Supplemental Material

S1. Excluded Data

Of the 357 infants enrolled in the larger study, 342 infant-mother dyads provided some data on the metrics of interest. A full explanation of excluded data at each assessment follows.

4-months. Eye-tracking data collected outside a 2.5- – 5.5-month window (42 infants) and questionnaire data collected outside a 2- – 6-month window (16 infants) were excluded. Infant temperamental negative affect and maternal anxiety measures were excluded for 11 participants as someone other than the mother completed the questionnaires. Overlap task data were excluded for 91 infants due to calibrations above 4 degrees deviation and 24 infants due to experimenter/equipment error.

8-months. Eye-tracking data collected outside a 6.5- – 9.5-month window (17 infants) and questionnaire data collected outside a 6- – 10-month window (4 infants) were excluded. Infant temperamental negative affect and maternal anxiety measures were excluded for 11 participants as someone other than the mother completed the questionnaires. Overlap task data were excluded for 13 infants due to calibrations above 4 degrees deviation and 3 infants due to experimenter/equipment error.

12-months. Eye-tracking data collected outside a 10.5- – 13.5-month window (16 infants) and questionnaire data collected outside a 10- – 14-month window (15 infants) were excluded. Infant temperamental negative affect and maternal anxiety measures were excluded for 10 participants as someone other than the mother completed the questionnaires. Overlap task data were excluded for 24 infants due to calibrations above 4 degrees deviation and 2 infants due to experimenter/equipment error.

18-months. Eye-tracking data collected outside a 16.5- – 19.5-month window (12 infants) and questionnaire data collected outside a 16- – 20-month window (12 infants) were excluded. Infant temperamental negative affect and maternal anxiety measures were excluded for 11 participants as someone other than the mother completed the questionnaires. Overlap task data were excluded for 13 infants due to calibrations above 4 degrees deviation.

24-months. Eye-tracking data collected outside a 22.5- – 25.5-month window (17 infants) and questionnaire data collected outside a 22- – 26-month window (20 infants) were excluded. Infant temperamental negative affect and maternal anxiety measures were excluded for 13 participants as someone other than the mother completed the questionnaires. Overlap task data were excluded for 3 infants due to calibrations above 4 degrees deviation.

S2. Power Analysis

Using Computing Power and Minimum Sample Size for RMSEA (Preacher & Coffman, 2006), we determined a sample size of at least 60 infants was needed to achieve an RMSEA of < .08 (good fit) with 115 degrees of freedom. Thus, we are adequately powered at 342 infants to assess the SEM model as a whole.

S3. Missing Data

Data were missing across the sample due to infant completion of the overlap task, maternal completion of questionnaires and the Covid-19 Pandemic. Our final three assessments (12-, 18- and 24-months) were most impacted by the Covid-19 Pandemic (in person data collection ended in March 2020). Additionally, at the time of analyses, questionnaire data were still being collected for the 18- and 24-month assessments. A full explanation of missing data from at each time assessment follows.

4-months. For the overlap task, 100 infants did not attempt and 7 infants were lost due to experimenter/equipment error. For the questionnaires, 76 mothers did not complete the IBQ and 102 mothers did not complete the BAI.

8-months. For the overlap task, 138 infants did not attempt and 7 infants were lost due to experimenter/equipment error. For the questionnaires, 109 mothers did not complete the IBQ and 129 mothers did not complete the BAI.

12-months. For the overlap task, 174 infants did not attempt and 7 infants were lost due to experimenter/equipment error. For the questionnaires, 129 mothers did not complete the IBQ and 157 mothers did not complete the BAI.

18-months. For the overlap task, 211 infants did not attempt and 7 infants were lost due to experimenter/equipment error. For the questionnaires, 142 mothers did not complete the TBAQ and 158 mothers did not complete the BAI.

24-months. For the overlap task, 266 infants did not attempt and 2 infants were lost due to experimenter/equipment error. For the questionnaires, 170 mothers did not complete the TBAQ and 186 mothers did not complete the BAI.

S4. Retention of Eye-Tracking Data

Collecting eye-tracking data in infants, especially young infants is challenging. However, to conduct complex analyses, such as ri-clpm, it is necessary to maximize the amount of data included in the model. To account for these developmental and modeling concerns, we included any data that was collected within our calibration standard of 4° and included infants with any number of valid trials. Table S1 displays the descriptive statistics for the amount of valid overlap trials by assessment. On average, we had 25.62 – 28.61 valid trials across assessments. Although some infants provided as few as 4 trials, overall, retaining data when possible provides the

robustness necessary to complete complex analyses. Furthermore, our use of FIML to handle missing data enabled us to retain infants who provided any eye-tracking at any assessment. Listwise deletion biases model estimates. Thus, including any infants who provided any eye-tracking data provides the best practice for interpreting relations amongst our variables over time (Enders & Bandalos, 2001).

S5. Missing Data Analysis.

T-tests and chi-square tests were conducted to assess how missingness related to study variables as well as data collection site and mother reported infant sex. As seen in Table S2, missingness was consistently related to data collection site. Visualization of missingness (Figure S2) indicated the ratio of missing to non-missing data was highest for site 3. Thus, we included site 3 as a covariate on the random intercepts of our models.

S6. Model Controlling for Sex

To assess if parent reported infant sex influenced observed relations, we included sex as covariate on the random intercepts (see analysis code). Sex was unrelated to infant affect-biased attention, infant negative affect and maternal anxiety Controlling for sex did not significantly impact observed relations. The model controlling for sex had a poorer fit than the primary model (CFI = .870; RMSEA = .053; SRMR = .105).

Table S1. Descriptive Statistics for Amount of Valid Overlap Trials

	M	*SD*	*Median*	*Range*
4-Months	26.53	6.58	29	3 – 30
8-Months	25.81	6.43	29	4 – 30
12-Months	25.62	6.36	29	4 – 30
18-Months	27.41	5.49	30	5 – 30
24-Months	28.61	3.12	30	14 - 30

Table S2. Tests of missingness in relation to study variables

4 Month Assessment						
	Missing Negative Affect		Missing Maternal Anxiety		Missing Attention Bias	
	t- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*
Site	26.85	< .001	49.28	< .001	1.41	.494
Sex	0.06	.814	0.20	.655	0.15	.699
Negative Affect	-	-	-	-	-0.86	.390
Maternal Anxiety	-	-	-	-	-0.58	.561
Attention Bias (Angry | Happy)	-1.31 | -0.15	.205 | .887	0.37 | 0.32	.715 | .754	-	-
8 Month Assessment						
	t- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*
Site	23.42	< .001	41.64	< .001	7.78	.020
Sex	0.11	.736	0	1	0.57	.449
Negative Affect	-	-	-	-	-0.28	.778
Maternal Anxiety	-	-	-	-	0.30	.766
Attention Bias (Angry | Happy)	-0.36 | 0.20	.722 | .846	-0.04 | 0.03	.966 | .978	-	-
12 Month Assessment						
	t- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*
Site	16.90	< .001	37.43	< .001	5.10	.078
Sex	2.00	.158	0.58	.448	5.16	.023
Negative Affect	-	-	-	-	0.79	.428
Maternal Anxiety	-	-	-	-	-0.53	.599
Attention Bias (Angry | Happy)	1.86 | 0.55	.078 | .589	0.56 | 0.61	.580 | .546	-	-
18 Month Assessment						
	t- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*
Site	21.32	< .001	36.102	< .001	12.30	.002
Sex	0.19	.665	0	1	0.23	.633
Negative Affect	-	-	-	-	-1.04	.300
Maternal Anxiety	-	-	-	-	-0.34	.736
Attention Bias (Angry | Happy)	0.01 | -0.63	.989 | .542	-0.08 | 0.17	.935 | .864	-	-
24 Month Assessment						
	t- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*	*t*- or x^2-*value*	*p-value*
Site	10.02	.007	13.77	.001	7.73	.021
Sex	0.05	.826	0.20	.652	0.02	.882
Negative Affect	-	-	-	-	0.22	.823
Maternal Anxiety	-	-	-	-	-0.23	.821
Attention Bias (Angry | Happy)	0.53 | 1.15	.607 | .273	0.81 | 0.98	.429 | .340	-	-

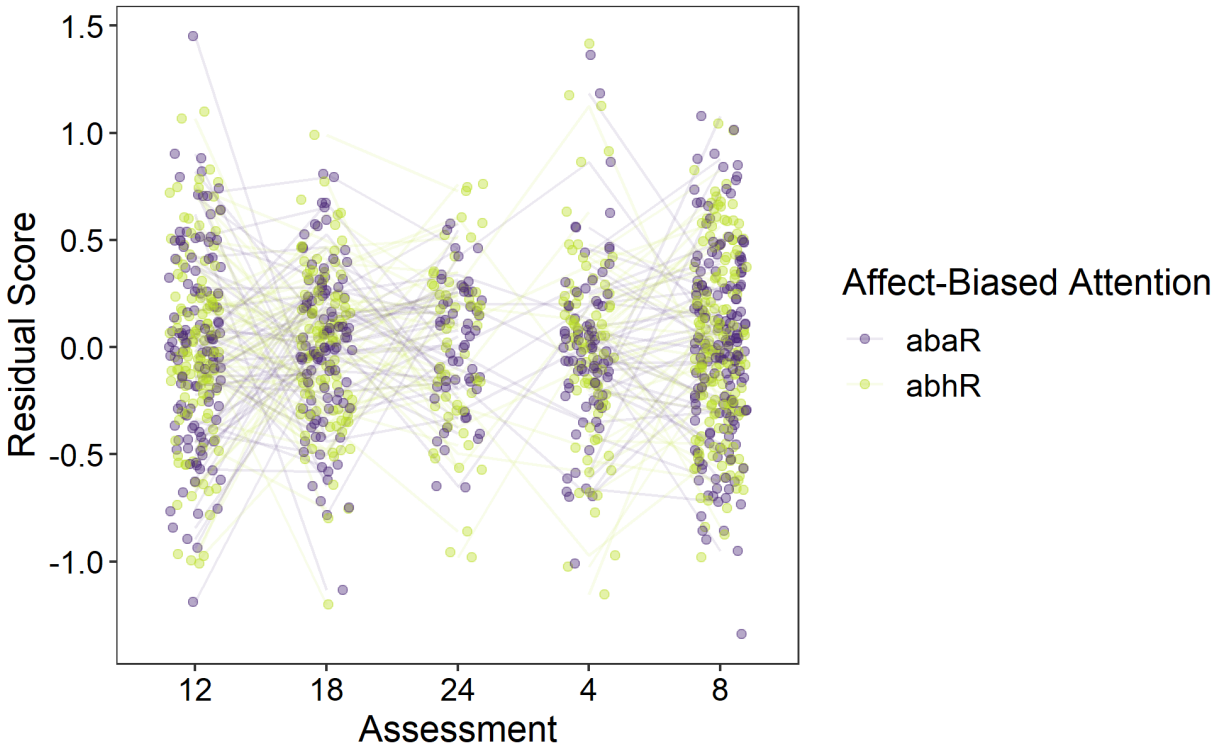

Figure S1. Spaghetti plot of affect-biased attention to angry (aba) and happy (abh) face configurations over assessments. Plots do not suggest that infants are all starting at the same level of bias nor suggest infants overall are retaining a specific level of bias over time.

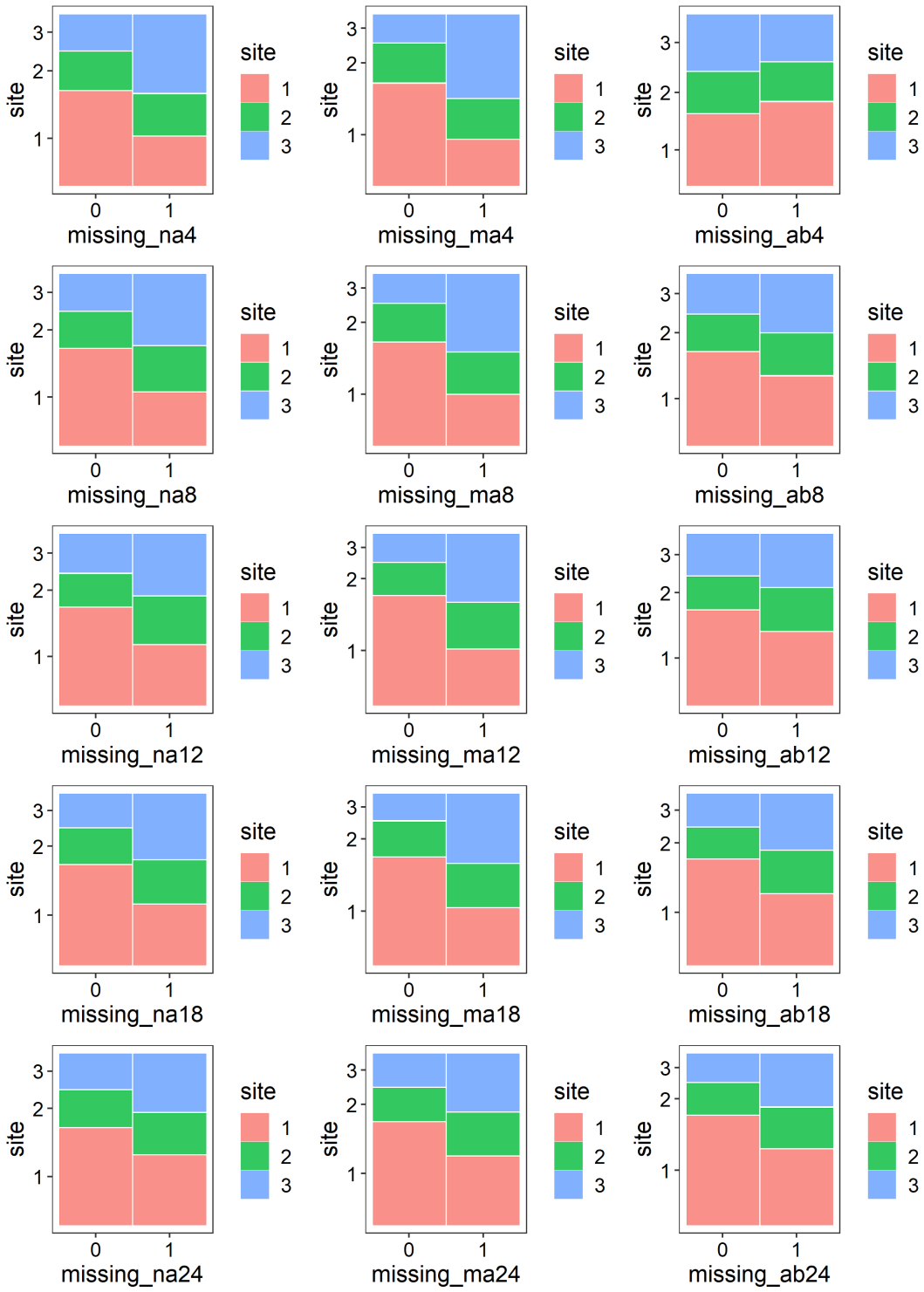

Figure S2. Missing data patterns across data collection site and study variables.

References

Enders, C., & Bandalos, D. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling: A Multidisciplinary Journal*, *8*(3), 430–457. https://doi.org/10.1207/S15328007SEM0803_5

Fox, N. A., Snidman, N., Haas, S. A., Degnan, K. A., & Kagan, J. (2015). The relations between reactivity at 4 months and behavioral inhibition in the second year: Replication across three independent samples. *Infancy*, *20*(1), 98–114. https://doi.org/10.1111/infa.12063

Preacher, K. J., & Coffman, D. L. (2006). *Computing power and minimum sample size for RMSEA*. http://quantpsy.org/