Abstract

Objective
Attention-deficit/hyperactivity disorder (ADHD) is more frequent in males than females. The “female protective effect” posits that females undergo greater exposure to etiological factors than males in order to develop ADHD, leading to the prediction that relatives of females with ADHD will display more ADHD behaviors. We thus tested whether co-twins of females displaying extreme ADHD traits would display more ADHD traits than co-twins of males displaying extreme ADHD traits.

Method
Parents of approximately 7,000 pairs of non-identical twins in Sweden, and around 4,000 pairs of twins in England and Wales, completed dimensional assessments of ADHD traits. Probands were selected on the basis of scoring within the highest 10% of the distribution in each sample. Dimensional scores of co-twins of probands, as well as the categorical recurrence rate, were investigated by proband sex.

Results
Co-twins of female probands displayed higher mean ADHD trait scores (Math Eq=0.62-0.79) than co-twins of male probands (Math Eq=0.38-0.55) in both samples. This trend was significant in the Swedish sample (p<.01) and when the two samples were merged into a single, larger sample (p<.001). When the samples were merged, there was also a significant association between proband sex and co-twin's categorical status, with more co-twins of female probands also being probands than co-twins of male probands.

Conclusion
These findings support a female protective effect against ADHD behaviors, suggesting that females require greater exposure to genetic and environmental factors associated with ADHD in order to develop the condition.