Cognitive style in speech accommodation
Investigating Autistic-spectrum Quotient as a factor in phonetic imitation

Student: Alexandra Schwabe
Faculty Sponsor: Jeff Mielke

Introduction
The purpose of this project was to test the hypothesis that variation in cognitive style affects how words are stored in the mental lexicon.

Research Question
Do individuals with high Autism Quotient (AQ) scores show different imitation behaviour than individuals with low AQ scores?

Hypothesis
High-AQ participants will tend to imitate an exaggerated property more in the words in which they heard it, and low-AQ participants will tend to generalize the exaggerated property—voice onset time—to other words.

Why?
This study follows up a clinical observation about the linguistic behaviour of high-functioning Autistic children with an experiment that has implications for models of linguistic representations and processing.

Children with Asperger’s syndrome sometimes have word-specific pronunciations, based the accent of the person they heard a word from.

This study investigates a previously unexplored area of research and may lay groundwork for future study with clinical populations that would have more direct implications for individuals with Autism Spectrum Disorders.

Method

Collection of Speech Data
The speech data collection procedures are based on the Nielsen's (2007) modified imitation paradigm.
1. Participants read a list of words
2. Participants listen to a recording in which the Voice Onset Time (VOT) of all word-initial [p]s has been increased
3. Participants reread the list of words

Autism Quotient Test
The Autism Spectrum Quotient (Baron-Cohen et al. 2001)
- Self-administered test of Autistic-like traits made up of 50 questions
- Used as a diagnostic tool
- Mean AQ score for neurotypicals is 16.4
- 80% of people diagnosed with an autism spectrum disorder score above 32

Data Analysis
An algorithm was applied to Praat, which added the VOT tier.
The algorithm tried to find the release and the onset of voicing by finding an abrupt start of noise (the release) and then finding the nearest glottal pulse to that point, which should be the onset of voicing.

Results
- Positive correlation found between AQ score and VOT % change
- Target words were more exaggerated by higher AQ participants, as expected

What can we take away from our results?
- Surprisingly little imitation in the first place. Why?
- Hard to interpret differences because all subjects are in the neurotypical range
- Encouraged to continue experiment with Autism Spectrum Disorder subjects and use the other subjects as a control group

VOT: the length of time that passes between when a stop consonant is released and when voicing, the vibration of the vocal folds, begins.