Left-handers are not at risk for mathematical learning difficulties

Nearly one in every ten people is left-handed, a number that seems to have remained the same through time and place. Interestingly, individuals with neurodevelopmental disorders, such as low functioning autism or intellectual disability, are more likely than the general population to show atypical hand preferences (e.g., left-, mixed-, or non-right-handedness). This is also the case -to a smaller extent- for individuals with learning difficulties, such as dyslexia. However, when it comes to individuals that have received a mathematical learning difficulties (MLD) diagnosis, we didn't know if there is any relationship with handedness. No study had focused on the handedness patterns of their participants as its main research question, although a few did report handedness data for MLD individuals.

In this study we tried to address this question for the first time. We sought to find out whether atypical handedness is associated with MLD, by presenting three new studies and by using meta-analytic methods to provide an overview of the literature.

The new studies were conducted in three different countries: Greece, the UK, and Germany. In Greece 45 MLD children were compared with 89 typically achieving (TA) children. In the UK we drew data from the ALSPAC longitudinal study and compared 445 MLD children, with 1,448 TA children. The German data were on 19 children at risk of MLD and 134 not at risk of MLD. The findings of these three studies together point to the direction of no relationship between handedness and MLD.

We then moved on to provide a statistical synthesis of these three new studies, together with all the previously published studies that reported handedness data on MLD and typically achieving individuals -even if though this was not their main aim. We were able to locate 19 such studies, with our meta-analysis totaling 3,667 participants. When all the different studies were pooled together, no evidence of a difference in the odds ratio of atypical handedness between MLD and TA participants was found.

As a conclusion, although evidence is mixed, the findings suggest that atypical hand preference is not related with MLD. Probably levels of atypical hand preference are not a general characteristic of all individuals with special educational needs, but rather specifically related to those conditions that affect language -as handedness is informative of cerebral language lateralization. Yet, we cannot rule out that handedness differences were too subtle to be detected or that other handedness measures, such as hand skill, might have been more sensitive. For the moment, we suggest that las of atypical hand preference should not be considered as a cause of concern for MLD by educators and parents.

Marietta Papadatou-Pastou

National and Kapodistrian University of Athens, Athens, Greece
Biomedical Research Foundation of the Academy of Athens, Athens, Greece

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Marietta Papadatou-Pastou, Despoina-Athanasia Panagiotidou, Filippo Abbondanza, Ursula Fischer, Silvia Paracchini, Giannis Karagiannakis
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