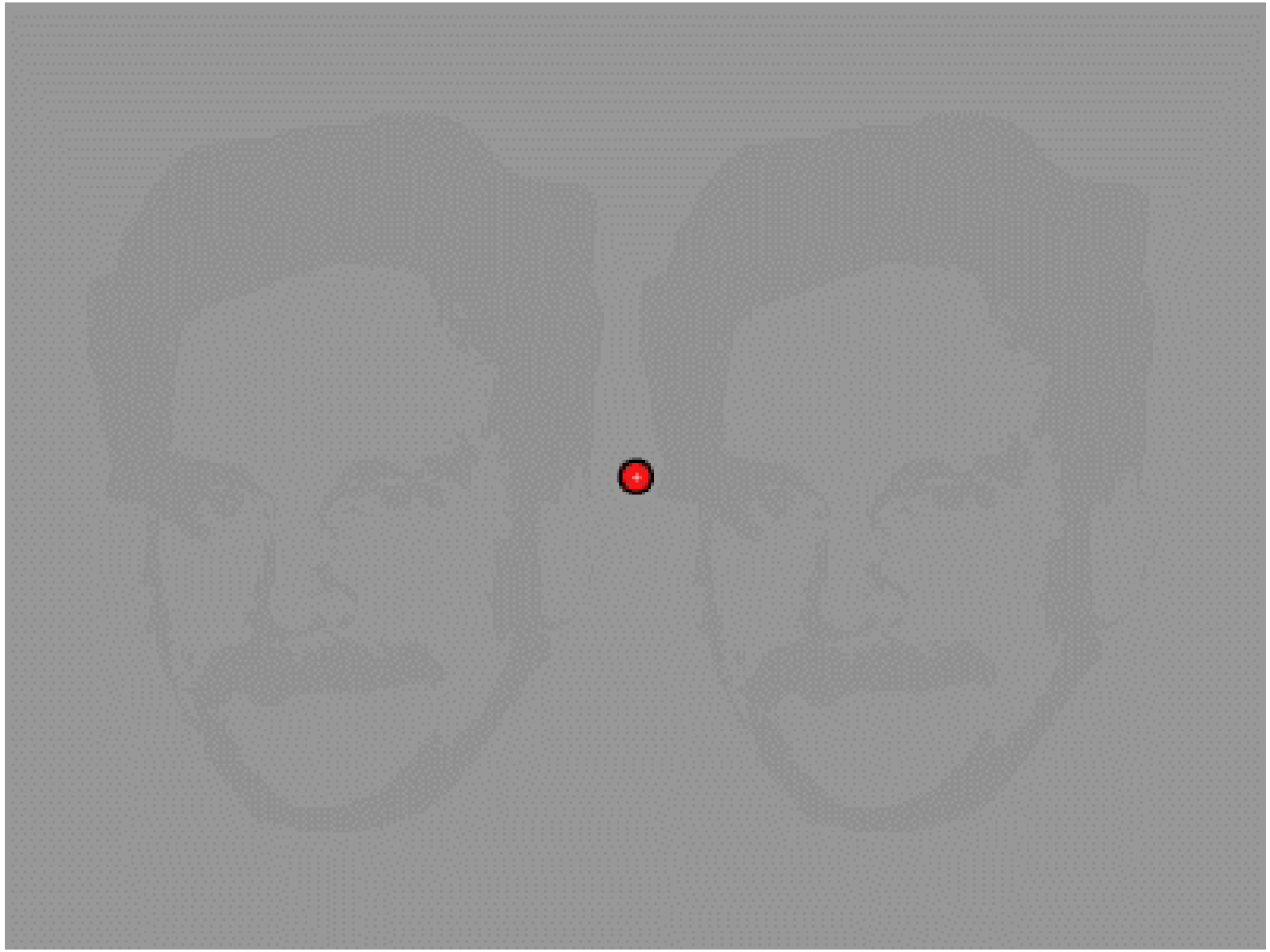

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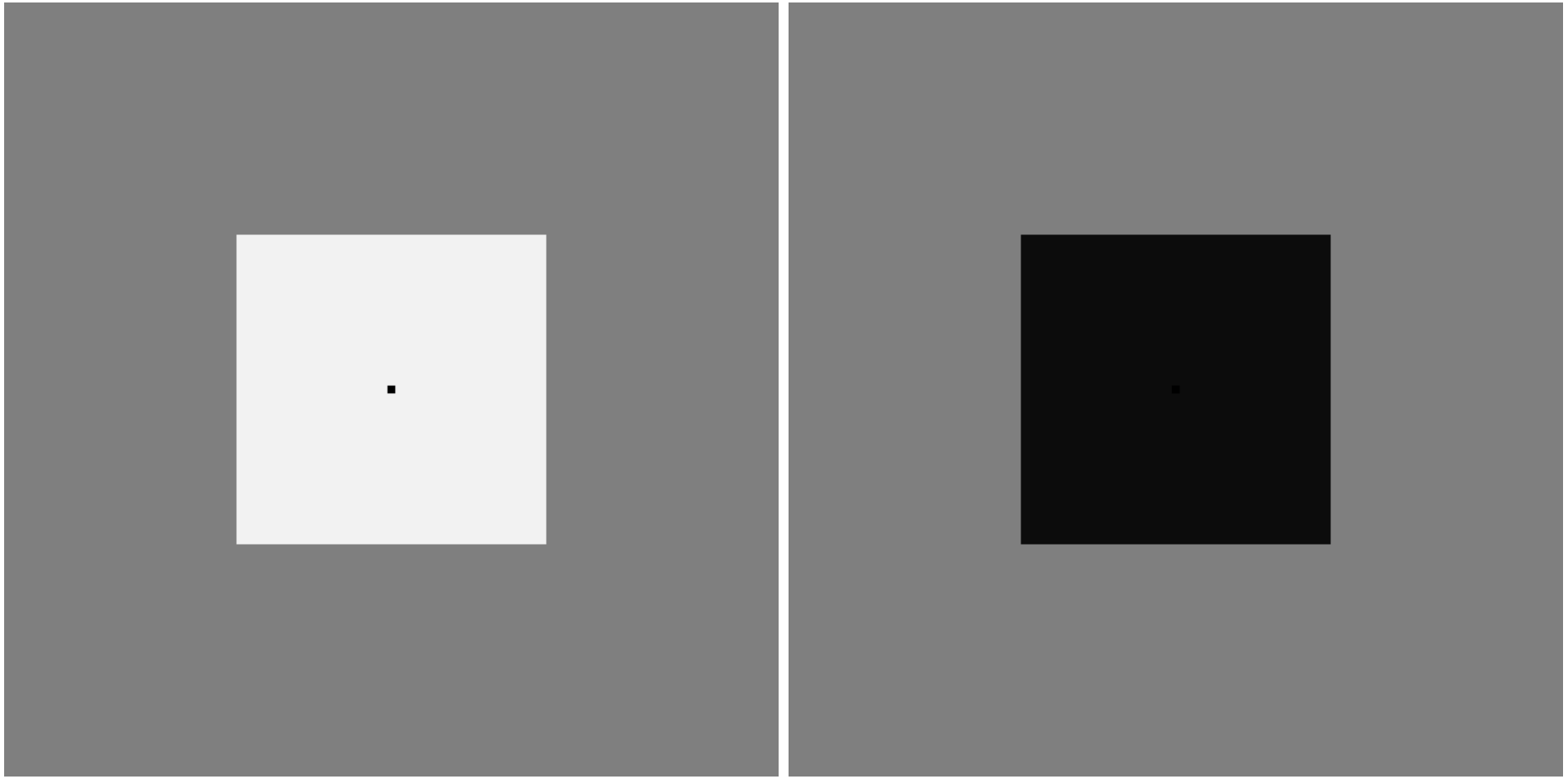
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

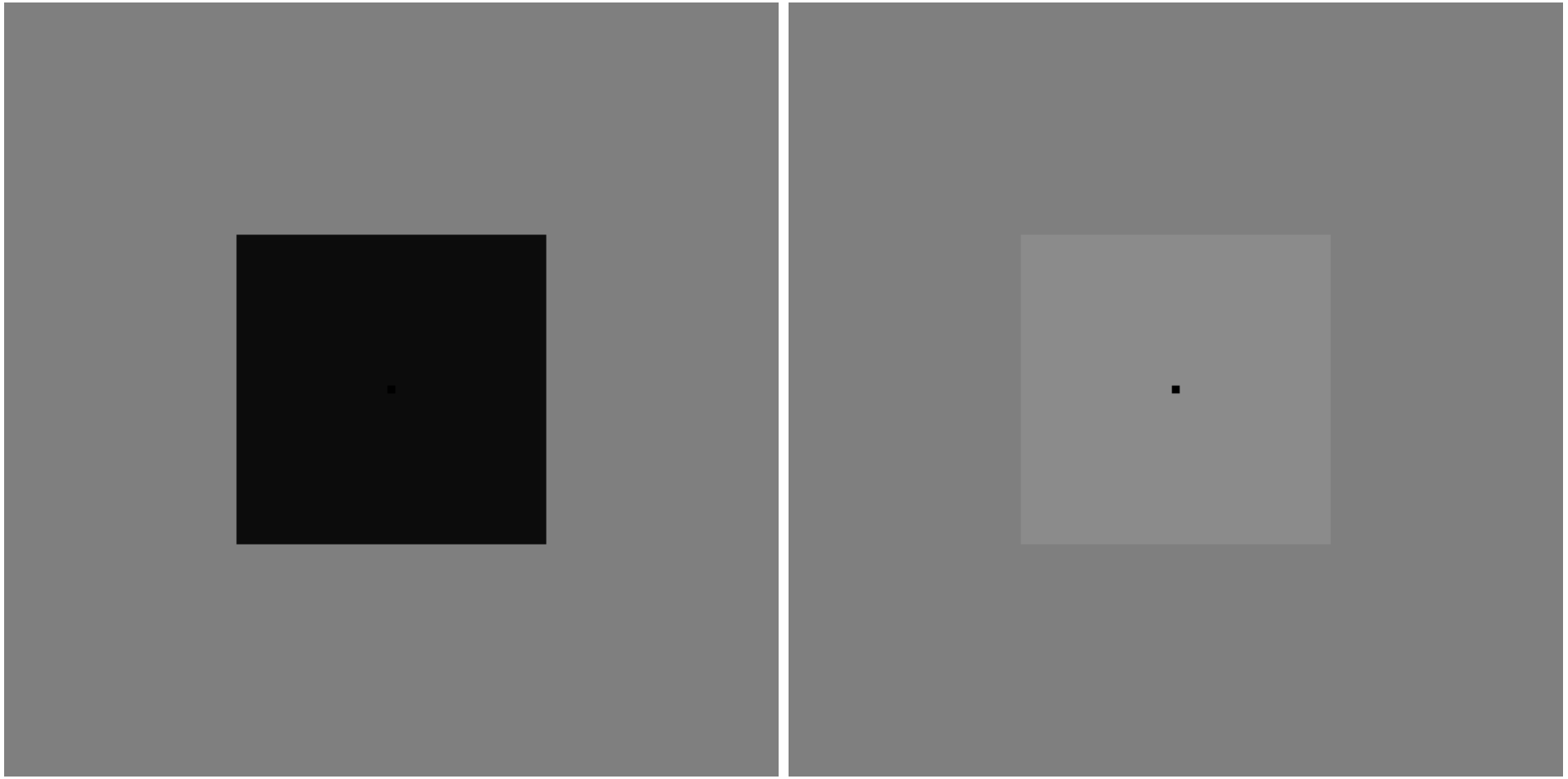
Felix Dexel

Flicker Adaptation



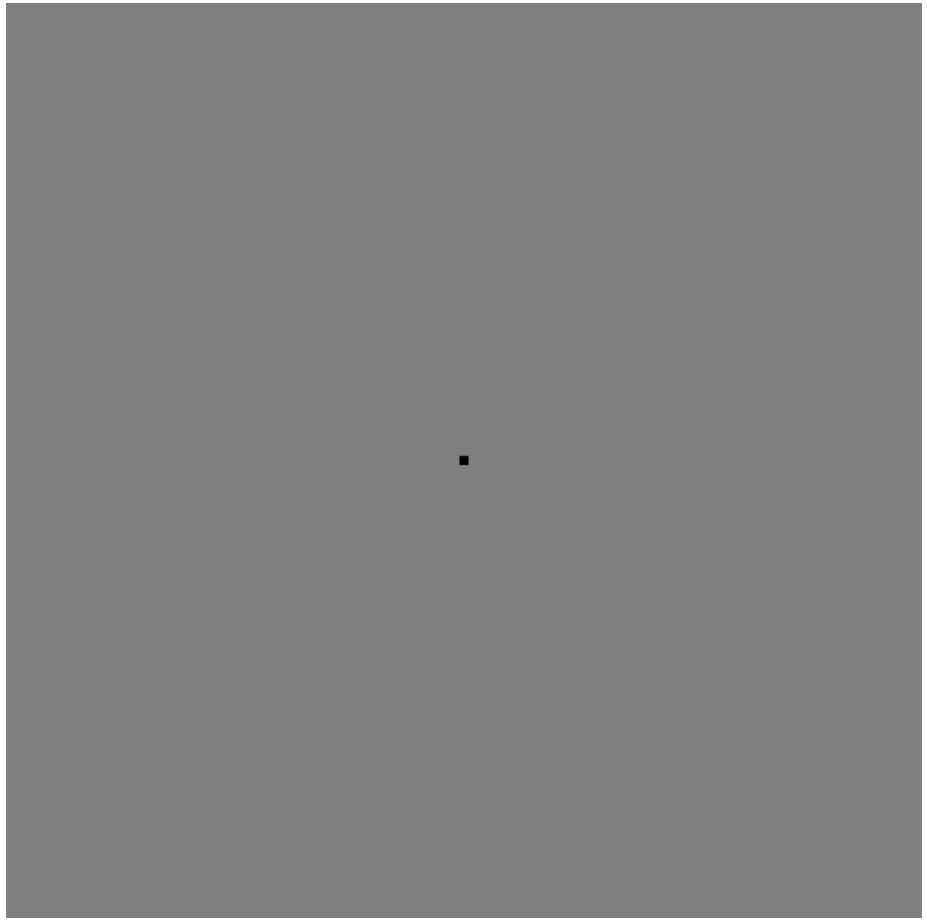
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Flicker Adaptation



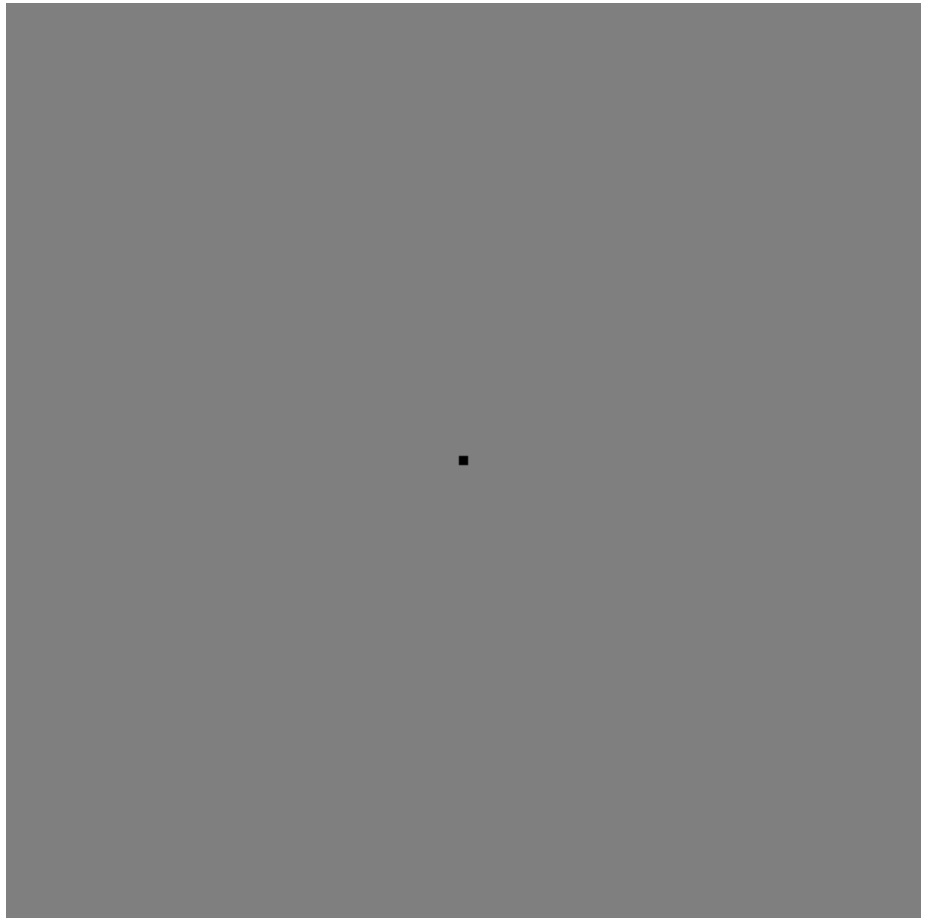
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Flicker Adaptation



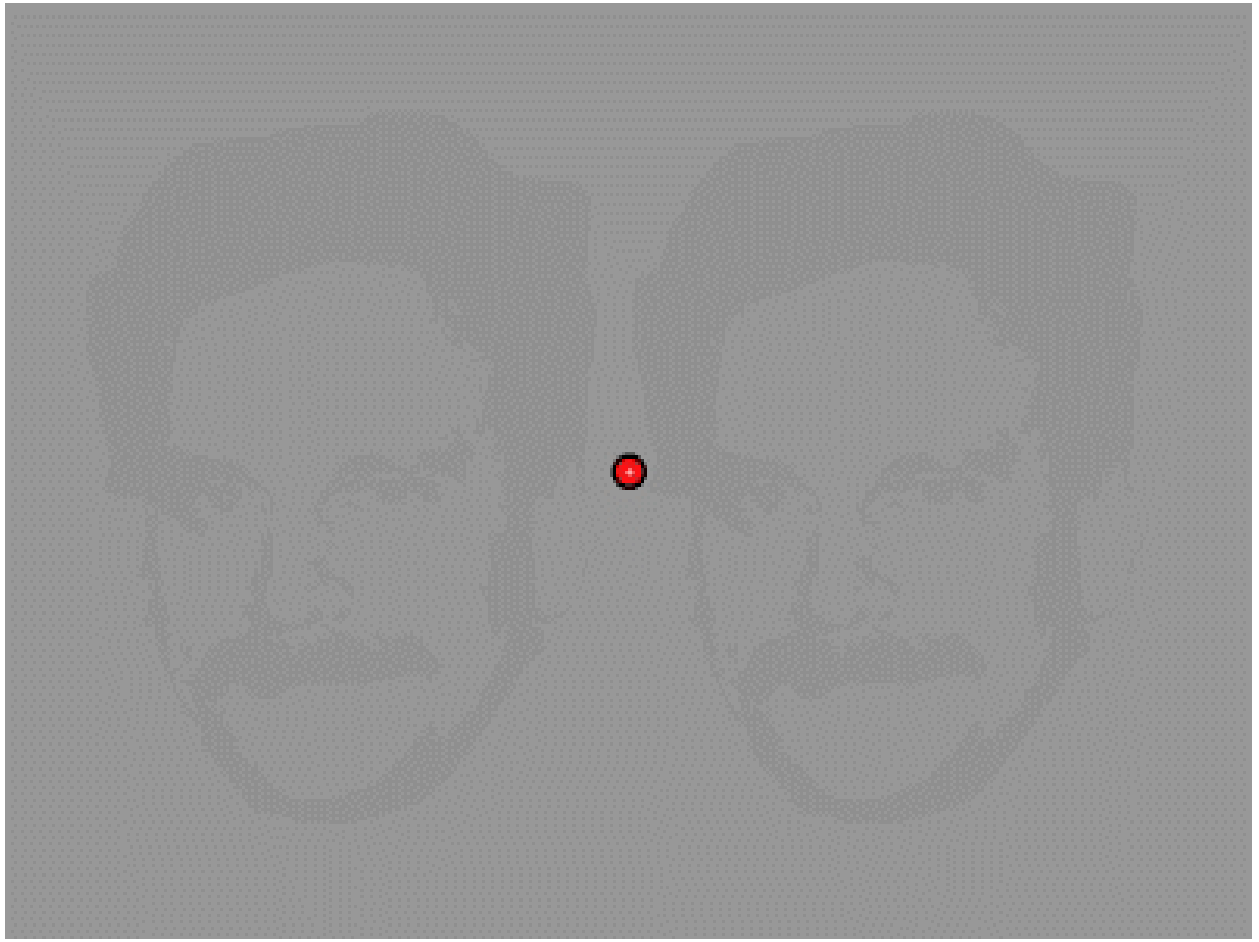
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Flicker Adaptation



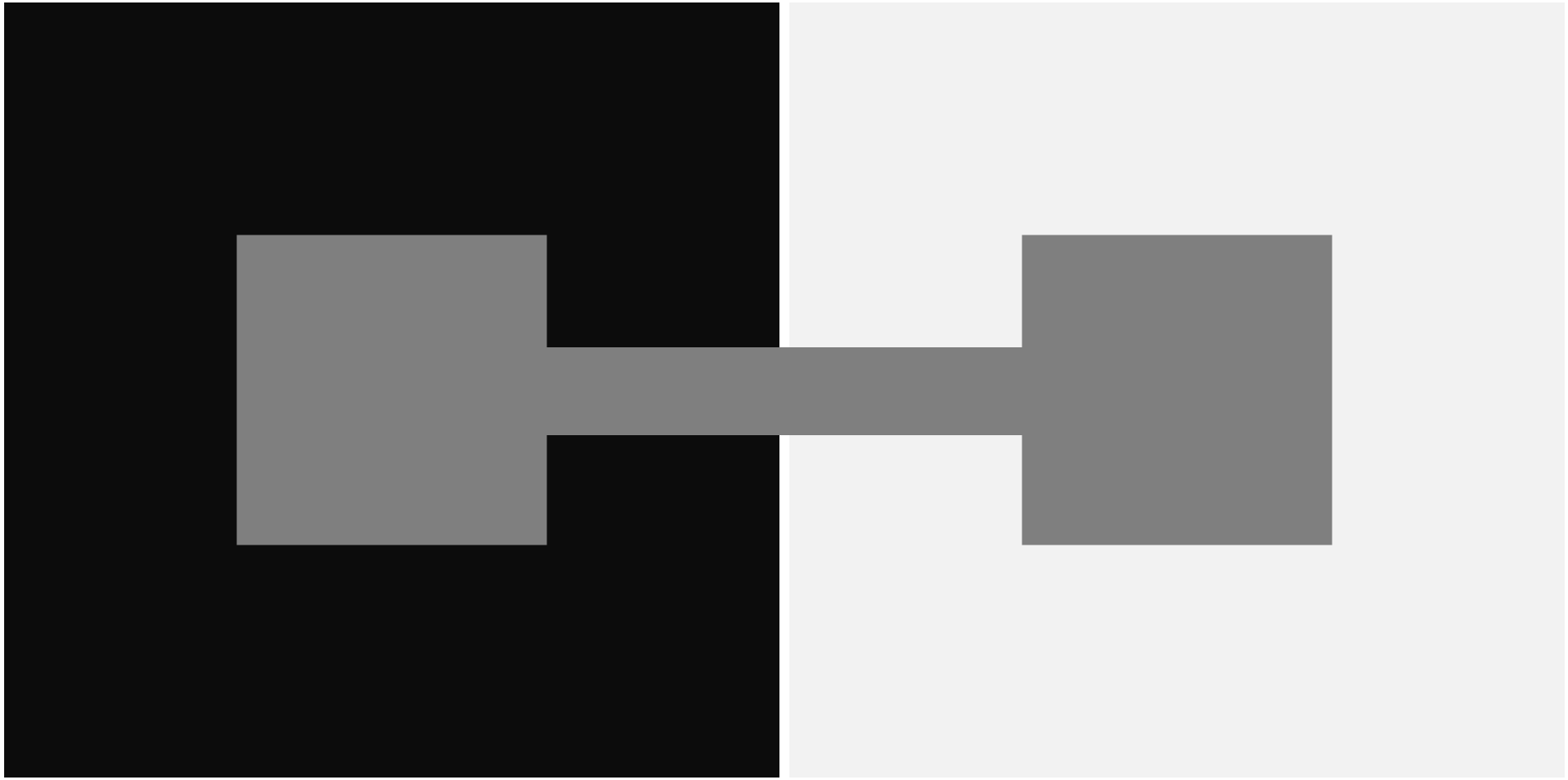
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Flicker Adaptation



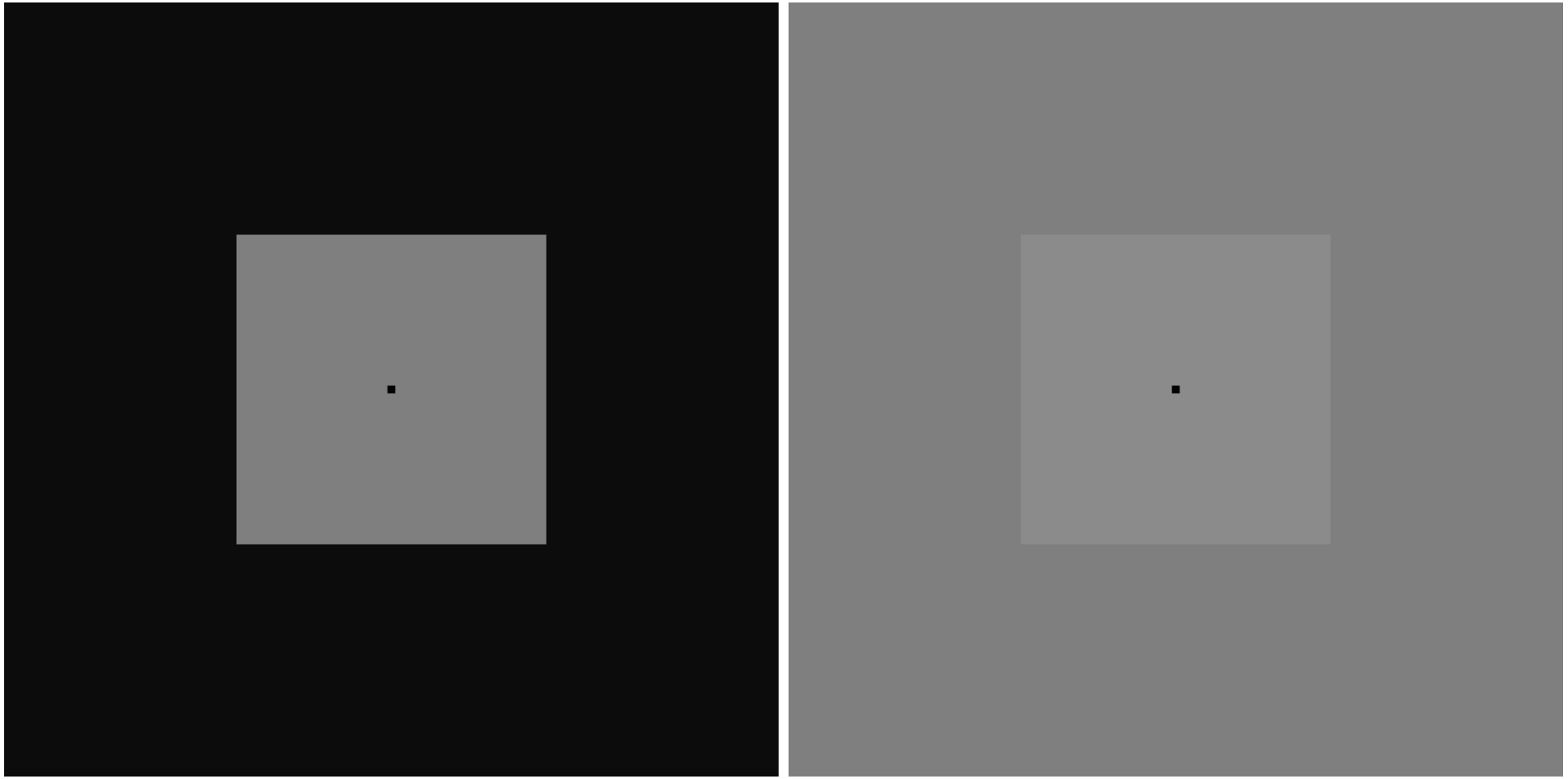
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Surround-Flicker induced Adaptation



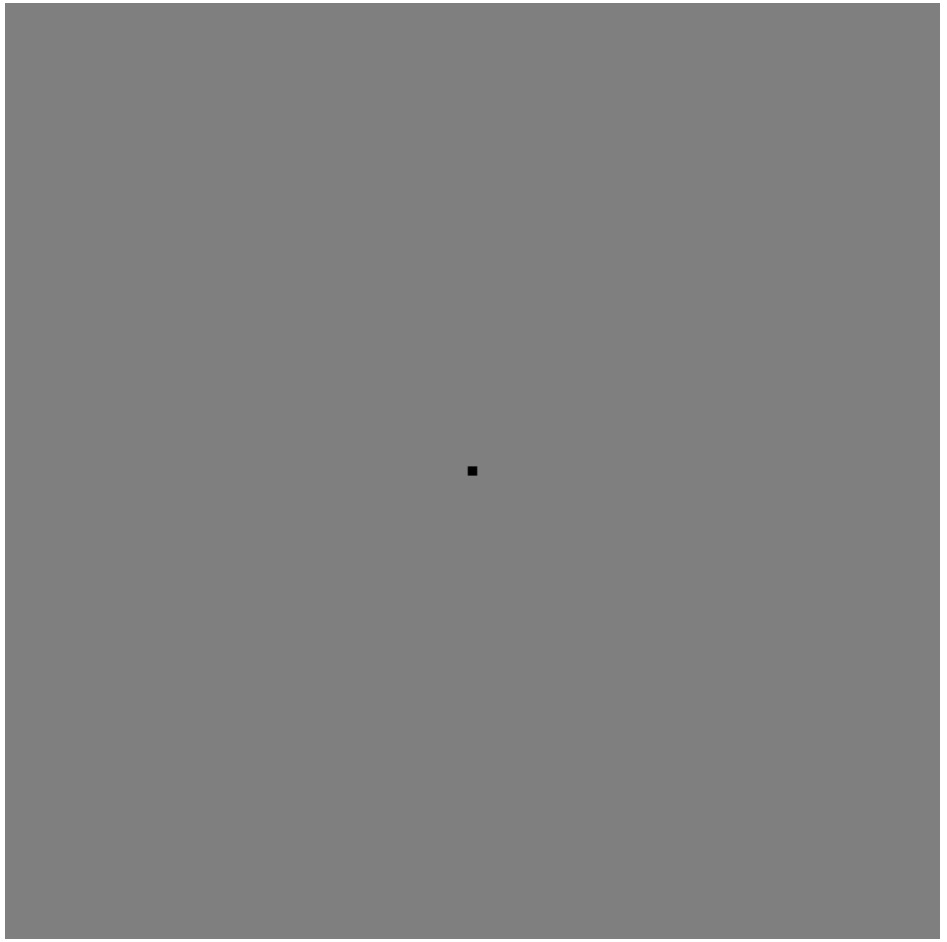
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Surround-Flicker induced Adaptation



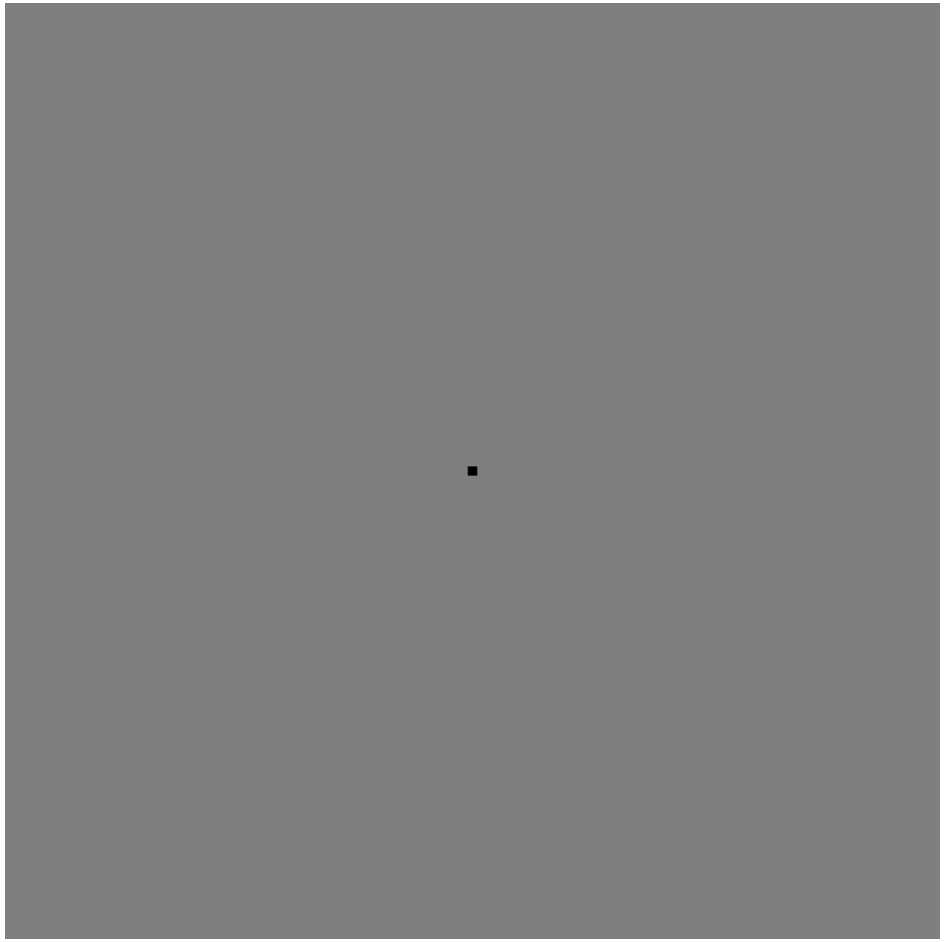
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Surround-Flicker induced Adaptation



The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

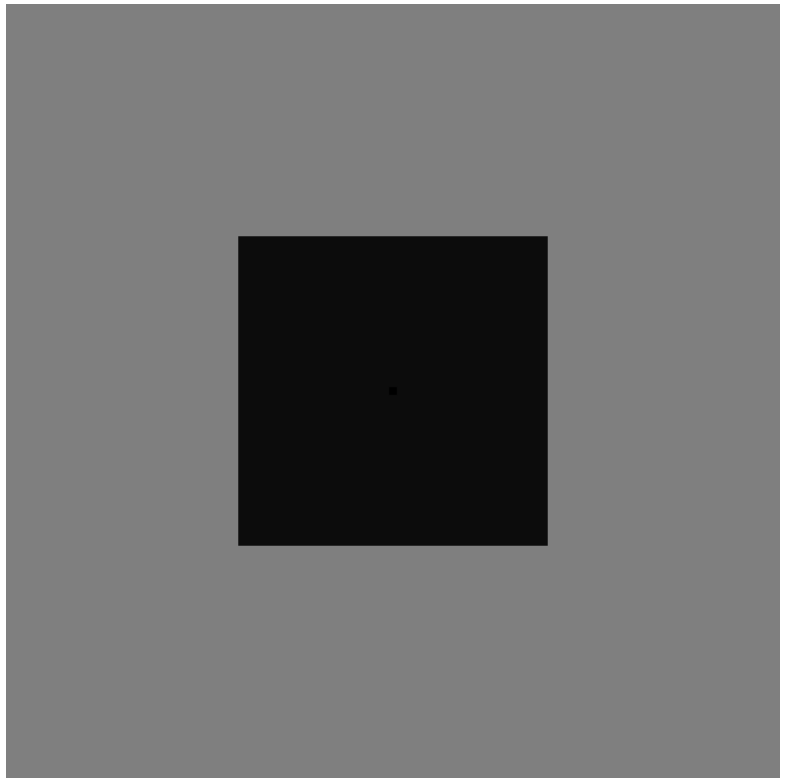
Surround-Flicker induced Adaptation



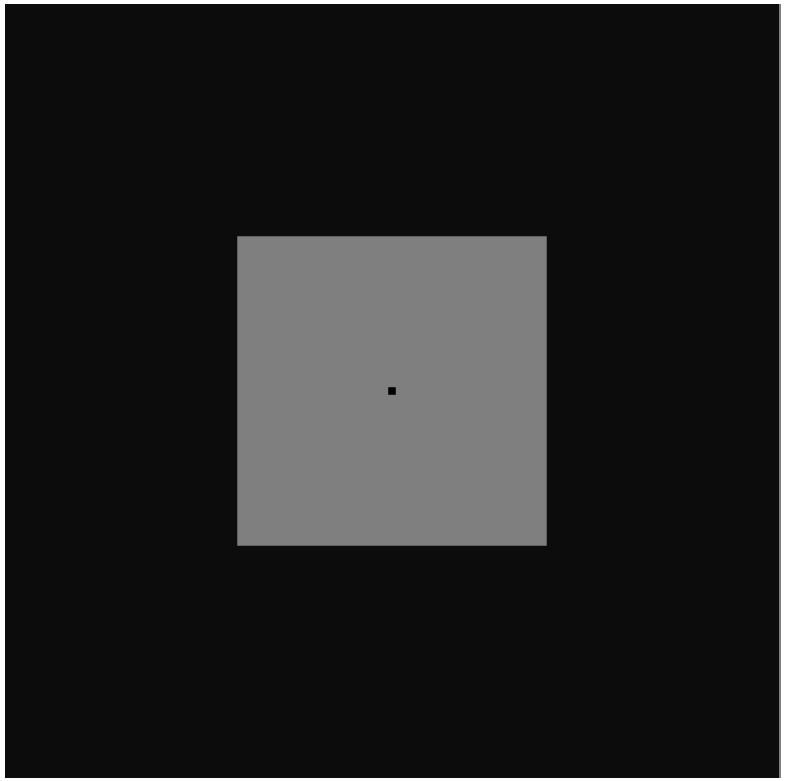
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Flicker Types

Flicker Adaptation



Surround-Flicker induced Adaptation

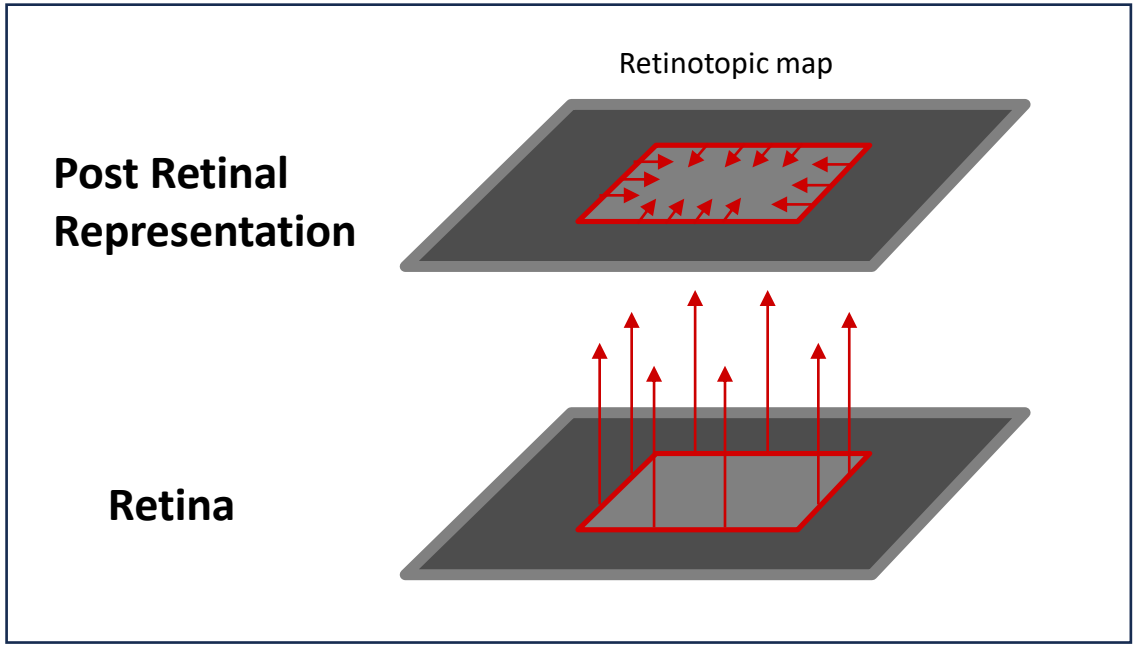


The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

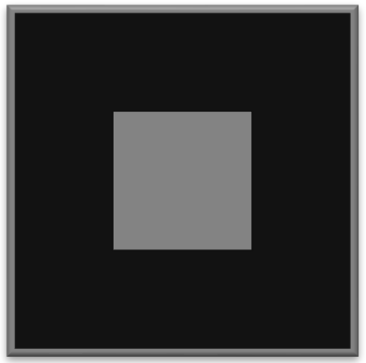
Brightness representation

- Brightness representation of surfaces in the brain
- Theories
  - neural filling-in
  - symbolic filling-in
  - multiscale spatial filtering

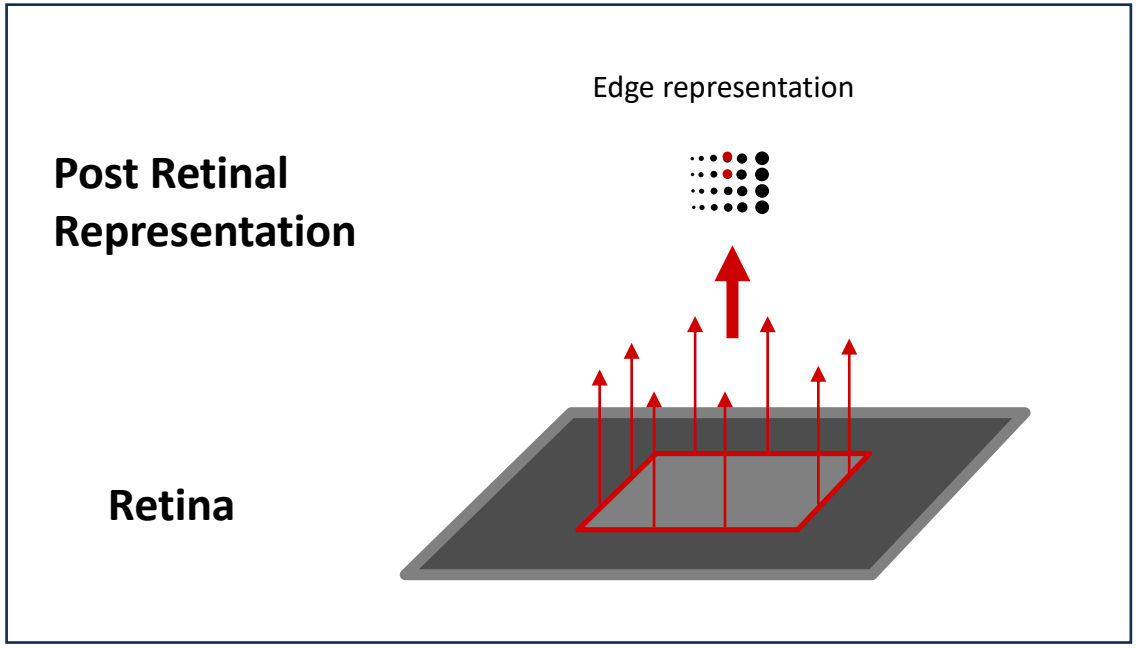
Theories – neural filling-in



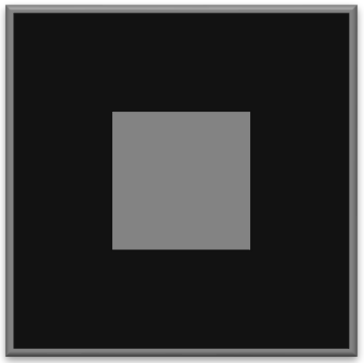
Stimuli



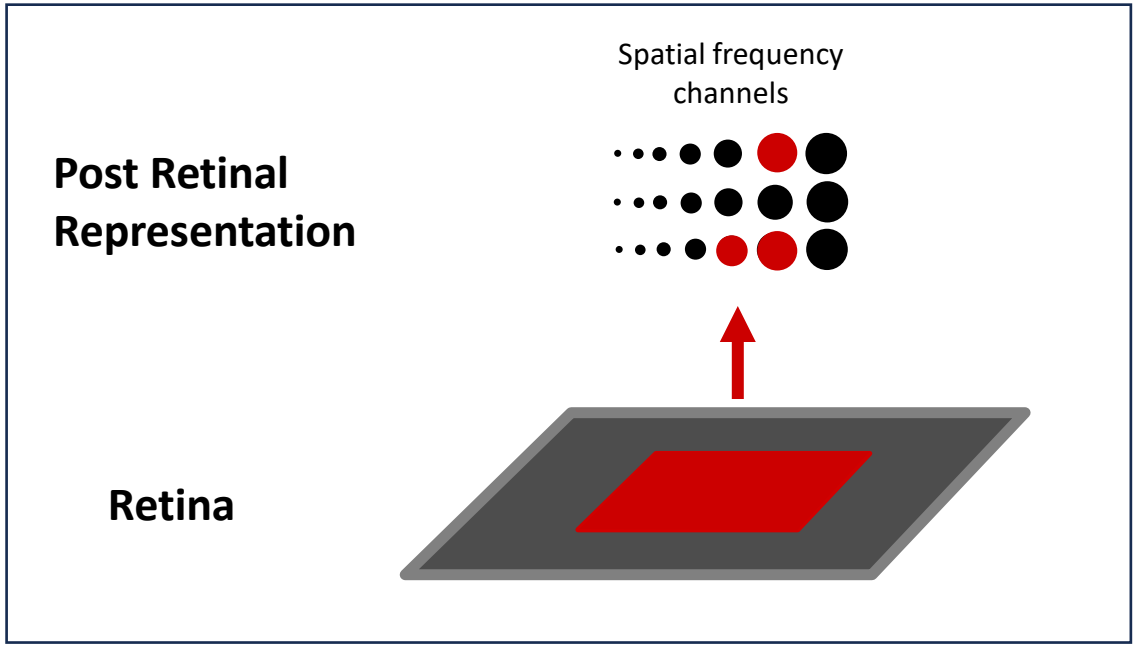
Theories – symbolic filling-in



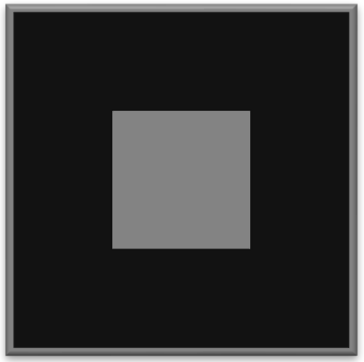
Stimuli



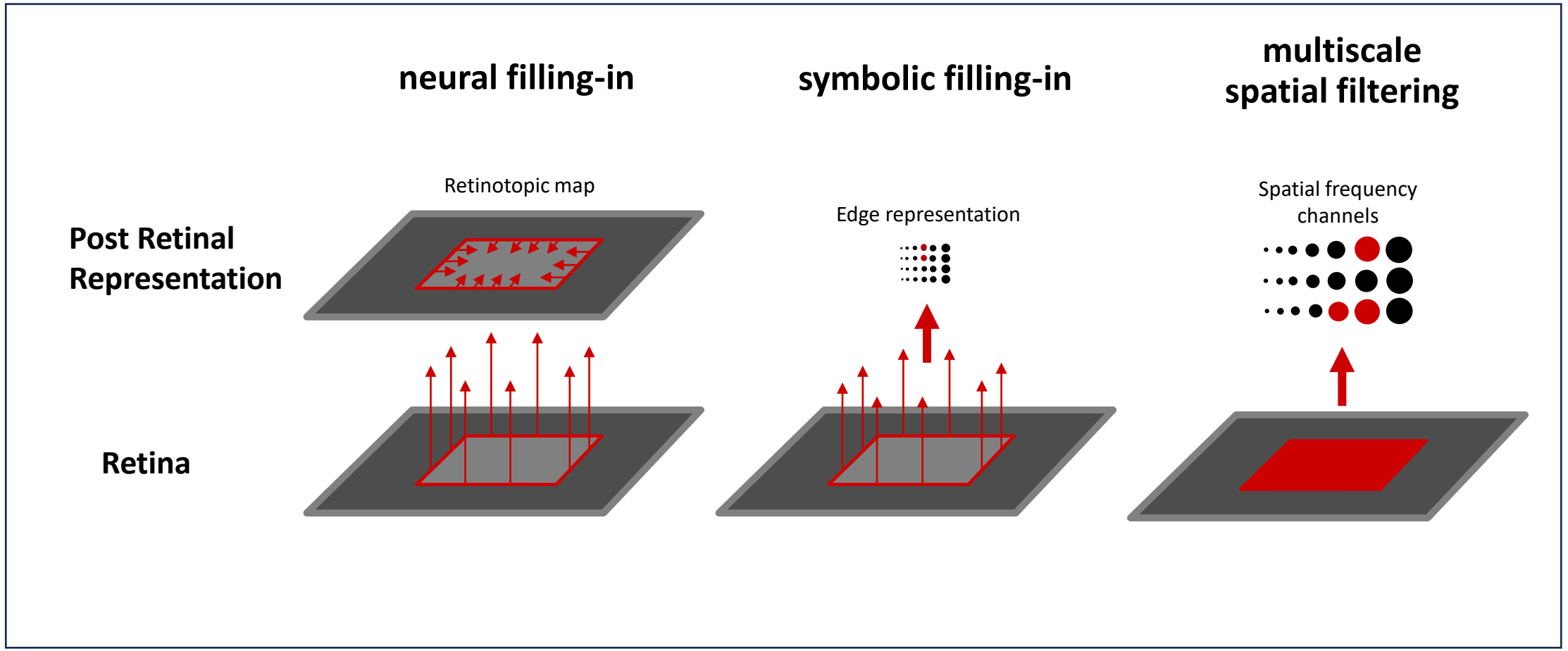
Theories – multiscale spatial filtering



Stimuli

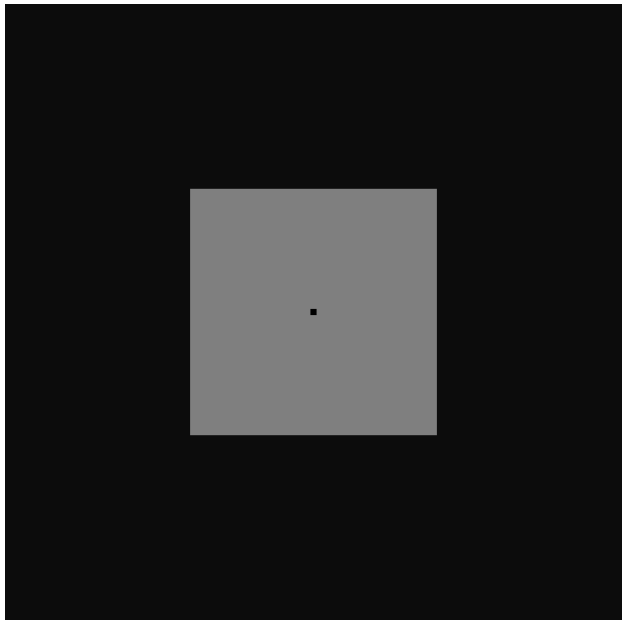


Theories

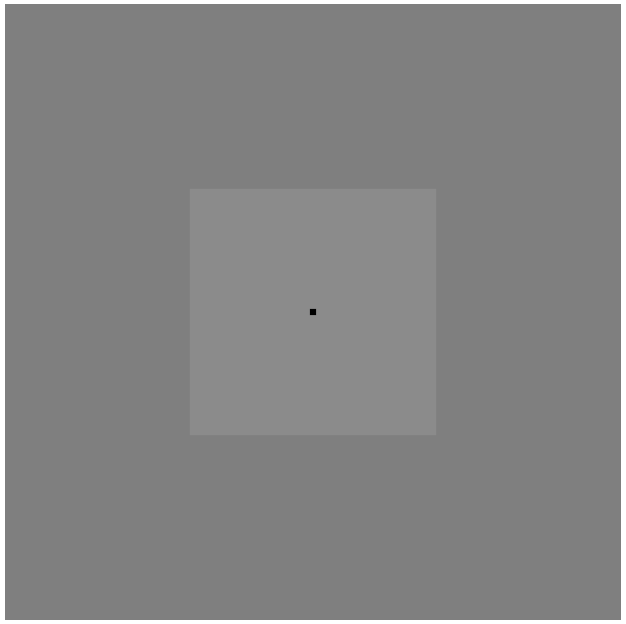

neural filling-in
symbolic filling-in
multiscale
spatial filtering
Retinotopic map
Edge representation
Spatial frequency
channels
Post Retinal
Representation
Retina

Test options

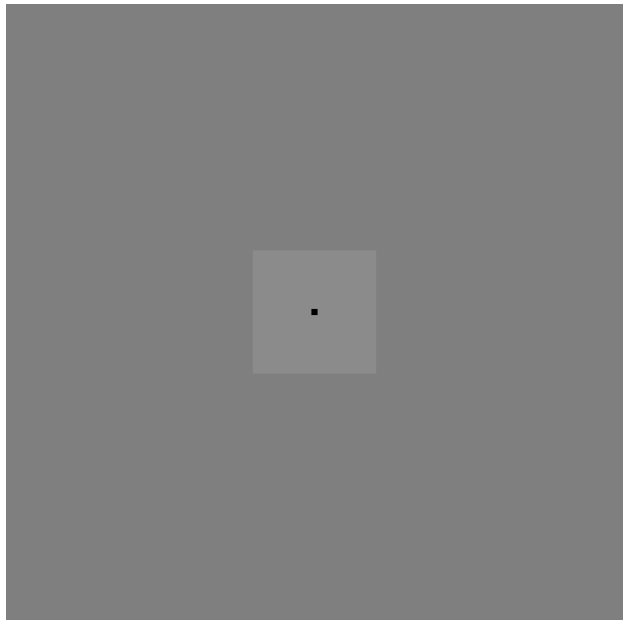
Flicker



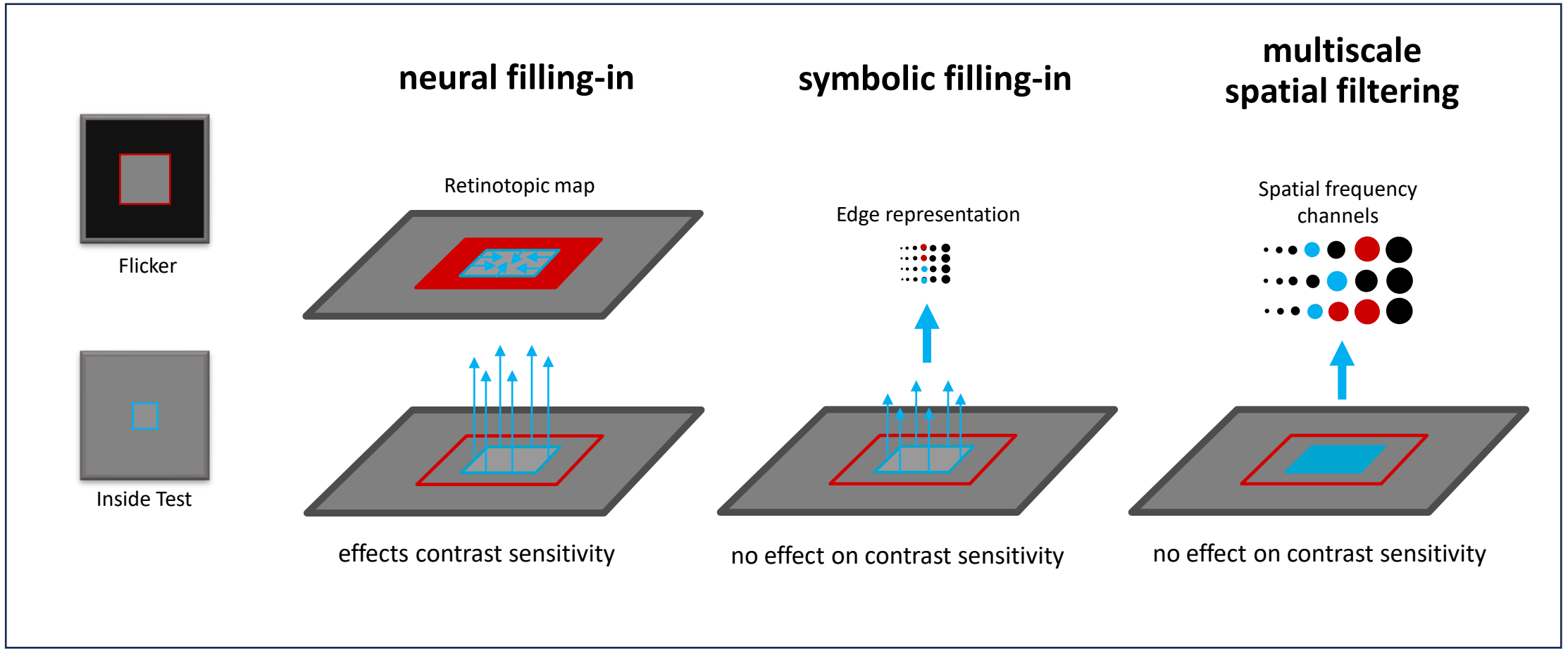
Aligned Condition



Inside Condition



Theories Prediction: inside condition



Robinson and de Sa

Robinson & de Sa (2012)

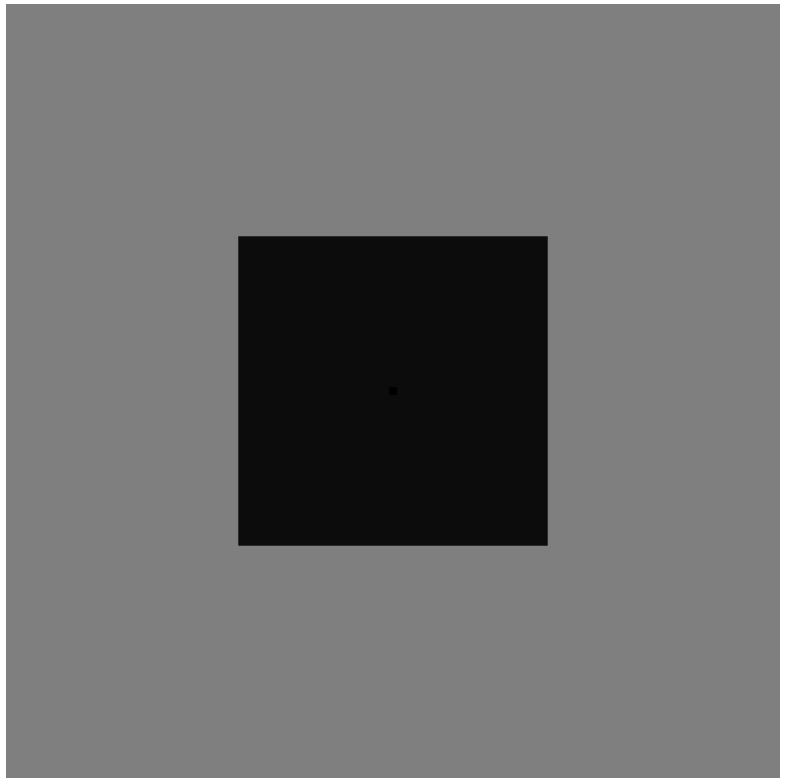
- Flicker Adaptation
- Aligned condition:
  - Effect on contrast sensitivity
- Inside condition:
  - Effect on contrast sensitivity
  - -> neural filling-in

Robinson & de Sa (2013)

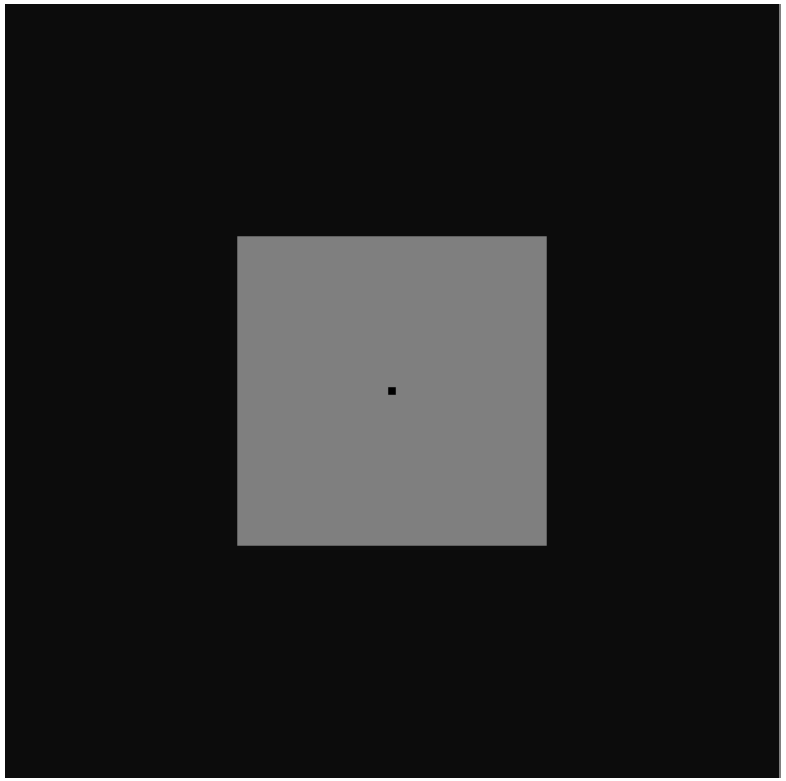
- Surround-Flicker induced Adaptation
  - induced Flicker Adaptation
- Aligned condition:
  - Effect on contrast sensitivity
- Inside condition:
  - No effect on contrast sensitivity
  - -> symbolic filling-in & multiscale spatial filtering

Flicker Types

Flicker Adaptation



Surround-flicker induced Adaptation

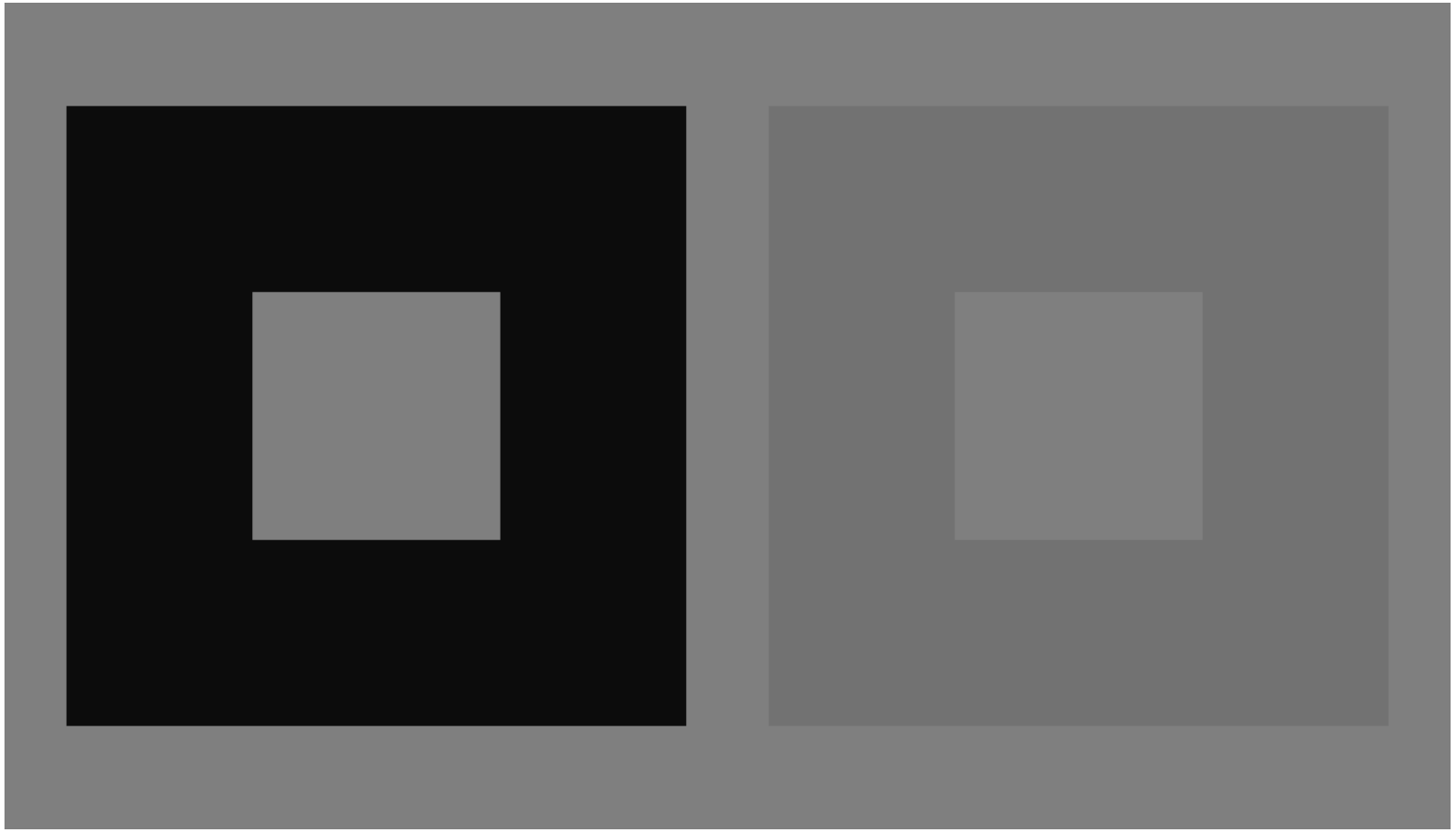


The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Procedure

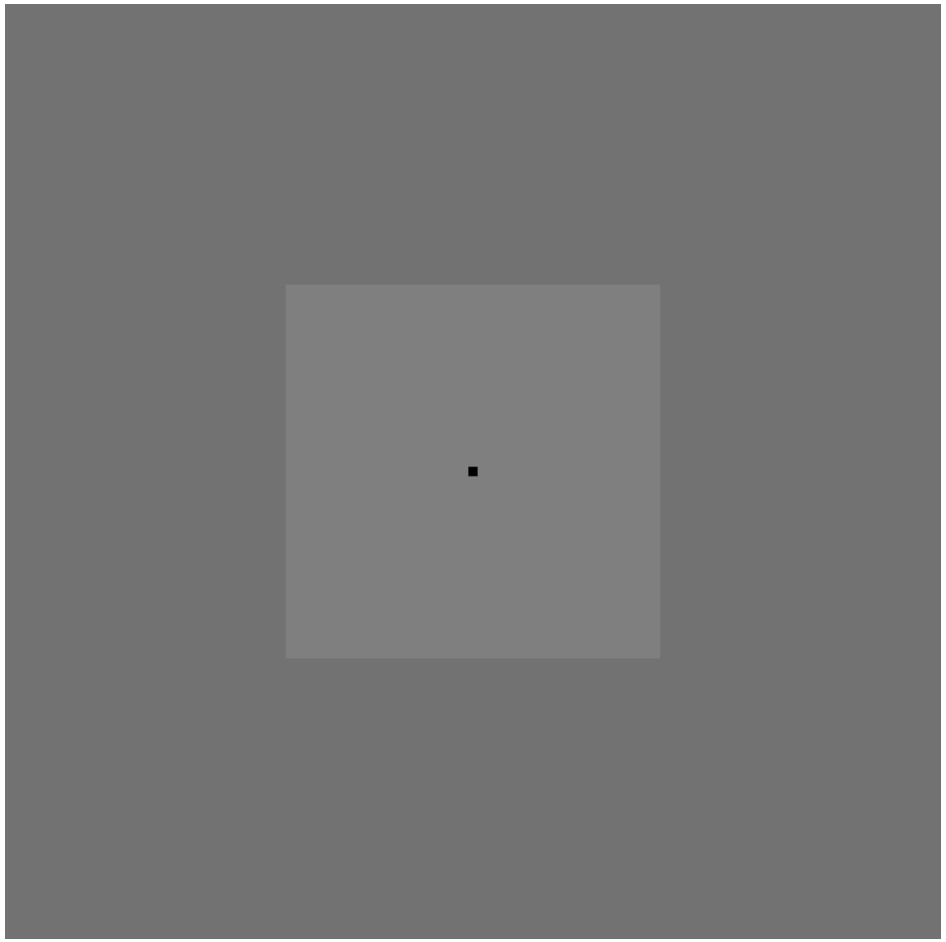
1. Find contrast values for SFiA
2. Find corresponding Values for FA
3. Validate FA Experiment with Values from 2.
4. Try SFiA Experiment with Values from 1.

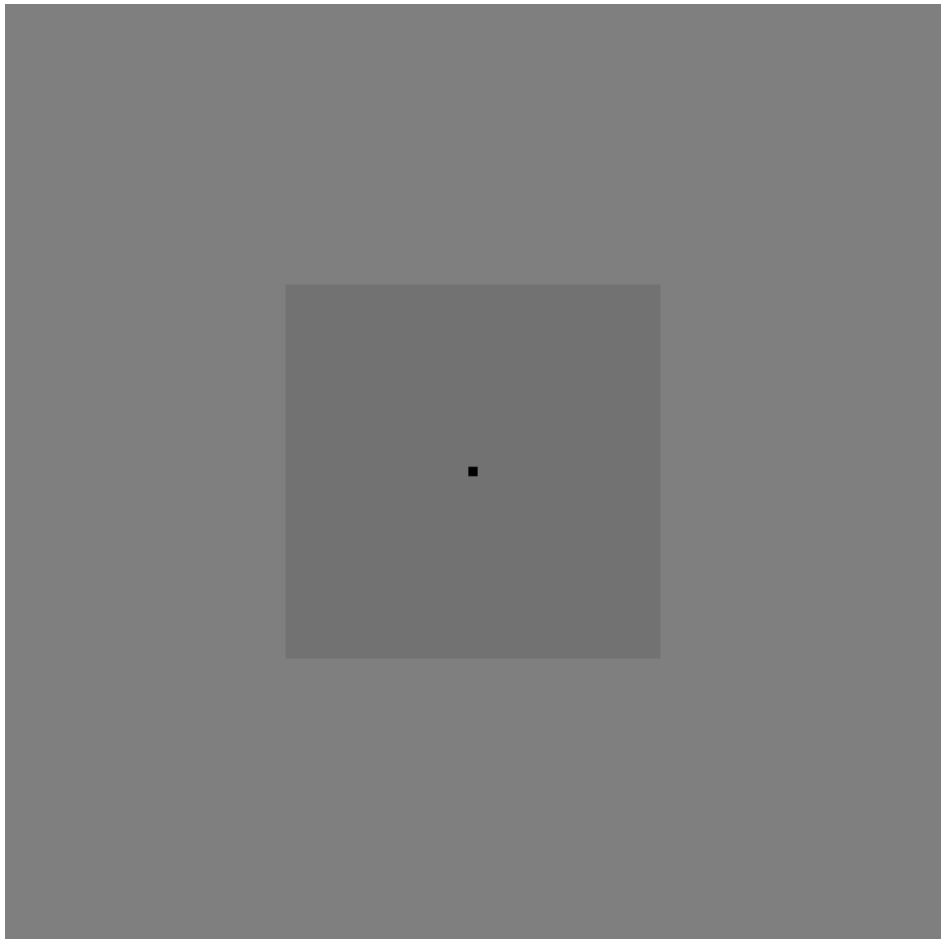
Experiment I.



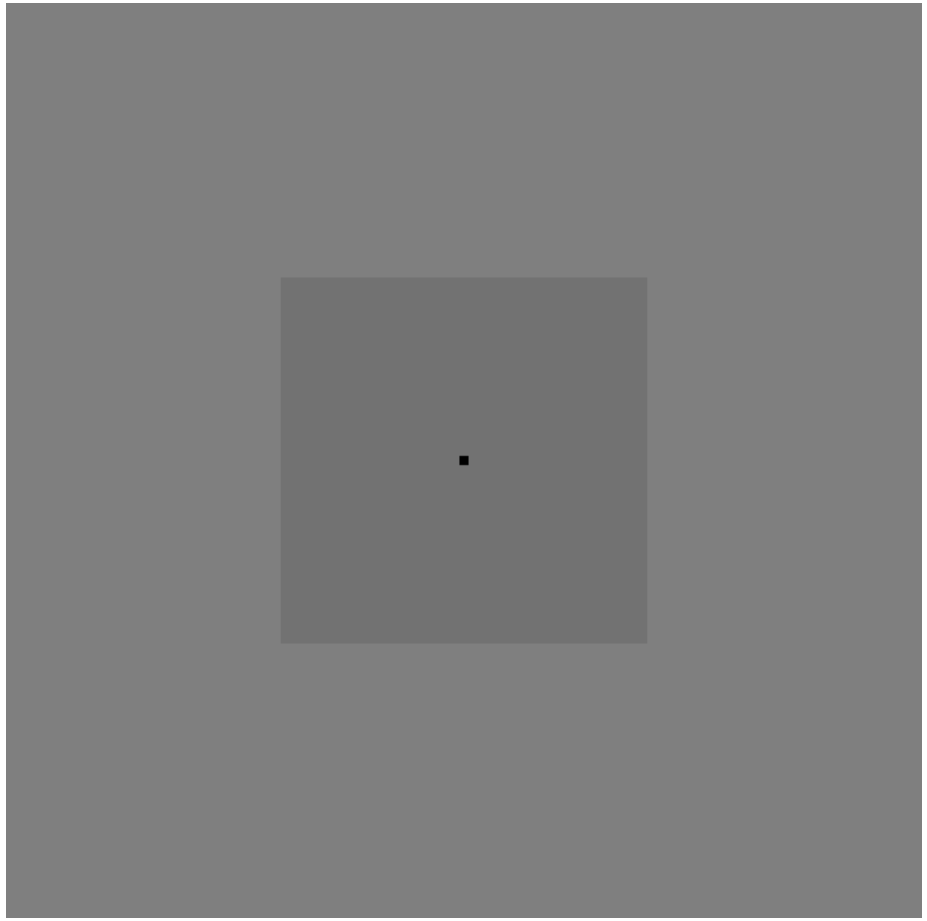
The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Experiment II.



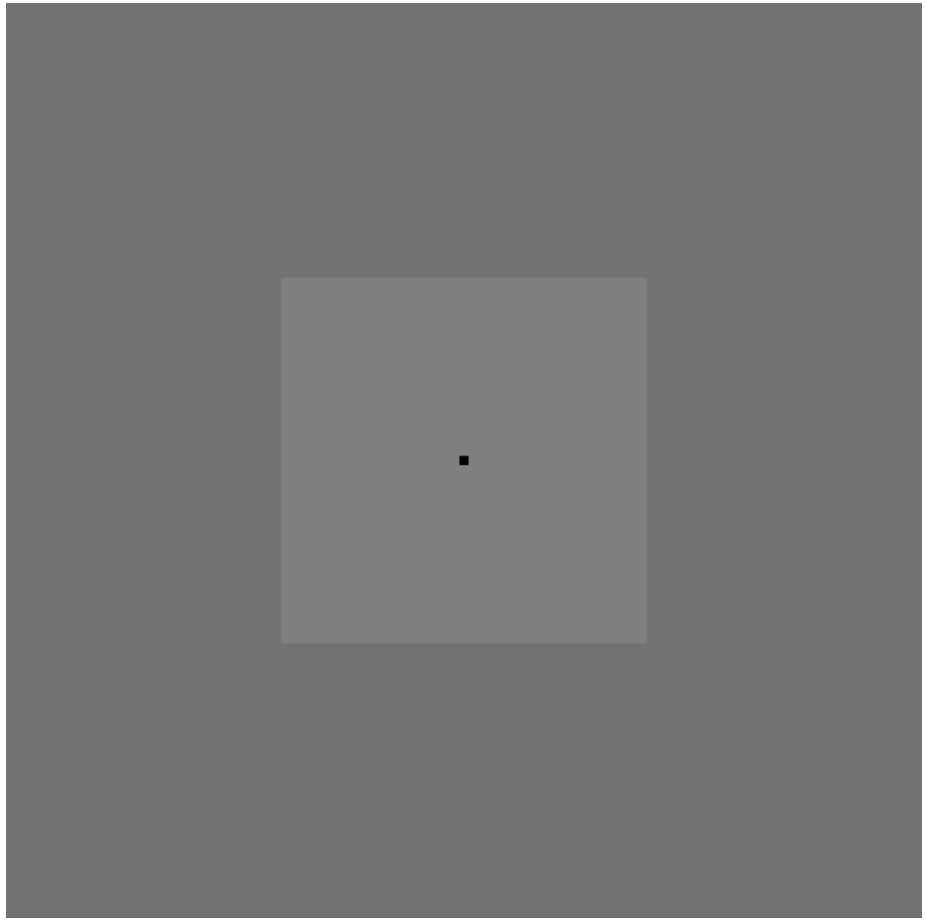


Experiment III.



The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

Experiment IV.



The Effect of Surround-Flicker induced Adaption on contrast sensitivity.

The End

Sources

- Robinson, A.E., de Sa, V.R., 2013. Dynamic brightness induction causes flicker adaptation, but only along the edges: Evidence against the neural filling-in of brightness. J. Vis. 13, 17. https://doi.org/10.1167/13.6.17
- Robinson, A.E., de Sa, V.R., 2012. Spatial properties of flicker adaptation. Vision Res. 70, 2–6. https://doi.org/10.1016/j.visres.2012.07.018
- Stuart Anstis; Contour adaptation. Journal of Vision 2013;13(2):25. doi: https://doi.org/10.1167/13.2.25