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## Embodied practice to increase L1 vocabulary acquisition in French kindergarten children

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## Introduction

- **L1 Vocabulary level in preschool children** is a *predictor* of future *reading skills* (Muter et al., 2004 ; Ouelette, 2006)
- **Co-speech iconic gestures** (McNeil, 1992) : *Co-speech gesture* illustrating some *semantic properties* of the *word referent* → An *efficient tool to support L2 vocabulary learning* in both adults and children (see for example Kelly et al., 2009 ; Quinn-Allen 1995 ; Tellier, 2008)
- **Embodied Pedagogy Framework** (Macedonia, 2019)
- Previous study : Focus on the use of **iconic gestures** to support **L1 vocabulary acquisition** (action verbs & nouns) in **French Kindergarten children in comparison with picture presentation**
  - 1) The effect of learning conditions depends on the tasks : **beneficial effect of iconic gestures for free recall & recognition task**
  - 2) Learners' vocabulary skills modulates the **effect of learning conditions for definition task**
  - 3) **No difference** in the effectiveness of learning conditions depending on **word types & learners' manual dexterity level**.
- **Objectives of the current study** : **Replicate and extend previous results** obtained by adding 1) long-term measurements and 2) a third learning method i.e. **gesture visualization** → To ensure that the (potential) **benefits of the iconic gestures** are explained by the **children's motor engagement**.

## Method

- **30 kindergarten** (12 Girls & 17 Boys) aged to  $5,6 \pm 2$  months from **medium to high socioeconomic backgrounds**
- **30 new words to learn with videos** : **15 action verbs** ("to crumple") & **15 nouns** ("suspenders")
- **3 learning conditions** (see Fig.1) :
  - **Pictures (P)** presentation
  - **Visualization of iconic gestures (V-IG)**
  - **Visualization & Reproduction of iconic gestures (VR-IG)**
- Before vocabulary training : evaluation of **reasoning** (WIPSSI-IV, Wechsler, 2014), **vocabulary skills** (EVIP, Dunn & coll., 2013) and **manual dexterity** (MABC-2, Henderson & al., 2007) + **definition task**
- Vocabulary training : **2 sessions/ method in on week** by **group of 3 or 4 children** through **videos**
- Evaluation with **4 tasks** in short & long term (D+7 & 21) : **free recall, recognition, denomination and definition task**



Fig 1. Examples of learning session for each experimental conditions : A) Pictures (P) for « straps » ; B) Visualization of iconic gestures (V-IG) & C) Visualisation and Reproduction (VR-IG) for « to knead »

## (Preliminary) Results

### FREE RECALL TASK

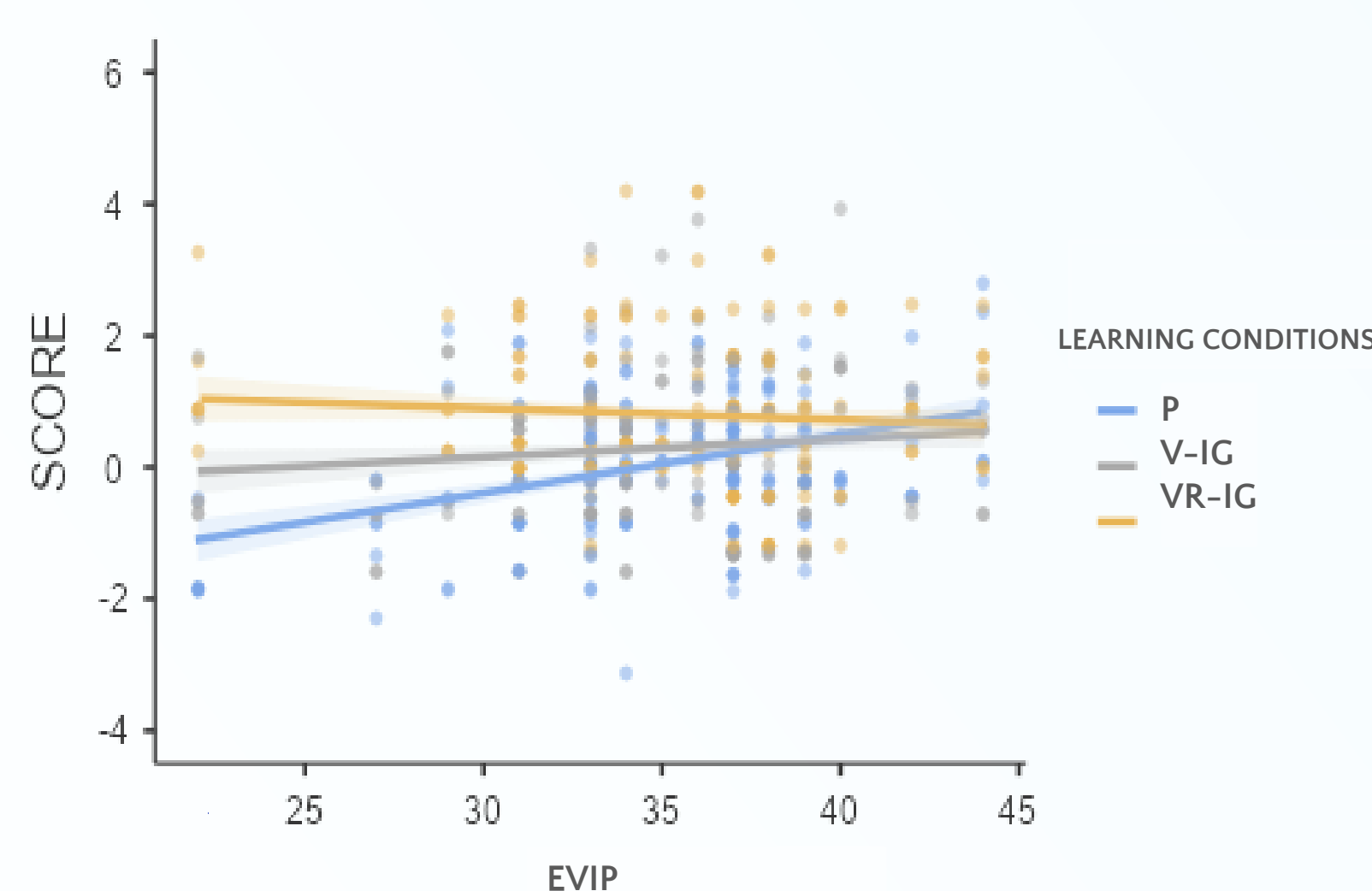


Fig 2. Rash scores for Recall task as a function of vocabulary skills (EVIP) and learning conditions

An **interaction effect** between **learning conditions** and **vocabulary skills** ( $p=0.001$ ) i.e. For children with a **low/medium level of vocabulary** :

- 1) **More words recalled in gesture conditions (V-IG & VR-IG) than in picture condition (P)** ( $p < 0,001$ )
- 2) **More words recalled in VR-IG condition than in V-IG** ( $p < 0,05$ )

### RECOGNITION TASK

Main effect of learning conditions i.e. :

- 1) **No difference** between **gesture (V-IG & VR-IG) and picture conditions (P)**
- 2) **For gesture conditions, more words recognised in VR-IG than in V-IG.**

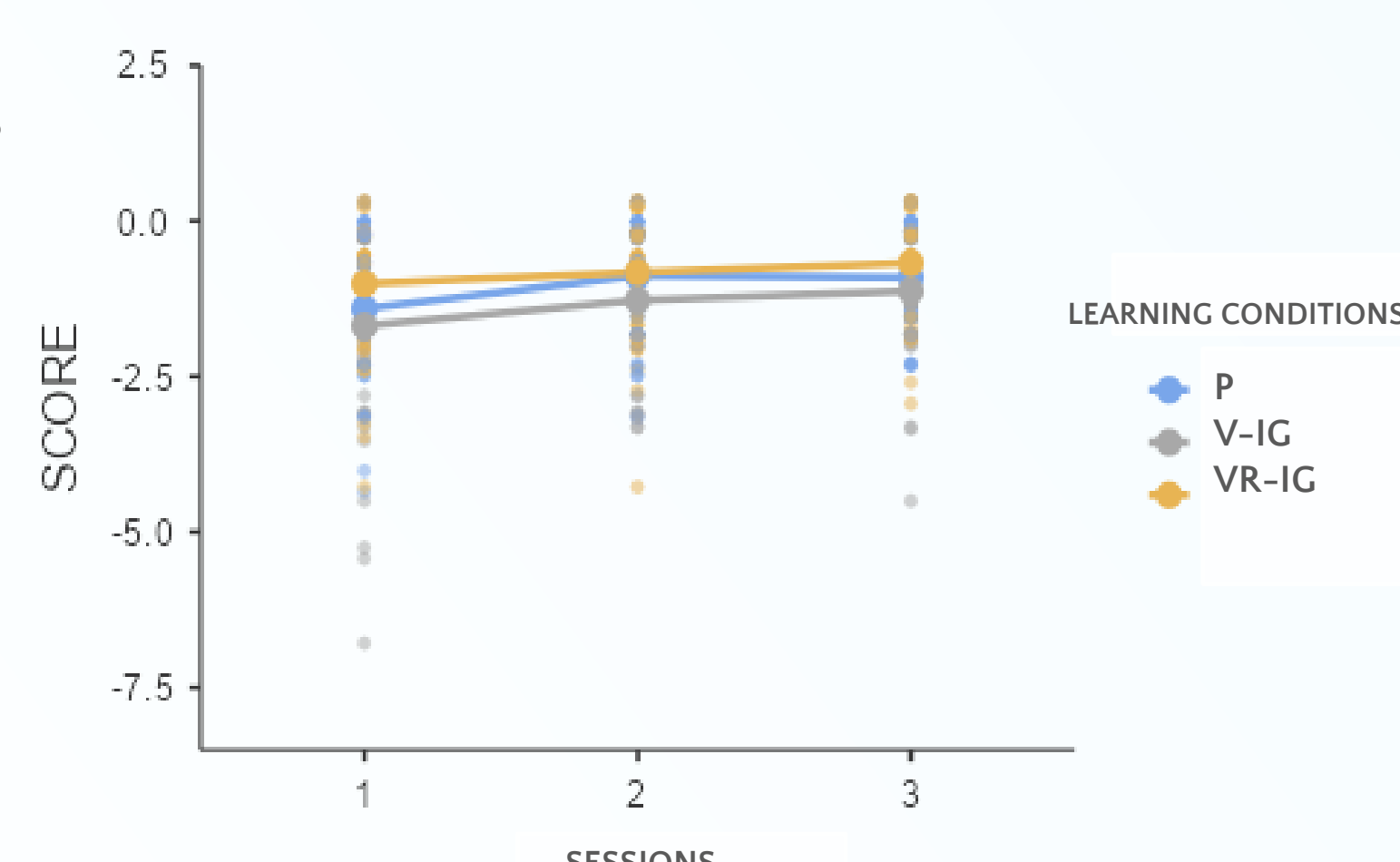


Fig 3. Rash scores for recognition task as a function of sessions and learning conditions

### DENOMINATION TASK

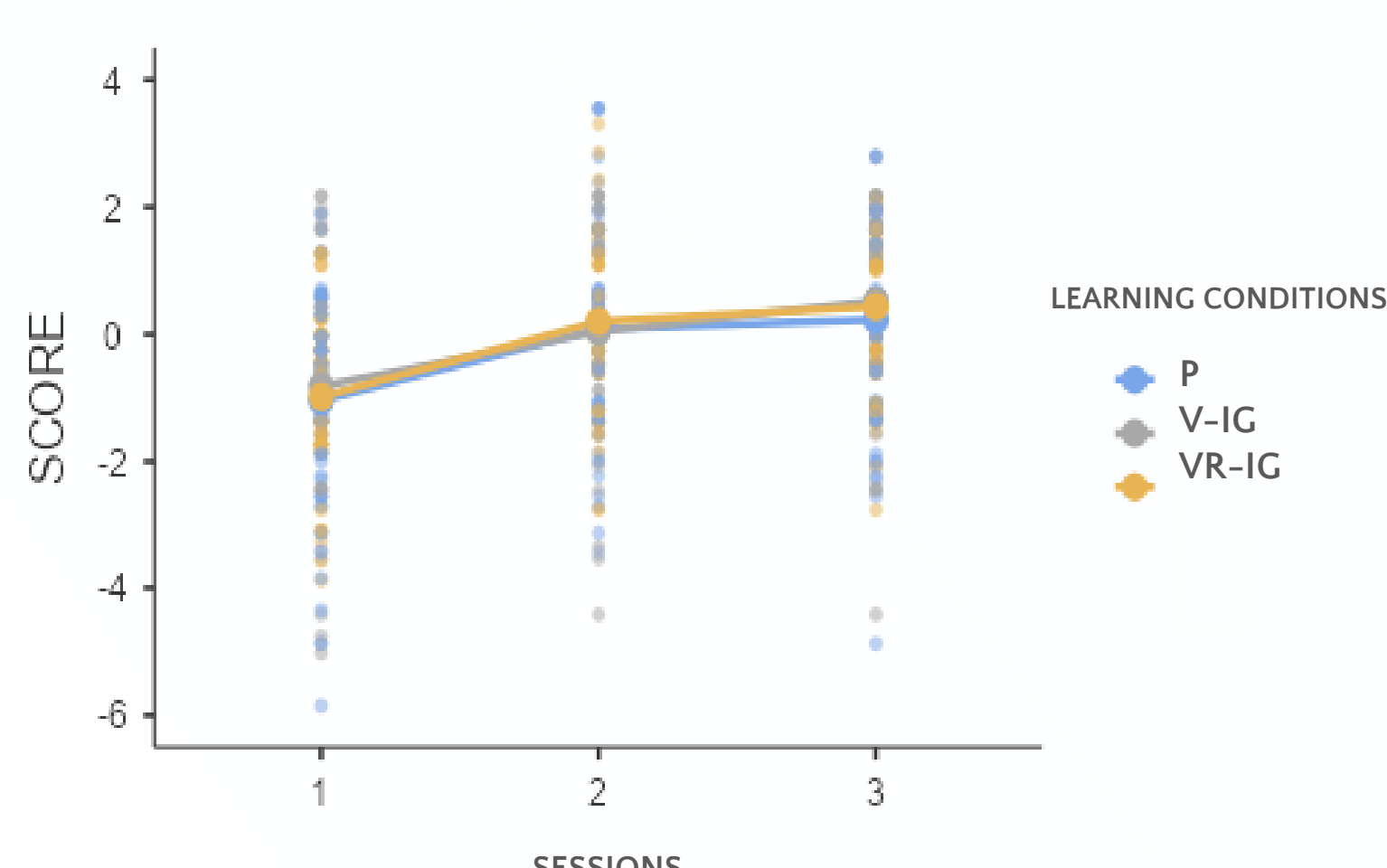


Fig 4. Rash scores for Denomination task as a function of sessions and learning conditions

**No main effect of learning conditions, only an effect of sessions with more named words** :

- 1) In S2 than in S1
- 2) In S3 than in S2

## Discussion

- **Results corroborate those of the first study** : **benefit of the gesture conditions depends on the tasks** → **superior effect for recall and recognition tasks**
- **For recall task** : **modulation of the effect of learning conditions according to learners' initial vocabulary skills** → **children with a low/medium level benefit most from the gesture conditions. To be seen for the definition task ?**
- **Benefits of gestures are due to the learners' physical engagement** : in line with the **"embodied pedagogy" framework** (Macedonia, 2019)
- **Effects maintained at D+7** : what about at D+ 21 ?
- Interestingly, **no difference** in the effectiveness of enrichment conditions depending on **word types**
- Next steps :
  - **Contextualization** of vocabulary learning (story reading)
  - Include **children from low socioeconomic backgrounds**

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