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Psychophysical evidence for a magnocellular pathway deficit in dyslexia.

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Abstract

The relationship between reading ability and psychophysical performance was examined to test the hypothesis that dyslexia is associated with a deficit in the magnocellular (M) pathway. Speed discrimination thresholds and contrast detection thresholds were measured under conditions (low mean luminance, low spatial frequency, high temporal frequency) for which psychophysical performance presumably depends on M pathway integrity. Dyslexic subjects had higher psychophysical thresholds than controls in both the speed discrimination and contrast detection tasks, but only the differences in speed thresholds were statistically significant. In addition, there was a strong correlation between individual differences in speed thresholds and reading rates. These results support the hypothesis for an M pathway abnormality in dyslexia, and suggest that motion discrimination may be a more sensitive psychophysical predictor of dyslexia than contrast sensitivity.

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