or on monitor screens. According to CCOHS (2025), the ability to see objects in the workplace does not only depend on lighting but also on "the time to focus on the object, for example, fast-moving objects are certainly difficult to see, the size of the object, the brightness of the object meaning the light of the object, and the contrast between the object and its background".

The colors in the interior can support and create the desired atmosphere. This is as per the research by Azizah TB Alkathiri (2019) which states that "color affects employee productivity." Furthermore, according to Dwi Retno Sri Ambarwati et al. (2022), it is stated that "monotonous corridor colors are less attractive."

Then in the interior, there are warm and cool colors. This is as stated by Pile (1997) that "based on the color wheel, warm tones include orange, yellow, red, up to purples that are not suitable for narrow spaces. Conversely, cool colors that are identical to the ocean, sky, and even ice can create a distancing effect and make a space feel larger and cooler. These colors provide a sense of calm and peace." Moreover, Meliana et al. (2023) prove that "the types of cool and warm colors can influence the reactions of occupants in a room in relation to concentration and work productivity."

Furthermore, regarding the contrast on the object, as Desita Nur Rachmaniar (2022) states that "a dark background on the object (thread) when inserting it into a needle takes longer than a light (white) object. Therefore, it can be said that color has a significant impact on productivity, especially in threading a needle."

About glare is a very bright light that makes squinting the eyes or even affects the ability to see clearly. According to Hujan Cai (2024), "there are two main forms of glare: discomfort glare, which only causes eye pain, and disabling glare, which completely obstructs vision. To prevent glare, consider using the Unified Glare Rating." Also according to Hujan Cai (2024), "the Unified Glare Rating (UGR) is a numerical scale that evaluates indoor glare, ranging from 10 (almost unnoticeable) to 30 (too bright). A UGR of 19 or less can help reduce eye strain and improve productivity."

According to RG Hopkinson (1972), "glare can be caused by direct viewing of a bright sky from inside a building. This glare can interfere with vision and even pose a direct hazard." Furthermore, according to Lusi Susanti et al. (2015), "This dazzling light is disruptive. This light increases fatigue and causes headaches. This light is the scattering of light within the lens of the eye."

Based on some of the opinions above, it can be concluded that ergonomic color is a color that can enhance productivity because the surrounding color creates a desired atmosphere, good mood, concentration, and perception. Furthermore, ergonomic glare is glare that can help reduce eye strain. Moreover, the visual perception of color and glare makes it less fatiguing, leading to increased workforce productivity.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Based on the analysis and discussion above, it can be concluded that ergonomic colors are colors that can enhance productivity because the surrounding colors are in accordance with what is desired to create a good mood, concentration, and perception. Then, ergonomic glare is glare that can help reduce eye strain. Furthermore, the view of color and glare makes it less tiring, and workforce productivity increases.

Recommedantion

Industry players should use ergonomic colors when painting their buildings, namely warm colors for narrow spaces and cool colors for wide spaces, as this improves the mood, concentration, and perception of the workforce. Additionally, if there is glare, it should be adjusted to ergonomic glare, which can help reduce eye strain for the workers.

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