

SIMOES LOUREIRO Isabelle, COLLETTE Cynthia, ROSSIGNOL Mandy & LEFEBVRE Laurent

Why do children link up chicken and egg before building the link between chicken and rabbit? Acquisition of thematic and taxonomic links in semantic memory in childhood memory



Cognitive Psychology and Neuropsychology Department, UMONS, Belgium
 isabelle.simoesloureiro@umons.ac.be

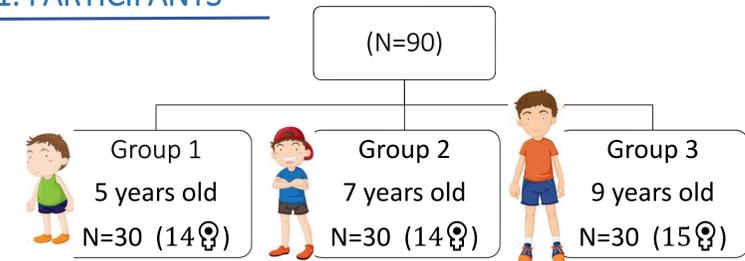
Introduction

Lexico-semantic organization in children comprises different links between concepts. **Taxonomic** links refer to relationships between concepts sharing common properties and thus belonging to the same category (e.g. chicken and rabbit). **Thematic** links refer to links uniting items sharing a spatio-temporal or contextual link (e.g. chicken and egg). There are two main theoretical positions about the temporality of acquisition of taxonomic and thematic links in childhood. The first is traditional, proposing an earlier development of thematic links comparing to taxonomic one. The second view is pluralistic, supporting a parallel development of both relationships.

The objective of this study was to challenge both views of conceptual development in children.

Methodology

1. PARTICIPANTS



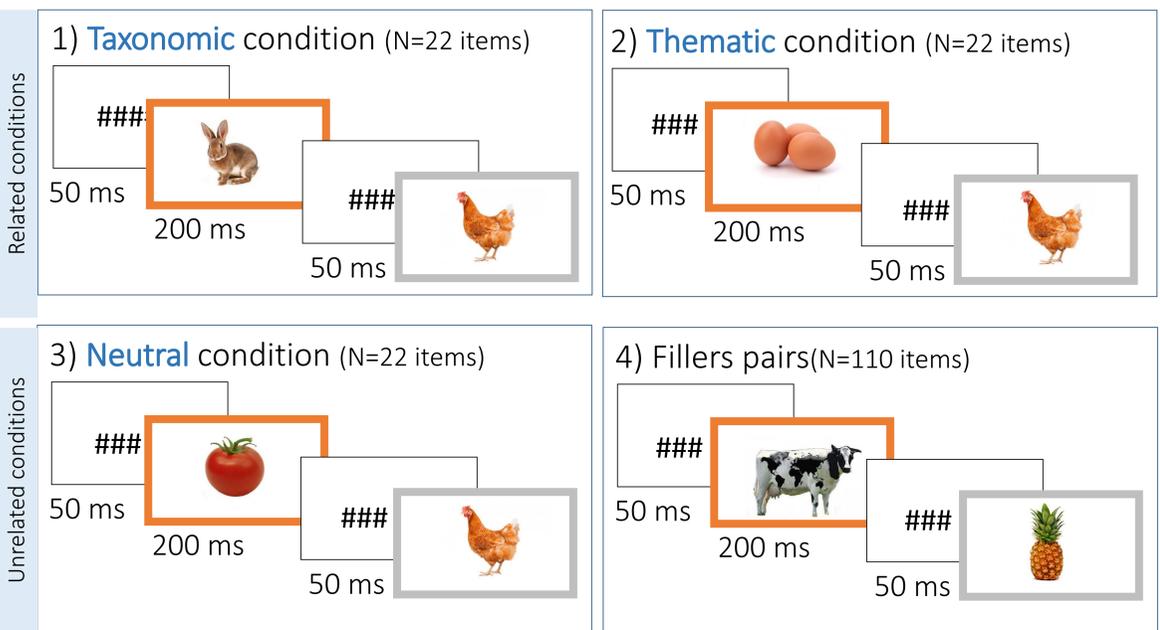
Clinical and demographical features

	Group 1 (5y)	Group 2 (7y)	Group 3 (9y)
Age	66.73 ($\sigma=3.31$)	89.27 ($\sigma=2.84$)	113.67 ($\sigma=2.85$)
MMSE	11.93 ($\sigma=2.97$)	20.67 ($\sigma=2.45$)	25.83 ($\sigma=2.24$)
SKQ	39.17 ($\sigma=12.54$)	17.57 ($\sigma=10.60$)	9.23 ($\sigma=4.86$)

Means for the three experimental groups for age (in months), MMSE (Mini-Mental State Examination) scores and total number of errors on the SKQ (Semantic Knowledge Questionnaire, Simoes Loureiro & Lefebvre, 2015). Standard deviations are between brackets.

2. TASK

Naming task associated to a masked semantic priming paradigm



Results

Given the differences in speed processing between groups, priming effects were expressed as a proportion of priming in accordance with Balota et al. (1999) procedure :

$$((\text{Mean RT in unrelated condition} - \text{mean RT in related condition}) / \text{mean RT in unrelated condition}) * 100$$

1. INTRAGROUP COMPARISONS

Proportion of priming effect

Thematic priming effect appears significantly at 7 and 9 years old. Taxonomic priming effect only appears at 9 years old.

	Taxonomic	Thematic
Group 1 (5y)	0,16 ($\sigma=6,16$)	2,26 ($\sigma=6,16$)
Group 2 (7y)	3,28 ($\sigma=7,29$)	7,12 ($\sigma=7,73$) *
Group 3 (9y)	6,96 ($\sigma=7,2$) *	8,01 ($\sigma=7,07$) *

2. INTERGROUP COMPARISONS

Comparison of PE

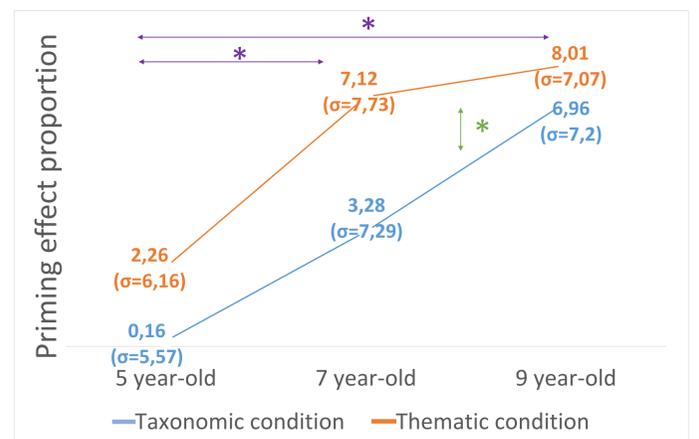
Repeated-measures ANOVA with condition (taxonomic vs thematic) as 'within subject factor,' and the groups as 'between subject factor'

Group effect *

$$F(2, 87) = 8.259, p=.001, \eta^2 = .160$$

Condition effect *

$$F(1,87)=11.492, p=.001, \eta^2=.117$$



* Significant difference with $p < .05$

Discussion and conclusions

The objective of this study was to bring a contribution to the understanding of the constitution of the semantic network in children aged from 5 to 9 years old, considering the type of links in the semantic memory (taxonomic versus thematic). Our results demonstrate a **progressive development of the lexico-semantic network** in 5- to 9-year-old children with a **distinct evolution of the thematic and taxonomic** paths of knowledge organization. Indeed, we observed a specific evolutions in both modes of organization. Thematic priming appears significantly at 7, suggesting that this path of knowledge organization develops early in children. On the contrary, taxonomic priming develops later, only appearing significantly at 9 years of age. Our results fit well with the theory supporting a specific development of both links with an easier process of thematic relationships and it's why children link up chicken and egg before building the link between chicken and rabbit.