Reviewer's report

Title: Smooth Pursuit Eye Movement Dysfunction and General Schizotypy as Measured by the SSQ: A Variance-Analytic and Correlational Study

Version: 1 Date: 28 February 2009

Reviewer: Ulrich Ettinger

Reviewer's report:

The authors have studied the relationship between psychometric schizotypy (measured using the SSQ) and smooth pursuit eye movement (SPEM) performance. SPEM is an endophenotype for schizophrenia, and the observation of SPEM deficits in high-risk groups such as schizotypal individuals is an important validation criterion. As such the study is important and of considerable interest. The findings suggest that schizotypy is associated with SPEM performance as measured using RMS, which is consistent with previous evidence. This is an interesting study, however a number of problems need to be addressed.

General problems:

The measurement of both SPEM dysfunction and schizotypy is less than optimal.

First, there are much more specific measures of SPEM than RMS. RMS has of course been used in a number of studies on schizophrenia, but most modern researchers use measures such as velocity gain.

Second, the sampling rate of 50Hz is quite low. Modern systems measure up to 2k Hz, but certainly in the region of 250-500Hz is very common.

Third, the authors argue for differential effects of negative and positive schizotypy but then use a general schizotypy measure. If negative schizotypy is of particular interest here (given the evidence from genetics), then why not just use the negative schizotypy factor that is part of the SSQ? Finally it is unclear what the authors mean by “the more or less ‘accidental’ scales of other instruments”.

Another point to consider is the specificity of the SPEM/SSQ association. You also have data from other questionnaires (such as neuroticism) which would be useful here. You could examine whether SPEM differences between SSQ groups remain when covarying for other personality variables. Otherwise, how can you be sure that schizotypy is really the causal factor? See for example a paper by Ettinger et al (2005, Biol Psychol) who have addressed this in a study of schizotypy associations with antisaccades, another oculomotor endophenotype for schizophrenia. In their study the relationship between schizotypy and antisaccades held even when covarying for neuroticism, despite a significant association between schizotypy and neuroticism (as in your study).
Specific comments:

Page 8: please provide a reference for the eye-tracker (company details, website, publication, etc.)

Why do you run ANOVA for group differences as well as correlations with SSQ scores? You should focus a priori, on the basis of your research question and design, on one statistical method and then stick to it. Given your design of two independent groups (high SSQ, medium SSQ) it would seem most appropriate to use ANOVA.

Page 11, similarly why do you run separate univariate ANOVAs after the repeated measures ANOVA model? This repeated measures model (with Group and Velocity as IVs) addresses your question(s), i.e. do the groups differ in RMS, does target velocity affect RMS, and is there a group by velocity interaction. Please report the effect of target velocity (L, M, H) on performance along with the Group and interaction effects. No further ANOVAs are needed.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests