
Scott Schroeder – *Speech-Language Hearing Sciences*

Peer-reviewed Research Publications

1. **Schroeder, S.R.**, & Rembrandt, H.N. (2018). How effectively do people remember voice disordered speech? An investigation of the serial-position curve. *Brain Sciences*, 8(2), 25.

ABSTRACT: We examined how well typical adult listeners remember the speech of a person with a voice disorder (relative to that of a person without a voice disorder). Participants (n= 40) listened to two lists of words (one list uttered in a disordered voice and the other list uttered in a normal voice). After each list, participants completed a free recall test, in which they tried to remember as many words as they could. While the total number of words recalled did not differ between the disordered voice condition and the normal voice condition, an investigation of the serial-position curve revealed a difference. In the normal voice condition, a parabolic (ie, u-shaped) serial-position curve was observed, with a significant primacy effect (ie, the beginning of the list was remembered better than the middle) and a significant recency effect (ie, the end of the list was remembered better than the middle). In contrast, in the disordered voice condition, while there was a significant recency effect, no primacy effect was present. Thus, the increased ability to remember the first words uttered by a speaker (relative to subsequent words) may disappear when the speaker has a voice disorder. Explanations and implications of this finding are discussed.

2. **Schroeder, S.R.** (2018). Do bilinguals have an advantage in Theory of Mind? A meta-analysis. *Frontiers in Communication*, 3, 36.

ABSTRACT: Bilingualism might help children develop Theory of Mind, but the evidence is mixed. To address the disagreement in the literature, a meta-analysis was conducted on studies that compared bilingual and monolingual children on false belief and other Theory of Mind tests. The meta-analysis of 16 studies and 1,283 children revealed a small bilingual advantage (Cohen's $d=.22$, $p=.050$). A secondary analysis was conducted on studies ($k=8$) that statistically adjusted the Theory of Mind scores to correct for a bilingual disadvantage in language proficiency. This secondary analysis indicated a medium-size bilingual advantage (Cohen's $d=.58$, $p<.001$). There was no evidence for publication bias in either analysis. Taken together, the results provide support for a beneficial effect of acquiring two languages on mental state reasoning. Explanations for this bilingual advantage, which include bilingual-monolingual differences in executive functioning, metalinguistic awareness, and socio-pragmatic abilities, are discussed.

3. Chen, P., Bartolotti, J., **Schroeder, S.R.**, Rochanavibhata, S., & Marian, V. (2018). Words and non-speech sounds access lexical and semantic knowledge differently. *Proceedings of the 40th Annual Conference of the Cognitive Science Society*. 1470-1475.

ABSTRACT: Using an eye-tracking paradigm, we examined the strength and speed of access to lexical knowledge (eg, our representation of the word dog in our mental vocabulary) and semantic knowledge (eg, our knowledge that a dog is associated with a leash) via both spoken words (eg, "dog") and characteristic sounds (eg, a dog's bark). Results show that both spoken words and characteristic sounds activate lexical and semantic knowledge, but with different patterns. Spoken words activate lexical knowledge faster than characteristic sounds do, but with the same strength. In contrast, characteristic sounds access semantic knowledge stronger than spoken words do, but with the same speed. These findings reveal similarities and differences in the activation of conceptual knowledge by verbal and non-verbal means and advance our understanding of how auditory input is cognitively processed.

4. Marian, V., Hayakawa, S., Lam, T.Q., & **Schroeder, S.R.** (2018). Language experience changes audiovisual perception. *Brain Sciences*, 8(5), 85.

ABSTRACT: Can experience change perception? Here, we examine whether language experience shapes the way individuals process auditory and visual information. We used the McGurk effect—the discovery that when people hear a

speech sound (eg, “ba”) and see a conflicting lip movement (eg, “ga”), they recognize it as a completely new sound (eg, “da”). This finding that the brain fuses input across auditory and visual modalities demonstrates that what we hear is profoundly influenced by what we see. We find that cross-modal integration is affected by language background, with bilinguals experiencing the McGurk effect more than monolinguals. This increased reliance on the visual channel is not due to decreased language proficiency, as the effect was observed even among highly proficient bilinguals. Instead, we propose that the challenges of learning and monitoring multiple languages have lasting consequences for how individuals process auditory and visual information.

Conference Poster Presentations

1. Marian, V., Hayakawa, S., Lam, T.Q., & **Schroeder, S.R.** (2018, November). Language experience changes audio-visual integration: Evidence from the McGurk Effect with bilinguals. *Psychonomic Society*. New Orleans, LA.

ABSTRACT: Can language experience change audiovisual perception? We answer this question by examining whether bilinguals and monolinguals differ in their likelihood of experiencing the McGurk effect. When people hear a speech sound (“ba”) but see an incongruent lip movement (“ga”), they often perceive a different sound altogether (“da”). This illusion demonstrates that what we hear is profoundly influenced by what we see. In this study, participants identified sounds after being presented with congruent and incongruent audiovisual speech. When processing incongruent stimuli, bilinguals experienced significantly more McGurk effects than monolinguals, revealing that language experience alters cross-modal integration. Furthermore, this integration was not associated with proficiency, suggesting that the increased reliance on visual information is not driven by difficulty understanding auditory speech. Instead, we propose that learning and using multiple languages can alter how individuals process auditory and visual inputs and that our experiences can shape even basic sensory perception.

2. **Schroeder, S.R.**, & Rembrandt, H.N. (2018, November). Do people trust and remember speech that is spoken in a disordered voice? *American Speech-Language-Hearing Association*. Boston, MA.

ABSTRACT: Voice-disordered speech can be difficult for listeners to understand. Evidence from research outside of voice disorders suggests that difficulty understanding a speaker can lead listeners to both doubt the truthfulness of and fail to remember what the speaker said. This research examines whether voice-disordered speech follows a similar pattern and is less believable and harder to remember than typical speech.

3. Hayakawa, S., Lam, T.Q., **Schroeder, S.R.**, & Marian, V. (2018, April). Language experience changes audio-visual integration. *Midwestern Psychological Association*. Chicago, IL.

ABSTRACT: Bilingual experience enhances audio-visual integration. Utilizing a speech-perception paradigm, we observe that both early and late bilinguals are more susceptible to the “McGurk Effect” whereby auditory perception is influenced by visual stimuli. We propose that the early challenges of acquiring multiple languages can fundamentally alter how individuals bind sensory inputs.