

# Acquiring literacy in the face of severe speech and physical impairments

Literacy is a powerful tool for communication, with particular potential for users of augmentative and alternative communication (AAC). This is dramatically illustrated by John Carey's comment in his preface to Christopher Nolan's book *Under the Eye of the Clock*.<sup>1</sup> He describes the author's experience of release when he surmounted his severe motor and speech impairments to express the written words, 'He played rapturously with them, making them riot and lark about, echoing, alliterating, and falling over one another.' However, unfortunately even in the presence of normal intellect, this acquisition of literacy for childhood AAC users proves elusive. The paper by Sandberg<sup>2</sup> in this month's issue is, therefore, a welcome contribution to the small body of literature that addresses this important area.

Their sample is small but inevitably so for children who have normal cognition in the face of severe speech and physical impairments (SSPI). The strength of the study lies in its longitudinal design combined with successful measurement of cognition and literacy, despite the challenges inherent in registering output through speech or fine manipulation in this clinical situation.

The finding that children with SSPI have phonological skills that are more than adequate to support literacy at its outset, and yet they fall further and further behind their typically developing peers over ensuing years, is clearly of concern. This should exercise all of us charged with their care to work out why that should be. Sandberg sets interesting findings against what is known about normal literature acquisition and draws up a number of hypotheses.

These possible explanations are wide ranging. Firstly, they may include direct effects of the severe motor impairments i.e. severe fine motor difficulties which impair the development of motor engrams or patterns of movement for executing letter patterns in spelling and reduce opportunities for independent reading through handling books and turning pages. Reading experience begets reading competence which, in turn, enhances phonological awareness and, thus, decoding skills, and it can be difficult to quantify this contribution.

However, Sandberg highlights what she considers are the two most important findings to fit into this puzzle. She observed a decline in nonverbal IQ and a relative reduction in verbal working memory. The children also had difficulties establishing auditory representations of visually presented material and the author proffers the reasonable hypothesis that the children may have a problem keeping the word to be spelt salient. In typical development children employ sub-vocal rehearsal to assist verbal working memory to help hold the word in mind as they recall how to spell it. This facility may be

impaired through lack of speech. I wondered to what extent communicating through Bliss symbols might also affect this capacity.

Of course it is not necessarily the case that children sustaining acquired neurological impairment are going to have an intact central nervous system subserving literacy acquisition which makes them directly comparable to children with typical development. The authors describe how the children in their study have normal visual acuity and perceptual skills established from assessment of the clinical notes. It can be difficult to exclude subtle cerebral visual difficulties or even field defects in such children. Even preserved phonological skills may not protect against alexia and inability to spell orthographically irregular words in childhood when reduced visual input to the language centre arises from impairment of the left occipital area or right posterior cortex and splenium of the corpus callosum.<sup>3</sup>

Nevertheless, the author has stimulated us to think very carefully about what might be the processes involved for children with SSPI that result in difficulties in acquiring this powerful tool of literacy. There is quite a challenge ahead and it is salutary to consider the complexity of what can go wrong in a typically developing child's route to reading.<sup>4,5</sup> It can also be a bit disheartening to discover how interventions based on sound neuropsychological and educational principles may only bring modest benefit if started too late after the introduction to literacy.<sup>5</sup> However, Sandberg has provided important findings in highlighting that there is no room for complacency in the context of children with SSPI and normal phonological skills at the start of school. Vigilance and longitudinal follow-up is essential if we are to understand, support, and remedy the difficulties.

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## References

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