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- Electromyogram (EMG) → facial muscles (more precise, or could filter via removing high frequency noise, which mentioned previously).
- Electrocardiogram (ECG) → heart .

➤ Analysing the EEG Signal.

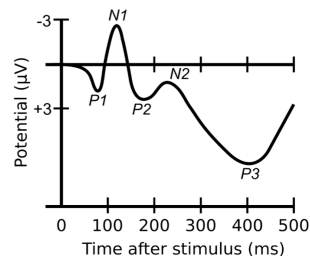
- The signal can be looked at in the time domain (amplitude data) or in the frequency domain (what EEG signal is doing in certain oscillatory patterns).

➤ Frequency Domain - Oscillations.

- When looking at frequency information (for example in sleep research), the raw signal can show systematic variations (different oscillatory patterns with distinct speed, from slow (delta – sleep) to fast (gamma – excited)), i.e. a specific frequency is dominant.
- We can ask which frequencies in the signal are dominant, and when they are dominant (plotted here as the spectrogram).

➤ Time Domain - ERPs.

- We can also measure the amplitude of the signal at specific moments in time when people engage in cognitive tasks (these brain waves are time-locked and phase-locked to the event) – this is the basis of the event-related potential (ERP) method.
- Typical components often associated with specific processes.
- The key assumptions for this approach are:
 - The event of interest is defined in time.
 - The event consistently evokes the signal.
 - The timing of the signal is consistent.
 - The signal and the noise are uncorrelated.
 - The noise is random with a mean of zero (cancel out).



○

P = positive activity; N = negative activity; Number associated with order.

*damages are usually widespread, rather than localised, which there is high possibility that impairments are in multiple regions, causing differences in functional damages due to combinations (rarely strictly one type of problem).

➤ Aphasias.

- Diminish or abolish the ability to comprehend and/or produce language, while sparing the ability to perceive relevant stimuli and to produce intelligible words.
- Is NOT a result of hearing loss, and is NOT the result of damage to motor control.
- Successful treatment dependent on:
 - Time after trauma.
 - Age.
 - Education level.
 - Handedness (?).

➤ Specific language Impairment (SLI).

- Developmental brain impairments, not acquired.
- Delayed language.
 - Receptive.
 - Following basic instructions.
 - Understanding sentences.
 - Expressive.
 - Generating language.
 - RAN (Rapid Automatized Naming).
 - Category naming.
- 50% comorbidity with dyslexia.
- Same sort of definition as dyslexia (definition of exclusion), but for language rather than reading.
- Is not speech Apraxia (a motor speech disorder), or pragmatic language impairment (difficulties with social use of language).
- About 7% of the population.

- A. Faces
- B. Individual objects
- C. Scenes and spatial layouts
- D. Written words

Answer: C. Scenes and spatial layouts

Which finding supports hippocampal involvement in navigation expertise?

- A. Taxi drivers show reduced hippocampal volume everywhere
- B. Bus drivers have larger posterior hippocampi than taxi drivers
- C. Taxi drivers have larger posterior hippocampi and superior navigation performance
- D. Hippocampal volume is unrelated to navigation experience

Answer: C. Taxi drivers have larger posterior hippocampi and superior navigation performance

W12

Which memory deficit was most prominent in HM following bilateral medial temporal lobe surgery?

- A. Loss of procedural memory
- B. Loss of working memory
- C. Inability to form new long-term memories
- D. Loss of intelligence

Answer: C. Inability to form new long-term memories

HM could not find his family's new home even after 10 months because he suffered from:

- A. Retrograde amnesia
- B. Spatial neglect
- C. Severe anterograde amnesia
- D. Aphasia

Answer: C. Severe anterograde amnesia