

Learning difficulties 'link to brain connections' - 28 February 2020

Differences associated with learning difficulties are found less in specific areas of the brain and more in the connections between them, experts say. After scanning 479 children's brains, Cambridge University researchers found they were organised in multiple "hubs". Those with no difficulties - or very specific ones, such as poor listening skills - had well connected hubs. But those with widespread and severe difficulties - 14-30% of all children - were found to have poor connections.

Dr Duncan Astle told BBC News:

"We have spent decades searching for the brain areas for different types of developmental difficulty such as ADHD and dyslexia. Our findings show that something which is far more important is the way a child's brain is organised. In particular, the role that highly connected 'hub' regions play. This has not been shown before and its implications for our scientific understanding of developmental difficulties is big. How do these hubs emerge over developmental time? What environmental and genetic factors can influence this emergence?"

"Another key finding is that the diagnostic labels children had been given were not closely related to their cognitive difficulties - for example, two children with ADHD [attention deficit hyperactivity disorder] could be very different from each other. This has been well known in practice for a long time but poorly documented in the scientific literature."

Mental-health disorders Treatment should be "less reliant" on naming a diagnosis, Dr Astle said.

"They should either receive broad interventions that benefit everyone or tailored interventions that support the child's areas of cognitive difficulty by harnessing their relative strengths. "But the take-home message is that the 'label' is unlikely to be helpful in deciding how to support a child."

Earlier research has suggested poor connectivity within the brain also plays a role in the emergence of mental-health disorders in adolescents.

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