

OSF Preregistration Template from AsPredicted.org

Title: Infants' Object Processing in the Context of Third-party Social Interactions

Description: Infants' object processing in the context of third-party social interactions. In this study we use a screen-based object-processing paradigm to investigate whether 9-month-old infants show superior processing of content presented within the context of an observed social interaction. In 16 videos, an object will be shown together with two adults. Based on a within-subjects 2x2 design, we manipulate the context of the scenarios with regard to the degree of ostensive context between the two actors (ostensive or non-ostensive) and their looking at the object (yes or no). By manipulating both variables, we aim to disentangle two factors that may have an impact on infants' object processing.

Data collection

Have any data been collected for this study already? Note: 'Yes' is a discouraged answer for this preregistration form.

No, no data have been collected for this study yet.

Hypothesis

What's the main question being asked or hypothesis being tested in this study?

MAIN QUESTION: (How) does third-party social interactive context affect infants' object processing?

We will measure infants' object processing after they have seen an object together with two adults in four types of videos. The videos will vary with regard to (a) the degree of ostensive context between the two actors (ostensive or non-ostensive), and (b) whether or not the actors look at the object (yes or no; see section "Conditions"). Manipulating both ostensive context and the degree of looking at the object will give us the opportunity to disentangle two possible factors that might have an impact on infants' object processing in third-party contexts.

HYPOTHESES: We hypothesize that if similar processes contribute to infants' object processing in third-party observational contexts as in first-party contexts with own involvement, infants' object processing should be facilitated by others' joint attention (per definition including ostensive context and mutual gazing to an object). If this is the case, infants' proportional looking time to the novel object should be significantly higher in the "third-party ostension – looking to the object" condition compared to all other three conditions.

If infants process information in observational contexts differently than in first-party contexts, the planned 2x2 design will allow to generate alternative explanations related to the relative impact of observed ostensive context and others' direct gazing to an object. A main effect of one or both factors would indicate that infants' object processing is influenced independently by observed ostensive context and/or others' direct gazing to the object.

Dependent variable

Describe the key dependent variable(s) specifying how they will be measured.

Infants will be presented with a screen-based object processing task (16 trials). Each trial will consist of an object encoding phase and a preferential-looking phase (Wahl, Michel, Pauen, & Hoehl, 2013). All dependent variables will be measured by using eye tracking.

During the object encoding phase, infants will be presented with one of four kinds of videos, all showing one object (abstract toy) and two adults. The videos will differ to the degree of ostensive context between the two actors and to the degree the adults look at the object (see section "Conditions"). Each video will have a total duration of 11 seconds (as in Okumura, Kanakogib, Kobayashia, & Itakura, 2020).

During the preferential-looking phase, infants will be presented with two objects at the same time for a duration of 10 seconds: the object they had previously seen in the encoding phase (familiar object) and a novel object. As the main dependent variable related to infants' object processing, we will measure infants' mean proportional looking time to the novel object in the preferential-looking phase. We define proportional looking time as the time spent looking at the novel object divided by the total looking time at both objects. According to the object encoding paradigm, infants should look longer at the novel object in the preferential-looking phase if they had processed the familiar object sufficiently during the learning phase (Reid & Striano, 2005; Theuring, Gredebäck & Hauf, 2007).

Conditions

How many and which conditions will participants be assigned to?

Four conditions will be tested within subjects: Based on a 2x2 design, we will manipulate the content of the videos in the object encoding phase regarding (a) the degree of ostensive context between the two actors (ostensive or non-ostensive) and (b) whether or not the actors look at the object (looking or not looking at the object). To manipulate the degree of ostensive context between the persons, we use the movements of their bodies (turning toward or away from one another), the relative positioning of their bodies (face-to-face or back-to-back), and gaze direction (eye contact or looking away from one another). Based on a within-subjects design, every child will be presented with 4 trials per condition (16 trials in total).

Analyses

Specify exactly which analyses you will conduct to examine the main question/hypothesis.

To investigate infant's object processing as a function of third-party social context and third-party gaze, we will conduct a general linear mixed model (GLMM). As dependent variable, we will include the mean prop. looking time at the novel object in the preferential-looking phase. As fixed effects we will include the interaction between third-party ostensive context (ostensive, non-ostensive) and actor's look at the object (look at object, no look at object). To account for possible trial effects, trial will be included as control variable in the model. All factors will be tested within subjects. We will include appropriate random effects in the model. If the two-way interaction does not reveal a significant effect, we will repeat our main analysis including social context and look at object as main effects.

If we find an effect of trial, we will repeat our main analysis including the first trial per condition only. We will provide appropriate visualizations to illustrate the differences between conditions with regard to our hypotheses.

Outliers and Exclusions

Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Children will be generally excluded in case of (a) technical errors with the eye tracking soft- or hardware, (b) inaccuracy or failure of calibration, or (c) premature birth (< 36 weeks of gestation).

Moreover, participants have to (d) contribute at least one valid trial per condition to be included in the final sample: We will only include a trial if infants have looked at least at one object during the preferential-looking phase, and if they have paid visual attention to the central parts of the video for at least one fixation (see also Michel, Pauen, & Hoehl, 2017). As central parts, we count the initial face-to-face (or back-to-back) phase, and the looking-to-object (or away-from-object) phase, excluding the motion sequences. Children will only be included in the analysis if they provide valid data in at least one trial per condition after being filtered according to these criteria (see also Wahl et al., 2013). We will report valid trial statistics for each condition.

Sample Size

How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We aim to include valid data from $N = 32$ infants between 9.0 and 10.0 months of age. Due to data base restrictions we might have to include infants who deviate a couple of days from our inclusion criterion. The criteria for "valid data" are described in section "Outlier and Exclusions". Data that has to be excluded from the final analyses due to these criteria will be replaced by additionally tested participants. In case of another corona-driven lockdown, we may stop data collection even if we did not collect valid data of 32 infants.

Other

Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

(1) TRIAL ORDER: The videos will be presented in 4 blocks of 4 trials each. In a particular block, each trial presents a different condition. The order of the conditions within a block will be randomized across blocks. Between blocks, infants will be presented with a 4-second kaleidoscope video to maintain their attention (see also Reuter, Emberson, Romberg, & Lew-Williams, 2018). We will counterbalance the order of trials during the first block of trials between children (in the way that an equal number of children sees condition 1 first, condition 2 first, etc.).

(2) OBJECTS: As objects we will use 32 pictures of abstract toys used in a study by Wahl, Michel, Pauen, & Hoehl (2013). The positioning of the novel object (right or left) will be counterbalanced within children and condition (i.e., each child sees the novel object in two trials per condition on the right side, and in two trials on the left side). The pairing of objects in the preferential-looking phase will be pseudo-randomized and consistent over participants. All children will see the same 32 objects, with the same toy never occurring twice. 16 objects will be presented as familiar objects in the object encoding phase, and 16 additional objects as novel objects in the preferential-looking phase. The meaning of each individual object (novel or familiar) will be counterbalanced across participants and condition, meaning that each object serves equally often as novel and as familiar object in all four conditions over all participants.

(3) ACTORS: Every child will see two different dyads of actors: one dyad performing in all trials of the two ostensive conditions, and the other dyad performing in all trials of the two non-ostensive control conditions. The left-right positioning of the actors within the dyads will be reversed in the "gazing at object" and "gazing away from object" conditions. Overall children, the two dyads will be seen equally often in all conditions.

(4) Depending on the testing situation due to Covid-19, we will test an additional sample of infants in a separate study, investigating the influence of ostension vs. gaze direction in a first-party context. We may analyze and compare data of both studies in one data set.

Name

Give a title for this AsPredicted pre-registration. Suggestion: use the name of the project, followed by study description.

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Finally

For record keeping purposes, please tell us the type of study you are pre-registering.

Experiment