

Effects of powered mobility on self-initiated behaviours of very young children with locomotor disability (1986)

DMCN 
50th
Anniversary

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Butler C. Effects of powered mobility on self-initiated behaviours of very young children with locomotor disability. *Dev Med Child Neurol* 1986; **28**: 325–32.

This study reports the effects of powered mobility on the self-initiated behaviour of six children with various disabilities who, between 23 and 38 months of age, learnt to use motorized wheelchairs in less than three weeks. Using a multiple baseline design, two-hour observation periods were video-recorded at 10-day intervals before and after they achieved independent mobility. Frequency of self-initiated interaction with objects, spatial exploration and communication with caregiver were analyzed. Three children increased all three types of behaviour; one increased in two types but decreased in interaction with objects; and two increased in spatial exploration only.

Commentary

Charlene Butler first presented her fascinating work on the impact of enhanced mobility on the development and function of very young disabled children at the 1982 American Academy for Central Palsy and Developmental Medicine meeting in San Diego. The work remains a model of excellence in clinical research, work I have often cited. Using a single-subject time series with multiple baselines across several participants, Charlene carefully observed six children's physical interaction with objects, communication with caregivers, and changes in location in space. After systematically ascertaining the children's 'steady-state' patterns over 3 weeks, she provided each child with a tailor-made powered mobility device that they learned to drive safely in 1 to 3 weeks. By repeating the observations three times she measured the effect of mobility independence on the children's function (and, anecdotally, on parents' perceptions of their children).

For me this work is significant for several reasons. First, it is a superb example of how one can use scientifically credible research methods to generate valid evidence about the impact of an intervention outside of a (complex, expensive, and often-infeasible) randomized controlled trial. There is still too little use of single-subject methods¹ in conditions such as childhood disability, where each child's individuality makes aggregating 'subjects' into groups a challenge.

Second, Charlene focused on the developmental impact of children's functional limitations rather than on the

impairments themselves (well ahead of the ICF that encouraged us to think about 'activity' and 'participation'²). The enhanced mobility provided an alternative method for children to achieve the capacity to explore that is such a vital integrating force in early child development. As developmentalists, we have a responsibility to consider how impairments may inhibit development, and address the developmental dimensions of disability with vigor and imagination³ as was done in this study.

A third aspect of the study is Charlene's use of a 'non-categorical' framework.⁴ The six children in the study had five distinct medical diagnoses but shared a functional challenge that made them appropriate for the same intervention. I believe that it is vitally important that we recognize the commonalities across disorders (in this case, the impact of varied 'diagnoses' on the development of mobility) and cross-link both our clinical observations and our research efforts more effectively.

One element that begs further exploration is more formal evaluation of the impact of interventions such as these on parents. How does the 'activation' of their children with enhanced/augmented mobility or communication change their perceptions and expectations of their children? Does the development of competencies enable them to 'parent' differently, seeing their children as 'able' rather than 'disabled'? If the answers are affirmative, what are the implications for 'early interventions' that include aids and devices as well as traditional 'therapies'?

These fascinating questions clearly require prospective longitudinal studies over 'real' time. Charlene Butler's foundational research provides a sound grounding for this next generation of inquiry about child and family development in the context of 'disability'.

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References

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