Symbols and word assignment: Can infants map a word onto a spatial relational role?

This project builds on the hypothesis that the capacity to establish stand-for relations for entities that are potential symbols is available in infancy. In the context of this project, the term "symbol" is understood relationally rather than taxonomically: a symbol is established when a "stand-for" relation is posited between a tangible, concrete, physical entity (the symbol) and a discourse referent (the entity being communicated about). This physical entity (i.e., the symbol) can be anything whose identity can be maintained and tracked in the 'here and now' of the actual context: a 3D object, a 2D image, a mark on a surface, an animated figure on a computer screen. The discourse referent (hereafter simply "referent") that a symbol stands for can be defined by a description, which is typically, but not necessarily, a token of a familiar concept. Importantly, one can assume that a given object is a symbol without knowing what it stands for just by recognizing that it is displayed on a representational medium (e.g., a computer screen). We posit that this assumption is present after the first year of life, and results from experience with representational media. When there is no obvious description for what a symbol stands for (e.g., no iconic match with familiar entities), infants can assign to it the thematic role the symbol plays in the context (e.g., "the chaser" or "the middle one").

We test this prediction by assuming that infants interpret labels applied to symbols according to the concept under which they describe them (cf. Yin & Csibra, 2015). Specifically, we test the concept of the "loner", which describes the relative position of a symbol compared to other symbols in the display. Fourteen- to 16-month-old infants are presented with a series of stimuli, each including 4 visual objects of the same kind. Three of these objects are grouped closely together, while an additional object is positioned farther away. The visual features of the objects, as well as their absolute location in the display, vary across trials, but in each one, an animated hand points to the lone shape while a voice says, "Hello baby! Look, this is a [dila]! Wow, a [dila]!". After 6 training trials, the test phase includes 4 additional displays of the same kind. In two of these trials, infants are asked, "Where is the [dila]?", and the other two, "Where is the [moge]?" (i.e., a novel label). Infants are expected to look at the loner symbol primarily when they hear the same label as during the training trials. Infants' gaze behavior is recorded by an eye-tracker (data collection is ongoing).

If our prediction is confirmed, it would demonstrate that infants extract novel situational roles from symbolic displays by analyzing the relation of a symbol to other symbols in their spatiotemporal arrangement.

Figures

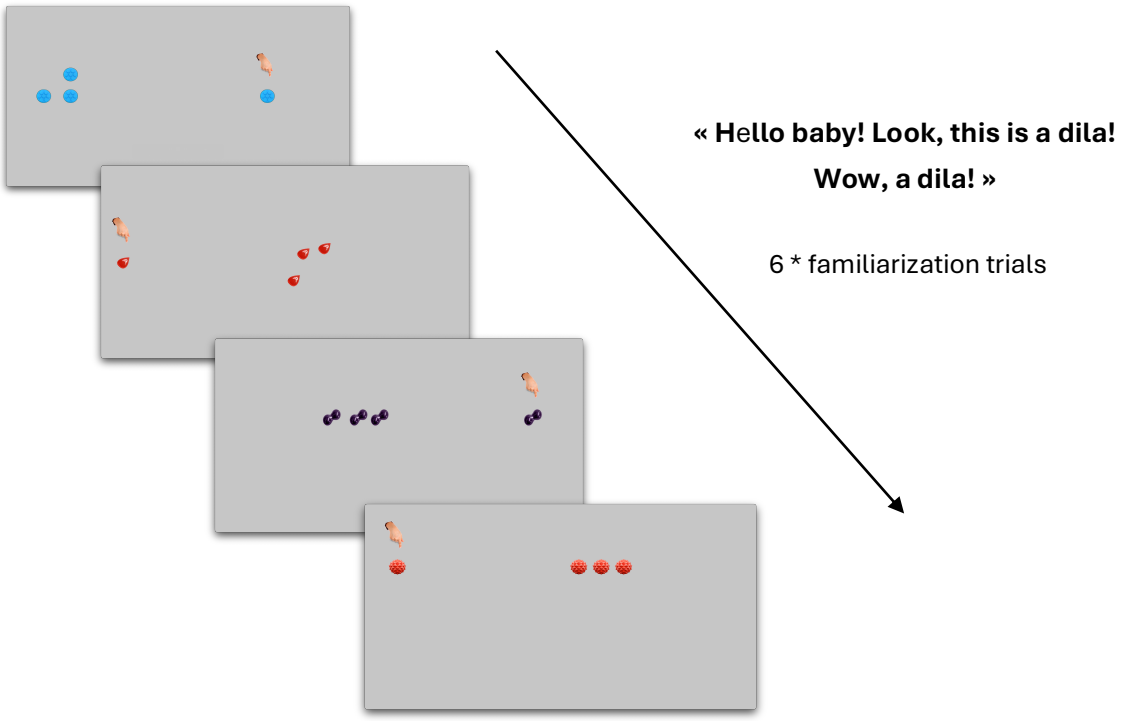

Figure 1: Familiarization trials

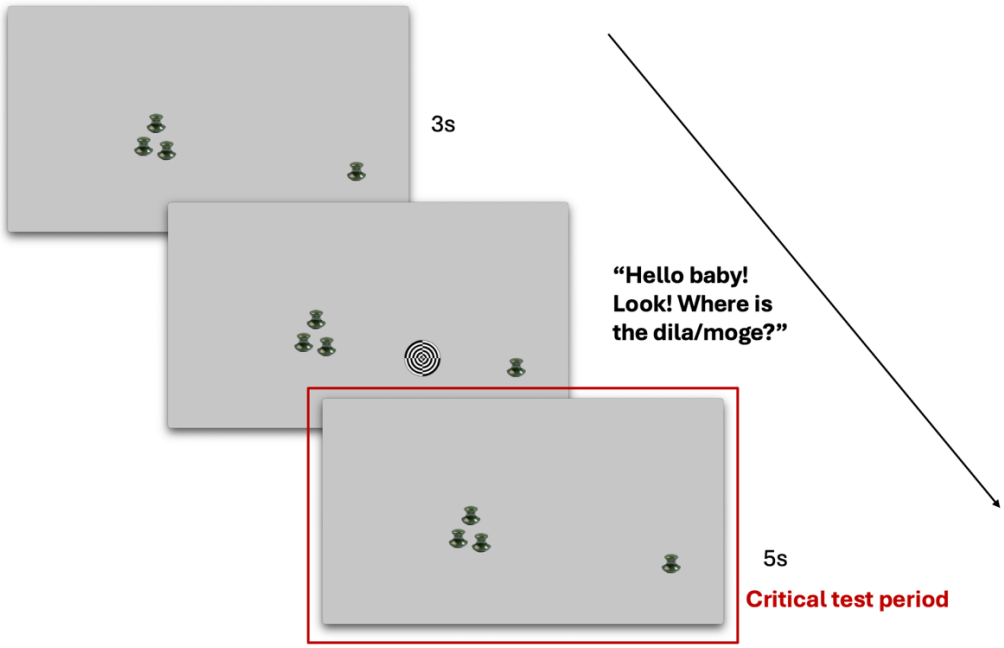

Figure 2 : Example of a test trial