Reviewer's report

Title: The influence of Methylphenidate on the power spectrum of ADHD children - a MEG study

Version: Date: 2 June 2005

Reviewer: Peter D Teale

Reviewer's report:

General

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1.) The statement in the last paragraph of the 'Background' section 'Subcortical activity is too weak to be detected.' is overly strong. Perhaps this could read '...often too weak...'.

2.) In the section labeled 'MEG Recording' I would like to see more discussion about the possible effects of 'real time noise reduction' on both amplitude and frequency of the biological signals. This would also apply to the 'Data Analysis MEG' section where 'Global noise was filtered from the MEG data by subtracting external, non-biological noise recorded by 11 MEG reference channels.' In both cases it seems to me that there is the possibility of some reduction in the strength of the biological signals associated with these procedures. If this were the case and it was frequency dependant than both relative power and band power ratios could be affected differentially.

3.) In the 'Discussion' section it is stated that 'MPH is known to influence the dopaminergic system by blocking dopamine reuptake and in consequence enhancing the availability of dopamine in the synaptic gap,' and that dopamine 'acts mainly on inhibitory neurons. By increasing the availability of dopamine MPH seems to diminish the inhibitory effect on motor activity.' This is confusing to me, I would have thought that the increased dopamine would increase inhibitory effects and thus reduce motor activity, not the inhibitory effect on motor activity.

4.) The legend for figure 4 should make it clear as to whether the graph is for post MPH power only or is the case regardless of MPH.

Discretionary Revisions (which the author can choose to ignore)

1.) In the 'Data Analysis MEG' section the word 'according' in the text segment '... nearest neighbours to the centre channel of the according channel group.' might be replaced the word 'respective'.

2.) In the 'Results frontal channels' section under 'Theta/Beta ratio' '... it was revealed that the Theta/Beta ratio ...' the word 'ration' should be 'ratio'.

What next?: Accept after minor essential revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable
Statistical review: No

Declaration of competing interests:
I declare that I have no competing interests.