

Project “**The role of social networks in regulation of body weight**”

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Background:

We have previously shown that food-related decision making is influenced by genes that are known to influence body weight and by the physiological condition during which the task is performed. Specifically, with MRI and fMRI we have been able to show that the medial and lateral orbitofrontal cortex play an important role. It has also been shown recently that an increased occurrence of obesity can be induced by integration in a social network (Christakis and Fowler, New Eng J Med 2007).

Hypothesis:

We now hypothesize that food-related decision making can be modulated by social interaction in peer groups and that the effects on relevant brain areas can be identified with fMRI.

Type of Study, Methods:

We combine genetic analysis with fMRI and with assessment and manipulation of a social setting. Subjects will be exposed to food pictures. They have to rate them and subsequently they have to make decisions on what they would like to eat.

Overall study design

The first study (behavioural assessment, structural and functional MRI, genetics) will be performed in 50 female subjects (2x25) belonging to two different social networks which specifically show differences in mean body mass index of the group members. There should be an overlap of BMI so that at least 20 subjects (2x10) can be matched for same BMI between the groups. It is expected that subjects matched for age, social status, and BMI etc. show differences related to the group they belong to.

In a second study, an intervention is performed. 50 “test subjects” (2 x 25) are “transferred” for a period of 6 months into a social group of different mean body mass index. The same battery of test is performed at the beginning of the experiment and after six months. Opposite changes are expected when transferral occurs into groups of higher / lower BMI, respectively.