

Individual differences in perspective taking: Inhibition & switching across the lifespan

Madeleine R. Long (University of Edinburgh), William S. Horton (Northwestern University),
Hannah Rohde (University of Edinburgh), Antonella Sorace (University of Edinburgh)
mlong@ed.ac.uk

Over the course of development, we acquire the ability to conceptualize others' thoughts and feelings as distinct from our own. This 'theory of mind' allows us to engage in meaningful social interactions, in which our understanding of another's perspective directly shapes our use of language. During discourse, we often make judgements about what knowledge is shared with a specific partner (common ground) and what must be introduced (privileged ground), requiring the integration of information during both listening and speaking. This complex process by which we tailor our speech to our partner is essential to communication, yet questions remain regarding the cognitive mechanisms underlying this process.

Prior work on the role of executive functions (EF) in regulating communicative perspective taking has often focused on inhibitory control, given the importance of suppressing one's own view in considering another's (Brown-Schmidt, 2009; Wardlow, 2013). Evidence for the potential relationship between inhibition and perspective taking is mixed, though (e.g. Ryskin et al., 2015). In addition, less consideration has been given to the comparison of inhibitory and switching capacities, the latter potentially being key to regulating the shift from one perspective to another and the update of the assumed state of affairs with each shift. Also, while a majority of work in this area targets younger adults, here we consider linguistic perspective taking across the lifespan, where differences in EF capacities may be more relevant. In particular, we examine the contributions of both inhibition and switching capacities, using two related tasks. These capacities are arguably two sides of the same coin, representing a potential trade-off (Braver, 2012; Goschke & Dreisbach, 2008) and different trajectories in cognitive aging (Gamboz et al, 2009; Wasylyshyn et al, 2011).

A total of 100 native English speakers (aged 17-84) were administered auditory tasks from the Test of Everyday Attention, measuring inhibition and switching (Robertson et al, 1996). In addition, they completed a communicative visual occluder task (from Wardlow Lane et al, 2006) in which participants identified targets in 4-object displays. Critical trials involved size contrasts between the target and a competitor. On common ground (CG) trials, competitors were mutually visible, requiring modification to disambiguate the target. On privileged ground (PG) trials, competitors were visible only to participants, so no modification was necessary. Responses were coded using a liberal "any modification" approach (any modification=1; bare NP=0). We obtain similar results when only pre-nominal modifiers are considered.

Using logistic mixed effects regression (with subjects and items as RE and maximal RE structure) we modelled perspective taking with Perspective (privileged or common ground), Age, and scores for the inhibition task and switching task as fixed effects. In general, differences in modification across perspectives decreased with Age (Age*Perspective: $\beta = -1.97$, $p < .01$). In addition, there was a three-way Age X Perspective X EF interaction for both inhibition and switching (both p 's $< .05$): a median age split revealed younger adults' sensitivity to perspective was influenced more by their inhibitory control performance (YAs: Perspective*Inhibition: $\beta = 2.09$, $p < .01$; Fig 1), while older adults' sensitivity to perspective was influenced more by switching (OAs: Perspective*Switching: $\beta = 2.02$, $p < .05$; Fig 2).

These results suggest perspective taking involves multiple aspects of EF, best revealed by examining multiple EF tasks and a wider range of individual capacities across the lifespan.

Figure 1. Performance of Younger Adults (YA) on Perspective Taking and EF Measures

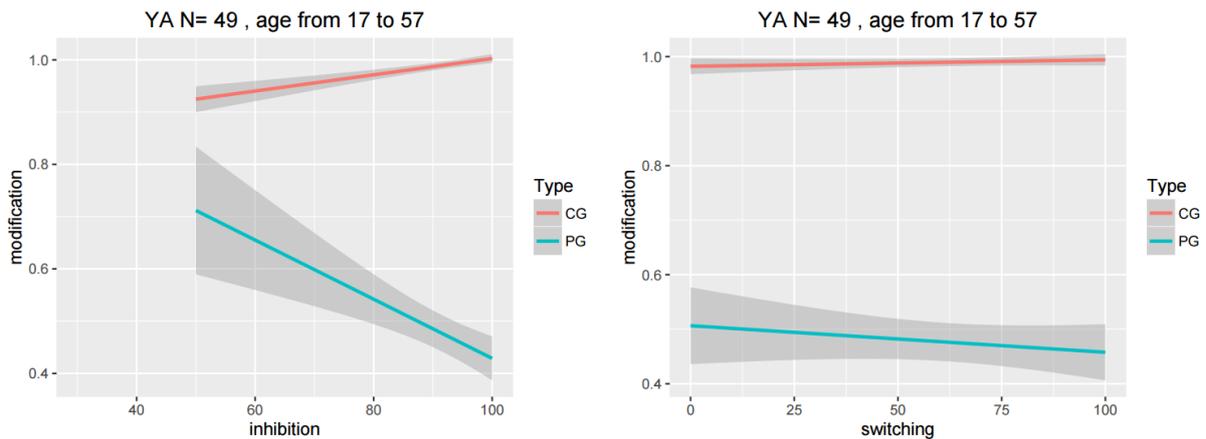
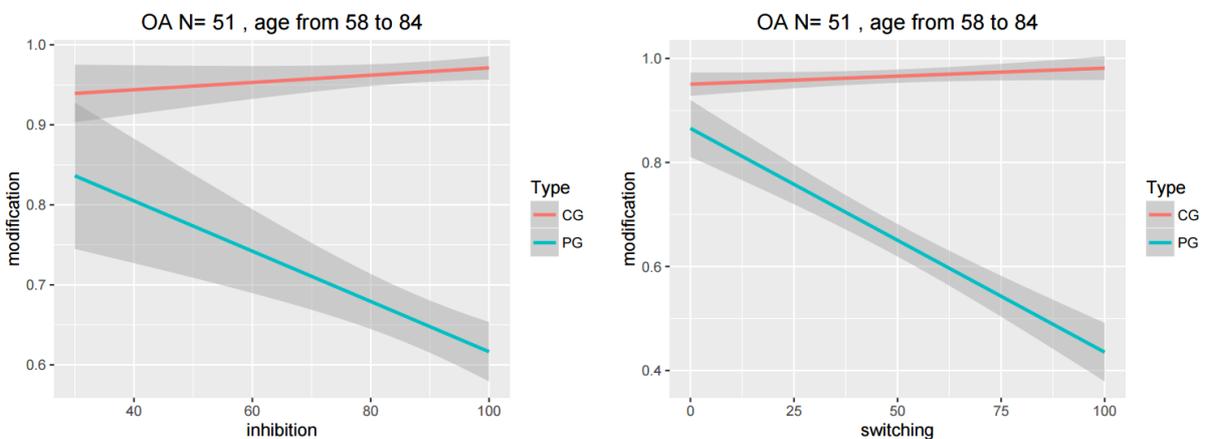


Figure 2. Performance of Older Adults (OA) on Perspective Taking and EF Measures



Note: CG=Common Ground trials, PG=Privileged Ground trials.

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