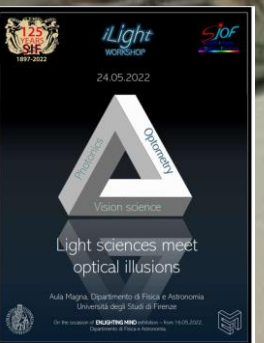
Optometry

Massimo Gurioli



Outline:

4 examples of Optometric aspects linked with

Optical Illusions

Myopia

Periphelal dysfunctions

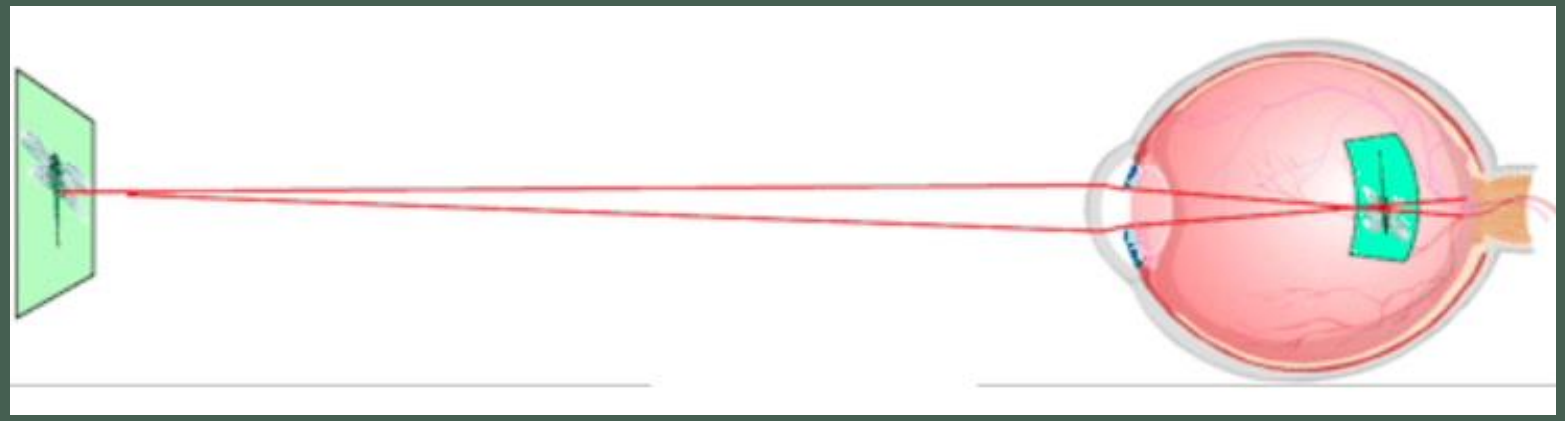
Dysphotosopsia

Binocular dysfunctions

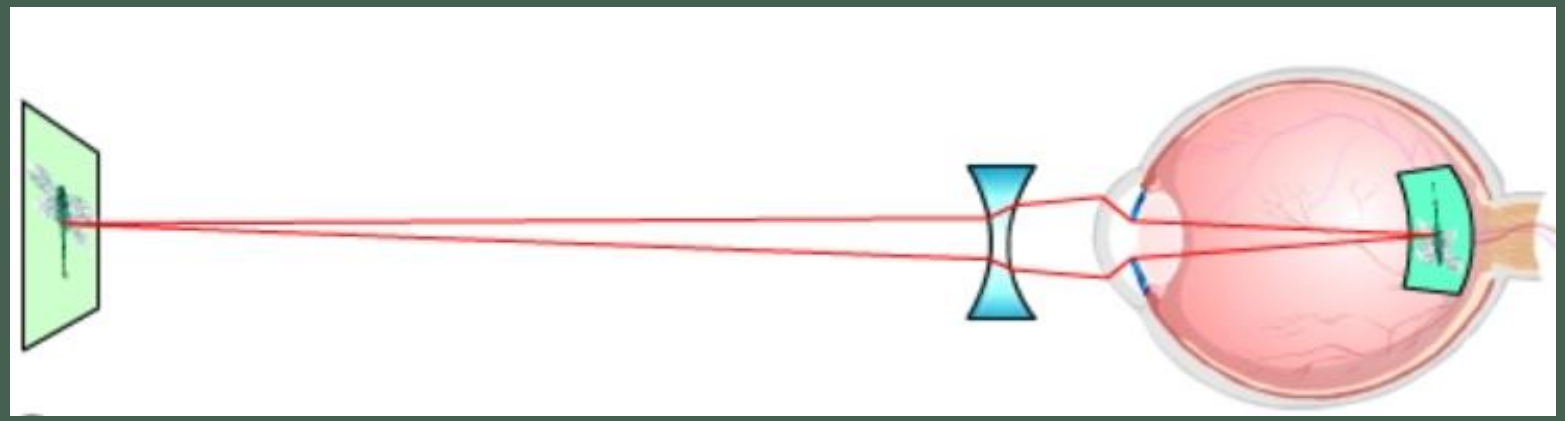
1. Myopia

Normal eye

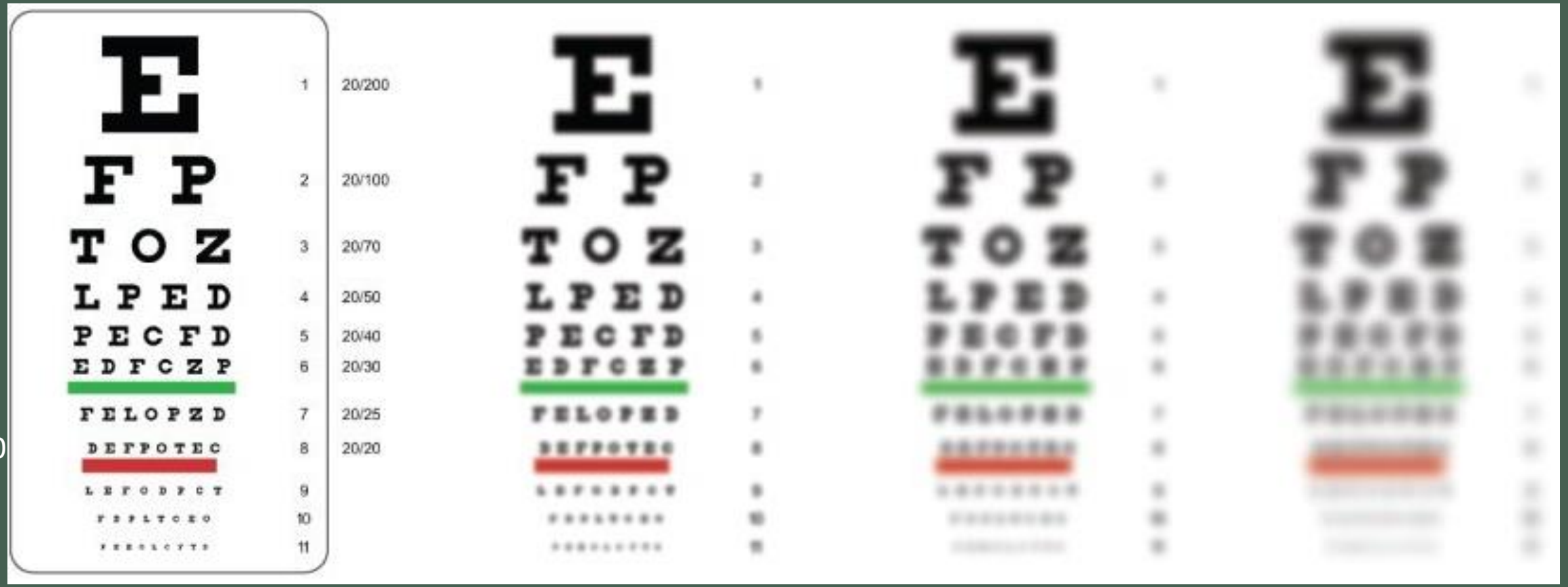
Myopic eye



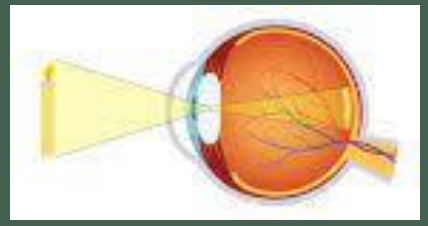
Corrected myopia



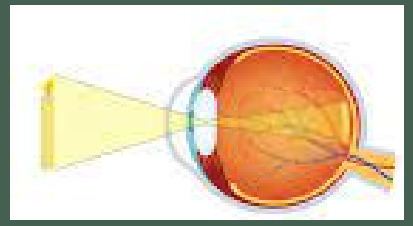
Myopia and tavola Snellen table



Acuity ≈ 10/10

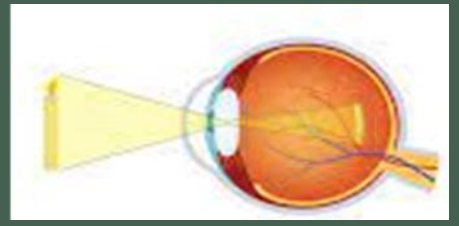


Acuity ≈ 8/10



Acuity ≈ 4/10

Acuity ≈ 1/10



Snellen tables and gratings

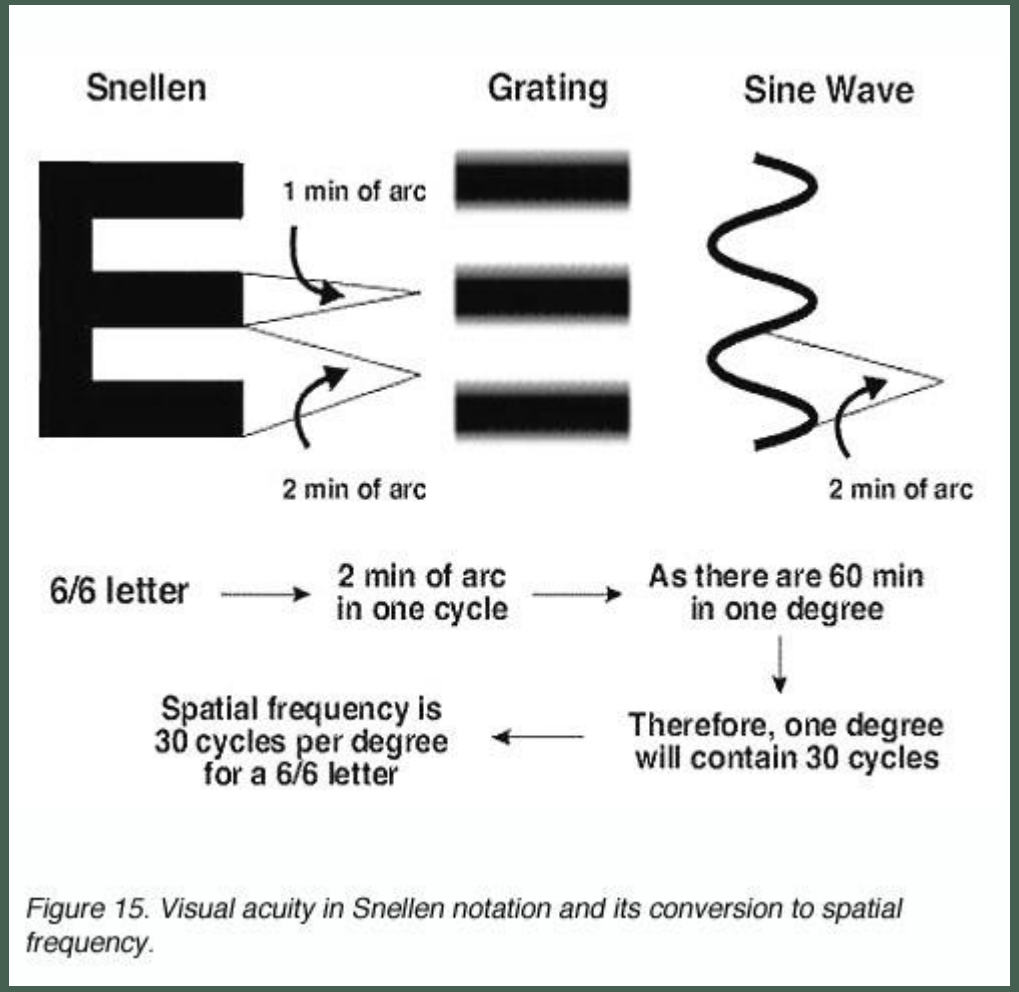


Figure 15. Visual acuity in Snellen notation and its conversion to spatial frequency.

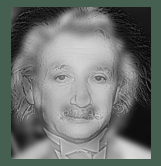
visual acuity of 10/10

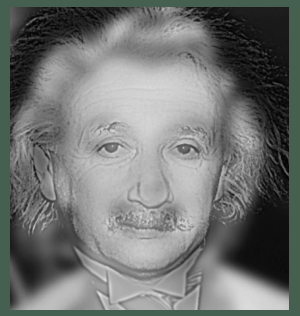
HFG

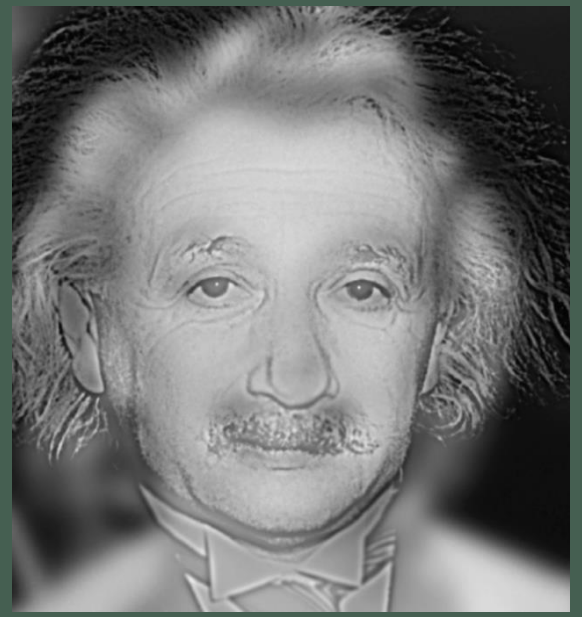
LFG

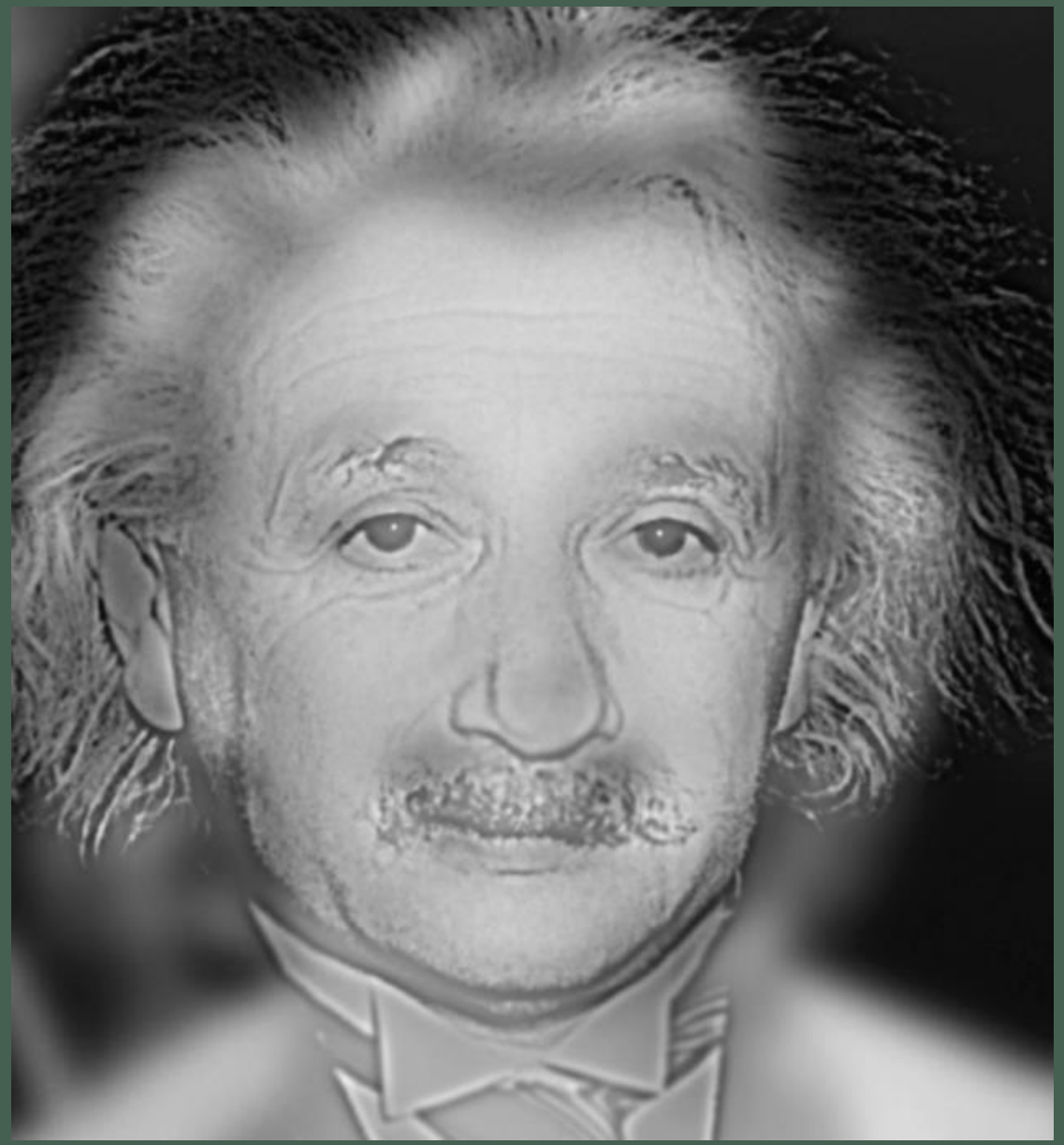
Vision acuity of 2/10

Myopia
&
Hybrid images









Spatial frequency filtering

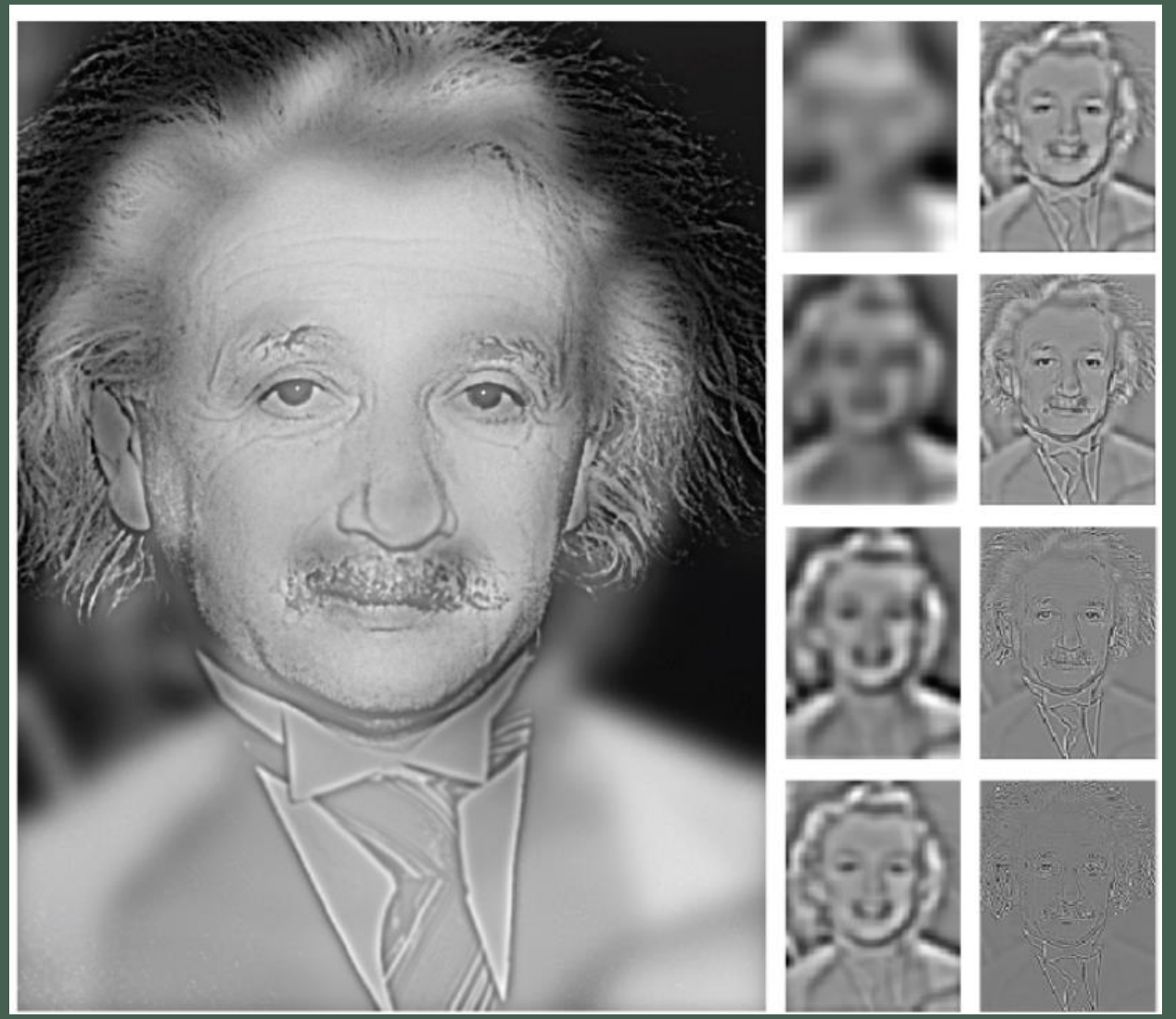
(a) Complete image

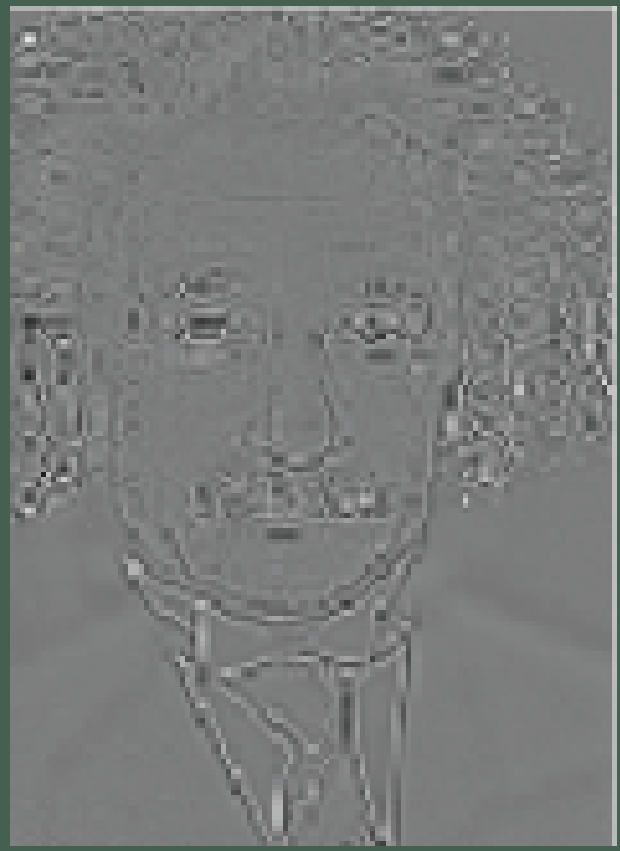
(b) Low-frequency component

(c) High-frequency component

SENSATION AND PERCEPTION, Figure 3.28

Hybrid images





Oliva, A., and Schyns, P.G. (1997). Coarse blobs or fine edges? Evidence that information diagnosticity changes the perception of complex visual stimuli. *Cognitive Psychology* 34: 72-107.

Oliva, A., Torralba, A., and Schyns, P.G. (2006). Hybrid Images. *ACM Transactions on Graphics (SIGGRAPH)* 25(3): 527-532.

Comparison Snellen table and Einstein/Marylin

1/10

2/10

3/10

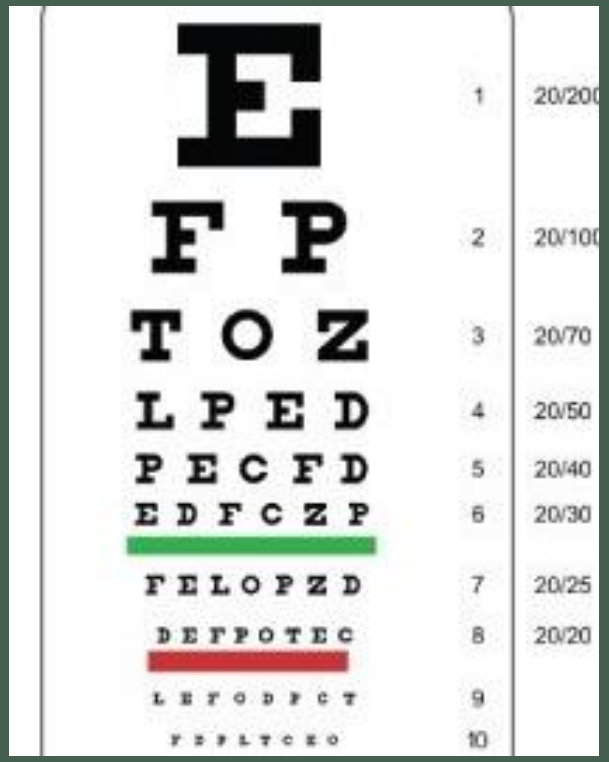
4/10

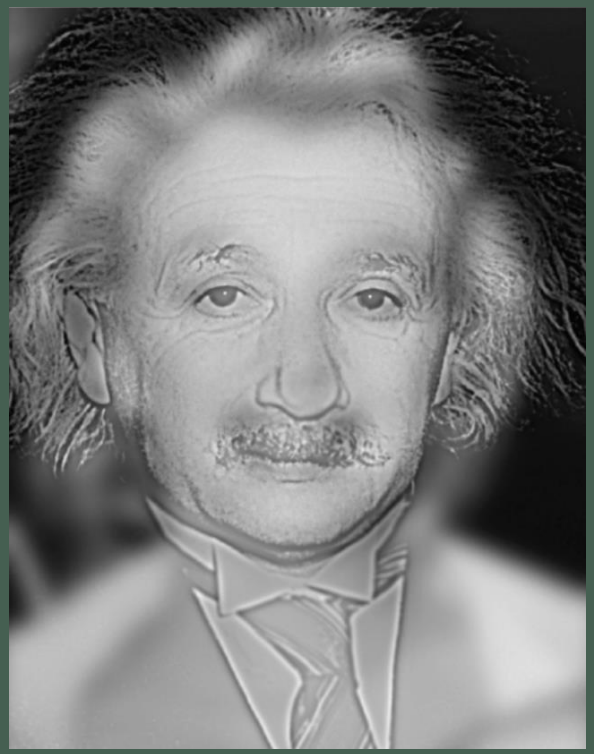
5/10

7/10

8/10

10/10





visual acuity of 10/10

Comparison Snellen table and Einstein/Marylin

1/10

2/10

3/10

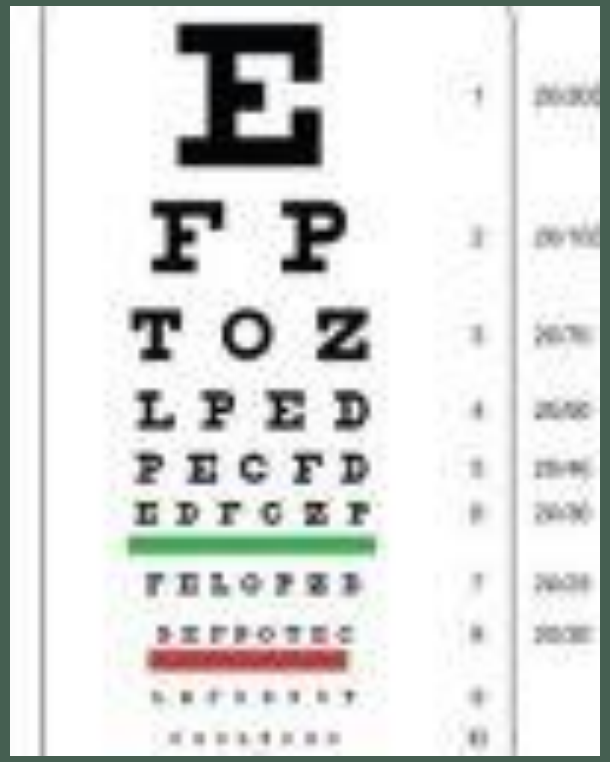
4/10

5/10

7/10

8/10

10/10



visual acuity of 8/10

Comparison Snellen table and Einstein/Marylin

1/10

2/10

3/10

4/10

5/10

7/10

8/10

10/10

visual acuity of 4/10

Comparison Snellen table and Einstein/Marylin

1/10

2/10

3/10

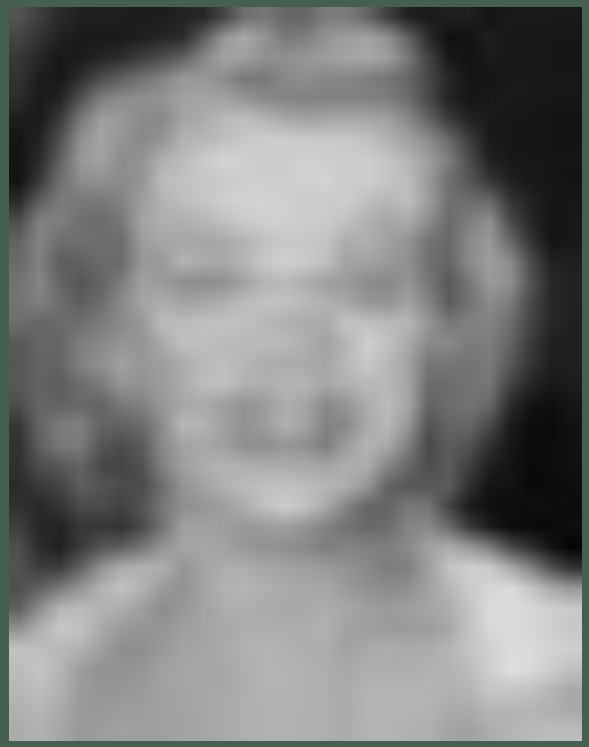
4/10

5/10

7/10

8/10

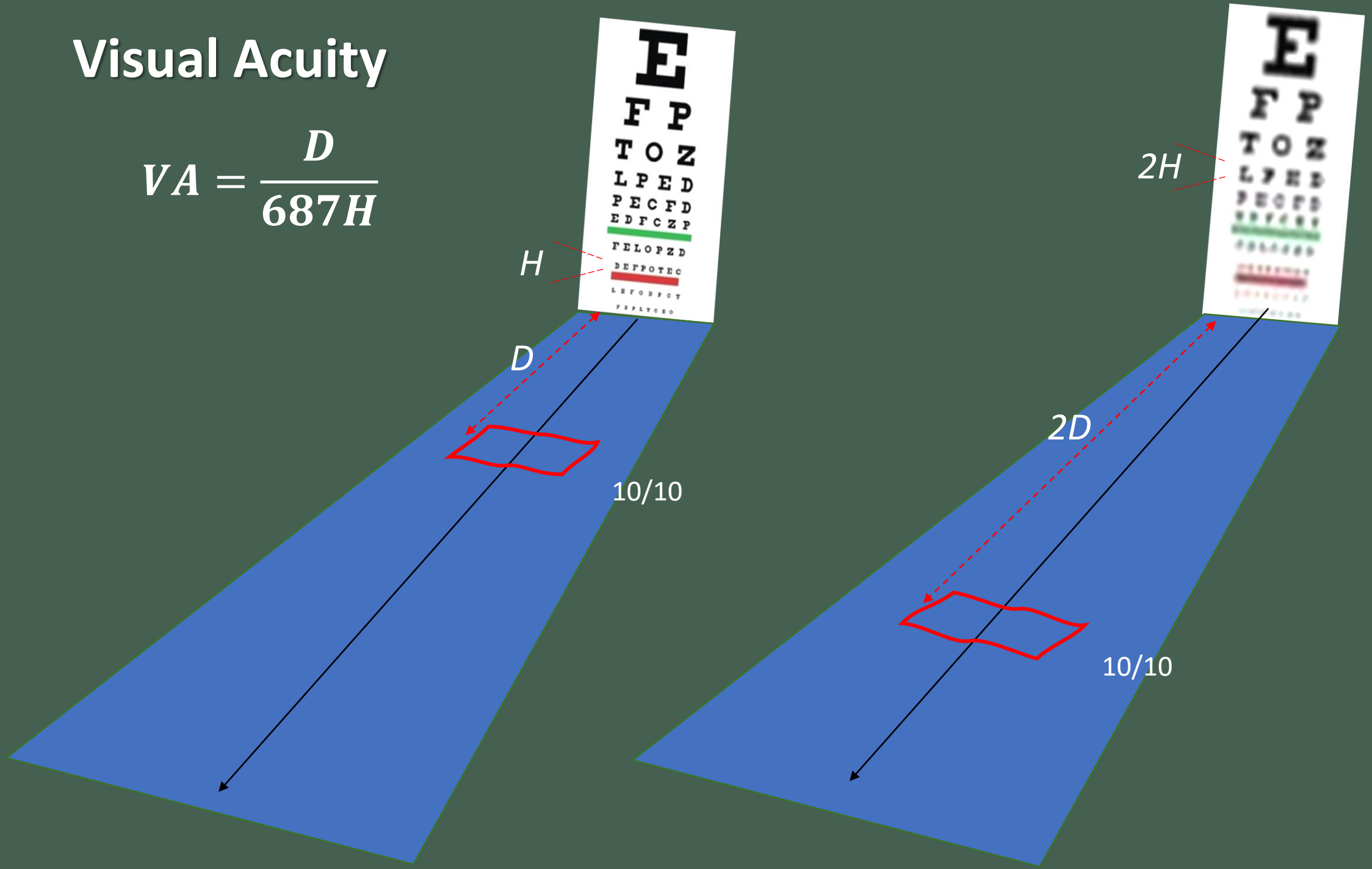
10/10



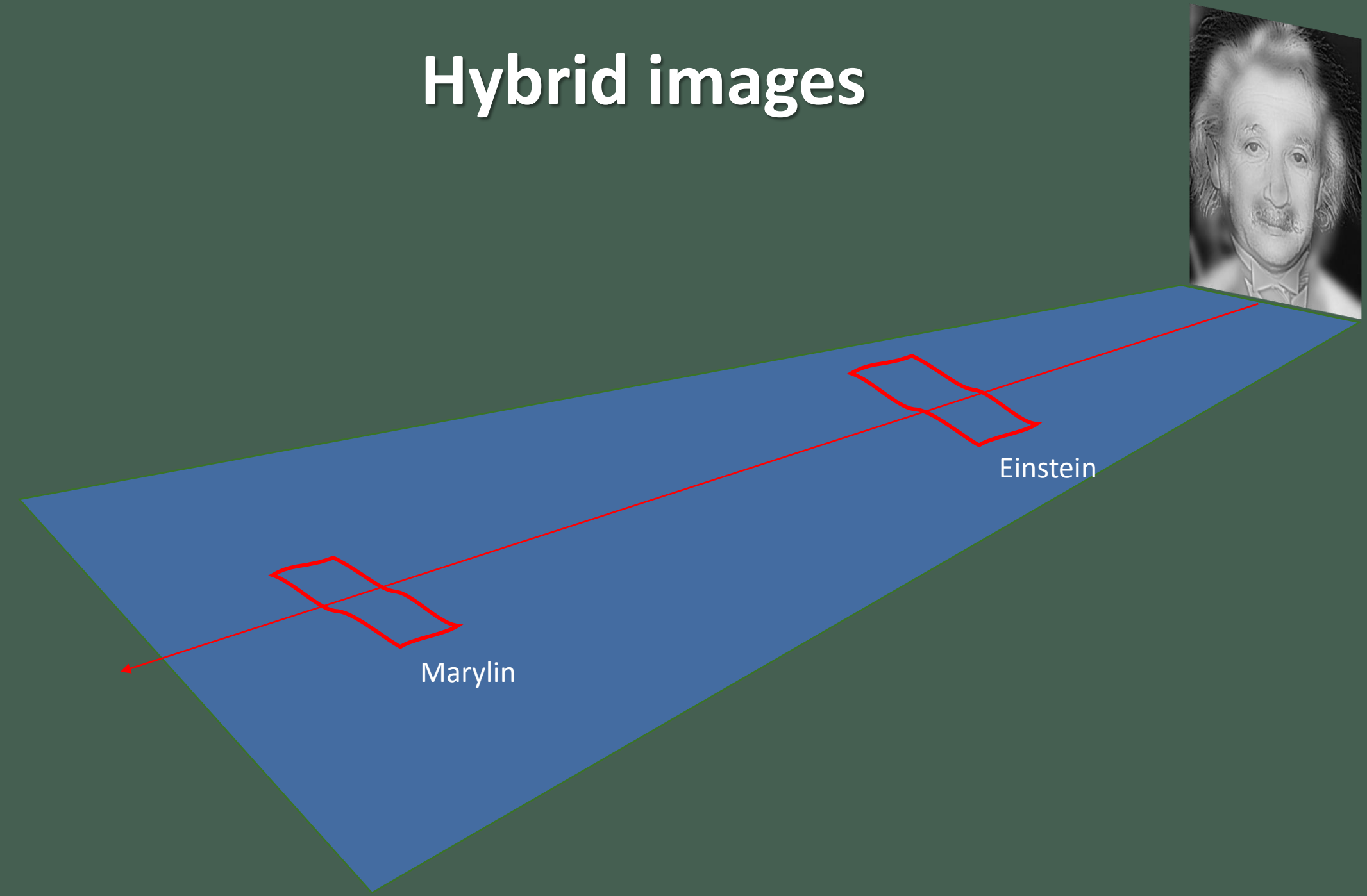
visual acuity of 1/10

Visual Acuity

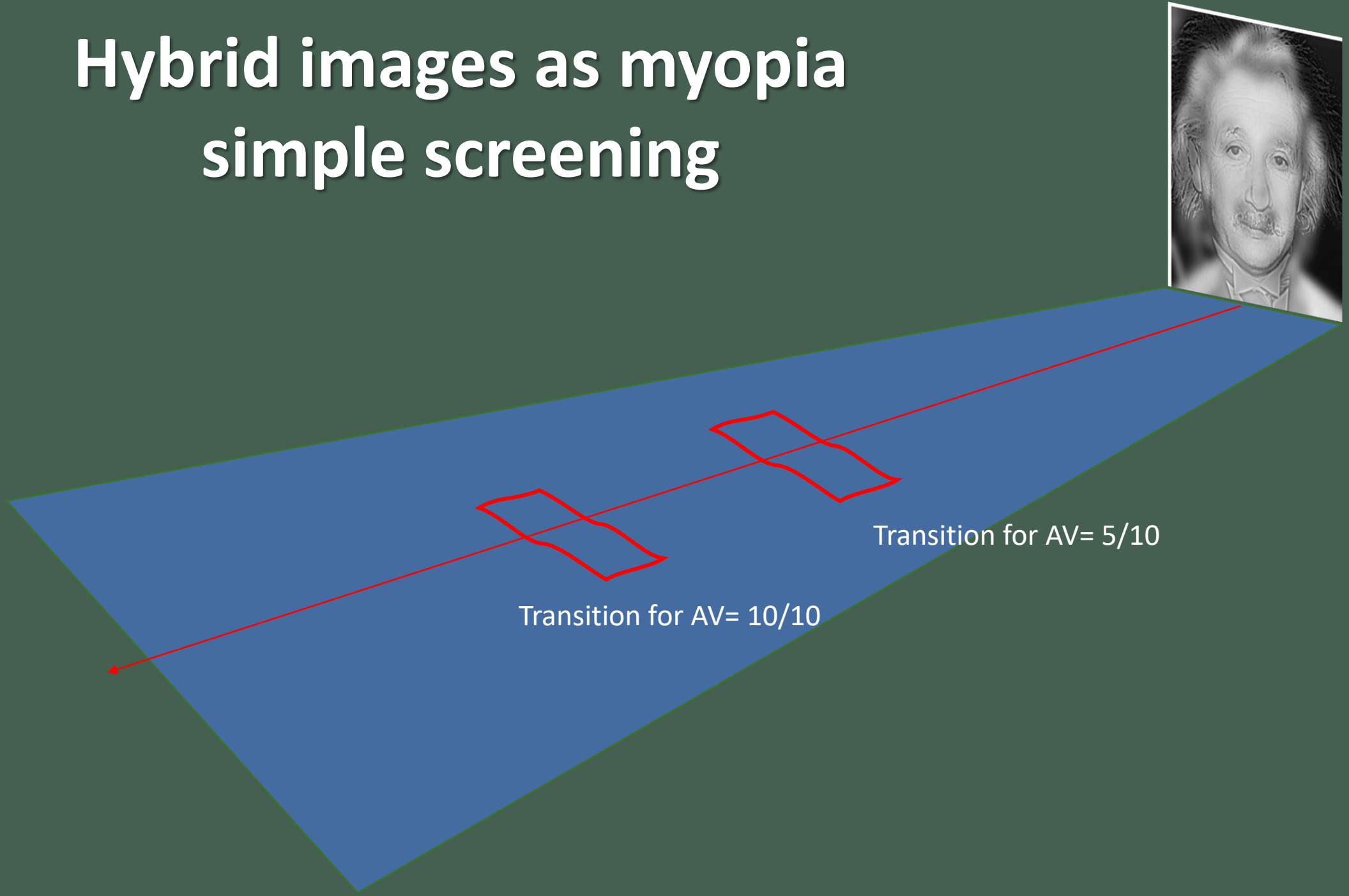
$$VA = \frac{D}{687H}$$



Hybrid images

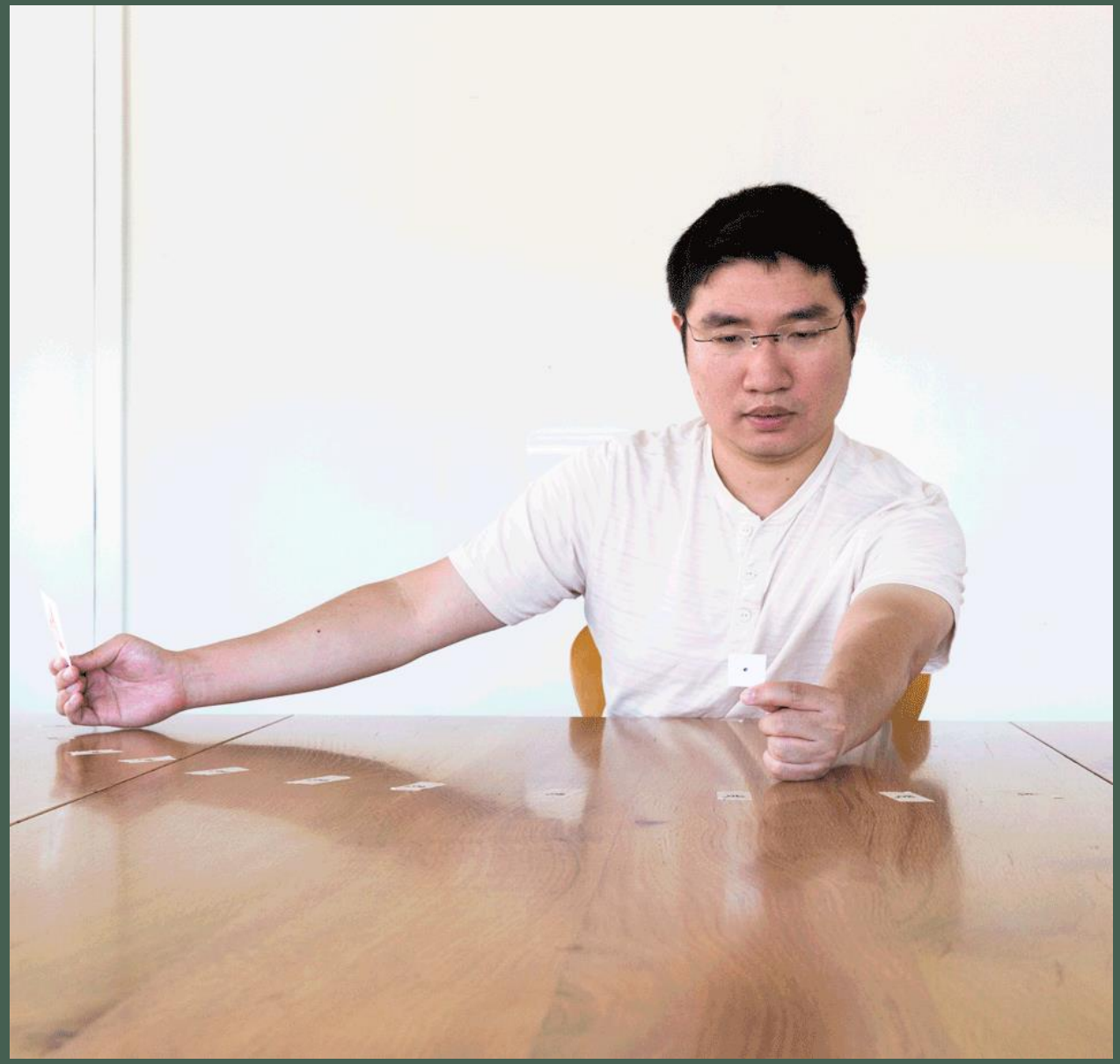


Hybrid images as myopia simple screening

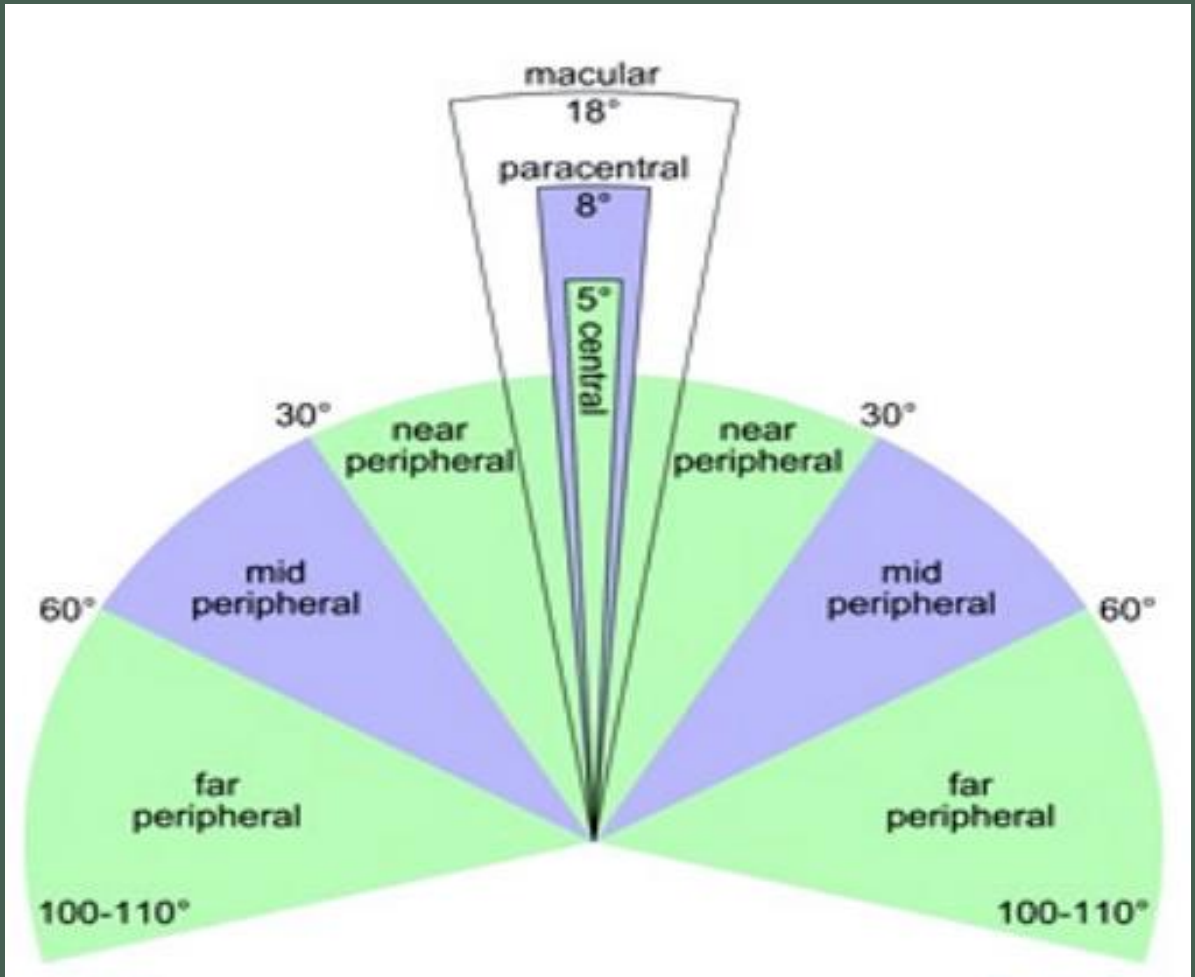


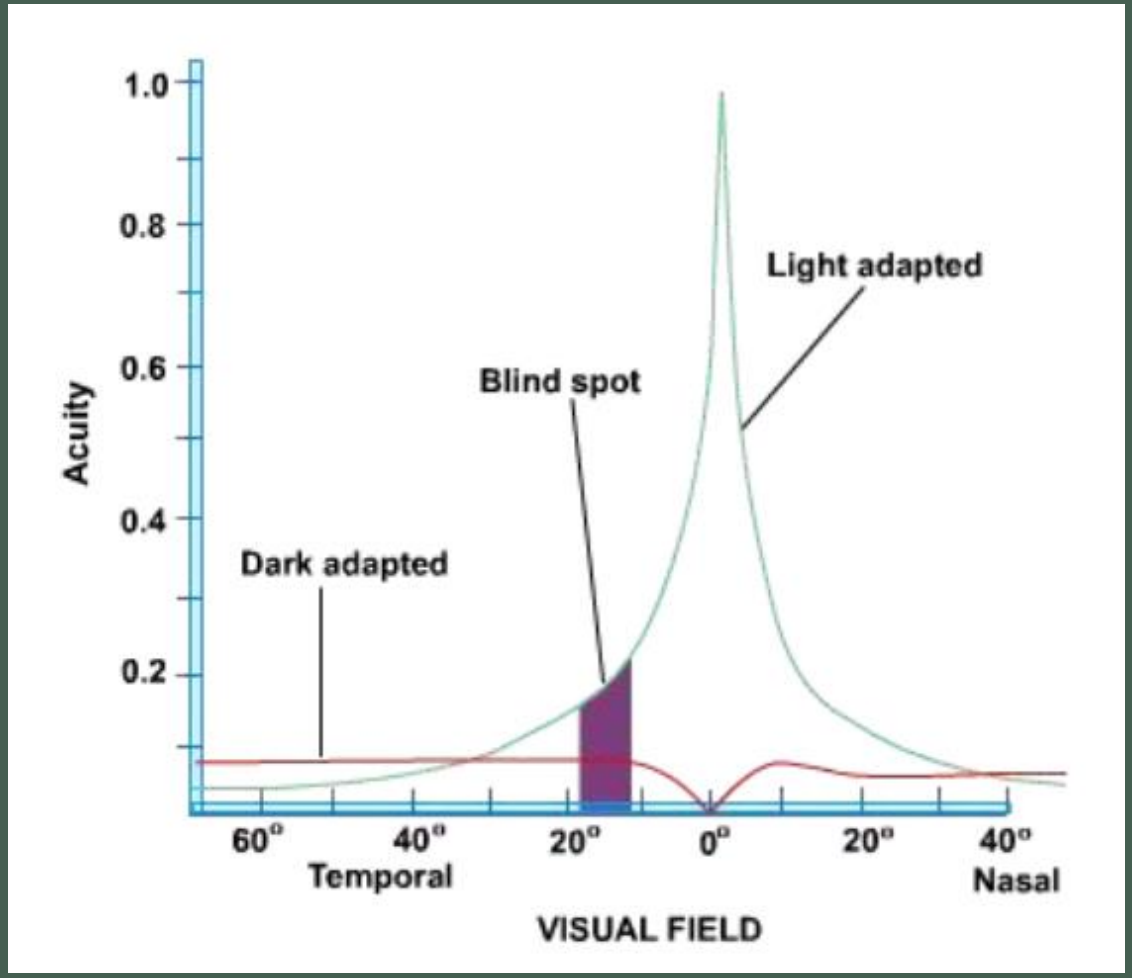
Hybrid images for myopia screening in kids

2. Problem in peripheral view

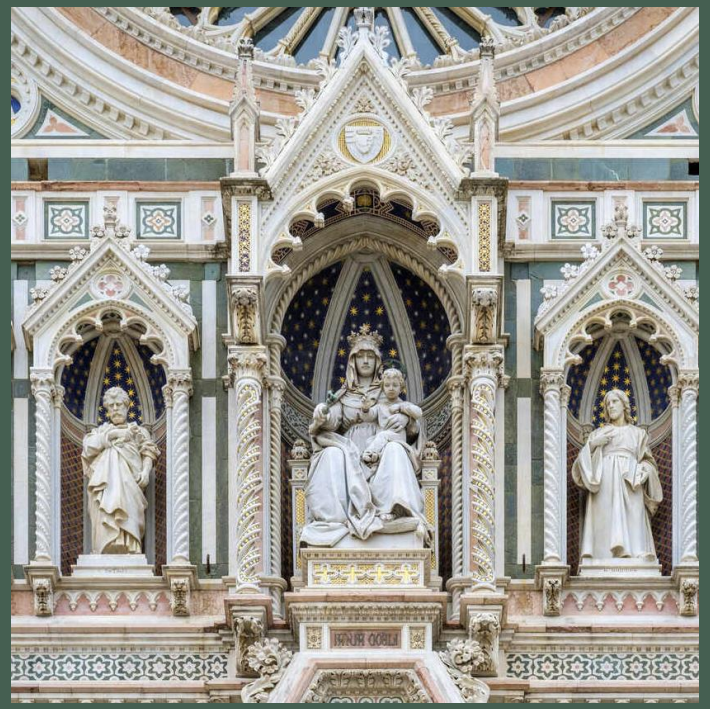


Peripheral view

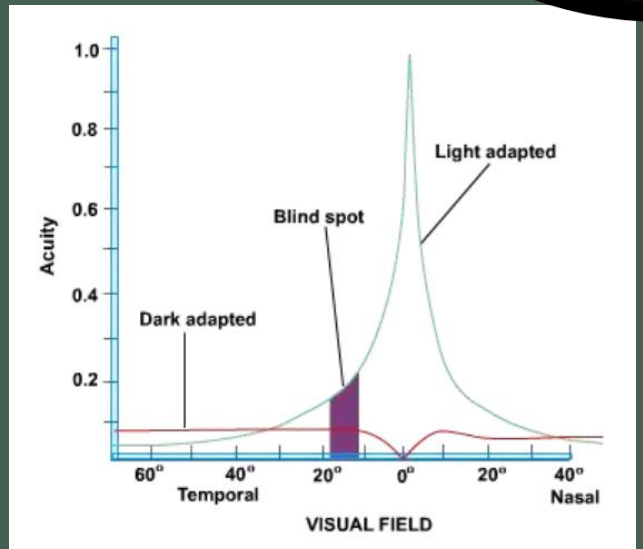




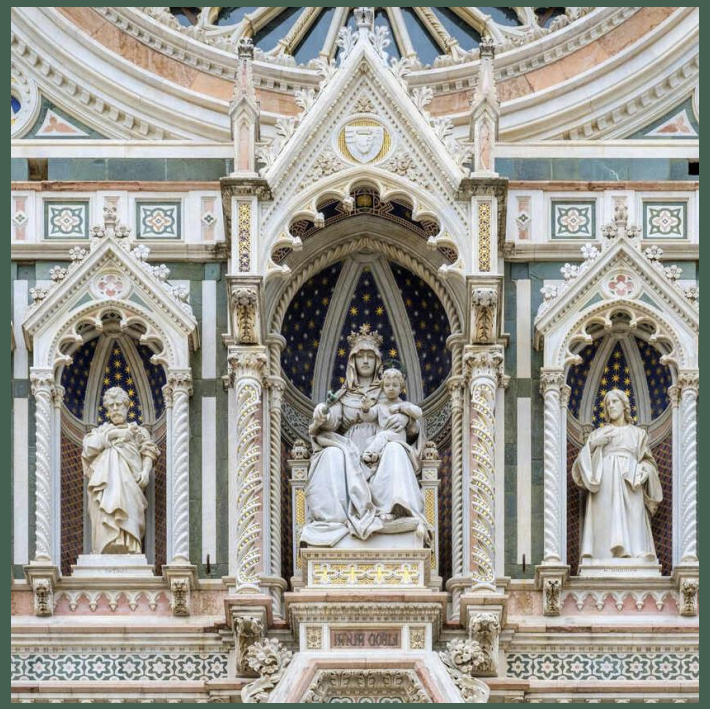
Subject



Images on retinas



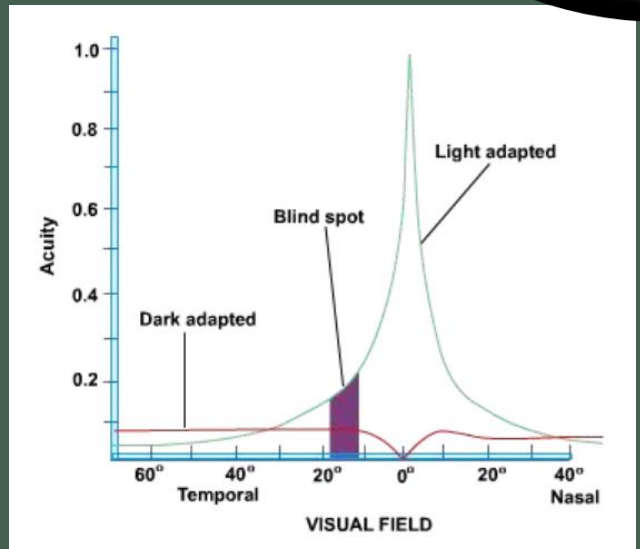
Subject



Images on retinas

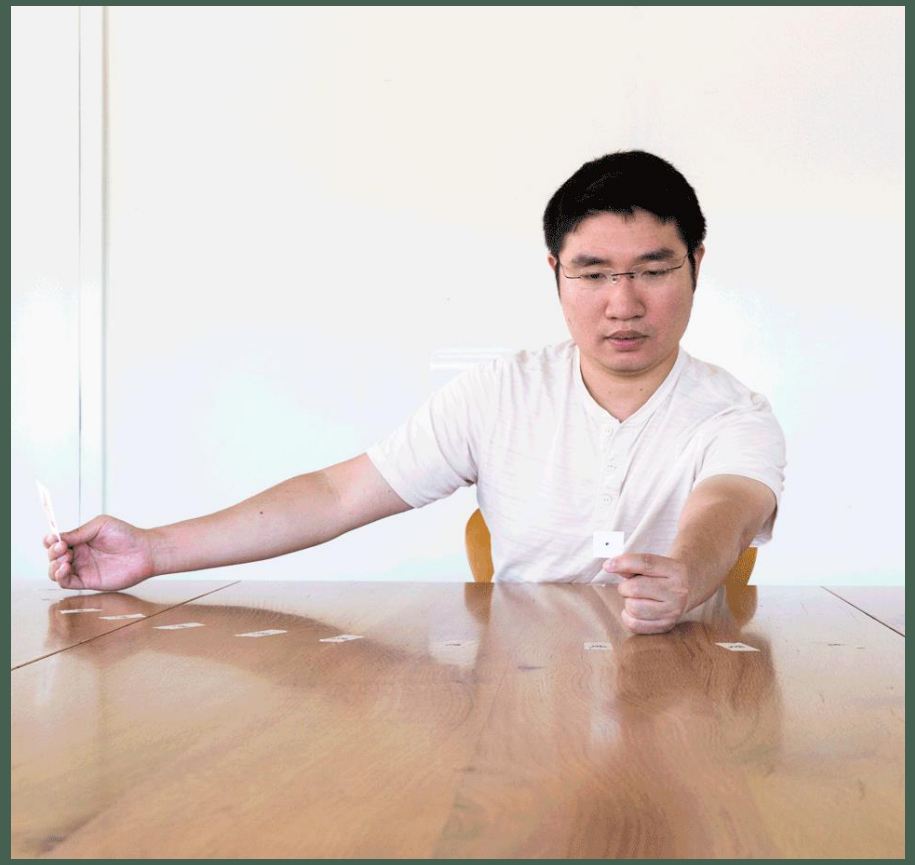
Central view is for recognition

Peripheral view is for orientation and movement perception



Peripheral view in sport

Peripheral view



1040-5488/05/8201-0018/0 VOL. 82, NO. 1, PP. 18–26
OPTOMETRY AND VISION SCIENCE

ORIGINAL ARTICLE

Head Movements While Crossing Streets: Effect of Vision Impairment

SHIRIN E. HASSAN, PhD, DUANE R. GERUSCHAT, PhD, and KATHLEEN A. TURANO, PhD

The Maryland School for the Blind, Baltimore, Maryland (SEH, DRG), and The Johns Hopkins University School of Medicine, Wilmer Eye Institute, Baltimore, Maryland (SEH, DRG, KAT)

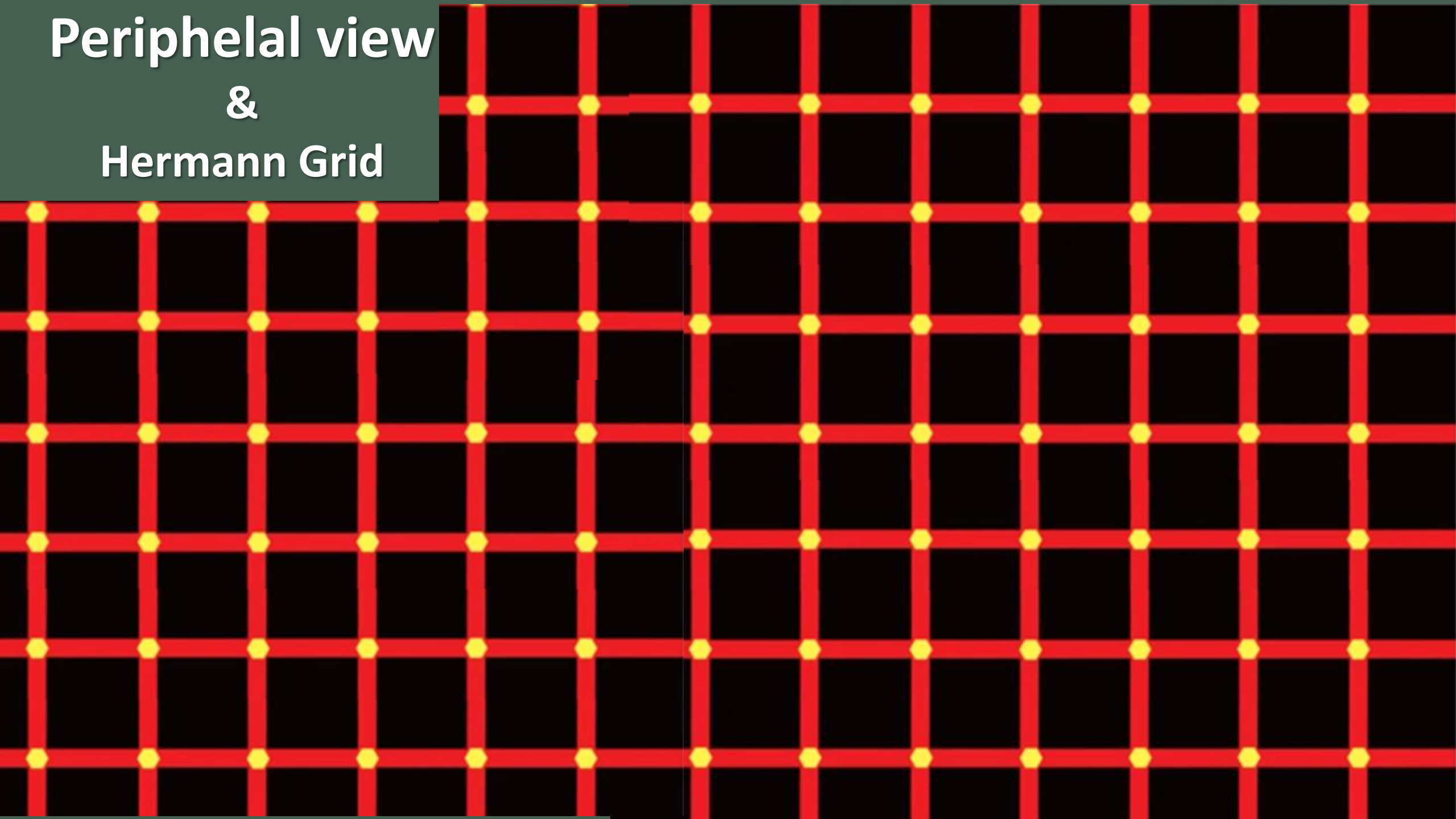
The Plus Intersection

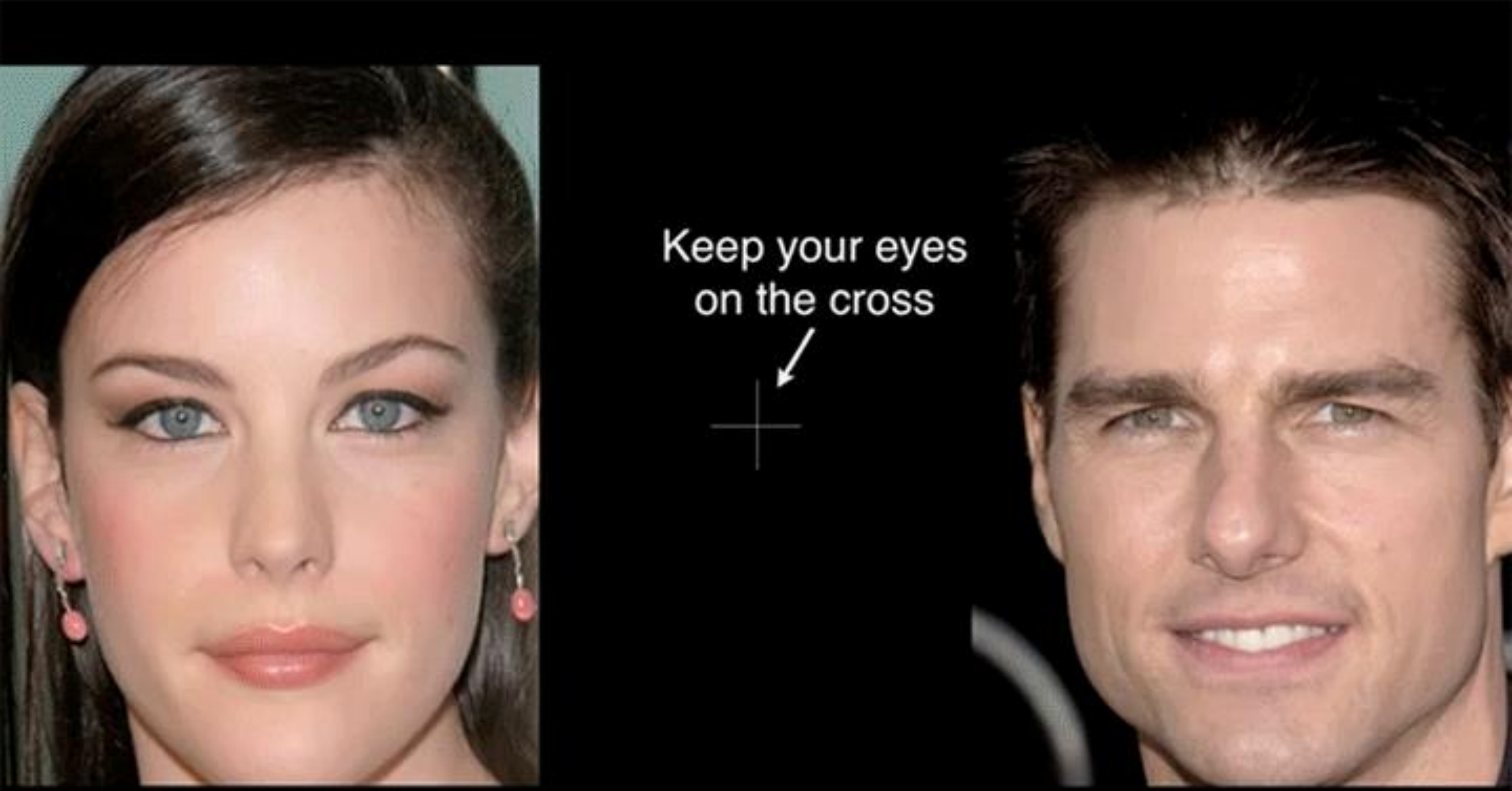
The Roundabout

Left **Center** **Right**

FIGURE 1.
Scene illustrations corresponding to head directions of left, center, and right at the Plus intersection (top) and roundabout (bottom).

Peripheral view & Hermann Grid





www.nature.com/scientificreports

SCIENTIFIC REPORTS

OPEN

The Flashed Face Distortion Effect Does Not Depend on Face-Specific Mechanisms

Received: 18 June 2018
Accepted: 6 December 2018
Published online: 07 February 2019

Benjamin Balas[1,2] & Hannah Pearson[1]

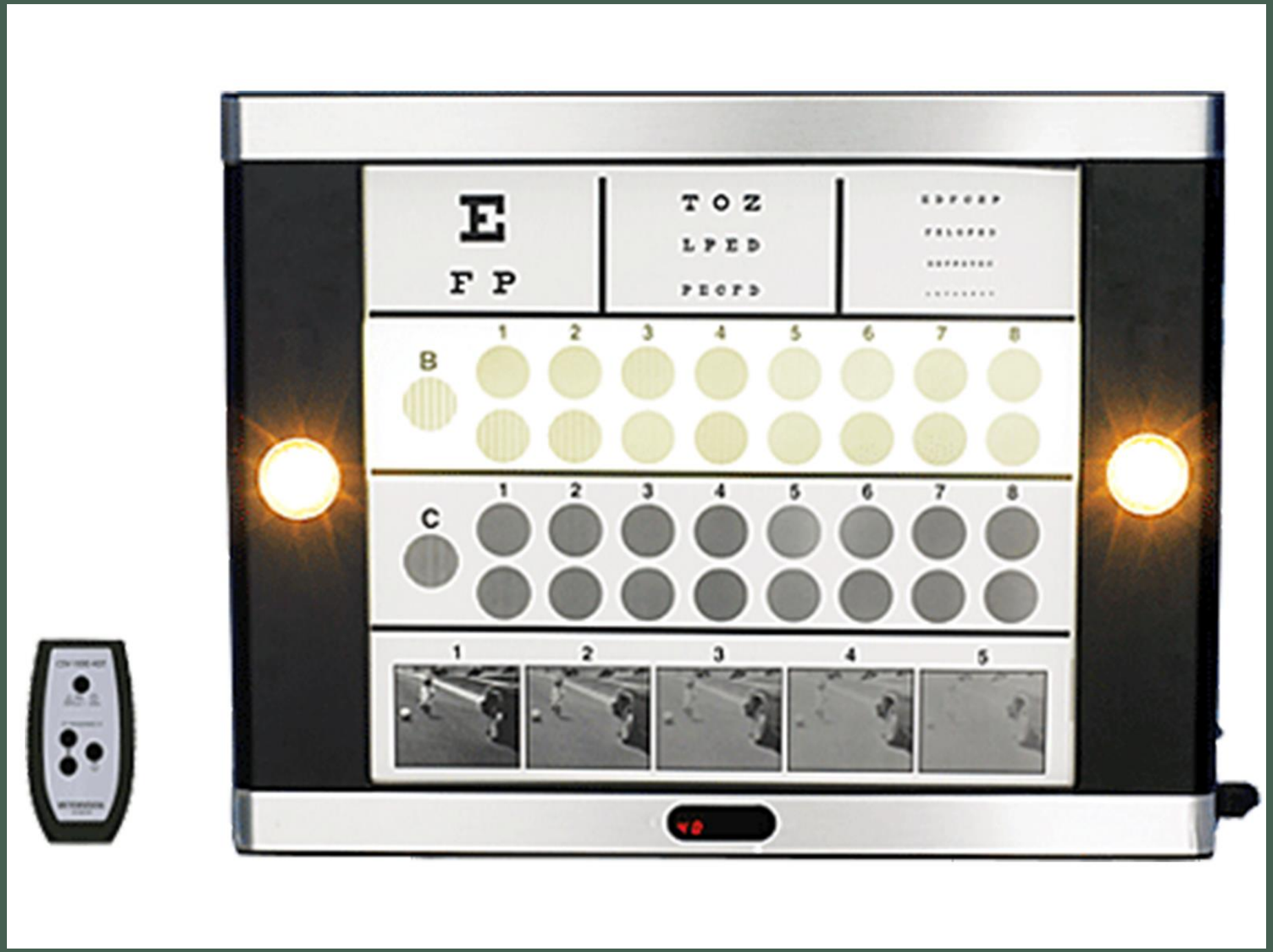
When normal faces are rapidly presented in the visual periphery, they are perceived as grotesque and distorted. This phenomenon, "The flashed-face distortion effect" (FFDE) is a powerful illusion that may reveal important properties of how faces are coded in peripheral vision. Despite the strength of the illusion (and its popularity), there has been almost no follow-up work to examine what governs the strength of the illusion or to develop a clear account of its phenomenology. Presently, our goal was to address this by manipulating aspects of facial appearance and spatial/temporal properties of the flashed-face stimulus to determine what factors modulate the illusion's strength. In three experiments, we investigated the extent to which local contrast (operationalized by the presence or absence of makeup), image eccentricity, image size, face inversion, and presentation rate of images within the sequence each contributed to the strength of the FFDE. We found that some of these factors (eccentricity and presentation rate) mattered a great deal, while others (makeup, face inversion and image size) made little contribution to the strength of the FFDE. We discuss the implications of these results for a mechanistic account of the FFDE, and suggest several avenues for future research based on this compelling visual illusion.

3. Dysphotosopsia

Figure 1 The EyeVisPod (PGB, Milan, Italy) graphical illustration depicting dysphotopsia (with the kind permission of EyeVisPod).

BMJ Open Ophth: first published as 10.1136/bmjophth-2016-000064 o

Glare test



Glare, Halo & Brigthness illusions

Acta Psychologica 198 (2019) 102882

Contents lists available at ScienceDirect

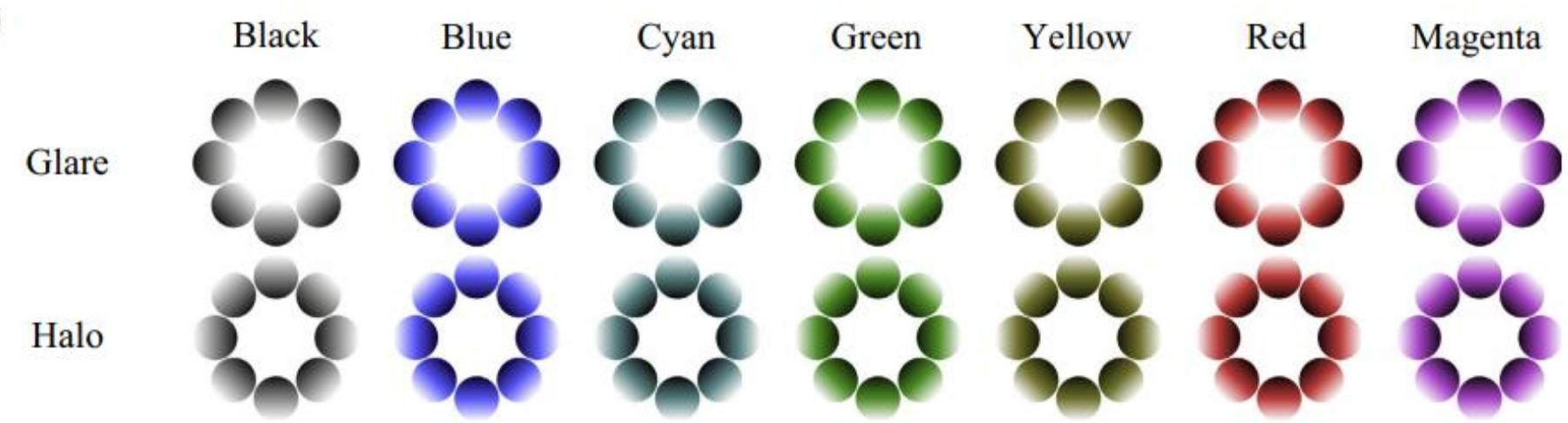
Acta Psychologica

journal homepage: www.elsevier.com/locate/actpsy

Colorful glares: Effects of colors on brightness illusions measured with pupillometry

Yuta Suzuki[a,*], Tetsuto Minami[a,b], Bruno Laeng[c], Shigeki Nakauchi[a]

[a] Department of Computer Science and Engineering, Toyohashi University of Technology, 1-1 Hibarigaoka Tempaku, Toyohashi, Aichi 441-8580, Japan
[b] Electronics-Inspired Interdisciplinary Research Institute, Toyohashi University of Technology, 1-1 Hibarigaoka Tempaku, Toyohashi, Aichi 441-8580, Japan
[c] Department of Psychology, University of Oslo, 0373 Oslo, Norway



Glare illusions

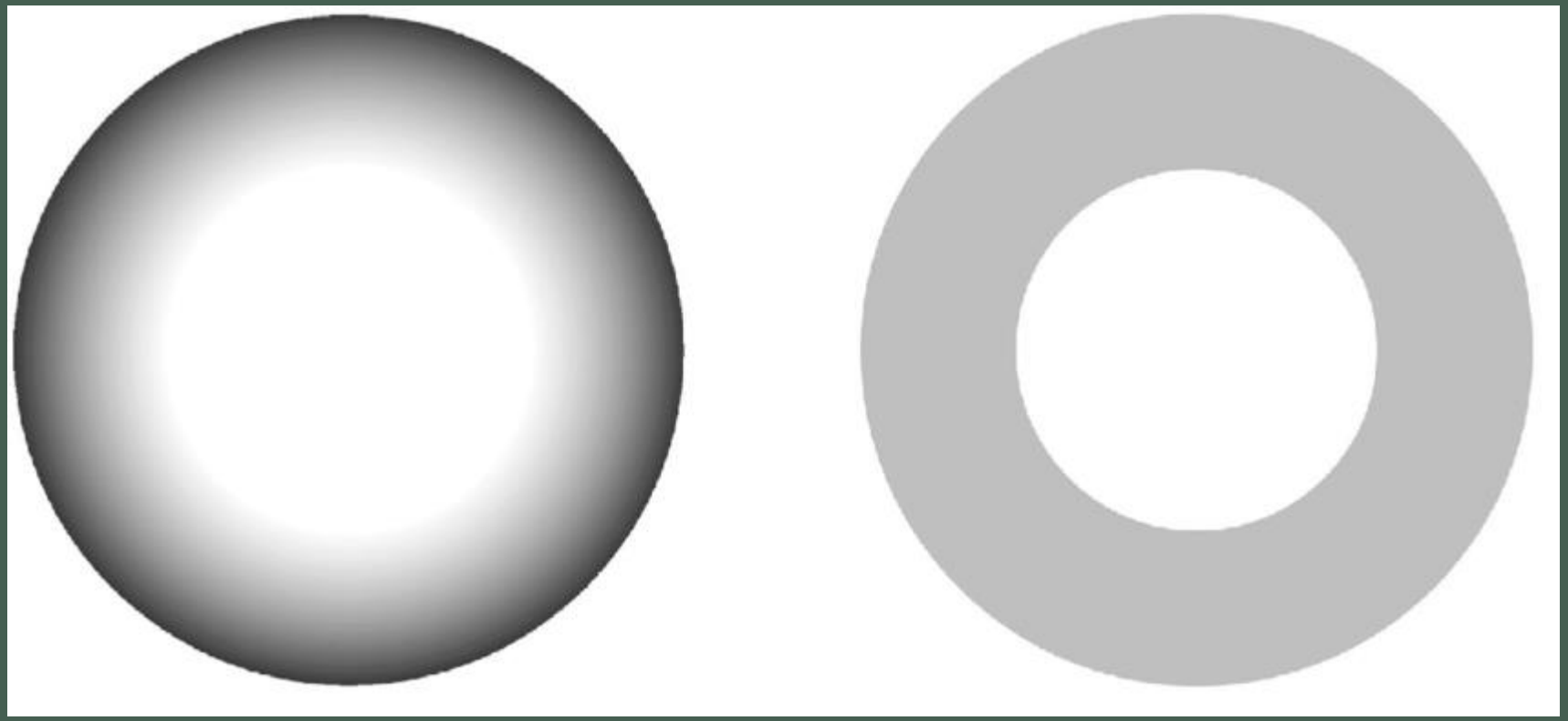
NEUROSCIENCE
RESEARCH ARTICLE
Y. Suzuki et al. / Neuroscience 416 (2019) 221–228

Pupil Constriction in the Glare Illusion Modulates the Steady-State Visual Evoked Potentials

Yuta Suzuki,[a] Tetsuto Minami[a,b,*] and Shigeki Nakauchi[a]

[a] Department of Computer Science and Engineering, Toyohashi University of Technology, 1-1 Hibarigaoka Tempaku, Toyohashi, Aichi 441-8580, Japan

[b] Electronics-Inspired Interdisciplinary Research Institute, Toyohashi University of Technology, 1-1 Hibarigaoka Tempaku, Toyohashi, Aichi 441-8580, Japan



Glare illusions

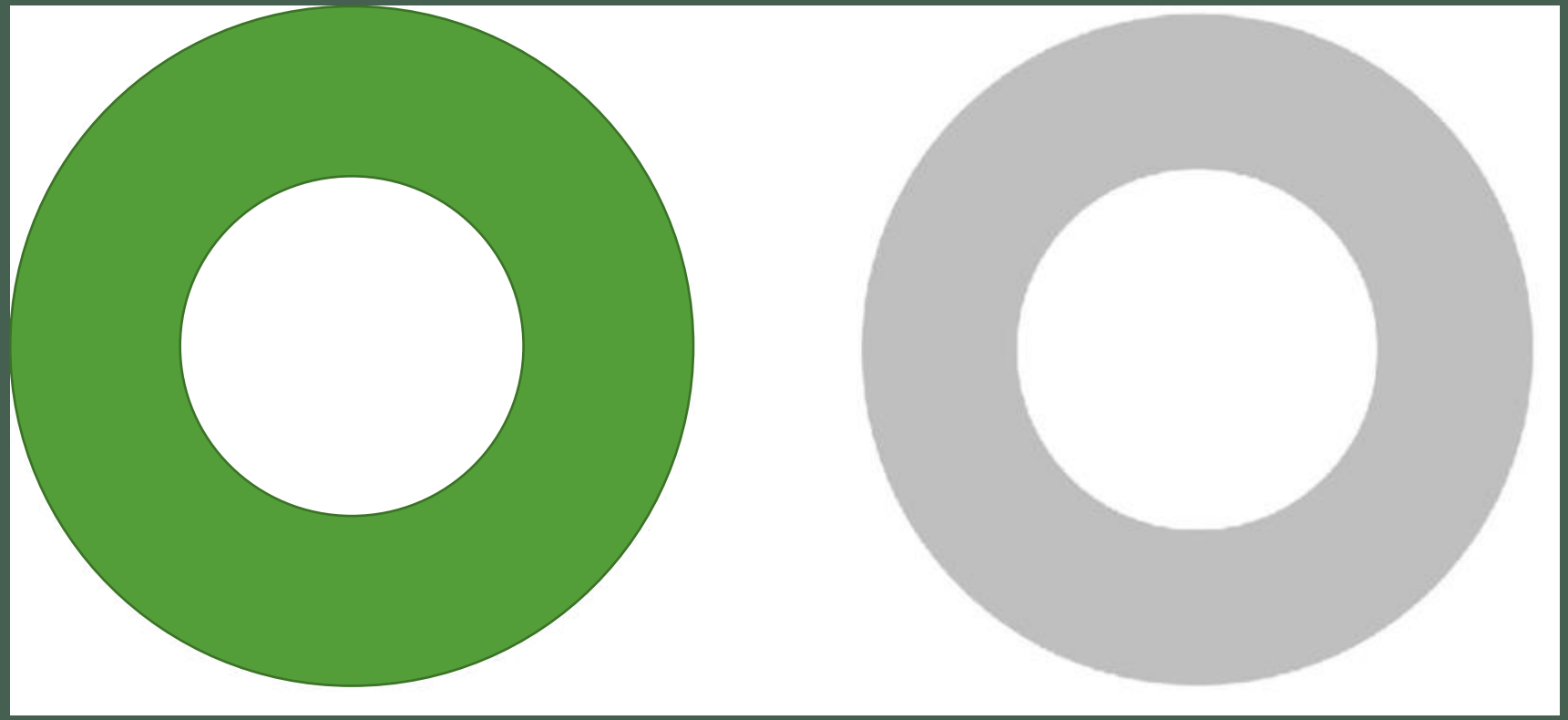
NEUROSCIENCE
RESEARCH ARTICLE
Y. Suzuki et al. / Neuroscience 416 (2019) 221–228

Pupil Constriction in the Glare Illusion Modulates the Steady-State Visual Evoked Potentials

Yuta Suzuki,[a] Tetsuto Minami[a,b,*] and Shigeki Nakauchi[a]

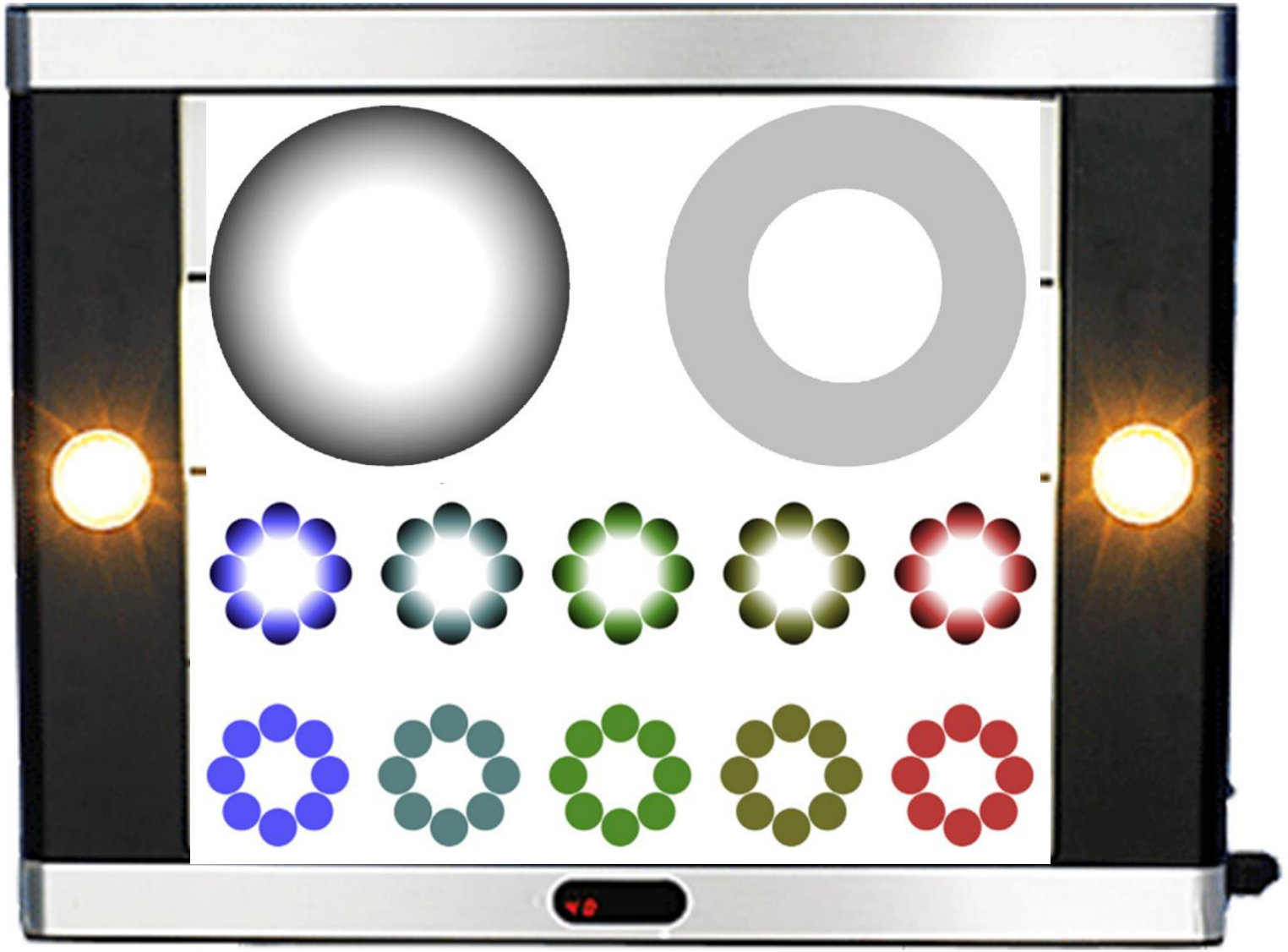
[a] Department of Computer Science and Engineering, Toyohashi University of Technology, 1-1 Hibarigaoka Tempaku, Toyohashi, Aichi 441-8580, Japan

[b] Electronics-Inspired Interdisciplinary Research Institute, Toyohashi University of Technology, 1-1 Hibarigaoka Tempaku, Toyohashi, Aichi 441-8580, Japan

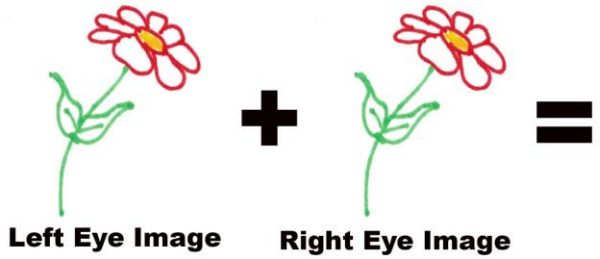


Glare illusions in art

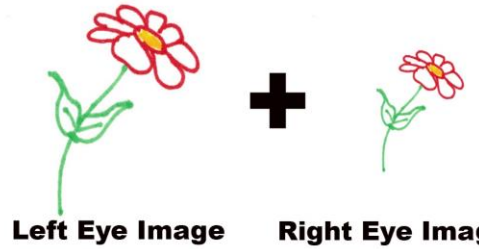
Glare test with Brigthness illusions?



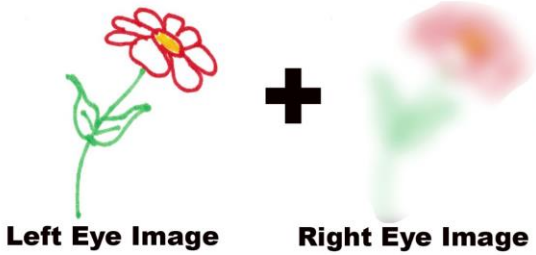
4. Binocular Dysfunctions

A.  = **Binocular Vision**

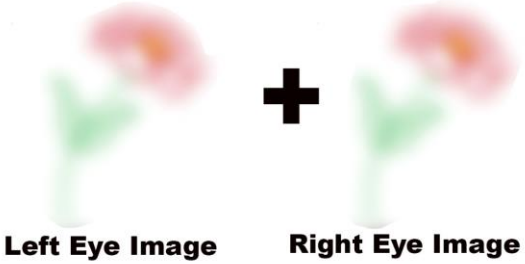
Left Eye Image + Right Eye Image

B.  = **Brain Ignores Right Eye**
No Binocularity

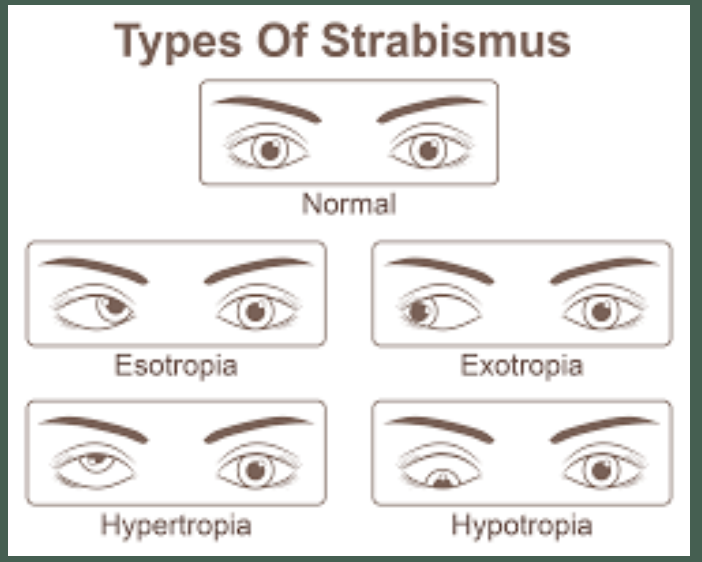
Left Eye Image + Right Eye Image

C.  = **Brain Ignores Right Eye**
No Binocularity

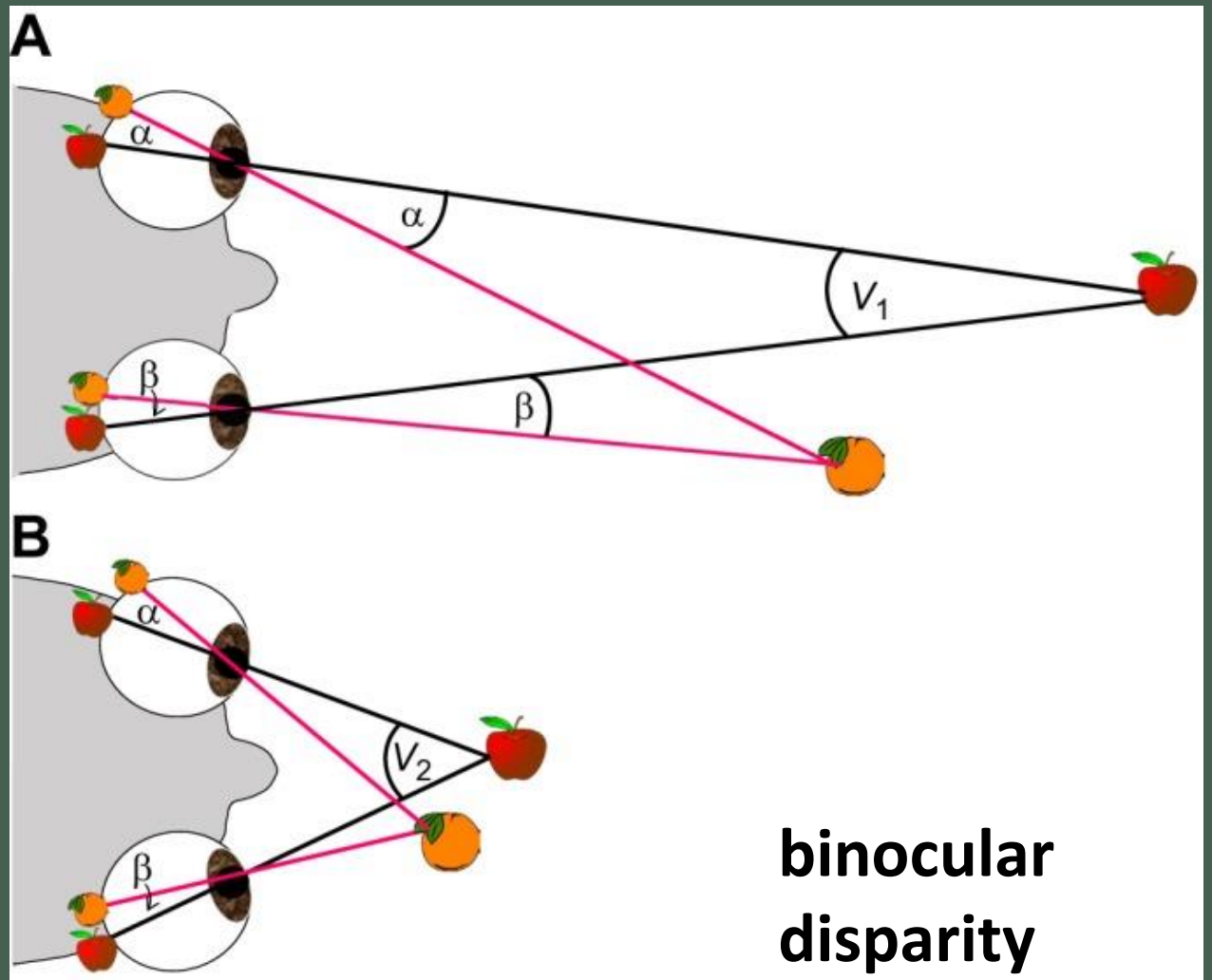
Left Eye Image + Right Eye Image

D.  = **Poor Vision**
No Binocularity

Left Eye Image + Right Eye Image



Binocular vision
&
3D view



binocular disparity

3D Optical illusions: Anaglyphs

3D Optical illusions
&
Optometric tests

LANG-STEREOTEST 31295 Stereotest di Lang II, per lo Screening dei Difetti della Visione Stereoscopica e Binoculare nei Bambini

Marca: LANG-STEREOTEST

★★★★☆ 11 voti

136,64 €

e Resi GRATUITI

Tutti i prezzi includono l'IVA.

Acquista subito e paga a rate con Cofidis al check-out Scopri di più

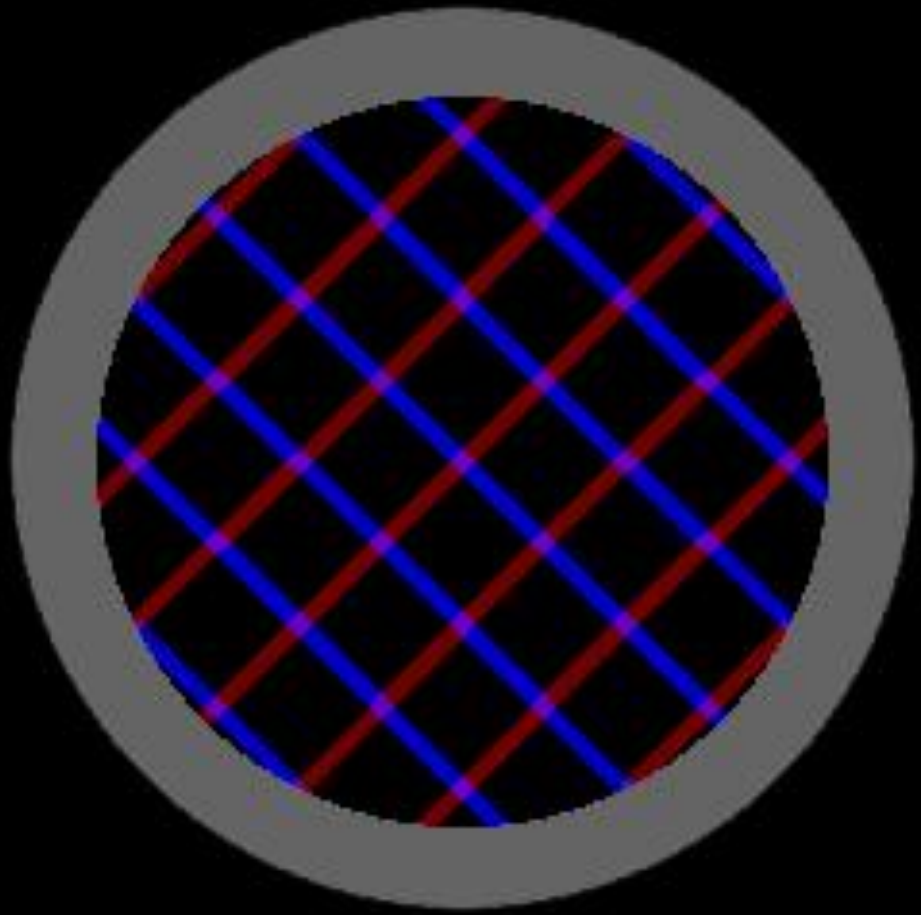
Spedizione GRATUITA con consegna presso **punti di ritiro (se disponibile per il tuo ordine).** Dettagli

Nuovo (4) da 136,64 € **Spedizione GRATUITA.**

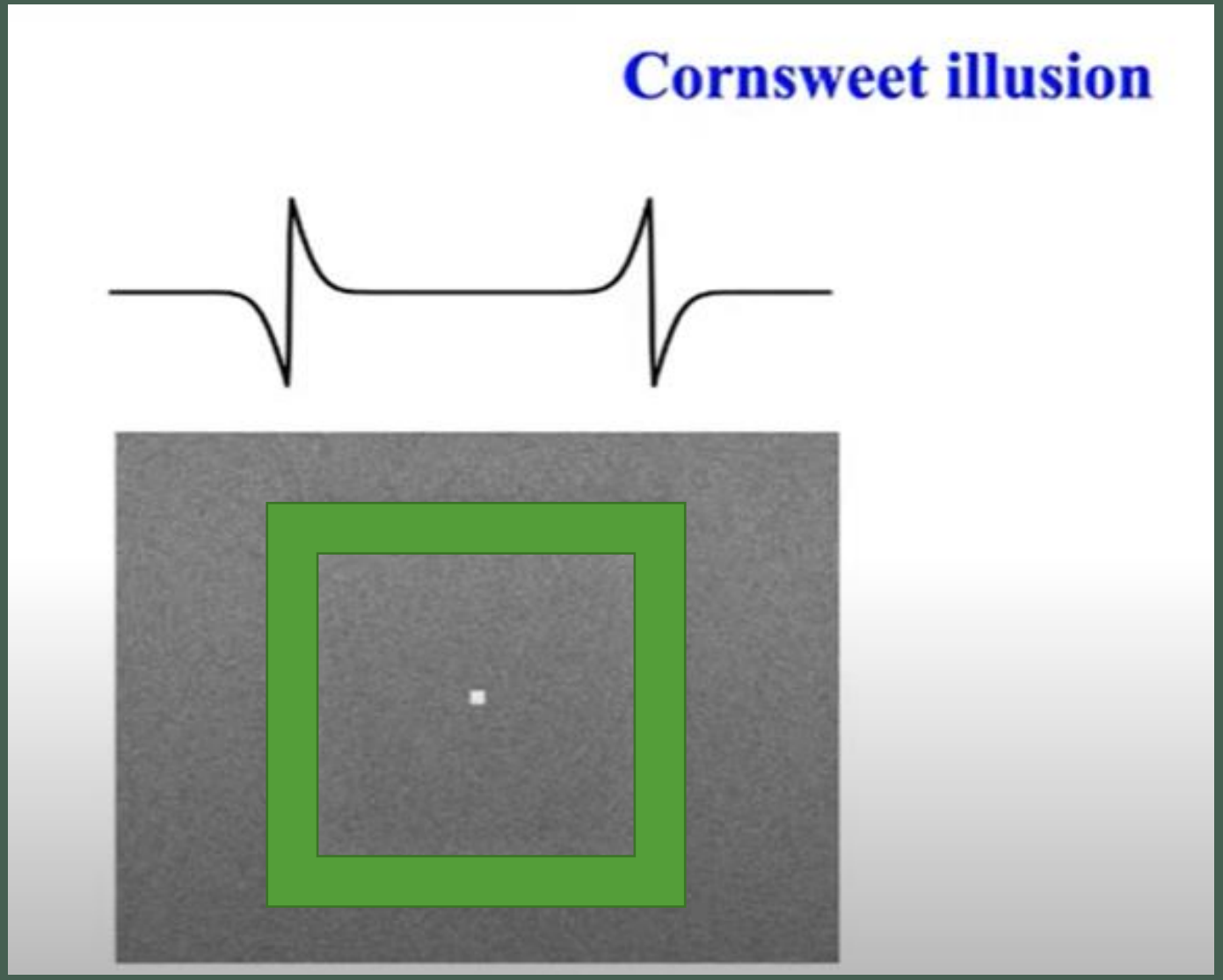
Taglia:
Bambini

Nome modello:
Single

Binocular rivalry



Brigthness illusions



Brigthness illusions