

THE BLUE-BLACK OR WHITE-GOLD DRESS ILLUSION

Ananya Mehra

Vasant Valley School, New Delhi, India

DOI: 10.46609/IJSSER.2021.v06i11.013 URL: <https://doi.org/10.46609/IJSSER.2021.v06i11.013>

Received: 2 Nov. 2021 / Accepted: 14 Nov. 2021 / Published: 5 Dec. 2021

ABSTRACT

This study investigates systematic individual differences in the way observers perceive different kinds of surface properties and their relationship to the dress, which shows striking individual differences in colour perception. Participants were between the age of 14-18 of all genders. For this research, participants were told to answer a question which asked which colours they saw on a particular dress. A survey was done and their answers were recorded. This study talks about the various characteristics of your eye and vision based on what you perceive. The result reveals that despite the colour of the dress being blue-black, majority of the participants saw otherwise.

Introduction

This dress is a photograph that became a viral internet sensation in the beginning of 2015. It started numerous debates and discussion when viewers disagreed over whether the dress was actually coloured black and royal blue, or white and gold. Illusions are perceptual experiences in which information coming from the external stimuli leads to an incorrect perception of the object or event. Perception is how we interpret and understand different sensations. This phenomenon also talks about the difference in colour perception which means how we perceive colours in different intensities of light.

Methods

1. What?

The dress illusion up started a global debate or whether the colour of the dress is blue and black or white and gold. Later it was confirmed that the dress was blue and black but most of the participants of my and other researcher's surveys perceived another colour combination. Some even saw the dress as completely different combinations.

2. Why it interested me?

When this first became a huge internet sensation I used to have debates with everyone on how the dress is actually white and gold and not blue and black. It has always interested me because I wonder how can people see a specific set of colours when it is clearly and very obviously not. Later it was confirmed that the dress is actually blue and black but to this today I still perceive it as white and gold. no matter how much I try to see the other colours I cant. Seeing so many people having different perceptions of one dress really interested me and I wanted to know more about the science behind it.

3. How ?

Sample

The participants for this study are teenagers from the age of 14-18 years of all genders. there are 5 male and 5 female and 2 non-binary people. This resulted in a sample size of 12 persons over the course of the study.

Review Of Literature

It is believed that those who perceive the dress as white and gold have higher activation in response to the image brain regions that are involved in higher cognition. [LaraSchlaffke, AnneGolisch,LaurenM.Haag,MelanieLenz,StefanieHeba,SilkeLissek,Tobias Schmidt-Wilcke,Ulf T.Eysel,MartinTegenthoff].

Colour is a human perception, and sometimes the answer of the human visual system is based on assumptions of unknown origin.[Manuel Melgosa Luis Gomez Robledo Maria Isabel Suero Mark D Fairchild]

The colours we see are usually influenced by manipulating and changing illumination.[Laila Hugrass; Jana Slavikova; Melissa Horvat; Alaa Al Musawi; David Crewther]

In that particular picture distribution of colours within the dress matches the distribution of natural daylight. This makes it more difficult to disambiguate illumination changes from those in reflectance.[Karl R.Gegenfurtner,MarinaBloj,MatteoToscani]

Different effect of colour constancy on illuminant estimation is a determining factor to yield individual differences in colour naming of the "dress". [Tomohisa Matsumoto; Takuma Morimoto; Keiji Uchikawa]

The lack of ambiguity in background information leads observers to different conclusions about the illuminant and the light field [Annette Werner; Alisa Schmidt]

White gold and switch population had significantly lower pupil size than blue black camp. [Kavita Vemuri, Kulvinder Bisla, SaiKrishna Mulpuru, Srinivasa Varadarajan]

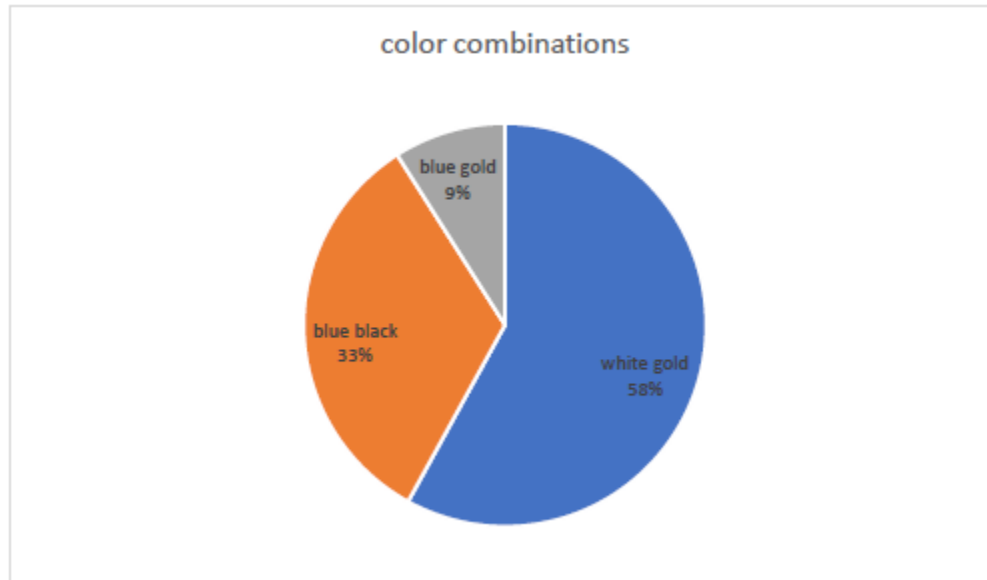
Procedure

For those who were selected the purpose of the study was explained. Informed consent about the experiment was obtained from each observer. They were sent a picture of the dress via Whatsapp and were asked if they saw blue and black or white and gold. They were thanked for their response. The data was then collected and recorded.

Results

Result

Name	Color combination
Anushka	Blue black
Zeina	White gold
Arjun	White gold
Kamya	White gold
Aryaman	Blue black
Vallabhi	White gold
Sanvi	Blue black
Sanah	White gold
Karina	White gold
Ruveer	Blue black
Kartik	Blue gold
Suyush	White gold



Interpretation And Discussion

There were 12 participants in the final sample for this study. While 7 thought the dress was white and gold, 4 perceived it as blue and black. The remaining one person didn't perceive the dress as blue and black nor white and gold. She thought it was a combination of light blue and gold.

If the dress looks blue and black it is said that:

It is a rare opinion as according to this survey white and gold was in the majority. Even a BuzzFeed survey was conducted of nearly 3 million people, and only 30 percent see blue and black. The other 70 percent see white and gold.

Your retina is interpreting the photo as overexposed. "There is too much light, so the colours in the dress appear darker to you after the retina has compensated," says Reena Garg, a doctor at the New York Eye and Ear Infirmary of Mount Sinai.

You could have active cones in your eyes. Cones are colour sensitive and help us see in the day. The dress as being washed out by bright light so your cones are in full effect and working efficiently.

Your brain knows to compensate for lighting tricks.

There's a phenomenon called "priming" that can make your brain immune to the dress's ways. "It could also be that you've seen dresses with the same texture or shape before, which could also affect your perception," John Borghi, a cognitive neuroscientist at Rockefeller University.

If the dress looks white and gold: You're in the majority.

The colours in the dress appear lighter because our retina is interpreting the photo as underexposed which means that there is very little light.

You could have active rods in your eyes. Rods help us see in the dark, and are sensitive to black and white shades. Hence, you see white and gold as the dress is set against a dim background.

You may be better at perceiving colour.. By being able to see variation in this image, you may be able to see beyond what's obvious.

If You See Combinations Other Than Blue/Black Or White/Gold.

You're still a mystery. According to a Yahoo Tech Survey, only 6 percent of us see something other than blue-black or white-gold.

Conclusion

From the above information it is safe to conclude that the majority (58%) perceived the dress as white and gold. 33% perceived it as blue and black. 9% saw a combination other than blue and black or white and gold. The dress was confirmed to be blue and black yet most of the people didn't see it as that and information was misinterpreted while perceiving the object.

References

https://en.wikipedia.org/wiki/The_dress

<https://www.yahoo.com/lifestyle/what-the-dress-color-you-see-says-about-you-112243093272.html>

<https://www.sciencedirect.com/science/article/abs/pii/S0010945215003226>

<https://onlinelibrary.wiley.com/doi/abs/10.1002/col.21966>

<https://jov.arvojournals.org/article.aspx?articleid=2627513>

<https://www.sciencedirect.com/science/article/pii/S0960982215004947>

<https://jov.arvojournals.org/article.aspx?articleid=2550205>

<https://jov.arvojournals.org/article.aspx?articleid=2550045>

<https://arxiv.org/abs/1507.08747>