Fashion versus perception: The impact of surface lightness on the perceived dimensions of interior space

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Abstract: Objectives: We compare expert opinion with perceptual judgment regarding the influence of color on the perceived height and width of interior rooms. Background: We hypothesize that contrary to popular belief, ceiling and wall lightness have additive effects on perceived height, whereas the lightness contrast between these surfaces is less important. We assessed the intuitions of architectural experts as to which surface colors maximize apparent height and compared these intuitions with psychophysical height and width estimates for rooms differing in ceiling, floor, and wall lightness. Method: Experiment 1 was a survey of architectural experts and nonexperts. Experiments 2 and 3 presented virtual rooms varying in physical height, physical width, and surface lightness. Results: In Experiment 1, both experts and nonexperts erroneously assumed that the lightness contrast between ceiling and walls influences perceived height. Experiment 2 showed that the lightness contrast does not determine apparent height but that ceiling and wall lightness have additive effects. Experiment 3 demonstrated a decrease in perceived width with physical height, whereas the perceived height was not related to physical width. Apparent width was unaffected by ceiling lightness. Conclusion: Light ceiling and light walls make a room appear higher, whereas floor color has a weaker effect. We also found evidence for an asymmetric interaction between height and width. Application: The question of how to color walls and ceiling to maximize the apparent size of a room can be answered empirically. Aesthetic considerations may interfere with the correct assessment of the effects of color in experts. © 2011, Human Factors and Ergonomics Society.

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