Review of Current Literature

Relations among speech, language and reading disorders.

Pennington B. F. & Bishop D. V. M. (2009) Annual Review of Psychology, 60, 283–306.

Abstract:

In this paper, we critically review the evidence for overlap among three developmental disorders, namely speech sound disorder, language impairment and reading disability, at three levels of analysis: diagnostic, cognitive and etiological. We find that while overlap exists at all three levels, it varies by comorbidity subtype, and the relations among these three disorders are complex and not fully understood. We evaluate which comorbidity models can be rejected or supported as explanations for why and how these three disorders overlap and what new data are needed to better define their relations.

Review:

Developmental models of developmental disorders emphasize interactivity between domains over time. In this context exploration of the neglected issue of co-morbidity could provide insights regarding the genetics, cognitive processes and aetiology of these disorders. This paper explores co-morbidity with respect to language impairment (LI), reading disability (RD) and speech sound disorder (SSD).

The evidence for co-morbidity among these disorders is summarized with reference to relative risk (RR). All combinations occur at above chance levels (RD + LI = 1.9–6.9; RD + SSD = 1.6–2.5; LI + SSD = 2.2–6.9); however, they vary with age as SSD tend to resolve or respond to treatment in the pre-school or early school years and RD can only present once literacy instruction has begun.

Of key interest to practitioners is the ability to determine which children may be at risk of developing later RD. In children with LI and/or SSD, an increased risk of later RD is almost entirely restricted to SSD + LI (RR = 4.6–8.9) whereas the rate of later RD in SSD without LI is negligible. The relative risk of RD in LI without SSD ranges from 1.9 to 6.9 and further longitudinal research is recommended to consider whether resolved SSD in some children with LI could explain the variability in incidence found between studies.

The evidence for cognitive overlap is explored and placed in the context of current cognitive models of LI, SSD and RD. The authors advance models such that, for all three disorders phonological deficits are a core underlying cause. RD and LI, however, are described as involving multiple deficits; children with RD having deficits in both phonological processing and rapid serial naming (a difficulty thought to imply slower perceptual or processing abilities), and children with LI having deficits in both phonological processing and ‘grammatical’ language skills.

Finally, the authors present the evidence for aetiological/genetic overlap in these disorders. They emphasize that SSD, LI and RD have complex, multi-factorial aetiologies and that the genes involved have probabilistic

rather than dichotomous effects which also interact with the child's environment. They conclude that LI, RD and SSD are familial, heritable and are linked to trait loci in certain chromosomal regions. There is some evidence of trait loci which may produce both RD and SSD phenotypes but less evidence for linkages with LI. However, the need for much more research in this area is underlined, as is the need to understand the nature of influence of environmental factors.

Any child presenting to child health and educational professionals with an RD, SSD and/or LI should therefore have access to comprehensive and detailed assessment of their speech and language abilities to uncover all areas of need and the probable implications for educational progress, in particular for literacy skills, should be acknowledged and addressed. Intervention approaches should include work to improve phonological processing skills for all three groups of children.

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