

Statistical Learning Across Visual and Auditory Modalities

Our ability to learn language is accomplished by using structural patterns found in everyday language. We use these structural patterns in language through a process of Statistical Learning (SL) to implicitly predict sequences in speech and visual input. Our research explored how SL predicts patterns of auditory and visual learning in adults ($N = 40$; $M = 27.1$ years) to provide a more complete picture of SL.

For the auditory task, participants were tested on whether they learned a novel language that they passively listened to for 6 minutes. Implicit and explicit learning were assessed after the exposure phase. For the visual task, participants were tasked with rapidly indicating a target's spatial location, which would appear in one of four circles. Reaction time and accuracy were assessed to determine whether implicit and explicit SL occurred.

Results demonstrated that implicit SL occurred in both modalities; however, no explicit learning occurred in the visual task and no correlations were found between these tasks. These results hint to an underlying difference in auditory and visual SL. This data may support the hypothesis that SL is modality specific and is not governed by a more general processing capacity.

These results provide behavioural data on the role of SL across modalities, which can inform theories of the neurocognitive underpinnings of language and reading acquisition. To better understand the role that SL has on reading and language abilities, future research should look at visual and auditory SL in children with reading and language impairments.