Self-related information seems to be preferentially processed by the human brain. For example, even 4-5 month-old infants prefer to listen to their own rather than other names. The first lexical item that children learn to read and write is usually their own name. Demented patients are still able to recognize this specific stimulus. After general anesthesia, reactivity to subject's own name precedes reactivity to pain or noise. Own name evokes behavioral responses even during sleep and results in awakening of the sleeping individuals. The own face is recognized faster than other (familiar) faces. Self-related memory is better than memory regarding other people. Neurobiological basis of such preference has been often investigated using EEG method. Many studies showed that processing of one's own name, one's own face, and self-descriptive personality traits (when compared with analogous stimuli not referring to the self) were associated with increased brain activity as revealed by early and late components of event-related potentials.

An interesting research question is whether such-preference may be modulated by the level of self-esteem. Self-esteem reflects a positive or negative attitude about the self; high self-esteem implies self-respect, and low self-esteem implies self-dissatisfaction or self-contempt. Therefore, self-related stimuli may have different emotional value to individuals with low and high self-esteem.

To date, only a few studies investigated neural correlates of self-related information processing taking into account the level of self-esteem. The aim of this project is to investigate the impact of self-esteem on changes in brain activity related to processing of different types of stimuli referring to the self. Three experiments will be carried out with participation of individuals with low and high self-esteem. The first one will be a simple detection of names and faces (one's own and others). During simple detection, differentiation of stimuli is not necessary to accomplish behavioral task and reaction to the presentation of stimuli is automatic. In the second experiment, recognition/identification of names and faces (one's own and others) will be required. The third experiment will be devoted to studying memory processes and it will be divided into two parts. At encoding, participants will be asked to judge whether a number of trait words can describe the self or others. At retrieval, those words will be mixed with new ones and participant will be asked to indicate whether a given word was previously presented or not. In all experiments, EEG will be recorded and EEG data will be subsequently analyzed. Analyses will reveal patterns of brain activity and functional connectivity between activated regions, associated with different task involving different self-related stimuli, in the low and high self-esteem groups.

We decided to study this topic because majority of previous studies investigated the influence of self-esteem on processing information coming from the social environment, such as rejection or criticism. In contrast, experiments proposed here aim to answer the question on how the brain of individuals with low and high self-esteem reacts to information related to the self. This seems to be of special interest as the concept of self-esteem, i.e. a positive or rather negative attitude to the self, implies that different levels of self-esteem may result in different assessments of self-related information.