About

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Key findings

The following key findings emerged from a rapid review of published reviews

visual word recognition. Modern classifications of dyslexia define the reading disorder

mental health problems; and (C) Mental health problems exacerbating reading difficulties.

Evidence suggests a high rate of co-occurrence between reading difficulties and mental health problems that are considered neurodevelopmental in origin such as

genetic and environmental risk explored links between ASD and reading comprehension impairment. On the whole, findings suggest significant genetic and environmental influences, though genetic factors appear to explain a higher proportion of the variance than the environment.[3]

There are a subset of studies giving evidence for common risk factors which explore the neurological functional similarities between some mental health problems and reading difficulties. These commonalities may be a result of either genetic or environmental influences, or an interaction of the two. For example, studies note similar cerebral structures involved in ASD and reading comprehension impairment, but language ability is likely to influence that link.[3,18] One review also noted similar neural structures involved in both ADHD and reading difficulties but children and young

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Neurocognitive processes such as information processing speed has been identified as a shared predictor in the development of ADHD and reading difficulties. Processing speed is an integral part of the reading process and is often impaired in reading disorders like dyslexia.[40] This is similar to ADHD in which difficulties with modulating and regulating the speed of information processing have been reported, particularly in the inattentive subtype.[18,41] Similarly, children with ADHD have shown difficulties with error monitoring when reading text. Difficulties in both processing speed and error monitoring are present in both disorders separately but are even more pronounced when they co-occur.[6] Reading comprehension impairment has also been noted in ASD; high-functioning children with ASD often struggle to make connections in text, have difficulty learning in social settings, and may need support and prompts to stimulate executive processes. Multiple cognitive functions, such as executive functions appear to play a common role in ADHD and also in reading difficulties more widely.[9,16] Some suggest that ADHD symptoms may lead to stagnation in the process of learning to read. This is further supported by the fact that both ADHD and reading disorders respond similarly to stimulant medication that targets executive functioning.[17] Other research seems to show that treatment improves reading only in

suggesting somewhat distinct developmental aetiologies.[9] It is likely that the similar neurocognitive processes may be involved in reading difficulties and mental health problems like ADHD separately but that these processes are particularly prominent when both conditions present concurrently.

Seven of the included reviews suggest dyslexia and allied reading difficulties are a risk factor for the development of mental disorders such as anxiety, social phobias, depression and broadband internalising symptoms (Figure 2). Anxiety disorders and reading difficulties were reported to be three to four times more common in dyslexia than in same-age peers [15] independent of year group or sex.[5,15] Mechanisms through which this is likely to occur include poor self-esteem, stigma and bullying, social comparison with peers, poor self-concept and stress. In turn these mechanisms can increase the risk of depression or anxiety.[4,18]arison with peers, poor se01(p)-30 G3heoi0N withto

observed in teachers, parents and young people themselves, who report the emotional [20] and feeling distinctly different from their peers,[21,22] may account for the experience of internalising symptoms such as stress, sadness and disappointment nearly exclusively in the school environment.[21] Actual or anticipated stigma and bullying can make navigating the school environment a daunting daily experience[21] sis as a coping mechanism.[22] Conversely, a sense of school-connectedness, positive school climate and awareness around dyslexia can moderate the development of mental health difficulties.[5]

Figure 2. Reading difficulties leading to mental health problems (Pathway B)

The allied challenges associated with dyslexia may also partially explain the elevated

Conditions such as depression are known to cause reduced attention and memory function in young people;[42] neurocognitive processes that are already compromised in reading difficulties and may lead to further difficulties in the classroom. Reduced help-seeking behaviour in adolescents with depression is likely to amplify the cycle,[5] particularly as teachers are more likely to only notice internalising symptoms as they culminate into externalising behaviours (aggression, hyperactivity, delinquency).[21] Subsequently, there is the worry that appropriate identification of the multiple difficulties may come too late for those affected. Parents may be the first to notice cognitive-
expecting failure at school, and diminished motivation to try new things.[21] These may

other work illustrating that low print exposure is actually a consequence of poor reading.[43] Rather than the mental health problems causing the low print exposure it is the existing reading ability that determines how much a young person chooses to read, but this is likely exacerbated by secondary mental health difficulties.

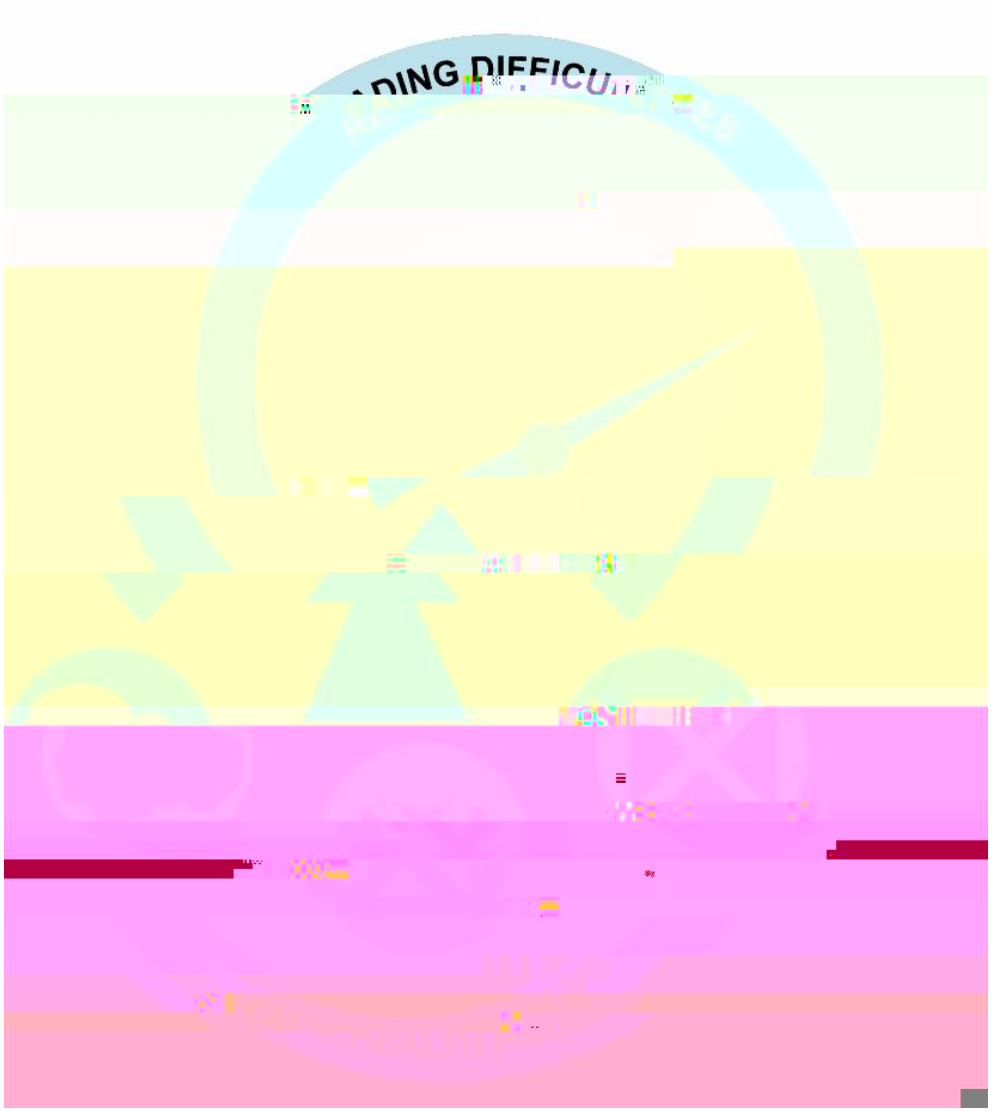

Figure 3. Mental health problems exacerbating reading difficulties (Pathway C).