

Addendum to Marshall et al. (2004): *Journal of Cognitive Neuroscience*, 16, 1327–1338

The EEG data presented by Marshall, Fox, and The BEIP Core Group (2004) were collected in Bucharest, Romania between April 2001 and November 2003. It was recently discovered that over a period of 4 months in 2001, the channel for the right mastoid electrode (M2) was mistakenly switched with the channel for the right occipital electrode (O2). Because the reference configuration that was used for analysis was an average mastoid reference, the fact that the electrode switch involved one of the mastoids has particular consequences for the data that were collected in this particular period. The data have now been reanalyzed to correct for the problem: The purpose of this addendum is to briefly present the key similarities and differences between the originally reported findings and the results of the reanalysis. More specific details, including further statistical information, may be requested from the first author via e-mail at pjmarsh@temple.edu.

The EEG data presented in the original article were from two groups of children: those living in institutions (the Institutionalized Group, or IG) and children from families in the local community (the Never-Institutionalized Group, or NIG). Of the 46 children who formed the NIG in the original article, 40 were seen during the period in which the electrodes were switched. In contrast, of the 104 children in the IG with sufficient EEG data who were included in the original published analyses, only 15 were seen in this time frame.

The reanalysis of the EEG data shows that the principal findings of the study are intact in terms of the main effects for absolute and relative spectral power between the IG and NIG: Both sets of analyses showed that compared with the NIG, the IG had increased levels of low-frequency power and decreased levels of high-frequency power in the EEG. However, there were some minor changes to the regional differences and hemispheric asymmetries that were reported in the original article. Both the original and corrected analyses employed six repeated-measures analyses of variance (ANOVAs) to examine group differences in power for three EEG bands (theta, alpha, and beta) across two different metrics (absolute and relative power). The following section summarizes similarities and changes in the results for each ANOVA in terms of the main effects and interactions involving group (IG/NIG) and region (frontal, central, parietal, occipital, and temporal).

GROUP DIFFERENCES IN ABSOLUTE POWER

Theta Absolute Power

As in the original analysis, the corrected analysis showed no main effect of group. The significant Group \times Region interaction that was present in the original analysis was also preserved in the corrected analysis, with the two groups continuing to show the largest difference at occipital sites (IG > NIG). The original analysis also showed a reversed group difference (NIG > IG) at temporal sites: This latter effect was no longer present in the reanalysis.

Alpha Absolute Power

The significant main effect of group and the Group \times Region interaction in the original analyses were still present in the reanalysis, although the pattern of regional differences was slightly different. In the original analysis, there were significant group differences at frontal and temporal sites (NIG > IG). In the reanalysis, there were significant group differences at occipital and temporal sites, but not at frontal sites.

Beta Absolute Power

The significant main effect of group and the significant Group \times Region interaction from the original analyses were both present in the reanalysis. In terms of the regional effect, the original analyses showed group differences at frontal, occipital, and temporal sites, especially in the right hemisphere. In the corrected analyses, group differences in the same direction (NIG > IG) were found bilaterally for all scalp regions. As in the original analysis, this difference was especially strong at occipital sites.

GROUP DIFFERENCES IN RELATIVE POWER

Theta Relative Power

The significant main effect of group and the Group \times Region interaction were preserved from the original to the corrected analyses. In terms of regional effects, the original analysis showed significant group differences (IG > NIG) at frontal, parietal, and occipital sites. The reanalysis continued to show significant group

differences in these same regions, as well as at temporal sites.

Alpha Relative Power

The significant main effect of group in the original analysis (NIG > IG) was also present in the reanalysis. The lack of a significant Group \times Region interaction was consistent across the original and corrected analyses.

Beta Relative Power

Both the original and corrected analyses showed a significant main effect of group (NIG > IG) and a significant Group \times Region interaction term. Although the original post hoc tests showed a group difference only at occipital sites (NIG > IG), the corrected results showed more

widespread group differences, with significant comparisons for frontal, parietal, occipital, and temporal (but not central) regions.

HEMISPHERIC ASYMMETRIES

The original analysis showed right-sided hemispheric asymmetries in the NIG for theta absolute power (AP) and beta AP, with these asymmetries being absent in the IG. These asymmetries in the NIG were not present in the corrected analyses.

Marshall, P. J., Fox, N. A., & The BEIP Core Group. (2004). A comparison of the electroencephalogram (EEG) between institutionalized and community children in Romania. *Journal of Cognitive Neuroscience*, *16*, 1327–1338.