

POSTER: DOES WORKING MEMORY HAVE A ROLE IN OBJECT CONTROL SKILLS DEVELOPMENT OF YOUNG CHILDREN?

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Objective: According to skill acquisition theories, movement skills are learnt through processes that are reliant on working memory capacity (WMC). It has been suggested that in young children, such mechanism is unlikely and children acquire fundamental movement skills (FMS) proficiency with less dependence on their cognitive resources. In two studies, we aimed to examine the relationship of WMC with FMS proficiency of young children. **Methods:** The first study used a cross-sectional design and involved children aged 5.84 SD 0.67 years (n=178). FMS components – locomotor and object control skills – were tested using the Test of Gross Motor Development-3 (TGMD-3); WMC components – verbal and visuospatial – were measured using digit recall and block tapping tasks, respectively. In addition, accuracy in throwing at a target was also measured. The second study used a longitudinal design and involved children aged 4.17 SD 0.30 years (n=32). Locomotor and object control skills were tested at the start (T1) and middle (T2) of the school year; verbal and visuospatial WMC were also tested at T1. **Results:** The first study showed that verbal WMC has a significant positive association with object control ($r_s = 0.14$, $p = 0.04$), but not with locomotor skills proficiency. Specifically for overhand throwing, significant positive associations with verbal WMC were found for movement pattern ($r_s = 0.19$, $p < 0.008$) and throwing accuracy ($r_s = 0.15$, $p = 0.03$). The second study similarly showed a significant positive association between verbal WMC and object control skills proficiency ($r_s = 0.36$, $p = 0.04$) at T1. A significant improvement in object control skills proficiency was found over the two time points ($F(1,30) = 53.58$, $p < 0.001$, $\eta^2 = 0.64$), but there was no significant interaction with verbal WMC. **Implications:** The findings show that in early childhood, object control skills proficiency is associated with verbal WMC. However, it appears that young children typically develop object control skills without relying on their verbal cognitive resources. Movement skills training in young children are recommended to focus less on the verbal aspects of instruction.