

CHAPTER 4

SHADE SELECTION IN DENTISTRY AND FACTORS AFFECTING SHADE DETERMINATION

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INTRODUCTION

Color perception is a complex process that begins when light of different wavelengths reaches the retina. Signals generated by the stimulation of three types of receptors in the retina are transmitted to the brain via the optic nerve, resulting in visual perception. In this context, color can be defined through three fundamental parameters: hue, chroma, and value. In dentistry, color is not only a visual phenomenon but also a critical factor determining the success of esthetic treatments. Particularly in prosthetic and restorative applications, the accurate reproduction of the optical properties of natural tooth structure directly affects treatment outcomes (1).

The foundations of esthetic dentistry are based on the color, form, alignment, proportions, and morphology of the teeth (2). The success of one of the most frequently requested procedures by patients, such as tooth whitening or prosthetic restorations, largely depends on accurate color determination. However, multi-dimensional optical properties of teeth such as brightness, opacity, translucency, metamerism, opalescence, and fluorescence render clinical evaluation quite challenging. Therefore, color determination can be influenced by both technical factors and individual differences in perception.

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sive evaluations not solely with shade guides but also under multiple lighting conditions while considering individual variations.

In conclusion, successful shade selection in esthetically oriented dental practice requires a combination of scientific knowledge, clinical experience, and effective communication with the patient. The integration of current knowledge and technologies will enable more standardized and predictable outcomes in the future.

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