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(Postdoctoral researcher | Department of Experimental Psychology | Ghent University | BE) will hold the seminar entitled

Individual differences in numerical cognition: the specific case of order/number-space interactions

29 November 2019 | 14:30 | DPSS 1 Meeting Room, Psychology Building 1, via Venezia 8, Padova

Abstract

It is widely acknowledged that the mental representation of numbers is closely associated with spatial processing. One of the most commonly used tasks to demonstrate this link is parity judgement. In this task, people with left-to-right reading habits typically respond faster with their left hand to small numbers and with their right hand to large numbers, i.e. the SNARC effect. More recently, a similar observation was made in serial order verbal working memory: responses to begin items are faster with the left hand and to end items with the right hand, i.e. the Ordinal Position Effect (OPE). From a theoretical point of view, it can be predicted that both effects are related to mathematical proficiency. So far however, the available results are inconsistent, mainly because an “experimental psychology” approach rather than a “differential psychology” approach was used (i.e. having different ideas about “measurement reliability” and the importance of between-participant variability).

In this talk I'll present 3 studies. The first one is a multi-lab initiative where we reanalyzed the data of 18 SNARC experiments (n=1016) to get an idea about the factors that determine the reliability of the SNARC effect and its prevalence at the level of the individual. For this, we calculated the regular reliability indices and used bootstrapping to get an idea about the precision with which an individual's SNARC effect is measured (which can be used to determine the prevalence). In Study 2, we used these insights to maximize the reliability and precision of the SNARC and OPE and used this bootstrapping technique to investigate whether these effects are related to mathematical abilities in adults. Finally, I will present the results of a study in kindergarten children (5 years old), to see whether they already show an OPE (i.e. in the absence of official reading/ writing instructions) and whether this effect is related to their pre-mathematical abilities.