

## **Investigation of visual aspects of developmental dyslexia in children**

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Developmental dyslexia is a disorder characterised by difficulties with reading, despite adequate intelligence and education. Phonological deficits are often indicated as the primary cause of dyslexia. Because a range of lower-level perceptual, attentional, and motor deficits may also be present, it has been argued that phonological deficits are secondary to a visual processing deficit, underpinned by abnormalities in magnocellular or dorsal stream functioning. This proposition mainly emerges from findings which indicate that people with dyslexia show poorer sensitivity to visual stimuli designed to preferentially activate the magnocellular visual stream at the retinal level or the dorsal cortical visual stream. The current research developed a novel “Dot-to-Dot” (DtD) task that may predict children’s risk of dyslexia. The current study aimed to elucidate **whether magnocellular and dorsal stream functioning are related to DtD task**. It further examined whether the performance on the **magnocellular and dorsal stream tasks would differ depending on the children's risk of dyslexia**. 171 children aged between 6-12 years were tested on a range of cognitive, dyslexia screening and vision tests. The vision tests included contrast sensitivity tests preferentially activating magnocellular and parvocellular pathways. Coherent motion (using an RDK) and coherent form tasks were used to activate the dorsal and ventral streams respectively. The results showed that DtD measures significantly correlated with all visual tasks apart from the coherent motion task. The phonological awareness measure, arguably the best dyslexia predictor, significantly correlated with the visual task tapping into the magnocellular functioning. Furthermore, performance on this task significantly differed between children at medium risk of dyslexia and those at low risk. The current findings seem to provide evidence for the magnocellular deficit in dyslexia, which is consistent with some of the previous literature. However, DtD task was not found to tap specifically into the magnocellular or dorsal stream functioning.