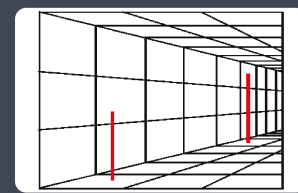


Assessing the Link Between Reading/Writing Direction and Perception of the Corridor Illusion



INTRODUCTION

Visual illusions demonstrate the limitation of our visual system and this phenomenon makes visual illusion a non-invasive tool to understand how brains process visual stimuli.

The corridor illusion is an illusion which objects of equal size, placed in the background and in the foreground of the corridor will appear to be different in size. Previous experiments used corridor illusion to demonstrate that illusion strength depends on reading/writing habits (1). The purpose of these two experiments are to investigate the effect of the direction of visual scanning and covert/overt attention on the strength of the illusion. These modifications are essential for understanding the role of the directionality of oculomotor scanning and selective attention in modulating the perception of the corridor illusion.

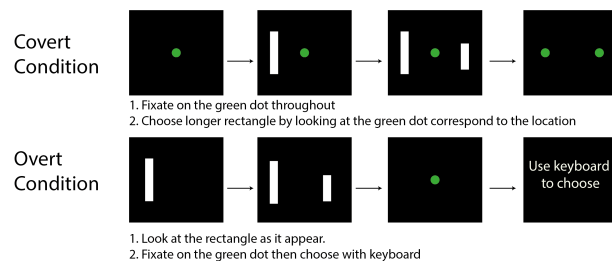
More importantly, studies have shown that Developmental Dyslexia (DD) subjects do not notice or less sensitive to visual illusions than normal readers do (2). If the result of the project shows a clear link between corridor illusions and reading abilities, this study will be a forerunner to testing corridor illusion on DD subjects.

AIM & METHOD (1)

To investigate direction of visual scanning and cover/overt attention on the strength of the corridor illusion

Method

English speaking participants are recruited to perform two computer tasks in which their eyes are tracked. In both tasks, participants are told to choose the longest rectangle between two rectangles. First task involves testing covert attention under control (black background) then corridor (illusion) background. Second task involves testing overt attention under the same two backgrounds. The sequence that two rectangles are presented (left to right or right to left) are randomized in both tasks.



RESULT (2)

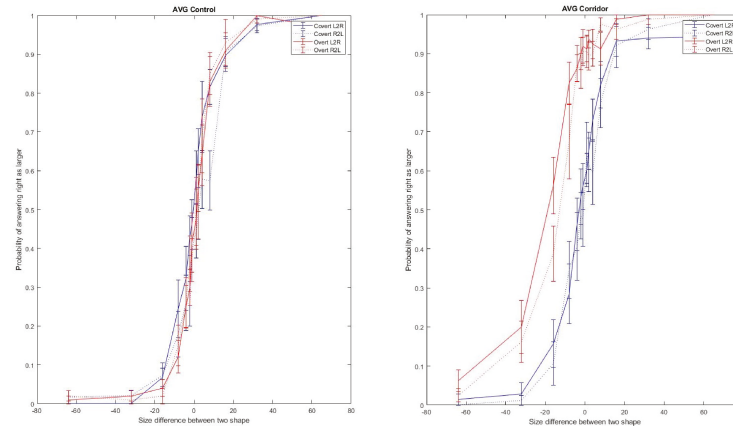


Figure 1: Psychometric curve of Covert Left to Right and Right to Left against Control Left to Right and Right to Left

Figure 2: Psychometric curve of Overt Left to Right and Right to Left against Control Left to Right and Right to Left

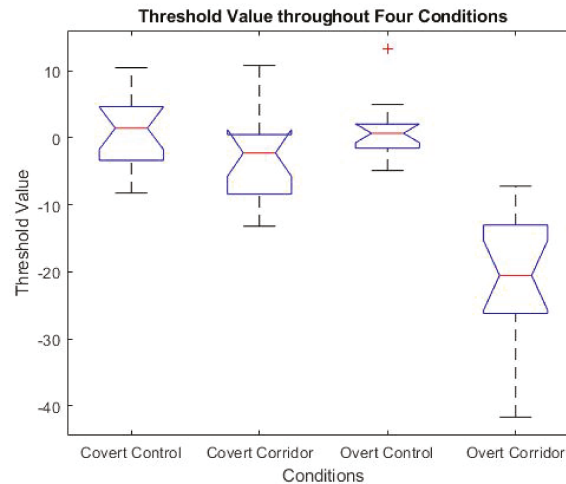


Figure 3: Box plot between four conditions with confidence interval

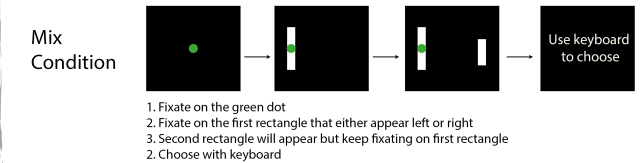
There is no statically difference between left to right VS right to left sequence of presentation in both covert and overt conditions as shown in figure 1. Using ANOVA statistic testing, there is no significant difference between control covert and corridor covert condition. However, there is a statistical significance between corridor overt condition from all other conditions in term of illusion strength as shown in figure 2 ($p < 0.001$).

AIM & METHOD (2)

investigate combination of both covert and overt attention (mix) on the strength of the corridor illusion

Method 2

All participants from first experiment is recalled to perform a similar computer task as first experiment but under mix condition with control and illusion background.



RESULT (2)

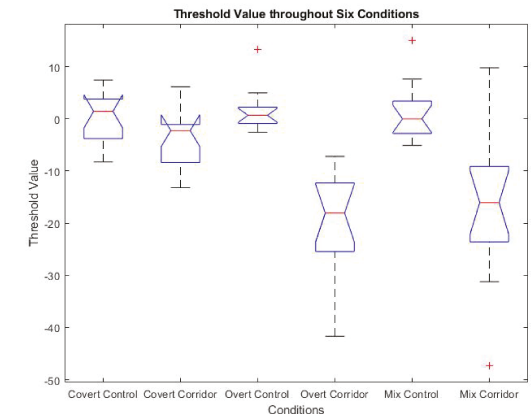


Figure 3: Box plot between four conditions and Mix conditions with confidence interval

Using ANOVA, there is statistical difference between mix corridor against all conditions except for overt corridor conditions ($p < 0.001$).

Conclusion

- There is no effect on sequence of presentation on illusion effect which is predicted because all participants recruited are English speaker.
- Illusion strength is the same throughout covert control, overt control, and covert corridor.
- Overt condition induces the most illusion strength out of all conditions.
- Future studies should investigate the reason behind the increased illusion strength in overt attention. In addition, bilingual should be included in future studies to test illusion strength with overt attention.