**Everyday taxi drivers: Do gifted navigators have larger hippocampi?**

Steven M. Weisberg1, Nora S. Newcombe2, Anjan Chatterjee1

1University of Pennsylvania, 2Temple University

WORD COUNT, just abstract: 240 (Max = 250)

Cognitive mapping – learning distance and direction relations between locations as opposed to stimulus-response associations – is supported by the hippocampus (CITES). Expert human navigators, taxi drivers who undergo extensive training about the layout of and routes through London, have enlarged hippocampi compared to bus drivers (CITE), and as a direct result of their training (CITE). We hypothesize that this structural change is the result of increased spatial knowledge rather than improved navigation ability. If this is wrong, individual differences in navigation ability among non-expert navigators should strongly correlate with hippocampal volume; if correct, the correlation should be weaker. Here, we used a desktop virtual environment to assess navigation ability in undergraduate students. Participants learned the names and locations of eight buildings. Learning was assessed with an onsite pointing task wherein participants were positioned at each of the eight buildings, then had to point directly at all other buildings. Structural MRI scans of their brains were collected in a separate session. We used a planned sequential analysis (CITE), collecting 30 participants, analyzing the data, then expanding the sample by 20 participants three times (maximum N=90) if results are equivocal. After 70 participants, results reveal a small correlation between hippocampal volume and overall pointing accuracy, *r*(70) = .20, *p* = .10. So far, the weak relationship between hippocampal volume and navigation ability in a non-expert sample, suggests that acquiring knowledge leads to the hippocampal enlargement seen in expert navigators, rather than improved ability.