

# Effects of Experience and Expectations on Adaptation to Dialect Variation in Noise

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## INTRODUCTION

Several factors influence processing of dialect variation in favorable listening conditions:

- recent experience, e.g., **implicit dialect familiarization** (Dahan et al., 2008; Floccia et al., 2006)
- expectations due to **associative priming of a dialect** (Hay et al., 2006)
- long-term experience, e.g., **knowledge of local dialects** (Sumner & Samuel, 2009)

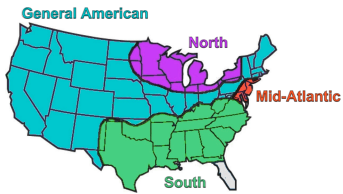
The present study investigates how these three factors influence dialect processing in noise.

## Dialect Processing in Noise:

Dialects are not equally intelligible in adverse listening conditions. Using a sentence intelligibility in noise (SIN) task, Clopper and Bradlow (2008) found consistent accuracy differences due to talker dialect:

**Mid-Atlantic < Northern < Southern < GenAm**

Listeners also showed no benefit for their own dialect.



Map of the major US dialect regions tested by Clopper & Bradlow (2008).

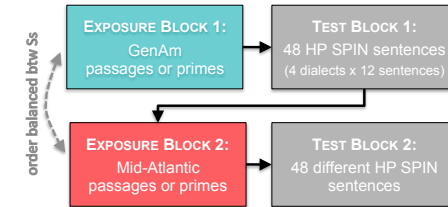
## Questions and Predictions:

We predict that the low intelligibility of Mid-Atlantic speech in noise can be *selectively improved* by:

- familiarizing non-Mid-At listeners to this dialect
- implicitly associative priming of this dialect

Further, we ask whether listeners show an advantage for their native dialect when knowledge of dialect variation is emphasized as task-relevant.

## METHOD



**Exposure Phase:** (within-subject manipulations)

- Exp1: dialect familiarization via short passages spoken by non-test talkers with either **GenAm** or **Mid-Atlantic** dialects.
  - N = 35 (21 Midland; 14 Northern)
- Exp2: dialect priming via brief presentation of associated place name (e.g., **Bloomington**; **New York City**).
  - N = 33 (23 Midland; 10 Northern)
- Exp3: dialect familiarization (same as Exp1) plus talkers explicitly identified as from **GenAm** or **Mid-At** cities.
  - N = 38 (21 Midland; 17 Northern)

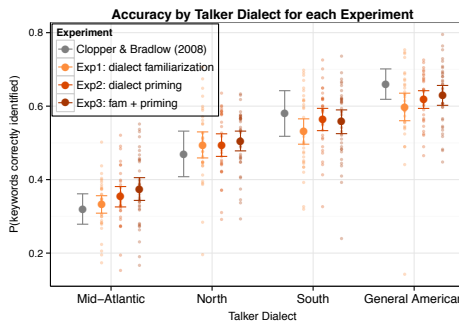
**Test Phase:** (same as C&B (2008))

- 96 HP SPIN sentences by talkers from 4 dialects (GenAm, Southern, Northern, and Mid-Atlantic)
- 2dB SNR with speech-shaped white noise

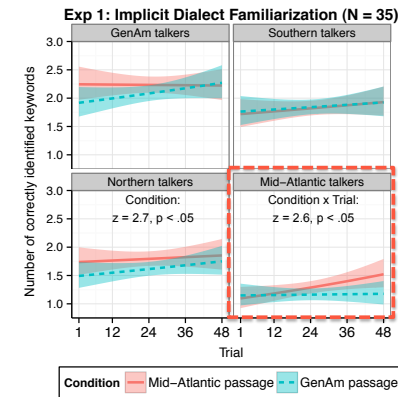
**Analysis:**

- multilevel log-normal Poisson regression (corrected for overdispersion) on number of correctly identified keywords

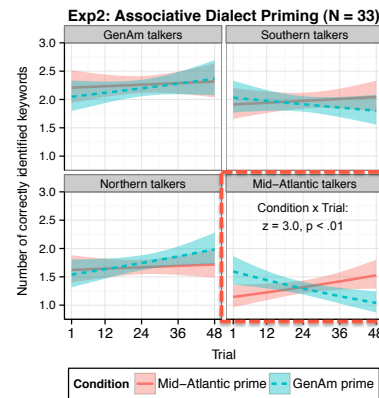
## RESULTS



## RESULTS: EXP1 & EXP2

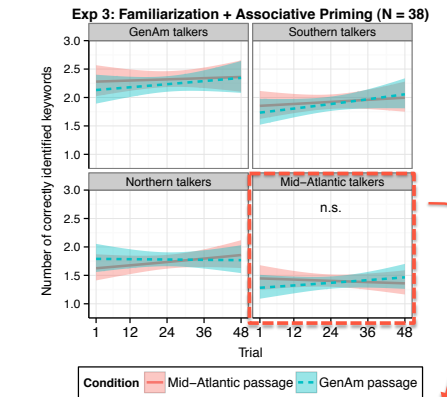


- Recent experience with Mid-At dialect significantly improved intelligibility of this dialect in noise
- Benefit emerged late (in interaction with Trial)



- Priming the Mid-At dialect via associated place names increased intelligibility of this dialect
- Again, benefit emerged late

## RESULTS: EXP3



- No selective benefit for Mid-At speech following Mid-At exposure
- Possible local ceiling effect: accuracy for Mid-At speech was higher in Exp3 than in all other exps

## The Role of Long-term Experience:

- Across all three Exps, listeners showed no advantage for their native dialect.
- i.e., **Northern** participants performed the same as **Midland** participants when listening to **Northern** speech.
- We were unable to recruit a sufficient number of native **Mid-Atlantic** and **Southern** participants to test long-term experience with these groups.

## CONCLUSIONS

Intelligibility of dialect variation in noise is selectively affected by recent experience with and global expectations about this dialect.

However, this influence is modest. Despite targeted familiarization and priming efforts, intelligibility of Mid-Atlantic speech was still below all other tested dialects.

## ACKNOWLEDGEMENTS

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