

A closer look at the association between Attention Problems and atopic diseases in a genetic design

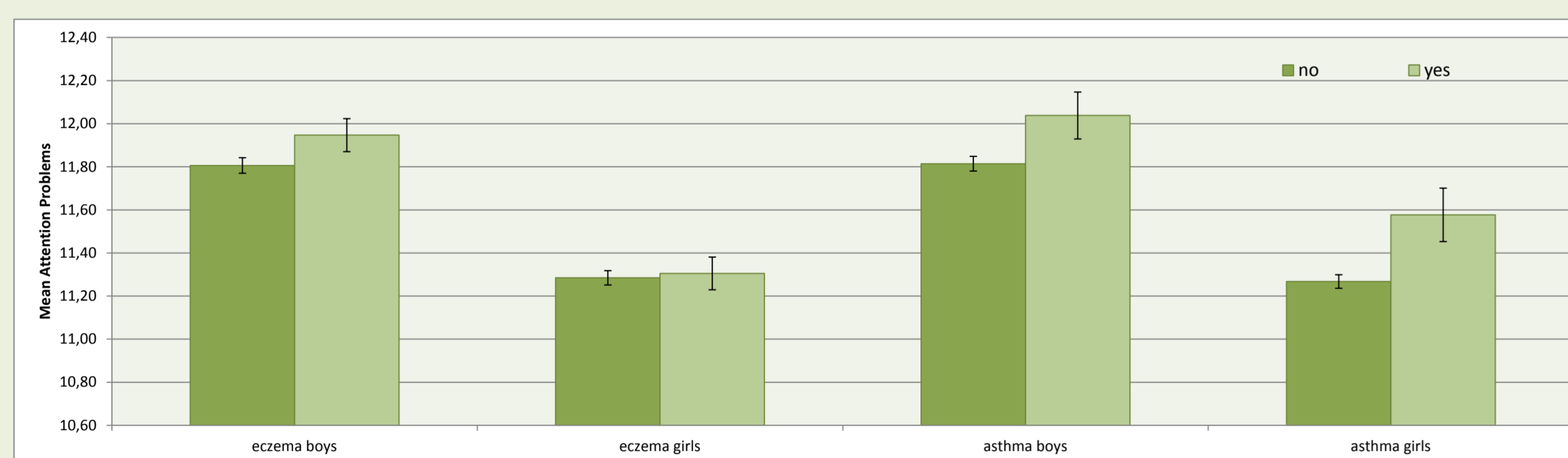
CEM van Beijsterveldt, M Bartels and DI Boomsma



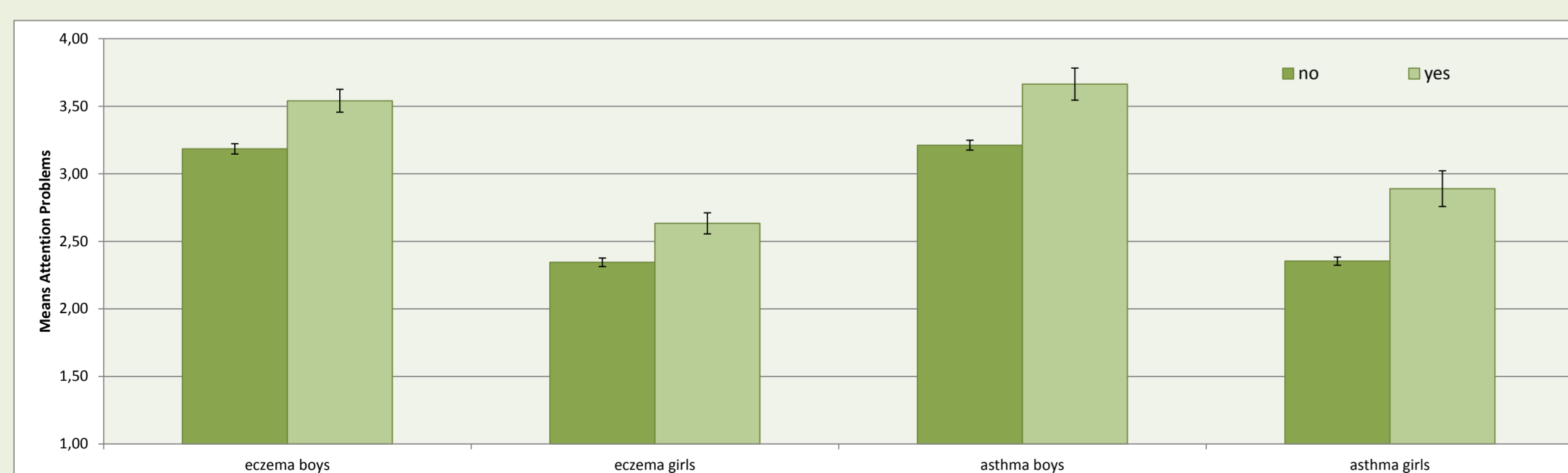
Faculty of Psychology and Education

Measures and sample: At age 5, data on asthma and eczema were reported by mothers (whether a physician had ever diagnosed asthma and eczema (yes/no)). Prevalence of asthma and eczema was respectively 9.6% and 18.8% for boys and 6.6% and 16.6% for girls. Attention Problems were rated by the mother using the Devereux Child Behavior (DCB) rating scale at age 5 and the Child Behavior Checklist (CBCL) at age 7. Exclusion: children with handicaps that interfere with daily function, birth weight <1500 grams, and gestational age < 32 weeks. For about 24,500 twins data on both atopic diseases and Attention Problems were available at age 5 and for 15,000 twins at age 7.

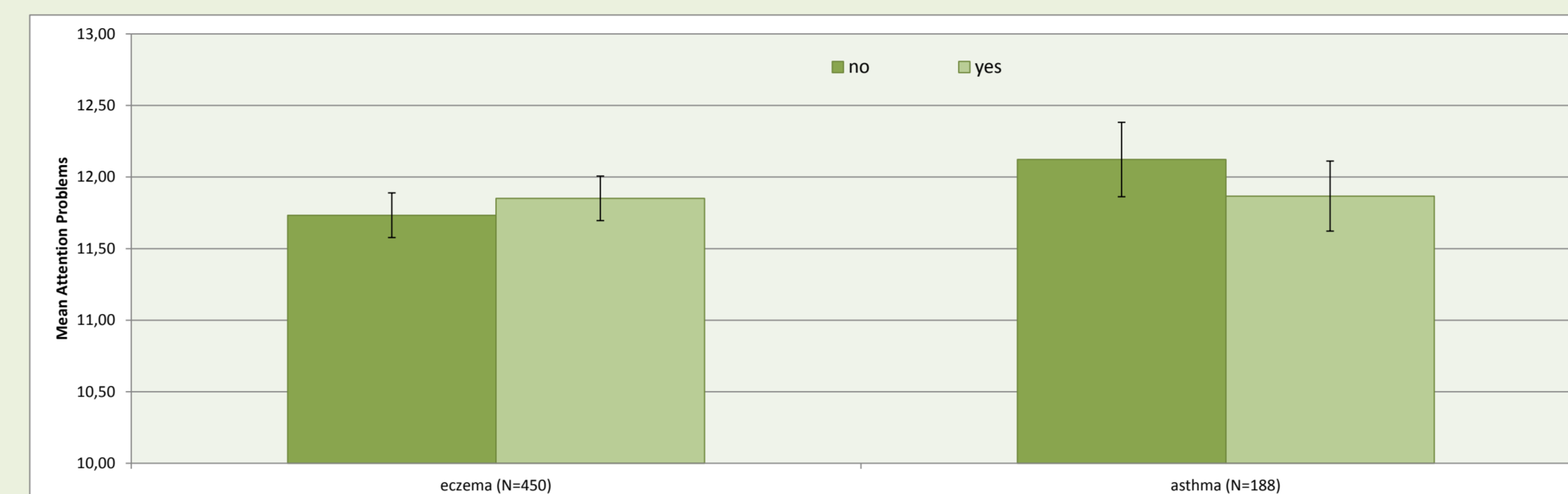
Age 5: Attention Problems for asthma and eczema in total sample:



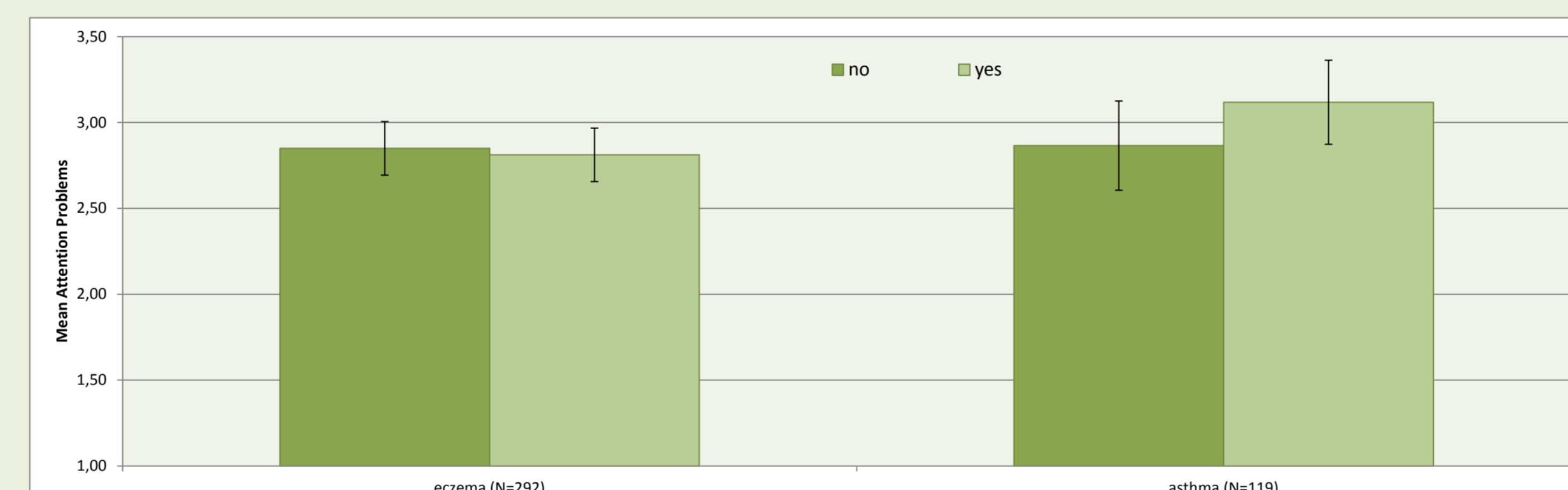
Age 7: Attention Problems for asthma and eczema in total sample:



Age 5: Attention Problems in MZ twins discordant for asthma or eczema:



Age 7: Attention Problems in MZ twins discordant for asthma or eczema:



Results: Total sample: Children with asthma had higher scores on Attention Problems at age 5 ($F=5.8$; $p=0.02$), and age 7 ($F=24.13$; $p<0.01$). Children with eczema had higher scores on Attention problems at age 7 ($F=18.01$; $p<0.01$), but not at age 5 ($F=1.40$; $p=0.24$).

MZ twins discordant for asthma : No significant differences between affected and unaffected twins at age 5 ($t=-1.01$; $p=0.31$) and age 7 ($t=1.433$; $p=0.15$).

MZ twins discordant for eczema : No significant differences between affected and unaffected twins at age 5 ($t=0.819$; $p=0.42$) and age 7 ($t=-0.296$; $p=0.77$).

Background: In a review on the relation between atopic diseases (asthma and eczema) and Attention-Deficit/Hyperactivity Disorder (ADHD), Schmitt et al. (2010) reported an increased risk of ADHD in children with eczema. However, it remains unclear whether the relationship is causal or is due to shared etiologic factors.

To clarify the association between ADHD and atopic diseases we examined Attention Problems in a group of MZ twin pairs discordant for atopic diseases. A discordant MZ twin design controls for the possible influence of genetic and shared environmental factors, and could lead to a more plausible interpretation of the causality of relationship between atopic diseases and Attention Problems.

*Schmitt, J., Buske-Kirschbaum, A., & V. Roessner (2010). Is atopic disease a risk factor for attention-deficit/hyperactivity disorder? A systematic review. *Allergy*, 65, 1506-1524

Conclusion: In the total sample we found that children with asthma/eczema had more Attention Problems. In MZ twin pairs discordant for asthma/eczema the scores on Attention Problems did not differ. These results suggest that it is unlikely that there is a causal relationship between asthma/eczema and Attention Problems.

