

## COMMENTARY

## Typology and categorization in developmental coordination disorder: Where does this leave us?

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Typology is important in developmental medicine and rehabilitation, aiding our understanding of differences in clinical presentation. Derived theories consider the co-alignment of phenomena (variables) representing meaningful subtypes potentially requiring different intervention strategies. Typological theories both clarify similarities and differences between individual behaviours, while also drawing attention to cases or behaviours not previously identified or measured. The latter is relevant when considering differing measures by which subtypes are determined. In the field of movement disorders, measurement of severity and/or quality of movement impairment with/without associated features may be incorporated into various 'types' under consideration. Whereas categories are increasingly popular for defining severity of impact of problems on functional behaviour and are often used for describing children with cerebral palsy. Categories with agreed criteria for defining assignment are useful for comparing studies using different samples and different measurements.

Thus, the challenge: neurodevelopmental disorders are heterogeneous conditions, despite some common diagnostic criteria. Focusing on specific constellations of behaviours or skills not only aids understanding of mechanisms of particular diagnoses, but also aids development of individualized targeted interventions. This is of relevance as the one-size-fits-all approach to pathways of care by diagnostic classification has failed to deliver interventions providing long-lasting, worthwhile, cost-effective benefits.

Developmental coordination disorder (DCD) represents a special challenge with respect to known variance in presentation and frequent associations with comorbidities or co-occurring conditions; particularly, attention (including attention-deficit/hyperactivity disorder [ADHD]), social (including autism spectrum disorders [ASD]), or learning impairments (e.g. dyslexia). With coordination problems, highly prevalent in both ASD and ADHD, the problem of determining subtypes of meaning in the clinical field is reversed from these differing perspectives, with

some suggesting that movement difficulties within ASD or ADHD may predict more negative or differing pathways of development and outcomes.<sup>1</sup> Emerging evidence of subtyping in unilateral cerebral palsy shows differing neuroplastic adaptation at the neurological level and presence of mirrored movements at the behavioural level potentially predictive of severity of impact and response to treatments such as constraint-induced movement therapy.

Cluster analysis is a favoured approach for the identification of subtypes, despite known reservations of sample dependency in cluster makeup (e.g. introduction of children with differing comorbid profiles into analyses may change cluster group allocation).<sup>2</sup> The findings presented by Lust et al.<sup>3</sup> using cluster analysis are therefore encouraging, reflecting previous studies exploring subtypes in DCD; identifying groups with more severe impairments and groups with less severe impairments across all measures used, and groups with somewhat differential profiles of strengths and weaknesses of visual-perceptual-motor control. A cluster with well-preserved ball skills, while unusual was not unknown, reflecting the context of the study and children's different motivations for engaging in ball skills, irrespective of movement difficulties.<sup>4</sup> The findings of Lust et al.<sup>3</sup> also highlight challenges in subtyping to capture individual motivations for engagement in measurement testing, restrictions of measures and co-occurring conditions incorporated into the analyses and context in which the study was undertaken. Furthermore, consideration of subtypes in DCD should also include cognitive profiles with emerging evidence of a subtype of children with DCD with weaker executive functions more likely to have persistent problems longer-term.<sup>5</sup>

The future should consider linking studies of subtyping or categorization with outcomes, both natural and in response to treatment, in order to progress knowledge of the impact of subtypes for children and their families. Sharing of open access data is the way forward to merge and analyse different populations, samples, and outcomes.

This commentary is on the original article by Lust et al. To view this paper visit <https://doi.org/10.1111/dmcn.15260>.

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