

PATTERN MATTERS IN INTERIOR SPACE PERCEPTION

Christoph von Castell, Heiko Hecht, Daniel Oberfeld tal Psychology



MOTIVATION

Interior-design experts:



- Previous findings of surface-characteristics effects on the perceived size of small objects:
- Helmholtz-square (von Helmholtz, 1867): A horizontally striped square appears taller than wide, a vertically striped square appears wider than tall Oppel-Kundt-illusion (OKI; Kundt, 1863; Oppel, 1861): An exocentric distance between two vertical sticks appears larger when divided by additional vertical sticks
- OKI depends on the number of dividing sticks e.g., Mikellidou & Thompson (2014): Maximum visual expansion with eight to 12 sticks, reversal of effect with one stick
- Visual expansion perpendicular to the orientation of striped patterns

Who is right? Or, do interior space and objects behave differently?



CONCLUSION

EXPERIMENT 1: Virtually no effect of pattern orientation on width and height estimates

44

420

201

est. height (cm)

n.s.

- At odds with both the experts' design recommendations and von Helmholtz's (1867) assumptions
- Probably due to relatively low number of stripes?
- EXPERIMENT 2A and EXPERIMENT 2B: Considerable effect of the number of vertical stripes
- Smaller width and height estimates for low-frequency (up to 12 vertical stripes) wall paints than for plain (unstriped) wall paints

Pattern orientation

artical atrices

Horizontal atrice

*

Larger width and height estimates for high-frequency (288 vertical stripes) wall paints than for plain (unstriped) wall paints

Width estimates consistent with previous results on the number of dividing sticks in the OKI (e.g., Mikellidou & Thompson, 2014)

→ When you seek to visually enlarge your room's perceived size by means of a striped wall paint, we recommend working with a slender brush.

Number of vertical stripes

44

*

ACKNOWLEDGEMENTS

We are grateful to Agnes Münch for programming the experiments. This study was funded by the Deutsche Forschungsgemeinschaft (Heiko Hecht) and OB 346/5-1 (Daniel Oberfeld).

ngsgemeinschaft: "Innenraumwahrnehmung", HE 2122/10-1

REFERENCES

Kundt, A. (1863). Untersuchungen über Augenmass und optische Täuschungen. Poggendorffs Annalen, 120, 118-158 Mikellidou, K., & Thompson, P. (2014). Crossing the line: Estimations of line length in the Oppel-Kundt illusion. Journal of Vision, 14(8). Oppel, J. J. (1861). Über geometrisch-optische Täuschungen (zweite Nachlese). Jahresbericht des physikalischen Vereins zu Frankfurt am Main 1860/64 (pp. 26-37). Von Helmholtz, H. (1867). Handbuch der physiologischen Optik (Allgemeine Encyklopädie der Physik, Vol. 9). Leipzig: Voss

TEAP 2016



CONTACT: CASTELL@UNI-MAINZ.DE

Note: All other effects n.s.

Room width* in all experiments

increasing room width

Perceived height decreased with

Ceiling height^{*} in all experiments Perceived height increased with increasing ceiling height

Heidelberg

Number of vertical stripes