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The Recognition of Overlapped Chinese Characters at Two Spatial Scales

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Introduction

The two hemispheres may have different strategies allowing various perceptions to be processed independently, such as near and far, ambient and focal, and low-level subcortical communications, contrasted to high-level cognition. Then what happen when the ambient processing of the large character, and the focal processing of small characters are merged? This study hypothesized that two repeated items should facilitate the recognition. Additionally, large stimulus captures visual attention, which should speed up the recognition of large characters, compared to small characters, and because this was a preattentive factor, the effect should not have a gender difference.

Experiment

Thirty-two Chinese characters, half high frequency and half low frequency, were presented in three versions: Large (400*400, units defined by Psyscope), Small (50*50) and Overlap version. The Overlap version was a large character overlapped by a small identical character in the centre. And the centre was emptied beforehand to make sure that the small character was not obscured by the large one. Characters and versions were arranged by Latin square design. A fixation point was presented in the centre of the monitor for 500 msec, followed by a character lasted for 150 msec, and then followed by a mask picture lasted for 500 msec. Native Chinese speakers, ten males and eleven females, participated in this study. They made a lexical decision by clicking the button on the response box with their index fingers, buttons were counterbalanced between people, and the response times were recorded by Psyscope.

Analysis and results

Frequency effect was significant by subjects and by items ($p < .01$), as High frequency characters were recognized faster than Low frequency characters. Size effect was significant only by subjects ($p < .01$) as Overlapped characters were recognized slower than Large and Small versions. Gender difference was insignificant ($p > .05$). A two-way interaction between Gender and Size was significant in the by-items analysis ($p < .05$). Post hoc tests show that females recognized Overlap characters quicker than Large and Small ones, but no significant difference for males.

Discussion

That large characters were recognized slightly quicker than small characters supports our hypothesis that the visual attention was more likely caught by larger objects, compared to small objects. And as presumed, Gender effect was not significant.

However, there were large characters in the overlapped versions, but the recognition of overlapped version was slowest. This suggests that in the overlapped version the small characters interfered with their recognition, resulting in the delay of the response latency. The degree of interference was greater in females than in males. Males did not show facilitation of recognition in the overlapped condition. It might be reasonable to interpret that in general, females performed more cautiously in doing the recognition task than males. It might be the cognitive style of the sexes that differentiate the results.

Conclusion

The result showed that Overlapped characters lengthened the response latency and seemed to interfere with the recognition process.

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