



1. Introduction

- **Children's spontaneous vocal productions become increasingly adultlike**
 - **shape** (canonical, non-canonical)
 - **phonetic and phonemic properties** (frequency range, phonotactics, etc.)
- **But... research has been limited to a narrow set of languages and communities**
 - **Indo-European languages**
 - **Western(ised) speaker communities**
 - **narrow age range: 0 - 24mo**

2. Speech Maturity Dataset

- Superset of **BabbleCor** (Cychosz et al., 2019)
- **15k** (Babblecor) → **258,914 clips** (ours)
- **398 children** (209 male, 186 female)
- Large age range: **2mo - 6yr**
- **14 communities**
 - rich industrialised societies
 - **farmer-forager communities**
- **25+ languages**

4. Metadata & Use Cases

- **Wealth of metadata**
 - Age
 - Sex
 - Linguistic Environment
 - Normativity
- **Use Cases**
 - Canonical/Linguistic Proportion
 - Train vocalisation-type classifiers

3. Zooniverse: Citizen Science

- **Citizen Scientist: Non-scientific volunteers** who annotate and label scientific data
- Clip labels based on the **majority vote** of **at least 3 citizen scientists**
- **Majority vote: at least 50%** of the citizen scientists **endorsed a particular label**
- **Labels** (speaker type and sex for a subset of the clips only N=110,577)
 - **Vocalisation Type:** canonical, non-canonical, laughing, crying, junk
 - **Speaker Type:** baby (younger than 3 years), child (3-12 years), adolescent (12-18 years)
 - **Sex:** Female/Male (for adolescents and adults)

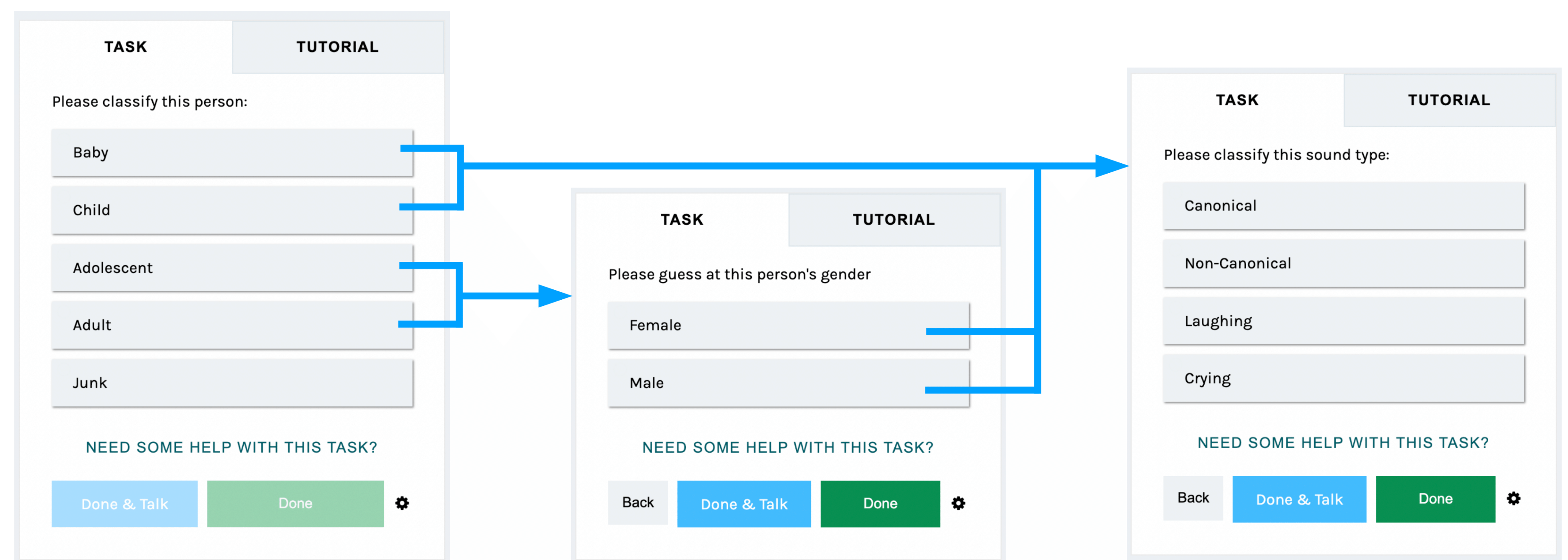


Figure 1: Zooniverse Pipeline

5. Preliminary analysis

- **Canonical (CP) and Linguistic proportion (LP)**
 - $CP = \frac{\text{Canonical}}{\text{Canonical} + \text{Non-Canonical}}$
 - $LP = \frac{\text{Canonical} + \text{Non-Canonical}}{\text{Canonical} + \text{Non-Canonical} + \text{Cry} + \text{Laugh}}$
 - **Linear Mixed-Effect Model**
 - Predict LP and CP
 - Fixed Effects: age, sex, monolingualism
 - Random Effects: child ID nested in corpus
- **Significant positive effect of age**
- **No significant effect of age or monolingualism**

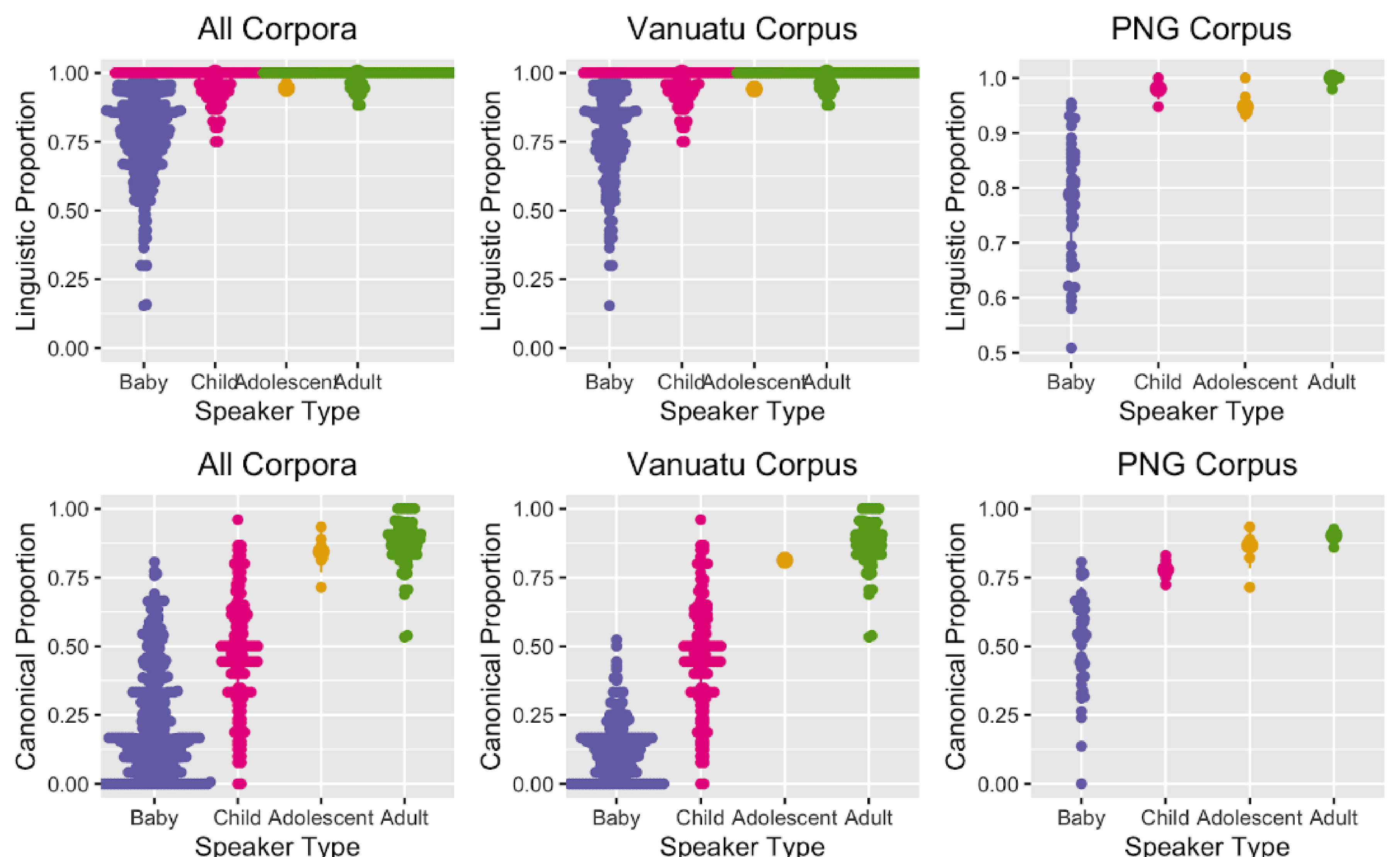


Figure 2: Linguistic proportions (top) and canonical proportions (bottom) by speaker age