

## The role of cognitive flexibility in children's reference production

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In conversation, people have to choose between alternative ways of referring to an entity (e.g., *rabbit* vs. *bunny*). Recent evidence suggests that, like adults, children tend to reuse an interlocutor's referential choices [1, 2, 3], even at the expense of their own naming preferences [4]. Such *lexical alignment* implicates perspective-taking, but the mechanisms underpinning this are unclear.

It has been proposed that cognitive flexibility (CF) – the ability to switch between different mental sets, tasks, or strategies [5] – supports children to shift perspectives, and hence labels, on an object [6, 7]. By extension, CF may also be a mechanism in children's lexical alignment, by enabling them to shift away from their own preferred name for an object, in order to align with a partner's dispreferred name for the same object. We report a study-in-progress which investigates this possibility, by examining whether a measure of children's cognitive flexibility predicts their tendency to lexically align with a partner. We hypothesised that children with better cognitive flexibility would show a stronger tendency to align on a partner's referential choices.

33 (of an anticipated 60) typically-developing children (aged 7 years 9 months to 10 years 9 months) have taken part in our study, comprising of two parts. In the first part, children played a picture-naming game with the experimenter. Experimental items had two alternative names, and children established their individual preferences for naming these items prior to playing the game. On experimental trials, children named an object previously described by the experimenter, who used either the child's preferred name or the alternative (dispreferred) name for the object. We measured children's overall likelihood of producing the dispreferred name.

In the second part of the study, we measured children's cognitive flexibility using a computerised version of the Dimensional Change Card Sort (DCCS) task [8] which assessed children's ability to shift perspective on a stimulus set, through sorting items by either colour or shape (two blocks, counterbalanced). In a third 'mixed' block of the DCCS, children sorted items by colour and shape, in a random order DCCS scores corresponded to proportion of accurate sorting trials, and reaction times (RT) averaged across trials, for each task block. At the end of experimental sessions, we also measured children's receptive vocabulary via the Kaufman Brief Intelligence Test [9].

The data gathered so far suggest that children showed strong lexical alignment: they were more likely to use a dispreferred name (e.g., *bunny*) if the adult had previously used the dispreferred name rather than their preferred name for an object ( $X^2 = 107.15, p < 0.001$ ), and this was unrelated to participants' verbal ability (which correlated only with chronological age). Critically, we also found a significant effect of accuracy in the mixed block on children's alignment scores, after controlling for RT ( $X^2 = 4.96, p = 0.03$ ). This indicates that children who tend to align more with a partner's use of a dispreferred name (suppressing their own preferred name) are better at switching from one sorting rule (e.g., shape) to a different one (colour). Data from additional participants with lower DCCS scores should help us to assess the true extent of the relationship between CF and alignment, however, as the significant relationship is currently being driven by an outlier with considerably below-average performance on the DCCS.

Our study-in-progress suggests that, in line with past research, children's referential choices are flexible and sensitive to a partner's previous usage. Children aligned on a dispreferred name even when this meant over-riding the default preference they had previously established with their partner. Our results also offer novel, tentative evidence that CF has a role in children's communicative perspective-taking; children who were better at rule switching in the DCCS were also most likely to align on the dispreferred names used by the experimenter,

suggesting that these behaviours have a common source. However, further data collection is necessary to firmly establish or refute such a relationship.

## References

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