

## Supplemental Information

**Table S1.** Behavioral Ethogram: Mother-Infant Behavioral Scoring System

Behaviors Measured for Duration of Occurrence	
Initiate Ventral	Infant initiates ventral contact with mother.
Receive Ventral	Infant receives ventral contact from mother.
Mutual Ventral Contact	Sustained ventral-ventral contact between mother and infant.
Initiate Contact	Infant initiates contact with mother, except ventral, groom or nipple.
Receive Contact	Infant receives contact from mother, except ventral, groom or nipple.
Nipple Contact	Oral contact by infant with mother's nipple.
Nipple Withdraw	Mother withdraws nipple from infant.
Initiate Groom	The infant picks at and/or spreads the fur of the mother.
Receive Groom	The mother picks at and/or spreads the fur of the infant.
Self Contact	Self directed behavior (e.g., self groom, self scratch, self mouth, self sex, excluding self aggressive behavior).
Self Aggression	Self directed aggressive behavior (e.g., self bite).
Stereotypy	Any repetitive, patterned and rhythmic movement maintained for at least 3 cycles. This includes idiosyncratic non-locomotor stereotyped actions, independent of locomotion.
Environmental Explore	Any oral, pedal, or manual manipulation or exploration of the environment, excluding eating, drinking, and stereotypy.
Environmental Eating	Infant is actively mouthing, chewing on food (chow, fruit, or nuts).
Environmental Drinking	Infant has mouth on water spicket and seems to be drinking.
Locomotion	Any self-induced movement through space by walking, jumping, climbing, or swinging.
Play	Mutual rough/tumble activity with or without locomotion, and/or chase, and/or play face.
Inactive	Subject is not engaged in any scored activity, social behavior, and/or appears to be sleeping.
Behaviors Measured for Frequency of Occurrence	
Vocalization	Any vocal sound, cooing, screeching, chirping, barking, or screaming.
Fear-submit to mother	Any fearful behavior directed toward mother, fear grimace, oriented withdraw, yield, crouch-submit.
Fear-submit to other	Any fearful behavior directed toward observer or other monkeys, fear grimace, oriented withdraw, yield, crouch-submit.
Hostility toward other	Any hostile behavior such as threats, barking or cage shaking directed at the examiner or at another animal in the room.
Mother rejects	Mother breaks contact with infant, when infant tries to establish contact or maintain contact.
Mother retrieves	Infant breaks contact and moves away and mother re-establishes contact.

## Magnetic Resonance Imaging Parameters

MRI scans were obtained at the Waisman Laboratory for Brain Imaging and Behavior. Imaging was performed on a GE SIGNA 3T scanner (General Electric Medical Systems, Milwaukee, WI) with a high resolution coronal 3D, Inversion-Recovery (IR)-Prepped, fast SPGR sequence for the T1-weighted scan (TI = 600ms; TR = 8.6ms, TE = 2.0ms, FOV = 14cm, flip angle = 10°, matrix = 256 x 256 (interpolated to 512 x 512), slice thickness = 1mm (interpolated to 0.5mm), bandwidth = +/-15.63 kHz) which yielded a continuous voxel size of 0.273 x 0.273 x 0.5mm across the entire cranium. A T2-weighted scan (TR = 12,000msec, TE = 90msec, FOV = 14cm, flip angle = 90°, 256 x 256 (interpolated to 512 x 512), voxel size = 0.2734mm, slice thickness = 1.5mm, slice gap = 0mm, bandwidth = 31.25) provided a continuous voxel size of 0.2734 x 0.2734 x 1.5mm across the entire cranium. T1 and T2 weighted scans were aligned using a 3-plane localizer during the scanning session.

**Table S2. Group Comparisons for Subcortical Region Volumes**

Region	Control (Mean ± SE)		Influenza (Mean ± SE)		P Value Uncorrected	P Value ICV Corrected
	Left	Right	Left	Right		
Amygdala	402 ± 16	405 ± 18	386 ± 9	381 ± 9	0.036*	0.477
Hippocampus	423 ± 9	413 ± 12	402 ± 9	399 ± 8	0.136	0.778
Caudate	619 ± 22	605 ± 20	597 ± 15	599 ± 15	0.540	0.208
Putamen	914 ± 26	914 ± 26	875 ± 18	878 ± 17	0.077	0.846

Significant group differences are shown (\* indicates p-values below .05) with and without correcting for intracranial volumes (brain region divided by ICV). Control  $n = 7$ , Influenza  $n = 12$ . Data are presented as raw means ( $\text{mm}^3$ ) ± SE.