Synopsis for EU-GEI Publication

Synopsis no.: *S5.25*

Preliminary title:
Aberrant salience as predictors of outcome of individuals with at-risk mental state

Contact info for the person(s) proposing the synopsis

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Publication category: 3
Publications from a single work package involving only some parties (or in some cases only one party) in the Work Package

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Work Packages involved: WP5

Partners involved from whom candidate co-authors (*additional to working and writing group*) should be nominated:
IoPPN and other interested centres within WP5

Objectives (scientific background, hypothesis, methods, and expected results):

Scientific background:
Aberrant salience to the neutral stimulus has been suggested to be one of the plausible models to explain the mechanism of developing psychotic symptoms (Kapur, 2003). Recent findings in neuroimaging studies support this model and revealed that the functional alteration relating to aberrant salience is present even in the individuals with at-risk mental state (ARMS) for psychosis (eg. Roiser et al., 2013). Therefore, aberrant salience could be expected to be one of the predictive factors for outcome of the individuals with ARMS. Deficits in facial affect recognition, particularly misattribution of neutral face to any other emotions, and hearing speech illusions from noise could be the indices of the aberrant salience exhibited in the individuals with ARMS. Nevertheless, so far, the findings about facial affect recognition in ARMS have been inconsistent among the studies and there has been only one study involving relatively small subjects with ARMS (n=37) which has shown that altered neutral and fear facial emotion recognition predicted transition to a psychotic disorder (Allott et al., 2014). On the other hand, only one study has shown that the length of speech illusion in individuals with ARMS predicts future transition to psychosis. Thus, the further research including larger samples and longitudinal design is needed.

Hypothesis:
The aberrant salience indicated by the baseline magnitude and less longitudinal improvement of the higher frequency of misattribution of neutral faces to any other emotions and baseline higher frequency of erroneous answer as hearing voices from only white noise itself is greater in the subjects with ARMS as compared to healthy people and predicts transition to psychosis in ARMS subjects within 12 months, greater positive and negative symptom severity and lower functioning in 12 month follow-up.

Methods:
The participants will consist of individuals with ARMS and healthy controls from the multiple centres participating in EU-GEI study. Demographic and clinical data and the results of the Degraded Facial Affect Recognition task of subjects with ARMS will be collected at baseline and 6 and 12 month follow-

up. The results of White Noise task of subjects with ARMS will be collected at baseline. Healthy controls will also be administered Degraded Facial Affect Recognition task and White Noise task.

Expected results:

- The frequency of misattribution of neutral faces to any other emotions in the Degraded Facial Affect Recognition task and erroneous answer as hearing voices from only white noise itself in White Noise task will be greater in the subjects with ARMS as compared to healthy people.
- The higher frequency of misattribution of neutral faces to any other emotions and erroneous answer as hearing voices from only white noise itself at baseline will contribute to incidence of transition to psychosis in ARMS within 12 months. The hazard of transition will be also confirmed on Cox regression model.
- The lower frequency of misattribution of neutral faces to any other emotions and erroneous answer as hearing voices from only white noise itself at baseline will contribute to the higher GAF score and lower severity in CAARMS positive symptoms at 6 and 12-month follow-up and the greater improvement in GAF score and CAARMS positive symptoms at 6 and 12-month follow-up period.
- The greater improvement in recognition of neutral faces in subjects with ARMS during follow-up period will be associated with the greater improvement in their global functioning and CAARMS positive symptom severity.

Data needed for the study:

- Basic demographic and possible covariate variables (eg. age, gender, ethnicity, year of education, fulfilled criteria for UHR, diagnosis by SCID, family history of psychosis, work status, history of medication, and past and present substance use)
- Duration of follow-up (For those who transitioned to psychosis, duration from baseline to transition is also needed.)
- Information about provided intervention (case management, medication, psychotherapy and other psychosocial intervention)
- CAARMSPlus (at baseline and follow-ups)
- GAF
- The variables about the outcome of participants with ARMS (eg. Incidence of transition to psychosis)
- Degraded Facial Affect Recognition task (baseline and follow-up)
- White Noise task
- Shortened WAIS (for estimation of IQ)

Plan for statistical analysis (overall strategy):

- T-tests and Chi-square tests to compare the results of tasks, demographic and clinical variables between ARMS and healthy control subjects and between subjects with ARMS those who later transitioned to psychosis and those who did not
- Cox regression analysis to determine whether the higher frequency of misattribution of neutral faces to any other emotions in degraded facial affect recognition task and erroneous answer as hearing voices from only white noise itself at baseline contributes to incidence of transition to psychosis in subjects with ARMS.
- Multiple regression analysis to estimate to which extent higher frequency of misattribution of neutral faces to any other emotions in degraded facial affect recognition task and erroneous answer as hearing voices from only white noise itself at baseline contributes to the value of GAF and CAARMS positive symptom severity at follow-ups and the change of GAF score and CAARMS positive symptom severity during follow-up period
- Mixed model (or correlation analysis) to estimate whether the change in the rate of misattribution of neutral faces predicts the change of GAF score or CAARMS positive symptom severity during follow-up period

Other analyses/methods:

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Involvement of external Parties (non EU-GEI): None
IPR check: N/A
Timeframe: Literature search and data cleaning will take 3 month, analysis will take 2 month, and drafting of the paper will take 4 month.
Additional comments: This proposal will not look at Gender differences