Motor development doesn’t need to be diagnostic to be important

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Many of the behavioral domains psychologists study — emotional expression, language and speech, social communication and interaction — are examined through the lens of movement. Yet psychologists have historically neglected the study of movement itself. Indeed, questions of motor control are sometimes called the “Cinderella” of the field. This is nowhere more true than in the study of autism, in which researchers have traditionally taken a siloed approach to their domain of interest, and diagnostic criteria emphasize “core” challenges in social communication and interaction or repetitive patterns of behavior.

Yet we know that autism is a complex condition that affects multiple systems and behaviors. As a developmental scientist deeply interested in how motor abilities create opportunities for infants and children to participate in activities, learn and develop, I am heartened to see motor difficulties in autism come to the forefront of our scientific exchanges.

The question of whether motor problems merit inclusion in our clinical definition of the condition is a complicated one; challenges with motor skills are not specific to autism, and conditions that often co-occur with autism, such as **intellectual disability** and **attention-deficit/hyperactivity disorder** , are also characterized by motor difficulties. Considering these issues for the purposes of diagnosis and classification is important, and although discussions of the etiology and expression of motor challenges advance our understanding of autism, in my view the more pressing need is for scientists and clinicians to recognize the pervasiveness of motor difficulties among people with autism, and how they create obstacles to daily functioning and participation. There is a substantial (and growing) evidence base indicating that autistic people of all ages and trait profiles have difficulties of some sort with movement, and that these difficulties must be addressed early in life because they can have downstream effects on development outside the motor domain and on opportunities for learning and participation.

The obstacles created by motor delays and difficulties are amplified in infancy. Infants learn about the world and the objects and people in it by exploring their environments via movement. Work in my lab and with our collaborators has made extensive use of the **developmental cascades framework**, which highlights the interconnected nature of development and the far-reaching, downstream effects of achievements in one domain, such as motor skills, on development in others, such as language. This approach has allowed us to explore how small, subtle, early-

occurring delays and differences in motor development may influence other domains.

We have done this work with **infants who have an autistic older sibling**, because in addition to having an elevated likelihood of receiving an autism diagnosis, they display great variability in the pace of early development. Among other things, we have observed that these infants take more time to **master sitting independently**. This difference, in turn, delays their ability to use their hands to move and explore objects rather than using them to prop themselves up, and they **spend less time grasping toys** compared with infants without a family history of autism. This is significant because exploring objects provides key perceptual and cognitive experiences that are foundational for later developmental advances, such as word learning.

We still have much to learn about the interplay between motor abilities and the development of skills in other areas. It is becoming increasingly clear, however, that early experiences and opportunities provided by movement and motor activity play a fundamental role in supporting advances in social, cognitive and language development. And for young children with developmental differences, motor delays may further restrict key learning opportunities.

With the acknowledgement that motor delays and difficulties are a key aspect of autism — even if they are not diagnostic criteria — the field now must align research, clinical practice and intervention with this reality. There is an urgent need to screen for, identify and address motor delays from early in infancy. Because movement is crucial for early learning and exploration, the “wait and see” approach can no longer be justified.

We must also recognize that just as autism is a lifelong condition, so too are the motor challenges that come with it. Most autistic people ultimately walk, run and perform complex fine-motor tasks, but the ability to perform these tasks does not mean they are not effortful or challenging. In our quest to support positive outcomes for all, we need to recognize that when movement is difficult or slow, it impacts people in ways that may hinder their ability to perform everyday tasks, participate in physical activity, engage in activities with peers, family and community, and maintain a healthy lifestyle.

Finally, interventions for people with autism that are narrowly focused on addressing behaviors in the social domain may not be optimal, particularly for infants and young children. The field needs to think outside the box to design and evaluate interventions that integrate opportunities for movement and exploration with the social and communicative opportunities that naturally accompany them. For example, an infant with delayed development of sitting could be positioned upright with support and provided opportunities to reach for and grasp toys while caregivers are coached to provide language input linked to those objects. When we work on and support the advancement of motor skills in the context of everyday settings and activities such as play and daily routines, opportunities for supporting the development of behaviors in other domains come along for free.