

## **Brain Bioelectrical Activity in Early Childhood Specific for Children Living in Orphanages**

**A. A. Kulenkova<sup>1</sup>, Yu. O. Dyagileva<sup>1</sup>, V. B. Pavlenko<sup>1</sup>,  
V. V. Belalov<sup>1</sup>, O. M. Kochukhova<sup>2</sup>**

<sup>1</sup>*Vernadsky Crimean Federal University, Simferopol (Russia)*

<sup>2</sup>*Uppsala University, Uppsala (Sweden)*

*e-mail: anna.kulenkova@gmail.com*

We investigated whether the electroencephalogram (EEG) during visual fixation in institutionalized children shows the altered oscillation properties. EEG was recorded in the “eyes open” situation with visual attention fixed on a cartoon in 51 2–3.5 years old children living in Simferopol orphanage, Crimea and in 53 age-matched children living in families. Oscillation properties were measured using the relative power (RP) indices of theta-, alpha-, beta- and gamma-rhythms. Institutionalized children showed higher RP of alpha rhythm in seven loci (frontal polar, anterior temporal, posterior temporal and left occipital derivations), lower RP of theta rhythm in eight loci (frontal polar, frontal, anterior temporal and posterior temporal derivations). In addition, RP of beta- and gamma-rhythms were decreased in the left anterior temporal area. These results suggest that institutionalized children show impaired development of CNS, in particular development of limbic system and neocortex, probably are caused by early social deprivation.

*Keywords: electroencephalogram rhythms, orphans.*