

ZMATH 2016f.00303

Gibson, Laura C.; Maurer, Daphne

Development of SNARC and distance effects and their relation to mathematical and visuospatial abilities.

J. Exp. Child Psychol. 150, 301-313 (2016).

Summary: The current experiment measured symbolic SNARC (Spatial-Numeric Association of Response Codes) and distance effects in school-aged children and investigated the relation between these measures and visuospatial skills and mathematics ability. In the experiment, 6-, 7-, and 8-year-olds performed a magnitude-relevant SNARC task, in which they indicated whether a target number was less or greater than 5, as well as standardized tests of visuospatial skills (Developmental Test of Visual Perception-Second Edition, DTVP-2) and mathematics ability (Test of Early Mathematics Ability-Third Edition, TEMA-3). Consistent with previous research using numerical SNARC tasks with Western children, all age groups exhibited robust distance effects, and SNARC effects were observed only in 7- and 8-year-olds. Distance effects, but not SNARC effects, were moderately but significantly correlated with a subtest of the DTVP-2 measuring the ability to mentally manipulate objects in space but no other subtest. These data suggest that mental orientation abilities, but perhaps not visuospatial skills involved in visual perception and visuomotor coordination, are related to some aspects of mental number line development. Nevertheless, no relation was observed between SNARC or distance effects and mathematics ability. This result is consistent with previous developmental studies investigating the association between SNARC and math skill. However, these data are inconsistent with most experiments assessing the relationship between distance effect strength and math – a difference that can likely be attributed to the fact that a magnitude-relevant SNARC task was employed as opposed to a traditional SNARC parity task.

Classification: C42 F32 F22 C32

Keywords: SNARC effect; visuospatial skills; development; distance effect; mental number line
doi:10.1016/j.jecp.2016.05.009