

Supplementary materials

S1. Supplementary Material

The list of read sentences in the storybook in Hungarian

Title: **Manóbújócska**

Number Sent

- | | |
|-----|---|
| 1 | Egy szép napon Tút és Szut elhatározták, hogy bújócskázni fognak. |
| 2a | Megvagy, Szut! |
| 2b | Látlak ám a málnásban! |
| 3a | Szia Dát! |
| 3b | Azt hittem, hogy Szut van itt! |
| 4a | Szut elbújt. |
| 4b | Segítesz megkeresni? |
| 5a | Megvagy, Szut! |
| 5b | Látlak odalent a tóparton! |
| 6 | Ó, hiszen ez nem Szut, hanem Zat! |
| 7a | Szut elbújt, |
| 7b | segítesz nekünk megkeresni? |
| 8a | Megvagy, Szut! |
| 8b | Látlak, ott vagy a barlangban! |
| 9 | Tút, Dát és Zat hanyatt-homlok menekült az oroszlán elől. |
| 10a | Végre megtaláltunk, Szut! |
| 10b | Azt hittük, sosem leszél meg. |

S2. Supplementary Material

Gesture coding

1. Annotation procedure and training protocol

The annotation of gestures was carried out using a multi-stage annotation procedure. In the initial stage of the research, some of the recorded files were annotated independently by four annotators, on the basis of which the final categorization system and annotation protocol were developed.

After reviewing these pilot annotations, we finalized the category labels, annotation rules, and procedures for handling uncertain cases. Following this stage, we created a reference file for subsequent annotations. This file contained examples of the different gesture categories and illustrated how to determine the start and end points of gestures.

The entire dataset was annotated by one annotator following the aforementioned protocol. A subset of the material was then independently annotated by a second annotator. To assess inter-annotator agreement, we compared the labels assigned by the two annotators.

Gesture annotation was conducted using ELAN (Lausberg & Sloetjes, 2019).

2. Gesture annotation principles

To determine the starting point of the recording, the annotators listened to the beginning of the recording, where the reference number of the story could be heard. Annotation began immediately after this point. For gesture annotation, only the muted video recordings were used. The annotators could not hear the soundtrack while annotating the gestures, as the verbal content might have biased the evaluation and categorization of the gestures. Thus, the annotation was based solely on visible movements, without considering the verbal content, stress, or intonation.

The endpoint of the storytelling session (and thus the annotation) was defined as the moment when the mother closed the storybook. However, in cases where the participant continued storytelling after this point, the annotated segment was extended accordingly. After closing the book, communication intervals unrelated to the storytelling (e.g., technical discussions with the experimenter) were not annotated.

Here, a gesture is defined as a sequence of movements between two rest positions (Kendon, 1980). Continuous movements were treated as single units.

3. Gesture coding categories

The categories used for the annotation formed a hierarchical structure. When a gesture fulfilled the criteria for more than one category, the category higher in the hierarchy was assigned to it.

Priority	Gesture	Definition
1	Pointing gesture	The mother points to a part of the book or a picture in a visually traceable manner for the infant. The “finger pointing” category refers to a deictic (pointing) gesture. Pointing may be performed with the index finger or with another finger as well, as long as the referent is clearly traceable.
2	Showing gesture	The mother shows the entire page without explicit pointing. In this case, the mother shows the entire book or page to the infant without pointing to a specific part of it.
3	Holding the book	The mother keeps the book on her lap in such a way that it is not visible to the infant or is only partially visible.
4	No gesture	Other storytelling-related movements that do not fall into any of the above categories.

S3. Supplementary Material

Annotation of narrative elements

1. Annotation procedure and training protocol

The annotation of narrative and conversational elements was also conducted using a multi-stage annotation procedure. In the initial stage of the research, transcriptions were annotated independently to facilitate the development of the final categorization system and annotation protocol. The categories of narrative and conversational elements were finalized after reviewing the pilot annotations.

Following the developed protocol, one annotator labeled the entire dataset. Afterwards, a second independent annotator repeated the procedure on a subset of the dataset. In the final annotation, the labels from these two annotators were used to evaluate inter-annotator agreement.

2. *Principles of narrative annotation*

The stories told by the mothers were transcribed, and these transcriptions were used for annotation. For annotation, only storytelling-related utterances were considered. Communication segments unrelated to the storytelling (e.g., technical discussions with the experimenter) were not annotated.

3. Narrative elements

Based on the picture sequence of the storybook, we determined the information units necessary for the listener to comprehend the story. These elements were not part of the scripted sentences, yet they occurred a considerable number of times in the storytelling. The following narrative elements were identified: hat, walnut, mane, bird, boat.

4. Conversational clauses

The conversational elements occurring during storytelling were annotated following the categorization proposed by Wigglesworth and Stavans (2001). Conversational elements were defined as utterances that served to encourage the infant's active participation. In our analysis, story-related conversational elements, attention-directing utterances, and responses to the infant's behavior were treated as a single combined category, labeled "conversational elements."

The gesture coding and the narrative analyses were conducted separately, and the primary coders were different for the two analyses. After the coding process was completed, the results were combined.