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Sara Scharoun Benson

University of Windsor, Sara.Scharoun@uwindsor.ca

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The influence of object size on the development of motor planning skills: Unimanual object manipulation with standard vs. choice object size

Everyday object manipulation may seem simple; however, success depends on the ability to gather and use information from the environment to plan and execute a movement. Previously, we observed that object size constrains children's motor planning skills to a certain degree (i.e., when manipulating large objects; Scharoun Benson, 2022). In the current research, 6- to 11-year-old children (N=73) were asked to pick up an overturned cup to be filled with water. In three trials, children manipulated a standard sized cup, and in three other trials, children selected a cup from 8 size options. Afterwards, children were asked to comment on their selection (i.e., why they selected a specific cup). In both conditions we expect the overturned cup to be grasped with an uncomfortable starting hand position (i.e., thumb pointing down) to facilitate end state comfort (i.e., thumb pointing up). It is certainly possible to perform the task in the reverse order, or using a different strategy, but doing so generally produces an awkward, uncomfortable ending hand position that makes it more difficult to perform the task of filling the cup with water. Overall, findings revealed an increase in end-state comfort (ESC) with age, consistent with previous reports (e.g., Scharoun Benson, 2022). Interestingly, the object (i.e., standard vs. choice size) was not a statistically significant influence. Here, it is important to acknowledge that many children selected based on object size and ease of grasping, as would be expected; however, many selected based on colour, which influenced the "*grasp-ability*" of the cup. Overall, the findings from this research will help us better understand developmental changes in movement in everyday life settings and may be used to help understand similarities and differences in children with movement difficulties.

Reference:

Scharoun Benson, S. M. (2022). The influence of object size on second-order planning in an overturned cup task. *Psychological Research*, 86(2), 642-650.