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**Defever, Emmy; Reynvoet, Bert; Gebuis, Titia**

**Task- and age-dependent effects of visual stimulus properties on children's explicit numerosity judgments.**

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Summary: Researchers investigating numerosity processing manipulate the visual stimulus properties (e.g., surface). This is done to control for the confound between numerosity and its visual properties and should allow the examination of pure number processes. Nevertheless, several studies have shown that, despite different visual controls, visual cues remained to exert their influence on numerosity judgments. This study, therefore, investigated whether the impact of the visual stimulus manipulations on numerosity judgments is dependent on the task at hand (comparison task vs. same-different task) and whether this impact changes throughout development. In addition, we examined whether the influence of visual stimulus manipulations on numerosity judgments plays a role in the relation between performance on numerosity tasks and mathematics achievement. Our findings confirmed that the visual stimulus manipulations affect numerosity judgments; more important, we found that these influences changed with increasing age and differed between the comparison and the same-different tasks. Consequently, direct comparisons between numerosity studies using different tasks and age groups are difficult. No meaningful relationship between the performance on the comparison and same-different tasks and mathematics achievement was found in typically developing children, nor did we find consistent differences between children with and without mathematical learning disability.

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