

Estimation abilities of large numerosities in preschool children

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Purpose—The purpose of this study was to examine numerical magnitude representations of 5- to 6-year old children at 3 different moments of kindergarten, considering children's early symbolic number knowledge as well as their socio-economic class.

Method—This study investigated estimation abilities of large numerosities using symbolic and non-symbolic output formats (numerical range: 8-to-64) as well as counting knowledge (numerical range: 1-to-12) in kindergarten during the end of the 2nd grade (N = 42), the middle of the 3rd grade (N = 29) and the end of the 3rd grade (N = 32).

Results— We observed surprising symbolic and predominately non-symbolic estimation abilities at a very young age (from 5 y.o.), far beyond children's symbolic knowledge. Moreover, as soon as 2nd grade, early counting knowledge was linked to more precise symbolic and non-symbolic representations. Moreover, socio-economic class had no impact on numerical estimation and counting knowledge during 2nd grade of kindergarten, but did play a role in estimation only, in 3rd grade.

Conclusions—Our results support the view that numerical representations serve as building blocks for mathematical knowledge: the link between finer representations and counting knowledge is present very early in young children. Moreover, since this representation seemed to be sensitive to external components (such as socio-economic class) this implies that it can probably be targeted and refined through specific educational strategies.