## Study Set 3

Hillyard et al. (1973); Hillyard (1985); Hopfinger et al. (2004); Naatanen et al. (2001)

(1) Explain why Hillyard et al. (1973) made the following methodological choices:

- Randomizing the sequence of tones presented to the two ears
- Presenting tones rapidly
- Making the pitch discrimination (i.e., between target and standard) difficult
- Having the attended and unattended stimuli differ in both location and pitch

(2) Describe evidence suggesting that the posterior visual P1 and N1 index functionally different aspects of attention.

(3) Provide support for the following statement: "Unlike the auditory N1, the visual N1 does not come from primary sensory cortex."

(4) An eleven-month old baby girl was found playing walking on the street by herself. She was taken to the police station where it was determined that she did not yet talk. One of the officers noticed that she was wearing a pin that he recognized as being either Hungarian or Finnish – two languages which don't belong to any language family but do share some phonemes. By determining which nationality the officer could narrow down who might be possible parents of the infant. He called in the police ERPer and asked him to test the infant and determine which language she knew. The ERPer asked the policeman to give him a call when the infant fell asleep. What sort of ERP paradigm could the ERPer use? What potential would be useful under this circumstance? Why? What pattern of results would reveal what language the infant knew?

(5) Prof. Doentnoh believed that the spotlight of attention was extremely small (no larger than a degree). Prof. Knoetal believed that the spotlight of attention was quite large, encompassing half the visual field. Design an ERP experiment that could help determine which of the two professors is correct. Start by describing the paradigm. Then indicate the relevant ERP comparisons. Finally, explain which pattern of results would support Prof. Doentnoh's position and which pattern of results would support Prof. Knoetal's position.