

Household items, toys key to infant motor skill development, research finds

June 4 2015



Priscila Cacola is an assistant professor of kinesiology at UT Arlington. Credit: UT Arlington

Toys, appliances, and even a sofa and coffee table can impact the way or when a baby first crawls, walks or achieves other growth milestones, but

a new UT Arlington study finds that many parents are unaware of the significant role household items play in their infant's motor skill development.

Priscila Caçola, an assistant professor of kinesiology in the UT Arlington College of Nursing and Health Innovation, co-developed a simple questionnaire for caregivers of infants aged 3 to 18 months that she says can aid in the evaluation of toys and other items in the home known as home affordances.

The study, called "Further Development and Validation of the Affordances in the Home Environment for Motor Development-Infant Scale (AHEMD-IS)," appears in a recent issue of the journal *Physical Therapy*.

The questionnaire is called the Affordances in the Home Environment for Motor Development-Infant Scale, or AHEMD-IS, and is now being used by physical and occupational therapists worldwide. Caçola said the tool could help parents better assess items for motor skill development or help infants do something like learning to walk.

"When parents buy toys, they're rarely thinking 'I wonder if this is going to be great for my [child's](#) fine or gross [motor skills](#),' but if they look at each AHEMD-IS question and each separation of the question, they can choose to buy toys that are different or that offer different opportunities for their infants," said Caçola, who also serves as director of the UT Arlington Department of Kinesiology's Little Mavs Movement Academy.

"Parents, doctors or other infant caregivers might ask 'What does a toy or a [coffee table](#) do?' Well, depending on the space between the couch and the coffee table, it could be the first distance that the child wants to cross," Caçola said. "If a toy is cranked and pops up, the child might

want to go grab it, which could lead the child to walking. But the challenge is the thing that stimulates that child to begin walking."

Caçola said the AHEMD-IS would be especially important when you consider infants that are premature, low birth-weight or have a condition that could impair motor skill development.

Gross motor skills commonly refer to movements involving larger muscles, like those in the arms, legs, feet or the whole body used for walking, jumping and so forth. Fine motor skills generally refer to movements involving smaller muscles, like those in the hands, wrists and fingers that are used for holding a crayon or toy. The two skills can overlap, for example, when a child is taking something off a shelf and using both large muscles to walk to the shelf and small muscles used to grasp for the toy with fingers.

David Keller, chair of the Department of Kinesiology, called Caçola's research and the AHEMD-IS measurement helpful for all children and said it "offers significant practical implications for the development of screening, diagnostic and intervention protocols associated with motor skills."

Carl Gabbard, Texas A&M University professor of health and kinesiology, Maria I.L. Montebelo, Universidade Metodista de Piracicaba (Brazil) professor of mathematical sciences, and Denise C.C. Santos, University of Michigan professor of human movement sciences, joined Caçola in the study.

The researchers surveyed parents of more than 400 infants over five years in three Brazilian states, using the AHEMD-IS. They focused on four categories, including physical space in the home, variety of stimulation, gross-motor toys and fine-motor toys. Parents were asked questions like whether there was enough space for the child in the home

to play or move around freely; does the home include a special space for toys where the child can choose what to play with and get it without help; and whether the parents regularly played games with their child to practice movements such as 'clap hands,' 'wave,' 'crawl,' 'walk,' etc.

Based on questionnaire responses, expert opinion and other variables, researchers found the AHEMD-IS to be a reliable and valid instrument for parents, doctors or other child caregivers in assessing objects in the [home environment](#) that promote infant [motor development](#).

"Developing a child's motor skills is extremely important because motor development is actually the mediator of cognitive, social and emotional development," Caçola said. "Good motor skills predict a whole lot later in life, so it might be something that all of us should be concerned about early in a child's life."

More information: *Physical Therapy*, [ptjournal.apta.org/content/ear... 5/02/25/ptj.20140011](http://ptjournal.apta.org/content/ear...5/02/25/ptj.20140011)

Provided by University of Texas at Arlington

Citation: Household items, toys key to infant motor skill development, research finds (2015, June 4) retrieved 4 May 2024 from <https://medicalxpress.com/news/2015-06-household-items-toys-key-infant.html>

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