# The Role of Iconic Gesture Speed in Verb Comprehension for 2-year-olds, 3-year-olds, and Adults

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Learning verb can be challenging for children as young as 3-year-olds, as they may have difficulty in generalizing verb meanings from actions alone (Kersten & Smith, 2002). Iconicity – an intuitive link between linguistic form and meaning – has been found to facilitate verb learning. For instance, iconic gestures representing how objects are moved can influence how young children interpret novel verb meanings (Mumford & Kita, 2014), and iconic gestures representing action referents can facilitate 3-year-olds' verb generalization (Aussems & Kita, 2021). However, previous studies mainly focused on the resemblance between an iconic gesture and its referent based on frequently lexicalized features, such as the manner of the action referent, whereas less attention has been given to other resemblance, such as the speed of the action referent. Thus, our project aims to investigate how iconic gesture conveying other resemblance, such as speed information, influences verb comprehension.

Moreover, our project also aims to investigate how this ability of comprehending iconic gestures develops over time. Not children of all ages can benefit from the iconic gestures when interpreting novel words, as the ability to recognize form-meaning correspondences develops during the preschool age. Previous studies suggested that children start to understand correspondences between iconic gestures and referents as early as 2 years old but not as well as 3 years old can (Goodrich & Hudson Kam, 2009; Namy, 2008; Tolar et al., 2008). More specifically, children at 2 years could not match iconic gestures and pictures of referent objects better than chance (Tolar et al., 2008), whereas Namy (2008) found that infants at 26 months could recognize iconic match between hand gesture and novel objects' shape and movement after training. Thus, we will test 2-year-olds, 3-year-olds, and adults in a verb-action matching task to see whether age influences the ability to utilize speed information from iconic gestures when comprehending verbs.

In the experiment, participants will watch a pair of videos that show a computer-modified slow and fast versions of the same action at the bottom of the laptop screen. A typical action video shows an actor moving across the scene in a funny way (e.g., jumping like a frog.). Simultaneously, participants will also watch an iconic gesture video depicting the manner of the action at the top of the laptop screen, with an accompanying recorded speech introducing a new verb (e.g., "Look at what is happening now. The girl is *blicking*."). We will manipulate the speed of the iconic gesture video (Slow vs. Fast). In the slow iconic gesture condition, participants will view an iconic gesture video at the same speed as actor's movement in the slow version of the action video, whereas in the fast iconic gesture condition, the iconic gesture video at the same speed as actor's movement in the fast action video. Afterward, participants will be asked to make a two-alternative forced choice to select the action video that best matches with the novel verb. The participants will not be explicitly told to match the iconic gesture to an action video, but we expect that they will take the information encoded in gesture to into account when selecting the novel verb referent. Specifically, we predict that participants are more likely to choose the slow action video in the slow iconic gesture condition, and the fast action video in the fast iconic gesture condition. We also predict that 3-year-olds and adults will show a reliable iconic gesture speed effect, but adults will outperform 3-year-olds. And we predict that 3-year-olds will outperform 2-year-olds, where the latter group will not be proficient at utilising gesture speed to comprehend verbs.

We are currently collecting data and will report preliminary results at the workshop. Our findings will contribute to a greater understanding of the role of iconic gestures in language acquisition, by illuminating the developmental trajectory of the utilisation of iconic gesture speed.

**Index Terms**: verb comprehension, iconic gesture, language development

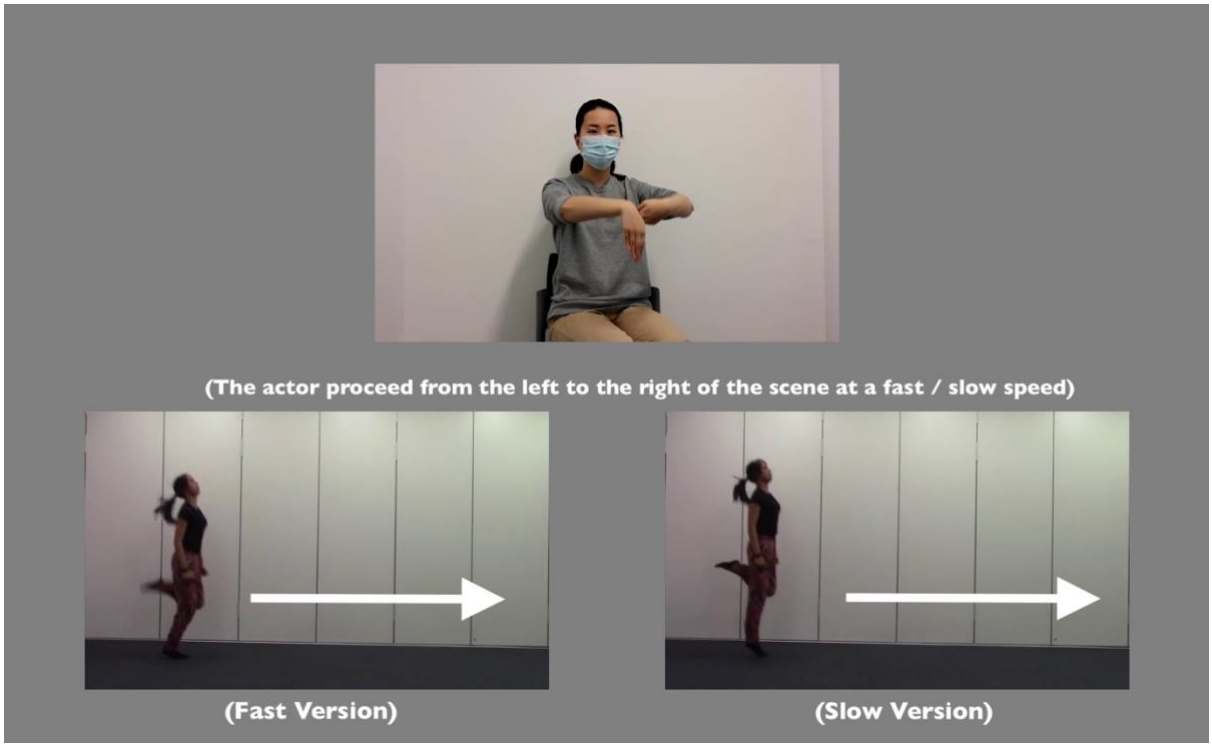


Figure 1: *An example trial of experimental lay-out. A pair of action videos are presented at the bottom of the screen. The action video pair features the same actor and the same action, but one is modified to be played at a fast speed, and the other is modified to be played at a slow speed. An iconic gesture video featuring the manner of actor's movement in the action video pair is presented at the top of the screen at the same time.*

## References

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