

Early-Life Adversity and the Protective Effect of Cortical Thickness on Dementia Risk in Older Adults

Dinithi Mudalige, Dylan Guan, Peter Chan, Zahinoor Ismail

Introduction

- Adverse childhood experiences (**ACEs**) are associated with markers of Alzheimer disease (AD) including:
 - **structural brain changes:** reduced hippocampal, corpus callosum, cerebellar, and global brain volume [1-3]
 - neuropsychiatric symptoms (**NPS**) [4]
- Not all those with ACEs develop NPS → possible protective role of preserved cortical thickness

Objective

- Explore the association between **cortical thickness** and **NPS severity**, and the **moderating role of ACEs**

Methods

- Cross-sectional data were from the **COMPASS-ND** study
- **ACE:** Validated ACE Scale [5]
- **NPS Severity:** Self-reported MBI Checklist (**MBI-C**) [6]
- **Cortical Thickness:** Average of MRI-derived cortical thickness in AD-related regions (entorhinal cortex, inferior temporal gyrus, middle temporal gyrus, inferior parietal lobe, fusiform gyrus, and precuneus)
- **Primary Model:** Zero-inflated negative binomial (**ZINB**) regression modelled the association between cortical thickness (predictor) and NPS severity (outcome)
- **Covariates:** age, sex, education, and cognitive diagnosis
- **Moderation Analysis:** cortical thickness*ACE interaction

Implications

- Early-life adversity may diminish the benefits of preserved brain structure
- Supports life-course models of AD risk by identifying ACEs as modifiers of neurobiological resilience
- Implications for ACE-informed early AD risk stratification and for reinforcing public health efforts to reduce ACEs

Greater cortical thickness is associated with lower neuropsychiatric symptom severity, but this effect is attenuated in those with adverse childhood experiences

References

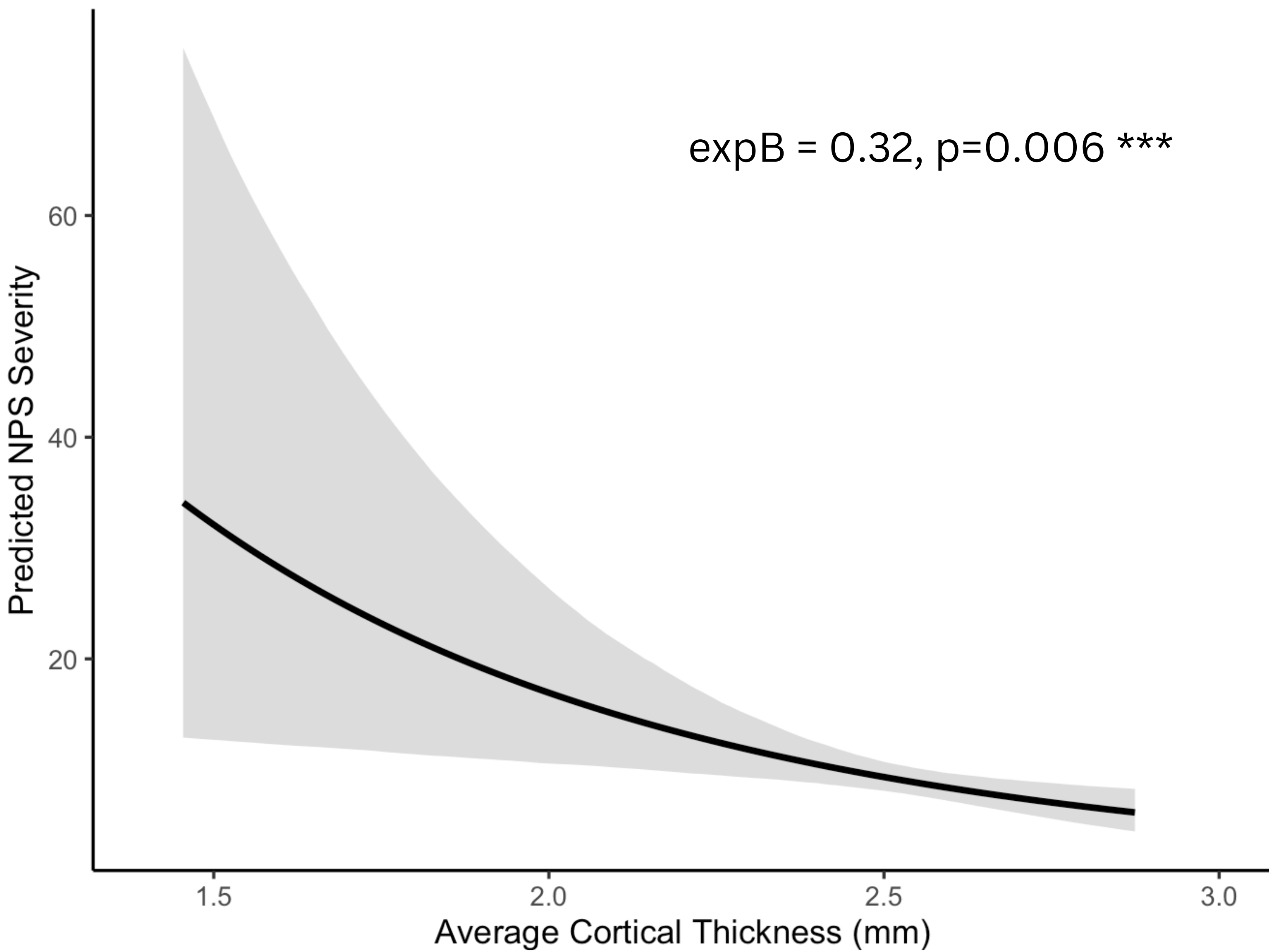


Figure 1. Adjusted ZINB regression plot for the association between cortical thickness and NPS severity (N=317)

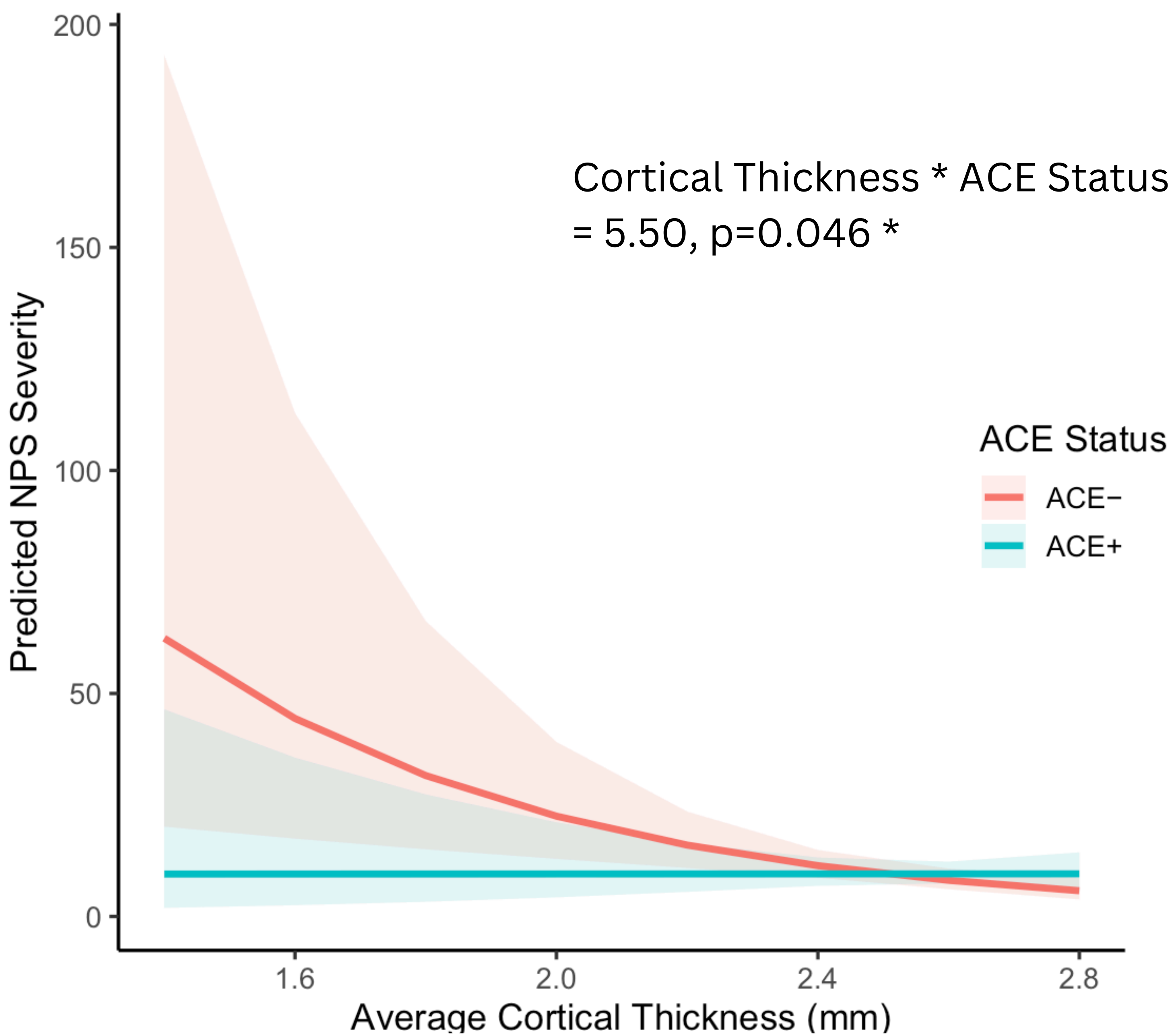


Figure 2. Moderation by ACE status for the associations between cortical thickness and NPS Severity (n=317)