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## **Counting direction in Dutch preschool children is not congruent with left-to-right number-space mapping**

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A large amount of studies has shown that numbers are mapped onto space. A common assumption based on this research is that numbers are mapped from low to high on a horizontal axis. The mapping direction – left to right or right to left – depends on cultural practices like reading and counting direction. Several studies have shown that even counting direction of most preschool children is congruent with left-to-right number-space mapping (e.g. Opfer & Furlong, 2011; Shaki, Fisher, & Goebel, 2012). The aim of the current study was to replicate these findings with preschool children in the Netherlands.

Fifty 3.5-year-old Dutch preschool children completed a counting task in which they counted a horizontal array of five blocks. Furthermore, they had to add a block to an array of three blocks and remove a block from an array of three blocks. It was ensured that the placement of the blocks did not give indications of counting or ordering direction.

Results showed that most children added and removed an object from a horizontal array consistent with left-to-right ordering. However, most children counted in the opposite direction, namely from right to left. Counting and ordering direction were related to the hand the children used for task performance. These results are not in agreement with findings from other studies, that found most preschool children count from left to right. The current study suggests that counting and ordering direction in young children is task-dependent; children grasp and transfer the blocks predominantly with the ipsilateral hand.