

A LIFESPAN APPROACH TO ENGLISH SPEECH ACQUISITION: COMPARATIVE COGNITIVE AND SOCIOLINGUISTIC ANALYSIS OF CHILDHOOD L1 DEVELOPMENT AND ADULT L2 LEARNING

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Abstract. *This project proposes an integrated lifespan framework for English speech acquisition, bridging native child language development (L1) and adult second language learning (L2). Rather than isolating early acquisition within psycholinguistics (Kuhl, 2010) and adult learning within applied linguistics (Ellis, 2008; Ortega, 2009), this study connects both domains.*

By examining changing cognitive memory systems—implicit versus explicit (Ullman, 2001, 2004)—alongside sociolinguistic environments (caregiver scaffolding vs. adult social networks; Vygotsky, 1978), we clarify how speech processing, phonetic adaptation, and pragmatic competence evolve over time. Using a convergent parallel mixed-methods design pairing quantitative acoustic and cognitive metrics with qualitative discourse analysis, the project offers theoretical insights into lifespan language processing and practical evidence for adult SLA pedagogy.

1. Introduction & Statement of Problem

Children acquire spoken English (L1) rapidly and without formal instruction, relying on implicit cognitive mechanisms supported by structured social feedback (Tomasello, 2003; Kuhl, 2010). Conversely, adult L2 learners possess mature executive function and explicit analytical skills, yet face persistent challenges in native-like spoken fluency and phonetic accuracy (DeKeyser, 2000; Abrahamsson & Hyltenstam, 2009).

A major limitation in current research is the conceptual segregation of early child acquisition (studied via neurodevelopmental and psycholinguistic frameworks) and adult SLA (studied via pedagogical or sociolinguistic lenses; Firth & Wagner, 1997; Ortega, 2009).

Understanding how cognitive processing shifts alongside changing social contexts is essential to resolving long-standing debates regarding age constraints and critical period hypotheses (Lenneberg, 1967).

2. Central Thesis Statement

English speech acquisition operates along a continuous lifespan continuum. The transition from child L1 native development to adult L2 learning represents a fundamental shift from implicit, sensorimotor-driven mechanisms to explicit, socially mediated learning strategies (Ullman, 2004).

Comparing these stages demonstrates how sociolinguistic environments directly interact with evolving cognitive architectures (such as the Declarative/Procedural model) to shape phonetic adaptation and spoken fluency.

3. Key Research Questions

1. **Cognitive Shift:** How do speech processing strategies transition from implicit memory mechanisms in childhood L1 acquisition to explicit frameworks in adult L2 learning (DeKeyser, 2000; Ullman, 2001)?

2. **Sociolinguistic Environment:** How do distinct social spaces (caregiver scaffolding vs. adult peer networks) influence speech production and pragmatic competence across lifespan stages (Tomasello, 2003)?

3. **Pedagogical Application:** How can empirical insights from L1 developmental pathways be systematically adapted to optimize spoken English instruction for adult learners (Ellis, 2008)?

4. Proposed Methodology

A convergent parallel mixed-methods design (Creswell & Creswell, 2018) collects quantitative and qualitative data across two cohorts (N = 80 total):

- **Group A (Child L1, n=40):** Native English speakers (Ages 2–7). Data: Acoustic phonetics, working memory assessments, caregiver interaction video.

- **Group B (Adult L2, n=40):** Non-native English learners (Ages 18+, CEFR B1–C1). Data: Acoustic phonetics, reaction time tasks, peer interaction video.

4.1 Quantitative Measures

- **Acoustic Phonetics:** Vowel formant frequencies (F1/F2) and Voice Onset Time (VOT) for stop consonants measured via Praat software (Boersma & Weenink, 2021).

- **Cognitive Processing:** Auditory discrimination reaction times and phonological working memory non-word repetition tasks (Baddeley, 2003).

4.2 Qualitative Measures

Micro-level conversation analysis (Sacks et al., 1974) of video recordings evaluating turn-taking, repair, and feedback loops across caregiver-child play and adult peer communicative tasks.

5. Significance & Contribution

This research advances applied linguistics by (1) bridging psycholinguistics and sociolinguistics into a unified lifespan framework (Firth & Wagner, 1997), and (2) guiding evidence-based adult pedagogy that reduces cognitive load and improves spoken phonetic automaticity (Ellis, 2008).

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