

# White Illusion

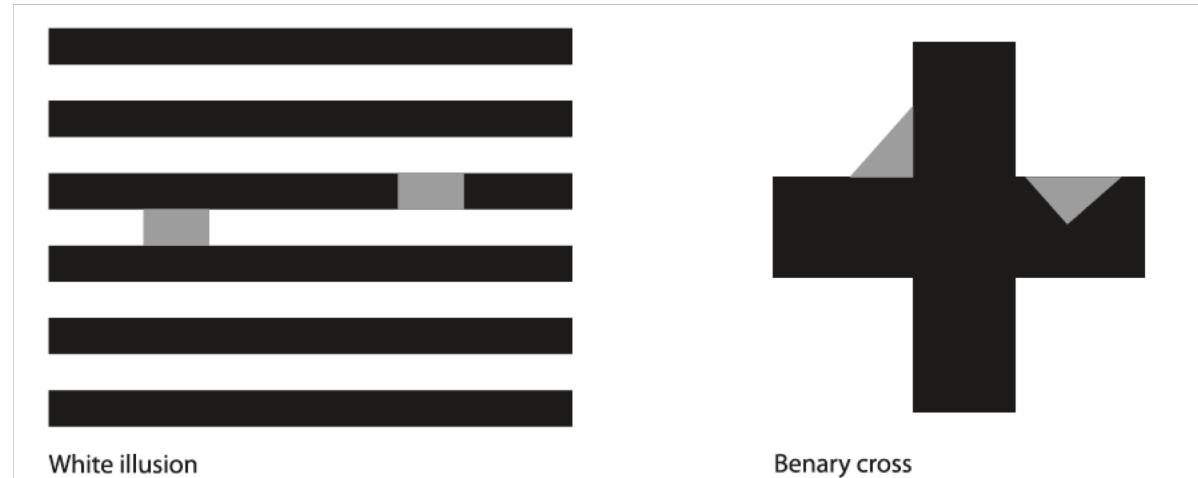
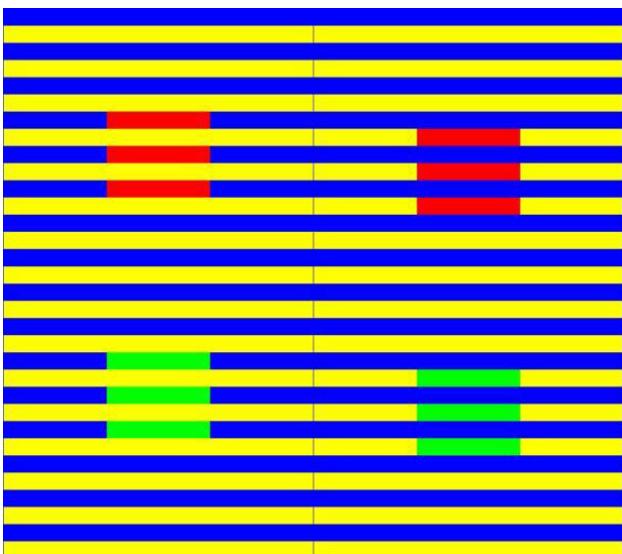
Py-Emotion: Persona #2  
PsychoPy Workshop  
Y.K.Lee  
2018.07.31



@PyEmotion

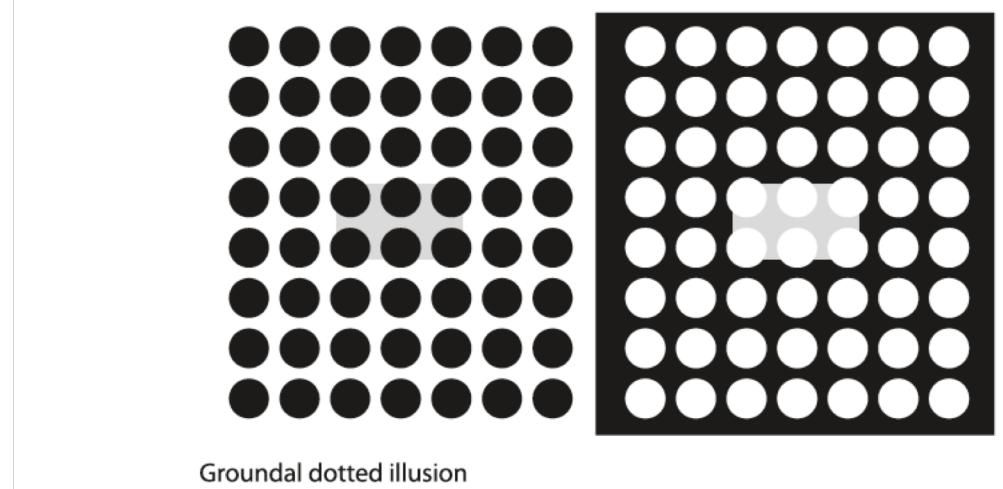
# Many versions of colour illusions

- The black and grey version.
- The White illusion (“black and grey”)
  - Australian psychologist Micheal White (1979)
- The Munker illusion (colorful one)



White illusion

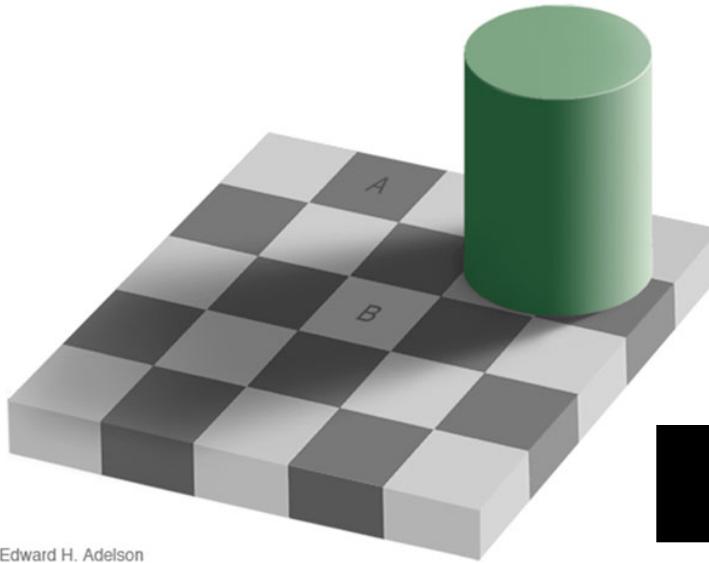
Benary cross



Groundal dotted illusion

Figure 9.1. In the *White illusion* the two grey patches are physically identical but the one on the left appears darker. The two triangles in the *Benary cross* are also identical, but the one on the left appears darker. Below you can see another version of the *White illusion*. This is my version of an image that White published in 1982. The grey on the left again appears darker despite the large dots on top of it

- Illusion occurs because surrounding color can yield an effect.
  - Lateral inhibition (Kingdom 1997)
    - The response to one stimulus is strengthened or weakened by the presence of a similar or different response in neighboring regions (“lateral” refers to side by side spatial position).

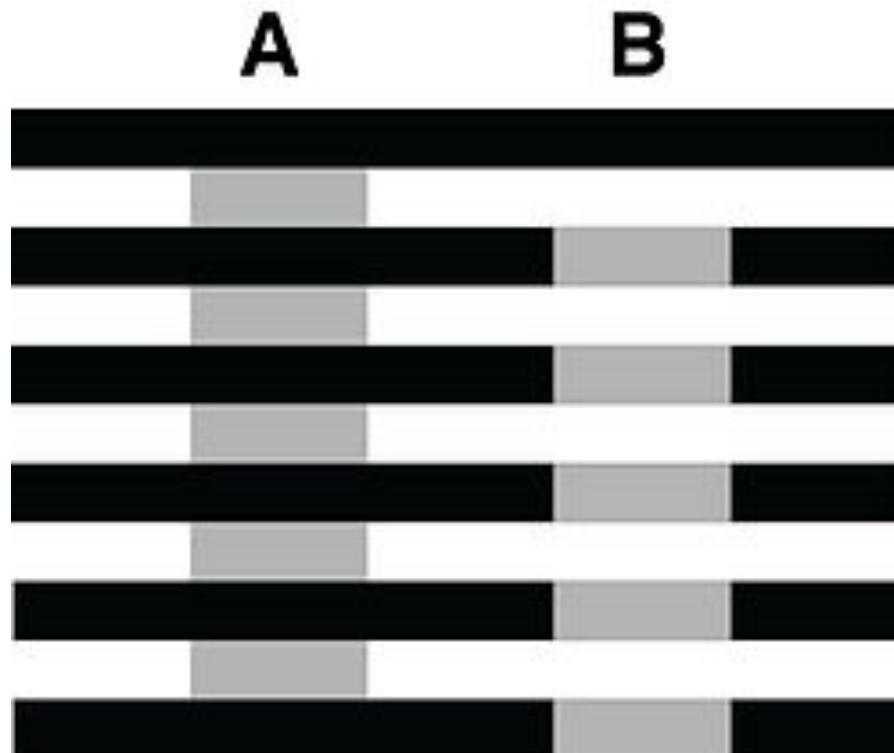


Adelson EH (1993)

Edward H. Adelson

## Simultaneous brightness contrast effect (“SBC”)

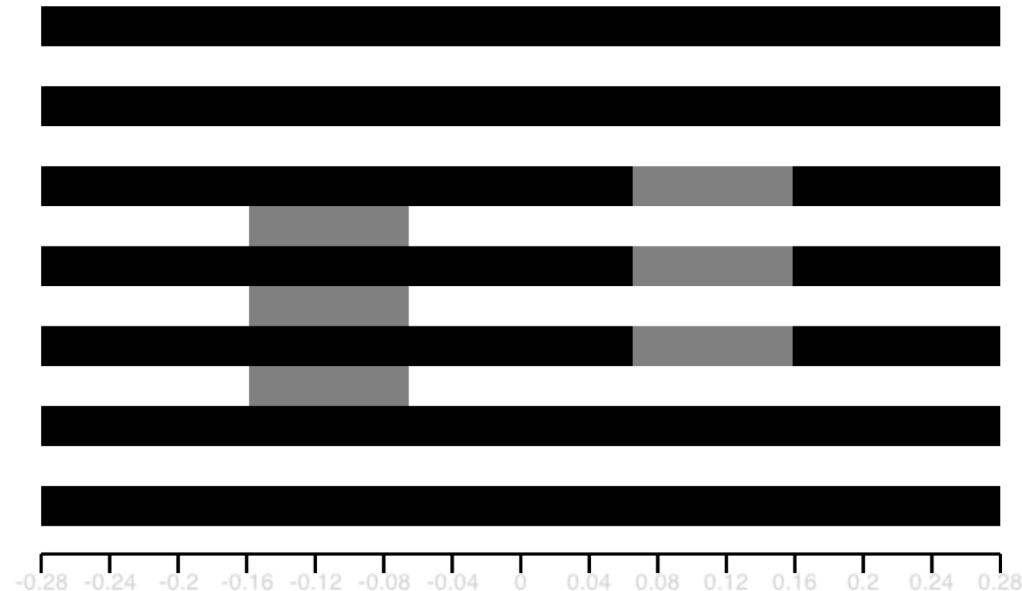
A grey patch surrounded by black appears brighter than the same grey patch surrounded by white.



The reason why we call this ‘contrast’ effect, and use the word ‘simultaneous’ is because we will look at the images side by side, at the same time.

# 시작화면 (no key-press)

White illusion



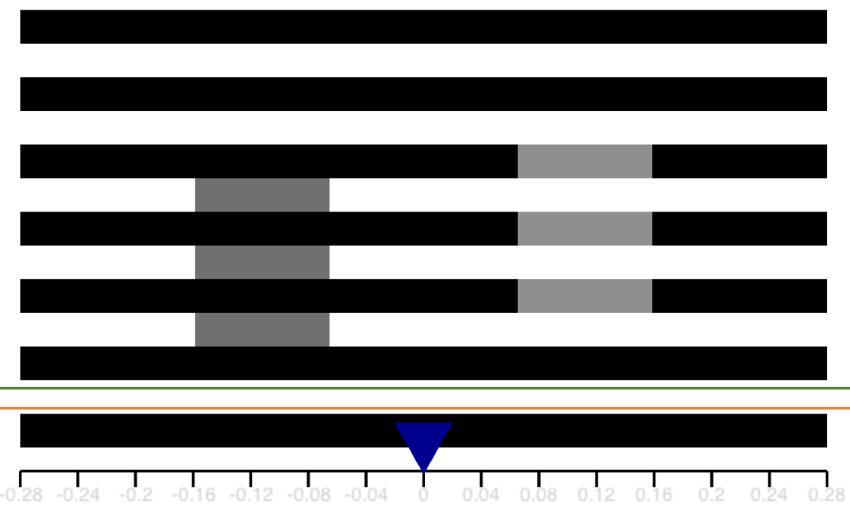
- Import()
- Define objects & functions
- Def. mainloop ()

```
import math, numpy, random #to have handy system and math functions  
from psychopy import core, event, visual, gui #these are the PsychoPy modules
```

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# 오브젝트 정의

White illusion

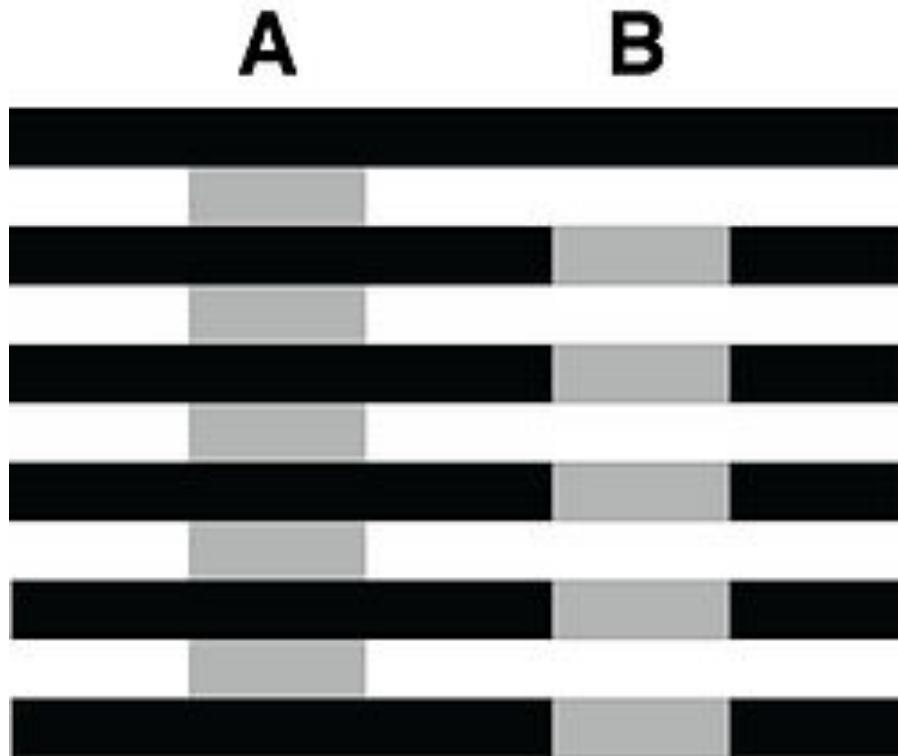


```
myWin = visual.Window(color = 'white', units = 'pix', size = [1000, 1000],  
allowGUI = False, fullscr = False) #creates a window  
grayRectangleLeft = visual.Rect(myWin, width = 100, height = 25, fillColor = [0, 0, 0], lineColor = None)  
grayRectangleRight = visual.Rect(myWin, width = 100, height = 25, fillColor = [0, 0, 0], lineColor = None)  
blackBar = visual.Rect(myWin, width = 600, height = 25, fillColor = 'black', lineColor = None)  
blackSquare = visual.Rect(myWin, width = 300, height = 400, pos = [-150, 0], fillColor = 'black', lineColor = None)  
whiteSquare = visual.Rect(myWin, width = 300, height = 400, pos = [150, 0], fillColor = 'white',  
lineColor = 'black')
```

```
myScale = visual.RatingScale(myWin, pos = [0, -360], textSize = 0.4, lineColor = 'black',  
tickHeight = False, scale = None,  
choices = [-.28, -.24, -.20, -.16, -.12, -.08, -.04, 0, .04, .08, .12, .16, .20, .24, .28],  
stretch = 2.0, showAccept = False, singleClick = True)  
information = visual.TextStim(myWin, pos = [0, -385], text = "", height = 18, color = 'black')
```

```
title = visual.TextStim(myWin, pos = [0, 305], text = "", height = 24, color = 'green')
```

# 함수 정의 (1)



```
#six grey rectangles, three on the left three on the right  
def drawRectangles(barHeight):
```

```
    → xPos = 120
```

```
    → grayRectangleRight.setPos([xPos, barHeight * -2])
```

```
    → grayRectangleRight.draw()
```

```
    → grayRectangleRight.setPos([xPos, barHeight * 0])
```

```
    → grayRectangleRight.draw()
```

```
    → grayRectangleRight.setPos([xPos, barHeight * 2])
```

```
    → grayRectangleRight.draw()
```

```
    → grayRectangleLeft.setPos([-xPos, barHeight * -3])
```

```
    → grayRectangleLeft.draw()
```

```
    → grayRectangleLeft.setPos([-xPos, barHeight * -1])
```

```
    → grayRectangleLeft.draw()
```

```
    → grayRectangleLeft.setPos([-xPos, barHeight * 1])
```

```
    → grayRectangleLeft.draw()
```

# 함수 정의 (2)

“showillusion”

“illusionName”

[state]

“showillusion” x “illusionName”

= “switchStatesAndDrawBackground

```
#there are 4 possible states in terms of what is on screen
def switchStatesAndDrawBackground(barHeight, showillusion, illusionName):
    if showillusion == True and illusionName == "White":
        title.setText('White illusion')
        for index in range(-6, 8, 2):
            blackBar.setPos([0, barHeight * index])
            blackBar.draw()
    elif showillusion == True and illusionName == "SBC":
        title.setText('Simultaneous Brightness Contrast')
        blackSquare.draw()
        whiteSquare.draw()
    elif showillusion == False and illusionName == "White":
        title.setText('White illusion - OFF')
    elif showillusion == False and illusionName == "SBC":
        title.setText('Simultaneous Brightness Contrast - OFF')
```

illusionName

Simultaneous  
brightness contrast  
"SBC"

White illusion  
"White"

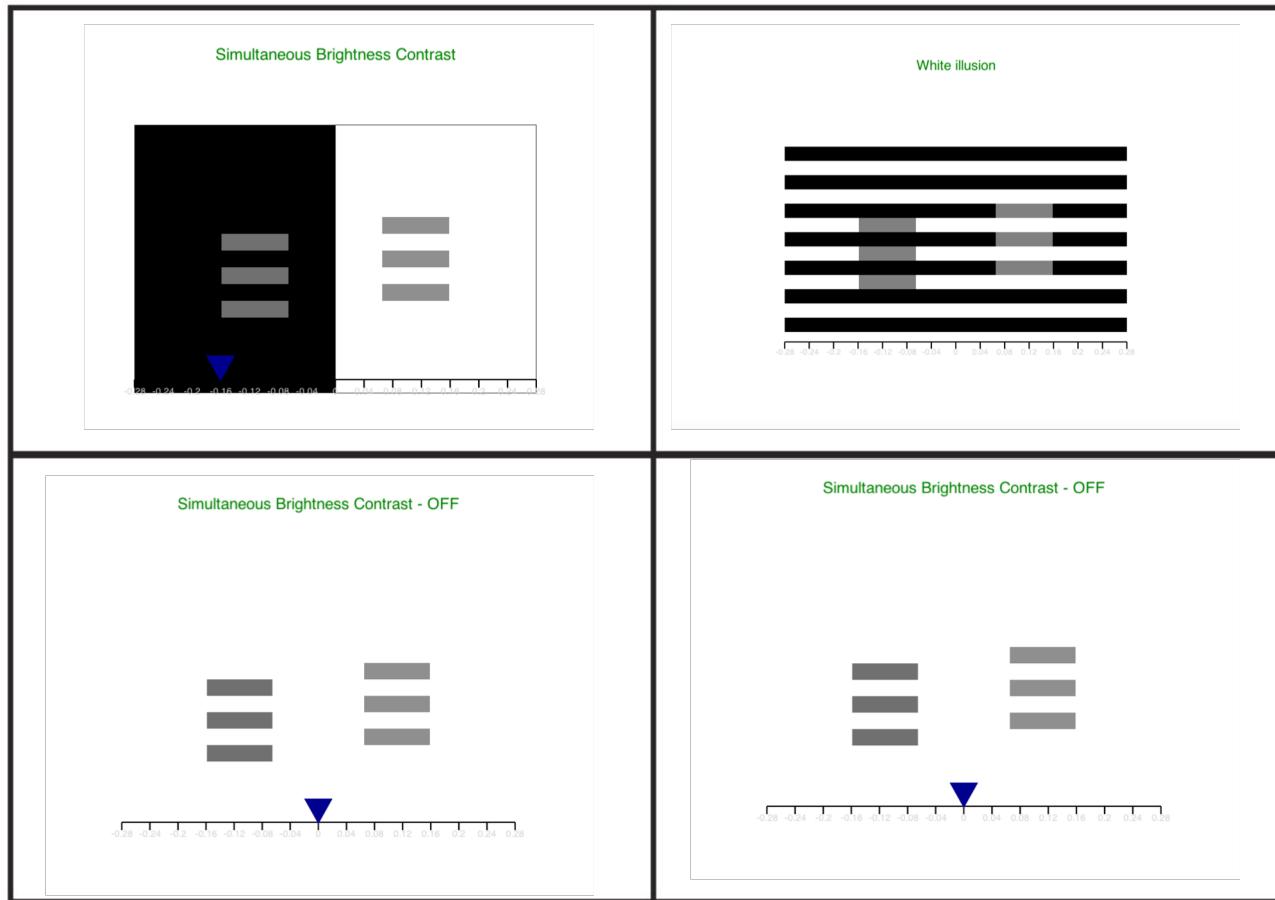
showillusion	True	False
True	SBC on screen	White illusion on screen
False	Only the gray rectangles	Only the gray rectangles

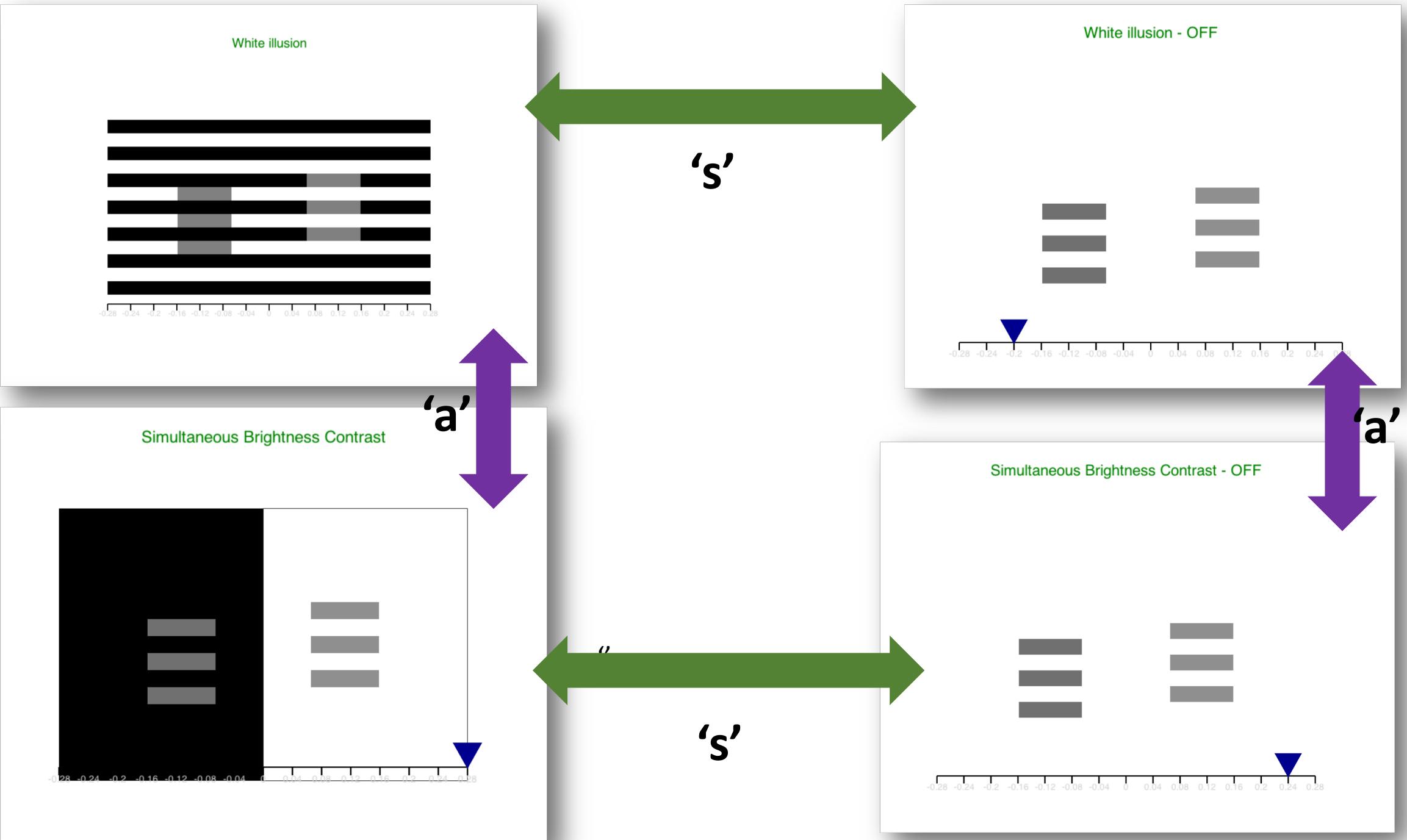
illusionName

Simultaneous  
brightness contrast  
"SBC"

White illusion  
"White"

True  
showillusion  
False





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실행