Temperament traits involving negative emotional tendencies, such as anger and sadness, as well as general negative affect, have been found to predict the development of maladaptive behavior and neuropsychological processes. Electroencephalography (EEG) allows non-invasive measures of electrical brain activity, and event-related potential (ERP) components allow identification of electrical brain activity that occurs in relation to the onset of a stimulus. The N200 ERP is associated with cognitive control, attention, and inhibitory processes, as well as temperament-related individual differences. Little work with the N200 has been done regarding temperament-related anger, sadness. In addition, little is known about the neuropsychological correlates of viewing stimuli depicting interpersonal emotion, especially in children.

We conducted a series of ANOVAs to test for temperament group differences in N200 mean amplitudes. In the angry block, children with high levels of temperament-related negative emotionality, F(1,19)=7.60, p<.05, anger, F(1,20)=4.49, p<.05, and sadness, F(1, 20)=4.78, p<.05, had smaller N200 amplitudes on happy trials, compared with children low in these traits. An interaction in the happy block was found, F(1.87)=4.31, p<.05. Paired samples t-tests indicated that children low in temperamental sadness showed larger N200 amplitudes on happy trials (M=-4.48, SD=2.69) compared to angry trials (M=-3.49, SD=2.57), t(10)=2.27, p<.05, but this difference was not seen in children high in sadness, t(10)=1.87, p>.05.

Findings suggest individual differences in attentional processes and inhibitory efforts (reflected in the N200) in response to emotionally salient stimuli, as a function of individual differences in temperamental negative affect, anger, and sadness. Results are discussed in terms of the implications of children’s neuropsychological processing of interpersonal emotion cues.