Correction to: Investigation of brain structure in the 1-month infant

Douglas C. Dean III^{1,2} · E. M. Planalp^{1,3} · W. Wooten² · C. K. Schmidt^{1,2} · S. R. Kecskemeti¹ · C. Frye² · N. L. Schmidt^{1,2} · H. H. Goldsmith^{1,3} · A. L. Alexander^{1,4,5} · R. J. Davidson^{1,2,3,4}

Published online: 10 March 2018
© Springer-Verlag GmbH Germany, part of Springer Nature 2018

Correction to: Brain Structure and Function <https://doi.org/10.1007/s00429-017-1600>

The authors regret that, in this article, there was an error in the analyses comparing infant male and female regional brain volume differences. In Table 3 of the original manuscript, we accurately present the mean infant male and female brain volumes. However, ANOVA analyses comparing the male and female regional brain volumes were miscalculated. Percent differences, though accurately calculated for raw regional brain volumes, were misattributed during interpretation of our findings. The first five columns of the original Table 3 correspond to analyses not controlling for total brain volume and age; the last column, ‘Direction’, presented findings of analyses that were calculated after controlling for total brain volume and infant age. This was not clearly described in the original manuscript. We inadvertently interpreted the findings from the corrected and uncorrected analyses together, resulting in incorrect conclusions regarding sex differences in the infant brain after controlling for total brain volume and age. Only results pertaining to the comparison of regional brain volume differences between males and females were affected.

We have reevaluated analyses examining differences between male and female regional brain volumes and clarified our results in a revised table as part of this correction. This table more clearly distinguishes analyses between male and female differences in regional brain volumes prior to and after controlling for total brain volume and age. After controlling for total brain volume and age, the male and female differences follow the same direction as originally indicated in the last column of Table 3 but are not significant.

In summary, the major ramification of the error reported here is a change in the extent to which regional brain volumes differ between males and females at 1 month of age and our conclusions regarding such findings. These amended results more clearly align with the previous neuroimaging reports of childhood and adolescent sex differences. The amended results indicate that raw sex differences in specific regions of interest are driven by total brain volume sex differences. Table 1 of this correction provides an updated version of Table 3 from the original manuscript and describes regional brain differences between males and females prior to and after controlling for total brain volume and age.

All other results of the original manuscript pertaining to age, asymmetry, and interactions among predictor variables were presented and discussed accurately.

The authors apologize for this error.

The original article can be found online at <https://doi.org/10.1007/s00429-017-1600-2>.

✉ Douglas C. Dean III
deaniiii@wisc.edu

¹ Waisman Center, University of Wisconsin-Madison, Madison, WI 53705, USA

² Center for Healthy Minds, University of Wisconsin-Madison, Madison, WI, USA

³ Department of Psychology, University of Wisconsin-Madison, Madison, WI, USA

⁴ Department of Psychiatry, University of Wisconsin-Madison School of Medicine and Public Health, Madison, WI, USA

⁵ Department of Medical Physics, University of Wisconsin-Madison School of Medicine and Public Health, Madison, WI, USA

Table 1 Updated version of Table 3 from the original manuscript comparing volumetric brain measures between males and females without and with correction for total brain volume (TBV) and gestation-corrected age

	Uncorrected volume comparison				Comparison after correction of TBV and age			
	Male		Female		T	p value	Direction	Significant
Total brain volume	611.48 ± 47.5	562.7 ± 50.6	5.94	< 0.001	8.32	8.32	Male	–
Gray matter	158.68 ± 12.9	146.22 ± 13.4	5.68	< 0.001	8.18	8.18	Male	Female
White matter	194.91 ± 15	179.21 ± 15.1	6.23	< 0.001	8.40	8.40	Male	Male
Gray matter regions								
Left amygdala	0.73 ± 0.1	0.67 ± 0.1	5.91	< 0.001	9.11	9.11	Male	No
Right Amygdala	0.78 ± 0.1	0.71 ± 0.1	6.29	< 0.001	10.04	10.04	Male	No
Left caudate	3.05 ± 0.3	2.81 ± 0.3	4.77	< 0.001	8.23	8.23	Male	No
Right caudate	3.09 ± 0.3	2.85 ± 0.3	4.62	< 0.001	8.02	8.02	Male	No
Left hippocampus	2.6 ± 0.2	2.4 ± 0.2	5.53	< 0.001	8.09	8.09	Male	No
Right hippocampus	2.71 ± 0.2	2.5 ± 0.2	5.54	< 0.001	7.86	7.86	Male	No
Left putamen	3.66 ± 0.3	3.4 ± 0.3	5.17	< 0.001	7.57	7.57	Male	No
Right putamen	3.87 ± 0.3	3.55 ± 0.3	5.70	< 0.001	8.46	8.46	Male	No
Left pallidum	0.82 ± 0.1	0.77 ± 0.1	4.61	< 0.001	6.81	6.81	Male	No
Right pallidum	0.85 ± 0.1	0.79 ± 0.1	5.13	< 0.001	7.65	7.65	Male	No
Left insula	6.01 ± 0.6	5.59 ± 0.5	4.51	< 0.001	7.15	7.15	Male	No
Right insula	6.26 ± 0.6	5.77 ± 0.5	5.04	< 0.001	8.11	8.11	Male	No
Left thalamus	3.17 ± 0.2	2.96 ± 0.2	5.40	< 0.001	6.91	6.91	Male	No
Right thalamus	3.21 ± 0.3	2.99 ± 0.2	5.16	< 0.001	7.04	7.04	Male	No
Left anterior cingulate gyrus	5.21 ± 0.7	4.68 ± 0.5	5.28	< 0.001	10.79	10.79	Male	No
Right anterior cingulate gyrus	5.36 ± 0.7	4.82 ± 0.6	5.14	< 0.001	10.64	10.64	Male	No
Left middle cingulate gyrus	7.42 ± 0.7	6.82 ± 0.7	5.10	< 0.001	8.51	8.51	Male	No
Right middle cingulate gyrus	7.53 ± 0.8	6.93 ± 0.7	4.67	< 0.001	8.25	8.25	Male	No
Left posterior cingulate gyrus	0.96 ± 0.1	0.87 ± 0.1	4.94	< 0.001	9.14	9.14	Male	No
Right posterior cingulate gyrus	0.96 ± 0.1	0.88 ± 0.1	5.73	< 0.001	9.09	9.09	Male	No
Left parahippocampal gyrus	4.04 ± 0.4	3.77 ± 0.4	4.35	< 0.001	6.97	6.97	Male	No
Right parahippocampal gyrus	4.24 ± 0.4	3.97 ± 0.4	4.16	< 0.001	6.66	6.66	Male	No
White matter regions								
Left corpus callosum	4.61 ± 0.4	4.23 ± 0.4	5.21	< 0.001	8.54	8.54	Male	No
Right corpus callosum	4.59 ± 0.5	4.2 ± 0.4	5.14	< 0.001	8.80	8.80	Male	No
Left anterior limb of internal capsule	1.4 ± 0.1	1.29 ± 0.1	5.08	< 0.001	8.29	8.29	Male	No
Right anterior limb of internal capsule	1.39 ± 0.1	1.29 ± 0.1	4.65	< 0.001	7.45	7.45	Male	No
Left posterior limb of internal capsule	2.06 ± 0.2	1.93 ± 0.2	3.98	< 0.001	6.44	6.44	Male	No
Right posterior limb of internal capsule	1.97 ± 0.2	1.85 ± 0.2	3.97	< 0.001	6.13	6.13	Male	No
Left retrolenticular limb of internal capsule	0.49 ± 0.1	0.46 ± 0	3.84	< 0.001	6.60	6.60	Male	No
Right retrolenticular limb of internal capsule	0.46 ± 0.1	0.44 ± 0	2.85	0.005	5.43	5.43	Male	No

Table 1 (continued)

	Uncorrected volume comparison				Comparison after correction of TBV and age					
	Male	Female	<i>T</i>	<i>p</i> value	Difference (%)	Direction	<i>T</i>	<i>p</i> value	Direction	Significant
Left superior longitudinal fasciculus	0.79±0.1	0.72±0.1	5.47	< 0.001	9.34	Male	− 1.23	0.222	Male	No
Right superior longitudinal fasciculus	0.76±0.1	0.68±0.1	5.42	< 0.001	10.26	Male	− 1.49	0.139	Male	No
Left sagittal stratum	1.22±0.1	1.11±0.1	5.90	< 0.001	9.44	Male	− 2.10	0.038	Male	No
Right sagittal stratum	1.21±0.1	1.1±0.1	5.74	< 0.001	9.85	Male	− 1.42	0.159	Male	No

Mean ± standard deviation of uncorrected regional brain volumes are reported in cm³. Significance was defined as $p < 0.05$ (Bonferroni corrected for multiple comparisons) corresponding to $p < 0.00135$. *p* values meeting the significance criteria are bolded. No significant differences between males and females were observed after correction for TBV and age