Supplemental Materials

Preliminary Results

Species Differences

Although we were reluctant to compare human and monkey infants within the same model (e.g., differences in ages and developmental rates), we compared human and monkey infants' overall attention to the screen (look duration and fixation frequency, as measures of attention holding and exploration, respectively), as well as their overall social proportion (time looking to the social video out of total time looking to both videos). See Supplementary Table 1 for details. We found that human infants attended more to the stimuli overall, compared to monkey infants. Human infants looked longer to the screen on average (M = 19.14, SD = 5.65) than monkey infants (M = 15.76, SD = 3.93), $t(137) = -4.14$, $p < .001$, $d = .69$, and human infants had a higher average frequency of fixations on the screen (M = 54.05, SD = 21.49) than monkey infants (M = 43.71, SD = 9.54), $t(137) = -3.76$, $p < .001$, $d = .62$. Although human infants payed more attention to the screen, macaque infants (M = .57, SD = .11) spent proportionately more time watching the social stimuli than human infants (M = .40, SD = .14), $t(138) = 7.60$, $p < .001$, $d = 1.35$.

Study 1: Macaque Results

Our dependent measure, social proportion, was inside the bounds of a normal distribution for macaque infants (skew = -0.11; kurtosis = -0.47), so we decided to maintain the data in the original form (no transformation), to preserve interpretability (see Lo & Andrews, 2015). We included in our analysis the within-subjects independent variable of age and the between-subjects covariates of infant sex and cohort. To prepare the data for analysis, we recoded age, denoting the youngest age (1 month) as zero (0). We examined attention to the screen (Supplemental Table 1) to confirm that infants were attentive, overall. We found no significant differences of age for time spent looking to the screen (γ_{01} = .353, t = 1.27, p = .21). Further, we ran a model with additional covariates, including the fixed effect of age at level-1, and sex and cohort at level-2. Controlling for sex and cohort did not alter our findings and they had no statistically significant effects (γ_{01} = .008, t = .26, p = .79; γ_{02} = -.003, t = -.19, p = .85; Supplementary Table 2).

Model:

Level 1: $y_{ij} = \beta_{0j} + \beta_{1j}Age_j + e_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}Sex_j + \gamma_{02}Cohort_j + u_{0j}$

$\beta_{1j} = \gamma_{10}$

Reduced-form: $y_{ij} = \gamma_{00} + \gamma_{01}Sex_j + \gamma_{02}Cohort_j + \gamma_{10}Age_{ij} + e_{ij}$

Study 2: Human Results

Social proportion was inside the bounds of a normal distribution for human infants (skew = 0.70; kurtosis = -0.67), so we decided to maintain the data in the original form (no transformation), to preserve interpretability (see Lo & Andrews, 2015). We examined attention to the screen (Supplemental Table 1) to confirm that infants were attentive, overall. We found no significant differences of age for time spent looking to the screen (γ_{01} = .271, t = 1.55, p = .12). Along with our within-subjects independent variable of age, we added sex as a between-subjects covariate to our analyses. We also controlled for gestational age, household income, mother's

education, and father's education. All additional continuous covariates were examined for normality. The skew (-.84) and kurtosis (1.37) values of gestational age fell into the expected range. To prepare the data for analysis, we recoded age, denoting the youngest age (2 months) as zero (0).

Overall, the quadratic model (age^2 as fixed effect) was heteroscedastic, but had no random effect of age (the relationship did not appear to vary across infants). Fixed effects at level-1 included age and the quadratic variable of age (age^2), and at level-2 included sex. We ran the same model with a piecewise effect with a knot at 6 months (instead of a quadratic effect) to examine if social proportion increased linearly after the initial decrease (see Table 3 for results).

Further, we ran two models with additional covariates, including the fixed effects at level-1 included age and the quadratic variable of age (age^2) for the first model and a piecewise effect (age from 2-6mo and 6-13mo) for the second. Level-2 included sex, gestational age, household income, mother's education, and father's education. None of the effects we found were driven by the additional variables in the model (for full results see Supplementary Table 3).

Model:

Level 1: $y_{ij} = \beta_{0j} + \beta_{1j}Age_j + \beta_{2j}Age^2_j + e_{ij}$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}Sex_j + \gamma_{02}GA_j + \gamma_{03}Total\_inc_j + \gamma_{04}M\_edu_j + \gamma_{05}F\_edu_j + u_{0j}$

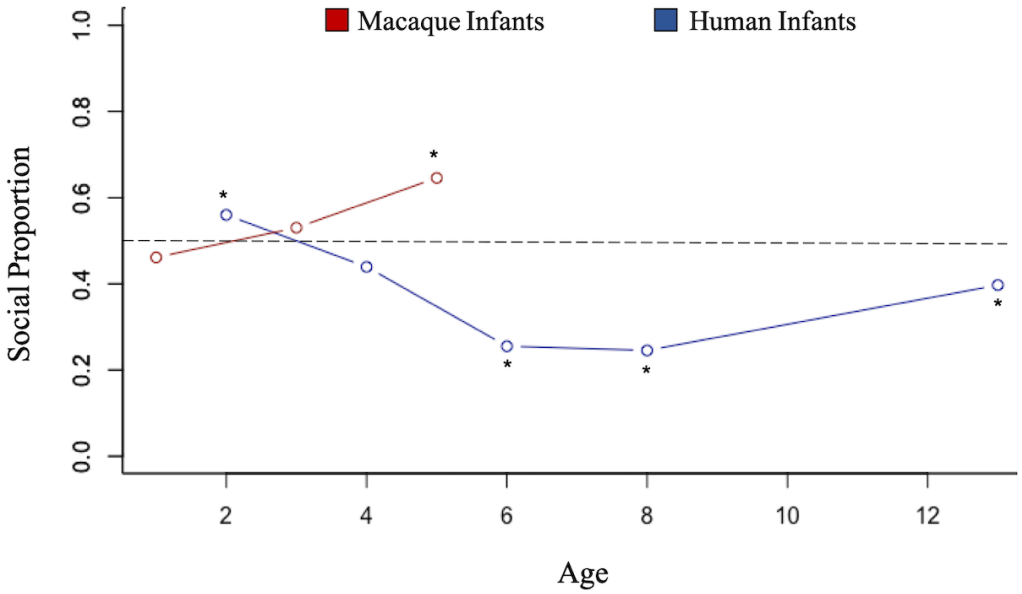
$\beta_{1j} = \gamma_{10}$

Reduced-form: $y_{ij} = \gamma_{00} + \gamma_{01}Sex_j + \gamma_{02}GA_j + \gamma_{03}Total\_inc_j + \gamma_{04}M\_edu_j + \gamma_{05}F\_edu_j + \gamma_{10}Age_{ij} + \gamma_{20}Age^2_{ij} + e_{ij}$

Supplementary References

Lo, S., & Andrews, S. (2015). To transform or not to transform: Using generalized linear mixed models to analyse reaction time data. *Frontiers in Psychology*, *6*, 1171.

Supplementary Figures



Supplementary Figure 1. Line graph comparing human infants' (blue) and macaque infants' (red) mean proportion of social looking time of by age (months). Chance looking (equal time to social and nonsocial) is at .50, with greater looking to social above .50, and greater looking to nonsocial below .50. *Indicates significant differences from chance (*p*s < .05) for each age and species.

Supplementary Tables

Species	Age (months)	Total Looks (seconds)	Social Proportion
Macaque	1	*M* = 13.39, *SD* = 5.17	*M* = .48, *SD* = .17
	3	*M* = 17.40, *SD* = 6.46	*M* = .53, *SD* = .19
	5	*M* = 16.45, *SD* = 6.08	*M* = .65, *SD* = .19
Human	2	*M* = 14.12, *SD* = 8.02	*M* = .60, *SD* = .36
	4	*M* = 19.38, *SD* = 8.72	*M* = .47, *SD* = .28
	6	*M* = 22.35, *SD* = 7.32	*M* = .25, *SD* = .18
	8	*M* = 21.38, *SD* = 8.49	*M* = .26, *SD* = .19
	13	*M* = 19.31, *SD* = 7.75	*M* = .41, *SD* = .22

Supplementary Table 1. Means (*M*) and standard deviations (*SD*) for total looks to the screen (seconds), average frequency of fixations to the screen, and proportion of time looking to the social relative to the nonsocial stimuli, for macaque infants (top) and human infants (bottom), at each age.

Labels	Random/Fixed	Greek Symbol	Estimate	Standard Error	*p*-value
Intercept (b/w group)	Random Effect	u_{0j}	.0007		
Residual (w/in group)	Random Effect	e_{ij}	.0326		
Intercept	Fixed Effect	γ_{00}	.4567	.0293	< .001***
Age (w/in group)	Fixed Effect	γ_{10}	.0423	.0074	< .001***
Sex (b/w group)	Fixed Effect	γ_{01}	.0038	.0261	.883
Cohort	Fixed Effect	γ_{02}	-.0071	.0089	.427

Supplementary Table 2. Macaque infant model results with additional variables.

Labels	Random/Fixed	Greek Symbol	Estimate	Standard Error	*p*-value
Quadratic Model					
Intercept (b/w group)	Random Effect	u_{0j}	.0060		
Residual (w/in group)	Random Effect	e_{ij}	.1279		
Intercept	Fixed Effect	γ_{00}	.5584	.0806	< .001***
Age (w/in group)	Fixed Effect	γ_{10}	-.1244	.0159	< .001***
Age^2	Fixed Effect	γ_{20}	.0095	.0013	< .001***
Sex (b/w group)	Fixed Effect	γ_{01}	-.0318	.0372	.397
Gestational age	Fixed Effect	γ_{02}	-.0082	.0110	.462
Family income	Fixed Effect	γ_{03}	.0183	.0140	.200
Mother education	Fixed Effect	γ_{04}	-.0003	.0187	.880
Father education	Fixed Effect	γ_{05}	.0009	.0155	.999
Piecewise Model					
Intercept (b/w group)	Random Effect	u_{0j}	.0058		
Residual (w/in group)	Random Effect	e_{ij}	.1299		
Intercept	Fixed Effect	γ_{00}	.5351	.0600	< .001***
Age (2-6mo)	Fixed Effect	γ_{10}	-.0983	.0124	< .001***
Age (6-13mo)	Fixed Effect	γ_{20}	.0209	.0065	.001**
Sex (b/w group)	Fixed Effect	γ_{01}	-.0350	.0363	.310
Gestational age	Fixed Effect	γ_{02}	-.0094	.0106	.405
Family income	Fixed Effect	γ_{03}	.0804	.0473	.108
Mother education	Fixed Effect	γ_{04}	-.0277	.0470	.523
Father education	Fixed Effect	γ_{05}	.0047	.0406	.887

Supplementary Table 3. Human infant model results with additional variables. Gestational age was measured in days. Family income was classified as having a total household income of either $39,000 and below or $40,000 and above. Mother education and father education was measured as having either some college experience or a lower education or at least a 2-year college degree and/or a higher education.