Supplementary Online Material to “Abstract Representations of Small Sets in Newborns”:

Results of the first sample of 16 infants tested in Experiment 1

Lucie Martin, Julien Marie, Mélanie Brun, Maria Dolores de Hevia, Arlette Streri & Véronique Izard

This document presents the results of the first sample of 16 infants tested on experiment 1, before we took the decision to double the sample size. The analyses were first performed on all 3 pairs of trials presented to this first sample of infants. As high attrition rates lead to the decision to shorten the experiment for the second sample of infants, we also present the results of analyses restricted to the first 2 pairs of trials. All analyses were run on log-transformed looking times, since residuals for analyses on raw looking times were close to deviating from normality (with three pairs of trials: Shapiro test on residuals for non-transformed looking times $W = .976, p = .082$, for log-transformed looking times: $W = .990, p = .70$; with two pairs of trials: residuals for non-transformed looking times $W = .964, p = .060$; for log-transformed looking times $W = .990, p = .88$). A sensitivity analysis indicates that with this first sample of 16 infants, our experiment had 80% power to detect effects of size $\eta^2_p = .28$ for main effects and interactions between 2-level variables (congruency, trial order, auditory stimulus), and size $\eta^2_p = .22$ for the main effect of trial pair and interactions with this variable. Results are illustrated in Figure S1.

An ANOVA with 2 within-subject variables for trial pair and congruency, and two between-subject variables for trial order and auditory stimulus identified a significant interaction between congruency and trial order ($F(1,12) = 10.7, p = .007, \eta^2_p = .47$), consistent with the results reported in the main text. Infants who received a congruent trial first looked generally longer at congruent stimuli ($M = 36.6$ vs. 22.5s; post-hoc contrast $p = .009, 7/8$ infants looked longer at congruent stimuli), while infants who received an incongruent trial first did not show any preference ($M = 22.7$ vs. 26.1s; post-hoc contrast $p = .29, 2/8$ infants looked longer at congruent stimuli). The main effect of congruency was not significant ($F(1,12) = 2.9, p = .12, \eta^2_p = .19$), but the interaction between congruency and trial pair approached significance ($F(2,24) = 2.7, p = .088, \eta^2_p = .18$; looking
times to the congruent and incongruent stimulus in the first pair of trials: \( M = 25.4s \) vs. 25.9s, 7/16 infants looked longer at the congruent stimulus; in the second pair of trials: \( M = 28.2s \) vs. 18.3s, 11/16 infants looked longer at the congruent stimulus; on the third pair of trials: \( M = 35.3s \) vs. 28.6s, 9/16 infants looked longer at the congruent stimulus). Besides these effects, the ANOVA yielded a significant effect of trial pair \( (F(2,24) = 3.8, p = .038, \eta^2_p = .24) \): infants generally looked longer during the last trials. There was also a triple interaction between auditory stimulus, congruency, and trial pair \( (F(2,24) = 4.1, p = .029, \eta^2_p = .26) \); however post-hoc contrast analyses did not identify any significant effect of congruency when breaking the data by auditory stimulus and trial pair \( (ps > .41; \) 3-6/8 infants looked more at the congruent trial in each cell). No other main effect or interaction were significant \( (ps > .29, \eta^2_p < .11) \).

**Figure S1. Looking times for the first and second samples of infants tested in Experiment 1.** The order of the bars shows the successive trials presented to the infants, starting either from a congruent or from an incongruent trial. Error bars are 95% CI.
The ANOVA performed on the first two pairs of trials yielded the same results: an interaction between congruency and order ($F(1,12) = 9.1, p = .011, \eta^2_p = .43$), reflecting longer looking at congruent trials when infants received a congruent stimulus first ($M = 32.1s$ vs. $20.2s$; post-hoc contrast $p = .008$; 7/8 infants looked more at the congruent stimuli), but not when they received an incongruent stimulus first ($M = 21.5s$ vs. $24.0s$; post-hoc contrast $p = .49$; 3/8 infants looked longer at the congruent stimuli). The main effect of congruency ($F(1,12) = 4.0, p = .069, \eta^2_p = .25$) and the interaction between congruency and trial pair ($F(1,12) = 4.1, p = .065, \eta^2_p = .26$) both approached significance. No other main effect or interaction were significant ($ps > .09, \eta^2_ps < .21$).