

Beyond forced choice: Using statistically induced chunking recall (SICR) to assess statistical learning in autism

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Background

- Statistical learning (SL): Ability to detect and encode regularities in the environment¹
 - Supports language acquisition
- SL differences are hypothesized in autism (AUT), though findings are mixed²
- Traditional forced-choice SL tasks require **explicit judgments**³ that may obscure individual learning differences⁴

Statistically Induced Chunking Recall (SICR)^{5,6}:

- Assesses recall following artificial language exposure
- Provides an implicit index of SL
- Minimizes meta-cognitive task demands; not an online measure of learning

Objectives & Hypotheses

Compare SL performance in AUT vs. NT adults
Test associations between SICR performance and autism traits (AQ)

Hypotheses:

- Reduced recall in autistic participants
- Negative SICR–AQ association

Methods

Task Design:

- 5-minute exposure to continuous artificial language stream
- Language: four trisyllabic “words”
- Transitional probabilities within words = 1.0
- After exposure, participants hear 24 items and repeat them immediately: 12 target items + 12 random syllable strings.
- Evaluate repetition accuracy for syllables & trigrams

Additional Measures:

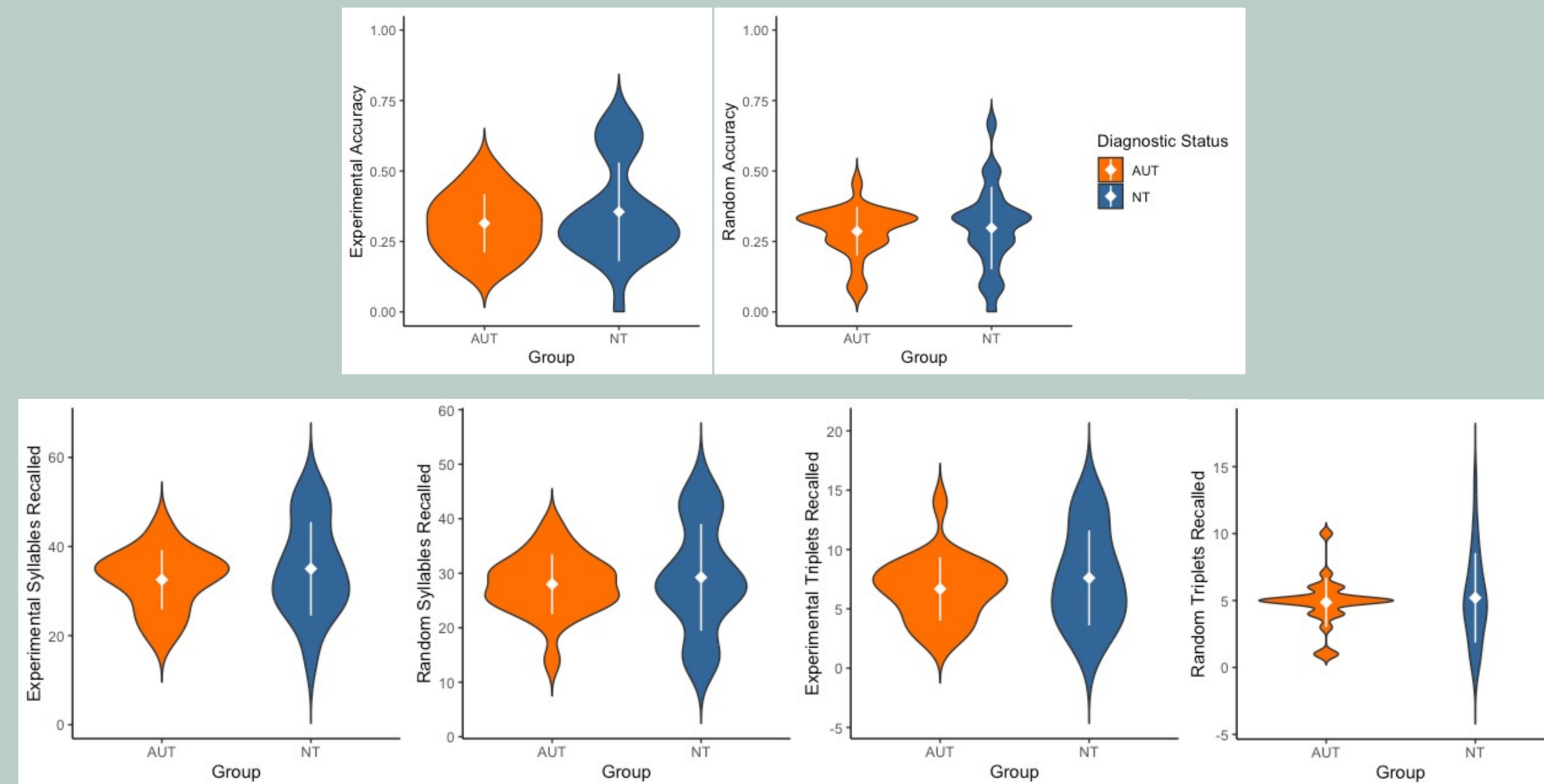
Autism Quotient (AQ)⁷

- Five subscales
 - Social Skill
 - Attention Switching
 - Attention to Detail
 - Communication
 - Imagination
- Total score out of 50
 - Autism threshold = 26

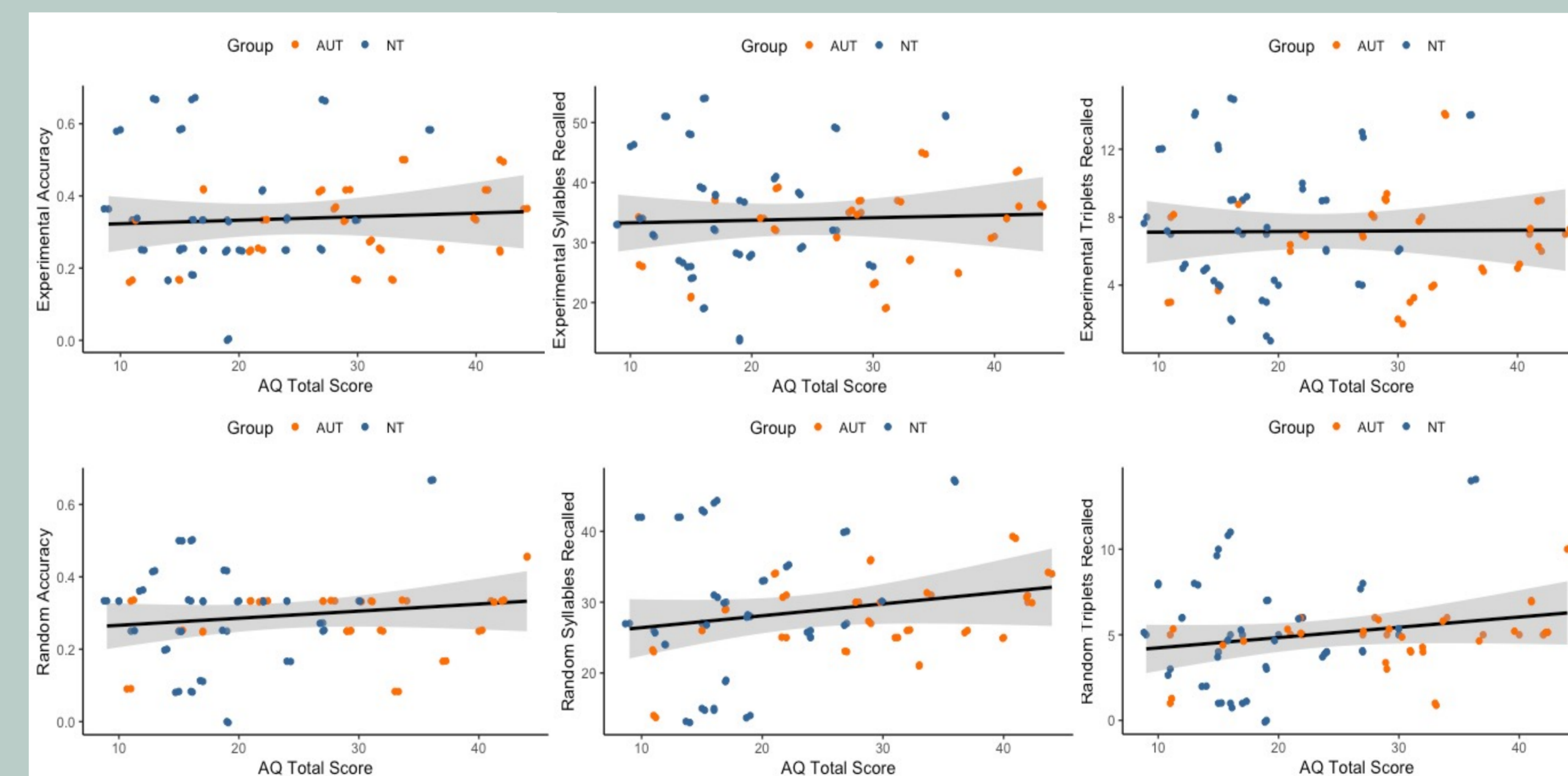
Words	Non-Words
kibudu	bumaka
modipa	molopa
lomari	ribuki
takapo	tadipo

Results

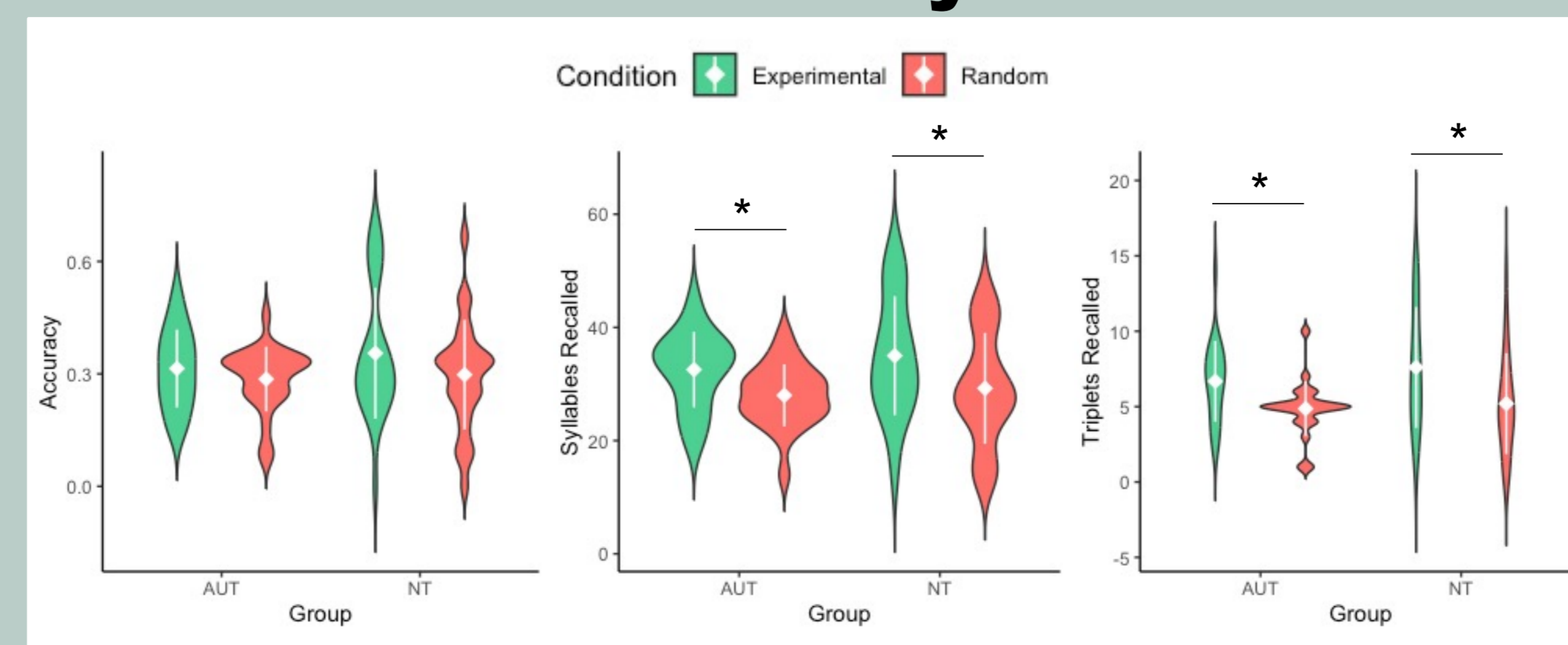
Between-group differences: No differences for overall accuracy, syllables or triplets



AQ and SICR performance: Unrelated



Within-group differences: Experimental vs. random syllables & triplets, but not accuracy



Participants

- 22 AUT, 25 NT monolingual adults (Prolific); L1 = English
- AUT: self-reported formal childhood diagnoses

	NT	AUT	Post-hoc
Sex	11 M, 14 F	14 M, 8 F	t = -1.34 p = 0.1851
Age	28.28 (5.70) 19-35	27.00 (5.29) 18-34	t = -0.80 p = 0.43
Ethnicity	Black = 4 White = 17 Asian = 2 Multi-racial = 2 Other = 0	Black = 4 White = 14 Asian = 0 Multi-racial = 3 Other = 1	
AQ Score	18.5 (6.6) 9-36	29.0 (10.0) 11-44	t = 4.19 p < 0.001 ***

Conclusions & Limitations

- No within- or between-group differences in accuracy
 - Target accuracy = ~ 35% for both groups
 - Random accuracy = ~ 30% for both group
- Within- but not between-group differences in recall (syllables/trigrams)
- AQ and accuracy: Unrelated
- Are statistical learning abilities impaired in autism?**
 - Jury is still out; these results suggest, no
 - Wide range of individual differences in both groups
 - Cognitive or language abilities, rather than autism per se, may better explain differences

Methodological limitations

- Online; no “supervision”; relied on self-report
- Limitations of AQ (e.g., high NT scores, low AUT scores)
- No measure of language ability; small *n*

Next steps

- Direct comparison of online and in-person performance

Acknowledgements

Funded by NIDCD T32 DC017703 to IM Eigsti & E Myers, and NIDCD F31 1F31DC022187-01 to R Canale

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