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## **THE EFFECT OF LIGHTING ON THE PERCEPTION OF MAKEUP IN PHOTOGRAPHY AND VIDEO: APPLICATION OF THE EFM (EMOTIONAL FRAMED METHOD)**

**Summary.** *The article examines the influence of different types of lighting on the perception of makeup in photography and video, with an emphasis on changing the color rendering, skin texture, and visual volume of the face. The study also incorporates a photographic approach based on professional visual content production, where lighting is a key factor shaping perception. The features of natural and artificial light, including warm and cold sources, directional and diffused light, as well as the effect of lighting intensity on makeup detail, are analyzed. The research applies the EFM (Emotional Framed Method), developed by Iuliia Tarasenko, which is based on controlling visual perception through lighting, framing, and emotional impact in the photographic process. It is shown that the choice of lighting directly affects the perception of shades of cosmetics, the degree of contouring, and the overall impression of the image. Special attention is paid to the differences between the perception of makeup in a static image and in the dynamics of a video, where lighting can change and*

*create additional visual effects. The paper also discusses practical recommendations for adapting makeup to different shooting conditions to achieve the most natural and aesthetic result.*

**Key words:** *lighting, makeup, photography, videography, color rendering, contouring, skin texture, chiaroscuro, artificial light, natural light, visual perception, beauty industry.*

**Relevance of the study.** In the modern world, with the development of digital technologies and the spread of visual content on social networks, media, and the beauty industry, the image quality of appearance, including makeup, has become especially important. This research is based on the practical experience of photography, where the stability of the visual result directly depends on lighting control. It is important to note that the perception of makeup in photos and videos largely depends not only on the technique of its application, but also on the characteristics of lighting, which can distort color, change skin texture, and enhance or smooth facial features. Differences between natural and artificial light, as well as shooting conditions, can significantly affect the perception of the same makeup in different visual spaces. This highlights the importance of in-depth study of the effects of lighting on the work of makeup artists, photographers, and videographers. The knowledge gained will help them create better makeup, adapted to specific shooting conditions.

**The purpose of the study.** The purpose of this study is to understand how different types and lighting parameters affect the perception of makeup in photography and video. We also want to determine the optimal lighting conditions that allow the most accurate rendering of the color, texture, and volume of the face.

In the process, we plan to analyze the differences between static and dynamic images and study the effects of directivity, temperature, and light

intensity on the visual qualities of makeup. Based on the results obtained, we will form practical recommendations for experts in the field of beauty and media.

The scientific novelty of our research lies in the development and application of the author's method, which we called EFM (Emotional Framed Method). For the first time, this method combines the effects of lighting, composition, and emotional perception in a single visual analysis model.

**Materials and research methods.** During the study, light sources with a fixed color temperature were used: 3200K, 4500K, and 5600K. The light level was adjusted in the range from 300 to 1000 lux. The shooting was carried out with the camera settings unchanged: ISO from 100 to 400 and aperture from f/2.8 to f/5.6. This made it possible to minimize changes in photographs that are not related to lighting.

Photographs and videos were compared to understand how the color rendition, detail, and perception of skin texture differ. In addition, we conducted an expert assessment with the participation of specialists in the field of makeup and photography, as well as studied theoretical sources on light optics and color correction. The data obtained helped us identify the key factors that affect the visual perception of makeup and formulate practical conclusions.

The author's EFM (Emotional Framed Method) method, created by Iuliia Tarasenko, was used in the course of the study. This method is aimed at controlling the visual and emotional perception of an image through light, composition, and makeup adaptation to camera conditions.

To structure the research methodology, the EFM method was presented as a functional model:

$EFM = f(L, C, M)$ , where:

L (Lighting) – lighting parameters, including color temperature, intensity, directivity, and degree of light scattering;

C (Composition) – features of framing, foreshortening, and visual organization of an image;

M (Makeup Adaptation) – adaptation of makeup, taking into account shooting conditions, camera characteristics, and the desired visual effect.

This model allowed us to study the perception of makeup not as a separate cosmetic result, but as a complex effect resulting from the interaction of various factors: light, compositional, and visual correction.

To quantify color differences, we used the  $\Delta E$  metric in the CIE Lab space, which made it possible to determine how much makeup shades differ under different types of lighting.

**The results of the study.** In the world of photography, lighting is a key tool that determines how makeup will be captured by the camera and perceived by the viewer.

The study of the influence of lighting on human appearance has deep historical roots and is closely related to the development of fine art, photography, and cinematography. Even in the era of painting, artists paid special attention to chiaroscuro, since it is lighting that allows you to convey the volume of the face, the texture of the skin, and the expressiveness of the image.

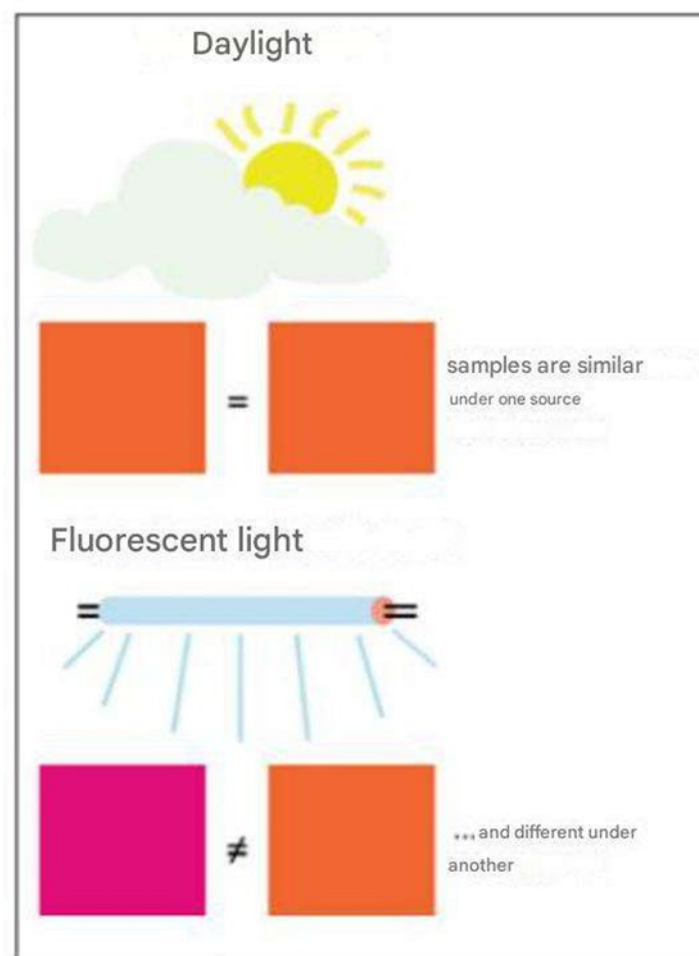
With the advent of photography in the 19th century, light began to play a crucial role in art. The first photographic materials had a limited range of sensitivity, which distorted the natural shades of skin and makeup. However, already at that time, photographers began experimenting with the direction and intensity of light, trying to achieve a more accurate representation of the appearance.

In the 20th century, with the development of the film industry and studio photography, standardized lighting schemes were developed, such as three-point lighting, which were actively used to emphasize the facial features of actors. Makeup became an integral part of lighting, as it was created taking into account the brightness of spotlights and the features of black-and-white, and then color photography. For example, in early cinema, contrasting and saturated shades of

makeup were used to compensate for the loss of detail and color reproduction on the screen.

With the development of digital technologies in the late 20th and early 21st centuries, the problem of makeup perception has become particularly relevant. Cameras have become more sensitive, with a variety of light sources with different color temperatures, as well as image processing tools. This has led to the fact that the same makeup can look different depending on the shooting conditions and equipment settings. The widespread use of social media, blogging, and the beauty content industry has made this topic particularly significant, as visual accuracy has become one of the key aspects of professional activity (Fig. 1).

Figure 1 shows how significantly the perception of color changes during the transition from daylight to fluorescent lighting. This clearly demonstrates how the visual image depends on the spectral composition of the light source.



**Fig. 1. Visual difference of Makeup shades under the influence of artificial and natural lighting**

Modern research in this field is interdisciplinary, combining knowledge from optics, coloristics, psychology of perception, and cosmetology. Special attention is paid to the influence of color temperature, light direction, and scattering on the transmission of skin tones and decorative cosmetics. In addition, differences in the perception of static images and videos are considered [2]. These studies allow us to form practical recommendations for specialists working at the intersection of the beauty industry and visual media.

It should be noted that modern lighting technologies play a crucial role in the perception of makeup in photographs and videos. They allow you to precisely control the color, intensity, and direction of light, which makes it possible to create expressive and spectacular images.

In this study, we use the EFM (Emotional Framed Method) method developed by Iuliia Tarasenko, which is a systematic approach to managing visual perception in photography and video.

This method combines three key aspects:

- Control of lighting characteristics, including color temperature, directivity, and intensity.
- Composition and framing of a visual image.
- Makeup adaptation to shooting conditions and camera features.

Unlike traditional methods, EFM takes into account not only the technical accuracy of the image but also the emotional perception of the viewer, creating a holistic visual impression.

One of the key achievements has been the widespread use of LED illuminators with adjustable color temperature. These lighting devices allow you to adapt the lighting to different shooting conditions and ensure the most natural transmission of skin tones and cosmetics.

These light sources allow you to vary the lighting from warm to cold. This directly affects how foundation products, blush, and contouring look. Warm light softens facial features and hides imperfections, while cold light, on the contrary, emphasizes texture and makes makeup more contrasting.

Ring lamps and softboxes, which are actively used in the beauty industry and in blogging, are of great importance. The ring light provides uniform illumination without harsh shadows, which visually smooths the skin and makes makeup appear more "clean" in the image. Softboxes, in turn, create soft, diffused lighting that resembles natural daylight [1]. Directional hard light, used in professional photography, can enhance the relief of the face, emphasizing the details of makeup and sculpting.

Modern cameras and smartphones also impact the perception of makeup through various image-processing algorithms. These algorithms include HDR, automatic white balance, and beauty filters. These technologies can both improve

appearance by smoothing skin and correcting colors, and distort real makeup by changing shade saturation and contrast [3].

In video, stable lighting is very important, as changes in the light source or its temperature can lead to color "jumps" on the face. This is especially noticeable when shooting with a front-facing camera, where algorithms are often active by default and can automatically enhance the image without the user's knowledge. Because of this, tonal transitions become less natural, and complex makeup shades, such as nude or cool tones, can become distorted or look flat.

To avoid such distortions, it is recommended to disable beauty filters, adjust the camera manually, and, if possible, fix the white balance. This will help preserve the naturalness of colors and textures. It is useful to take test shots before the main shoot. They will help you identify possible problems in advance and adjust makeup or lighting.

In addition, there are color correction and post-processing technologies that allow you to edit the image after shooting. This makes it possible to enhance or soften makeup by adapting it to the visual standards of various platforms and promotional materials. Thus, the modern perception of makeup is determined not only by the process of applying cosmetics, but also by a complex system of technical solutions. One of the key factors influencing the final visual effect is lighting (Table 1).

Table 1

### Technologies of color correction and photo post-processing

№	Technology	Characteristic
1	Color correction	<i>White balance correction</i> Eliminate color distortions caused by light sources (such as incandescent or fluorescent lamps). Tools: gradients and sliders in programs (Adobe Lightroom, Photoshop). <i>Exposure correction</i> Adjusts the brightness and contrast of the image to achieve optimal light. Using a histogram to analyze light values.

		<p><i>Color correction</i> Changing the saturation, brightness, and tone of individual colors. Tools: curves, levels, HSL (Hue, Saturation, Lightness).</p> <p><i>Local correction</i> Applying correction to specific areas of an image using masks and gradients.</p>
2	Post-processing	<p><i>Retouching</i> Removal of defects (spots, wrinkles) using cloning and restoration tools.</p> <p><i>Improved sharpness</i> The use of filters to enhance the clarity of details.</p> <p><i>Filters and effects</i> Using preset filters to create a specific style (for example, vignetting, sepia).</p> <p><i>Compositional changes</i> Crop and change the angle of the image to improve the composition.</p> <p><i>Merging images.</i> Create HDR or panoramic photos by merging multiple frames.</p>
3	Software	<p>Adobe Lightroom. It is great for color correction and processing of large volumes of photos.</p> <p>Adobe Photoshop. It is ideal for more complex post-processing and retouching.</p> <p>Capture One. Professional software for working with RAW files.</p> <p>GIMP. A free alternative to Photoshop with many features.</p>

It should be noted that lighting can significantly affect the perception of makeup in photography and video. There are certain problems that can significantly distort the final visual effect.

One of the main difficulties is related to incorrect color rendering. Different light sources have different color temperatures, and if it is not calibrated properly, the shades of foundation, eye shadow, and lipstick may look different from in reality. For example, warm light gives the skin a yellowish tint and can "eat up" cold pigments, while cold light makes the face pale and highlights imperfections of the skin.

Another problem is uneven lighting and unwanted shadows. Harsh directional light can accentuate the texture of the skin, making visible the pores, wrinkles, and layers of makeup that normally look natural.

On the other hand, excessively soft or frontal light, for example, from a ring lamp, can make the face "flat," which eliminates contouring and sculpting, making makeup seem less expressive.

Automatic camera settings can also have a serious impact. White balance, exposure, and HDR often work erratically, especially in mixed lighting. This leads to jumps in skin tones and distortion of makeup colors in the video. Smartphone cameras additionally use smoothing algorithms and beauty filters that can hide the real details of makeup, making it less noticeable or, conversely, unnaturally "perfect."

It is also worth noting the difference between the perception of makeup in reality and through a lens. Makeup created for filming is usually more saturated and contrasting, as some of the color is "lost" during recording. However, in the wrong light, this balance can be disrupted, and makeup can look either too bright or too faded.

In addition, the impact of post-processing needs to be considered. Color correction and filters can significantly change the perception of makeup, creating a mismatch between the actual appearance and the final image. This is especially true in advertising and beauty content, where the viewer may encounter expectations that do not correspond to reality.

These problems demonstrate that lighting not only complements makeup in the frame but actively affects its perception, sometimes distorting the result beyond recognition.

We are convinced that the key to solving the problem of lighting in photo and video makeup shooting lies in the correct choice and control of light sources.

First, it is necessary to use lighting with an optimal color temperature in the range from 5000 to 5600K, which is as close as possible to natural daylight.

This will preserve natural skin tones and cosmetics, creating a more realistic look. In addition, you should avoid mixing different types of lighting, such as warm and cold, as this can make it difficult to adjust the white balance and lead to color distortion.

Uniform light distribution is the basis of high-quality lighting. Applying soft, diffused light through softboxes or diffusers helps minimize harsh shadows, focus on skin texture, and preserve facial volume. To keep makeup from looking flat, it's important to add a light modeling light on the side or top that highlights the contours without creating harsh shadows.

Camera settings should be carefully calibrated manually. It is important to fix the white balance, exposure, and ISO to avoid sudden changes in color and brightness, especially in video. It is recommended to disable automatic beauty filters and minimize image processing to preserve the natural texture and shades of makeup. If you are shooting on a smartphone, you can use professional applications that offer more detailed control over the parameters.

In addition, it is necessary to adapt the makeup to the shooting conditions. For the camera, it is recommended to enhance contrast, line clarity, and color saturation, but taking into account the type of lighting. Foundation products should perfectly match your skin tone and be tested under the same lighting in which the shooting will take place to avoid the effect of a mask. Matting products will help reduce unwanted glare, especially in bright light.

Post-processing should be minimal and properly performed. Color correction should only compensate for the technical limitations of the camera and not distort the natural shades. Using calibrated monitors and checking the image on different devices helps to maintain the accuracy of the result.

An integrated approach, including control of light, camera, and makeup, can significantly reduce distortion and achieve the most accurate appearance in the frame.

**Conclusions.** The study has several limitations related to the subjectivity of visual perception and the small number of experimental conditions. This makes it necessary to conduct further quantitative studies with a broader sample.

The results of the study show that the photographer plays a crucial role in shaping visual perception by controlling light, composition, and technical aspects of shooting.

The EFM (Emotional Framed Method) demonstrates that photography is not only the fixation of an image, but also the process of creating visual and emotional perception.

Lighting plays a crucial role in the perception of makeup in photos and videos. It directly affects the accuracy of rendering the color, texture, and shape of the face. Incorrectly selected light can distort skin tones and cosmetics, emphasize unwanted details or, conversely, "erase" the volume, making makeup less expressive.

The most effective solution is to use neutral, uniform, and controlled lighting, close to daylight. It is important to avoid mixing different color temperatures in order to preserve the naturalness of the image and simplify working with camera settings. In addition, proper adjustment of the technique, especially the white balance and exposure, ensures the stability of the result.

It should be noted that makeup for filming needs some adaptation. It should be more contrasting and carefully thought out, taking into account the lighting, in order to look harmonious in the frame. Excessive post-processing can negate all efforts, so it should be used as little as possible and with caution.

Thus, to achieve a high-quality result, an integrated approach is needed, in which lighting, shooting techniques, and makeup features work in harmony. This allows you to convey the image as reliably and aesthetically as possible.

The results obtained have practical implications for the photography, film, and beauty content industries. They can be used in the development of visual production standards.

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