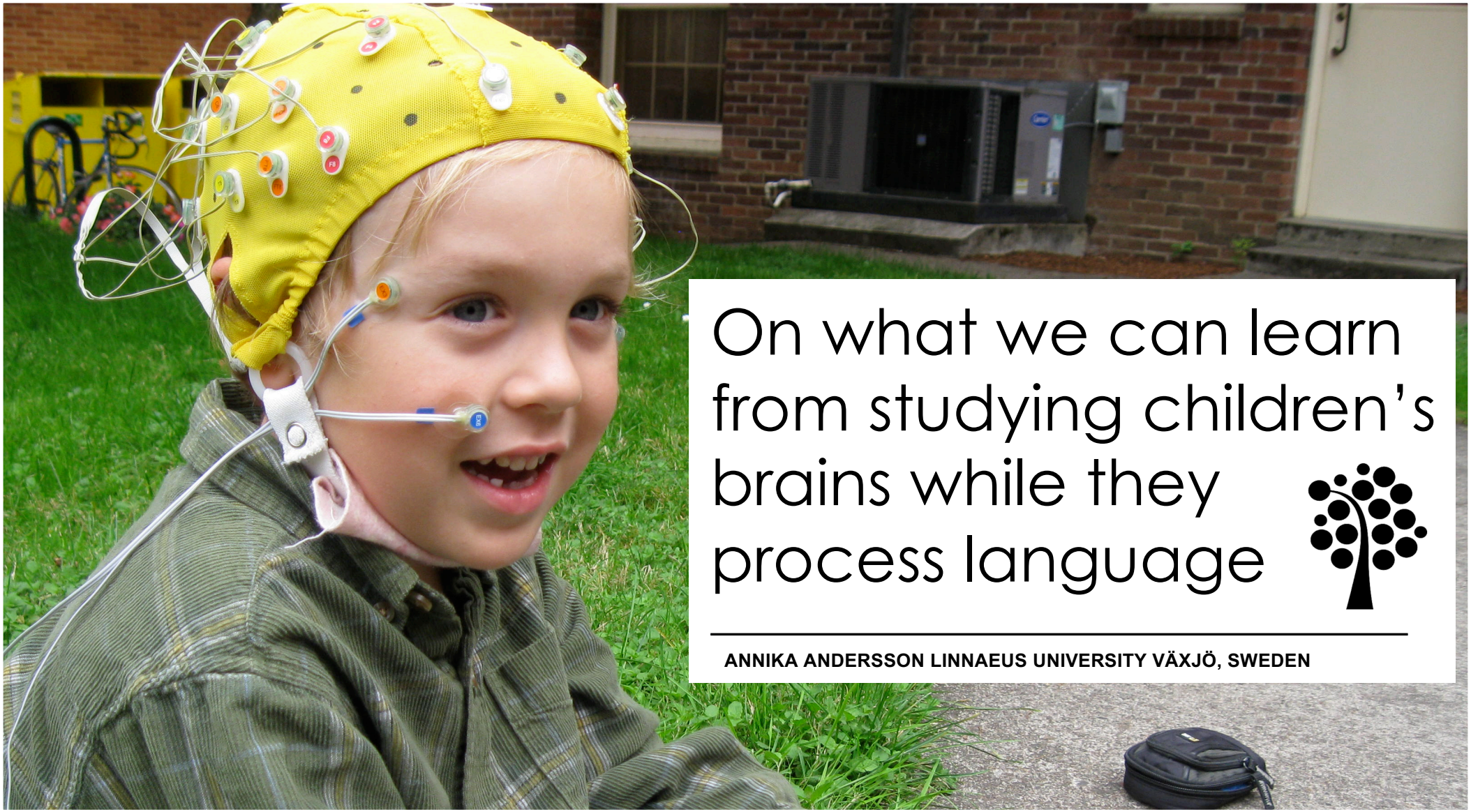
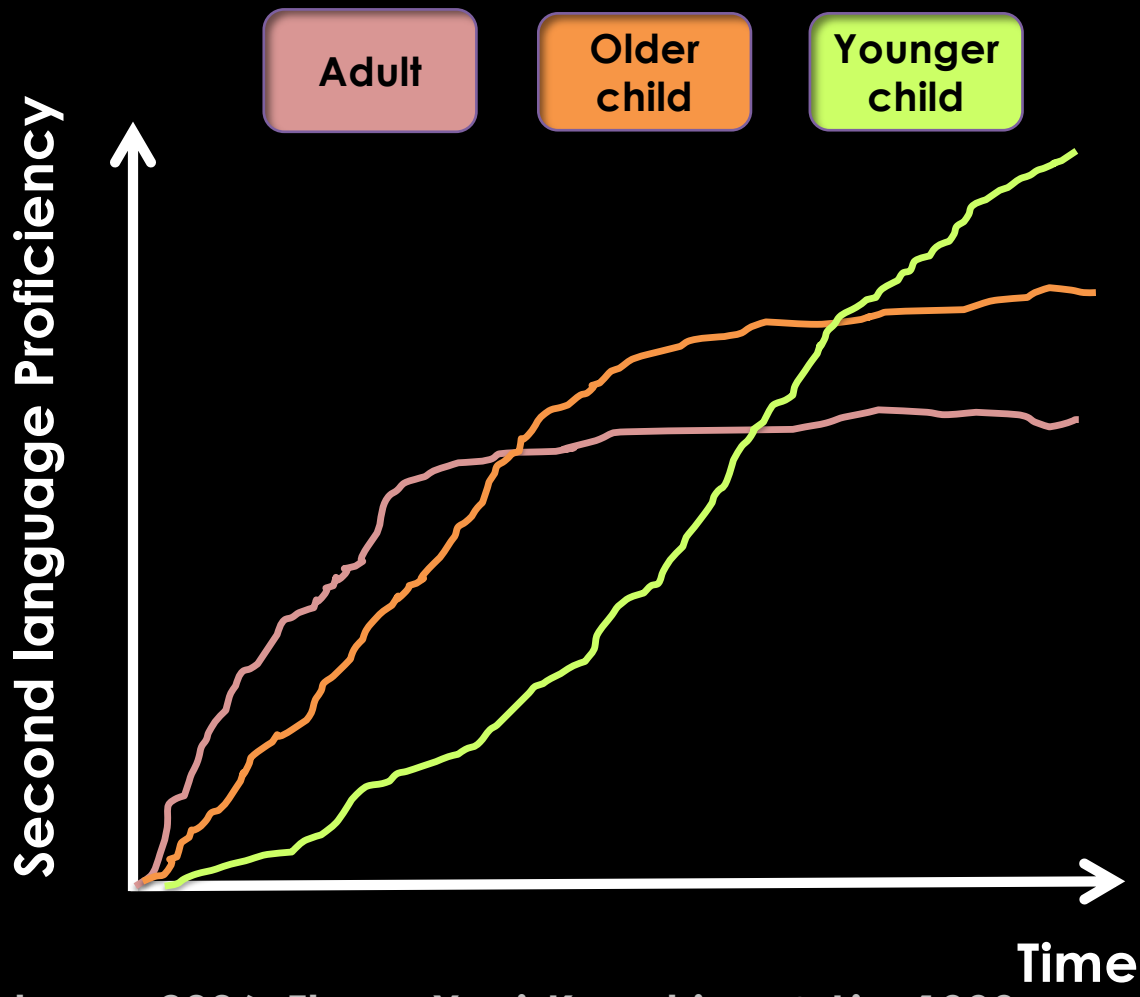


On what we can learn from studying children's brains while they process language

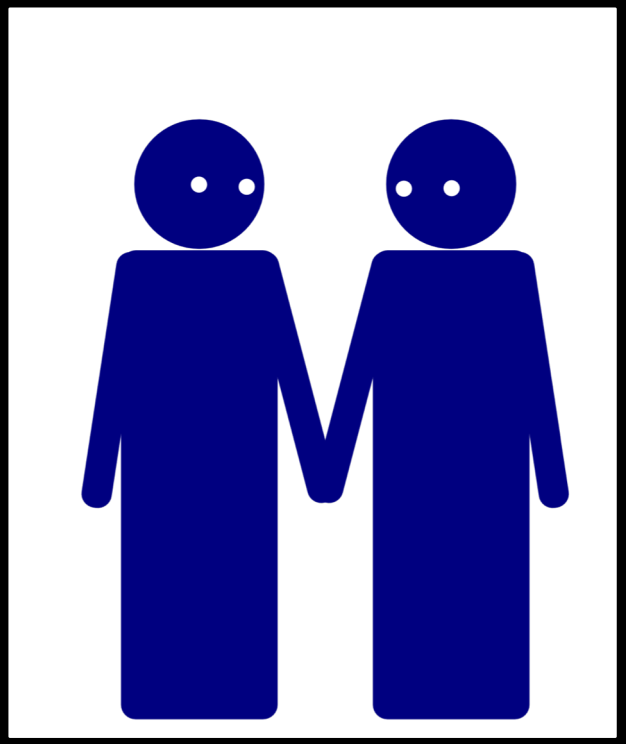
ANNIKA ANDERSSON LINNAEUS UNIVERSITY VÄXJÖ, SWEDEN



Asher & Price, 1967; Birdsong, 2006; Flege, Yeni-Komshian, & Liu, 1999; Johnson & Newport, 1989; MacSwan & Pray, 2005; Misrachi & Denney, 1979; Oyama, 1976; Paradis, 2004; Snow & Hoefnagel-Hohle, 1977, 1978; Weber-Fox & Neville, 1996

Phonological Awareness

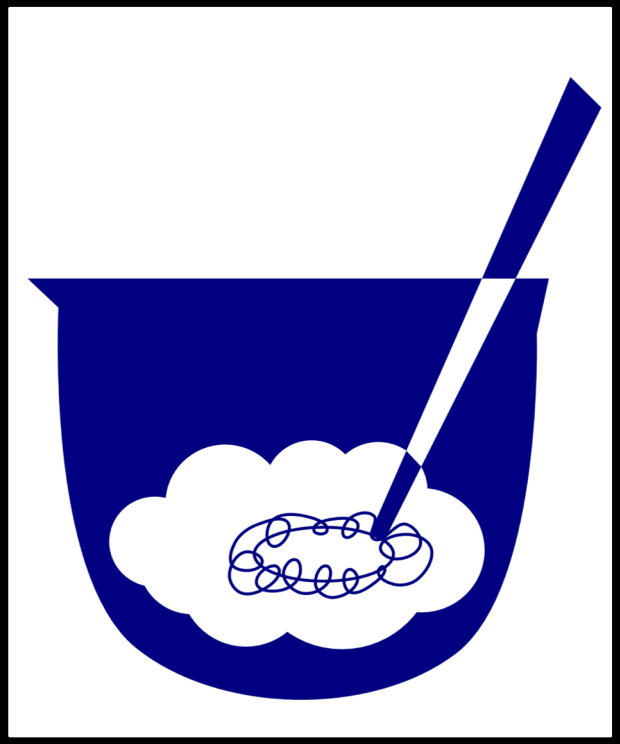


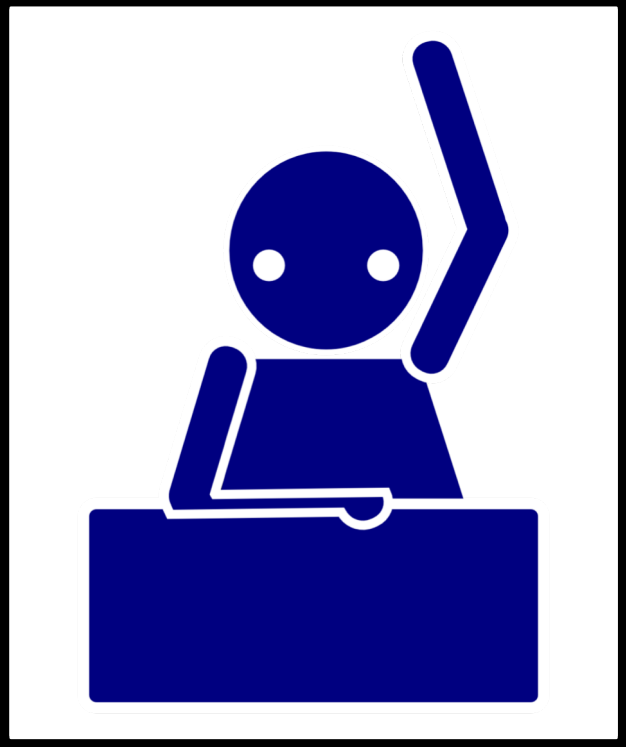


Images:
Carolina Larsson,
Lund University

Bialystok, Majumder, & Martin, 2003; Brennan & Ireson, 1997; Bryant, MacLean, Bradley, & Crossland, 1990; Carlisle, Beeman, Davis, Spharim, 1999; Cisero & Royer, 1995; Durgonuglo, 2002; Garcia & Trujillo, 1979; Gathercole, Willis, & Baddeley, 1991; Lundberg, 1994; MacDonald & Cornwall, 1995

Vocabulary





Images:
Carolina Larsson,
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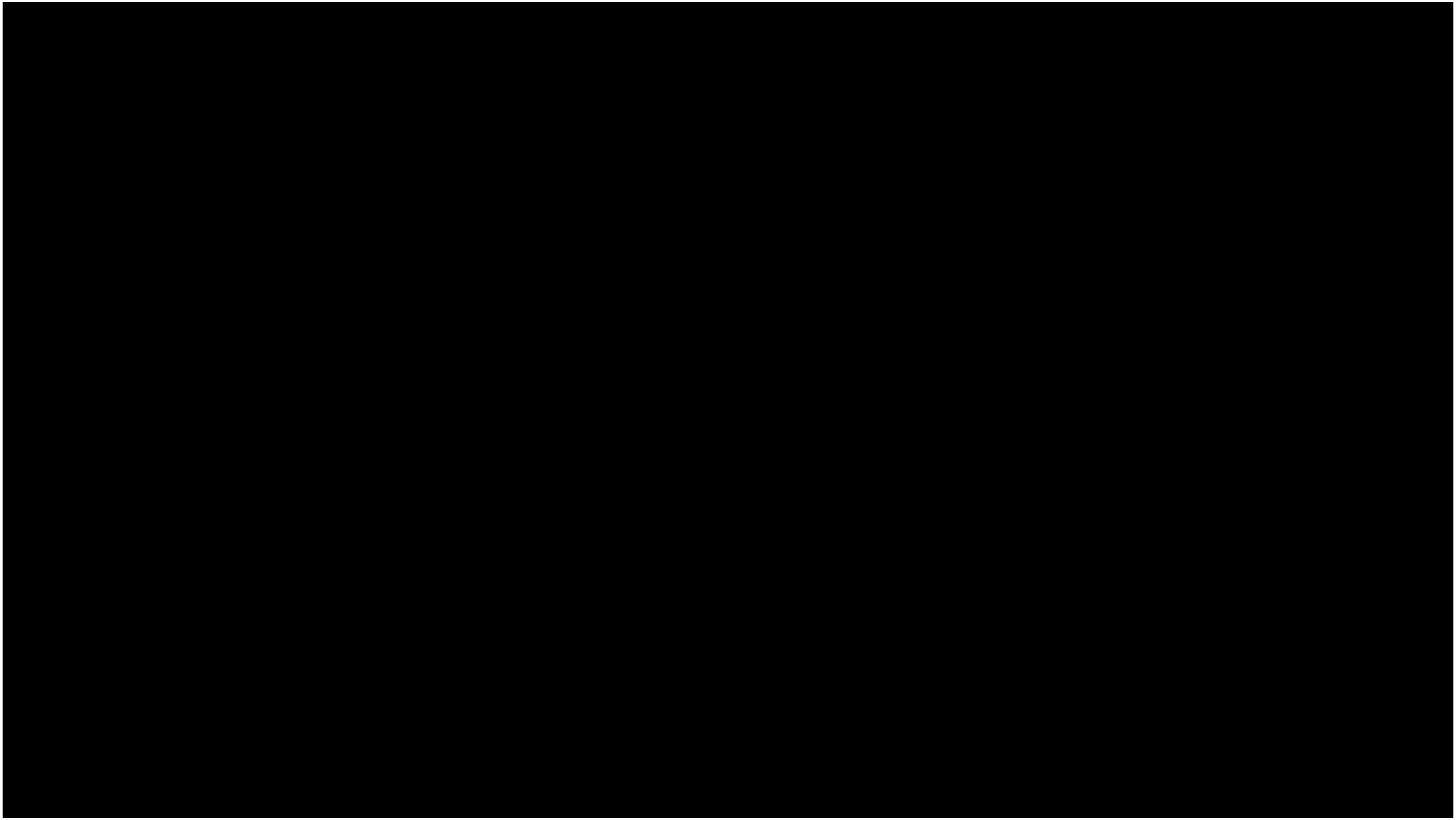
Caldwell & Mowry, 1933; Carrow, 1971; Escamilla & Medina, 1993; Genesee, 1989; Oller & Eilers, 2002; Patterson, 2000, 2002; Pearson, Fernandez, & Oller, 1995; Killian, 1971; Kohnert, 2000 On tests: Peña, Quinn, Iglesias, 1992; Restrepo & Silverman, 2001; Saenz & Hauer, 2003

Syntax

Proficient in L2 syntax after 3 years of exposure

MacSwan & Pray, 2005

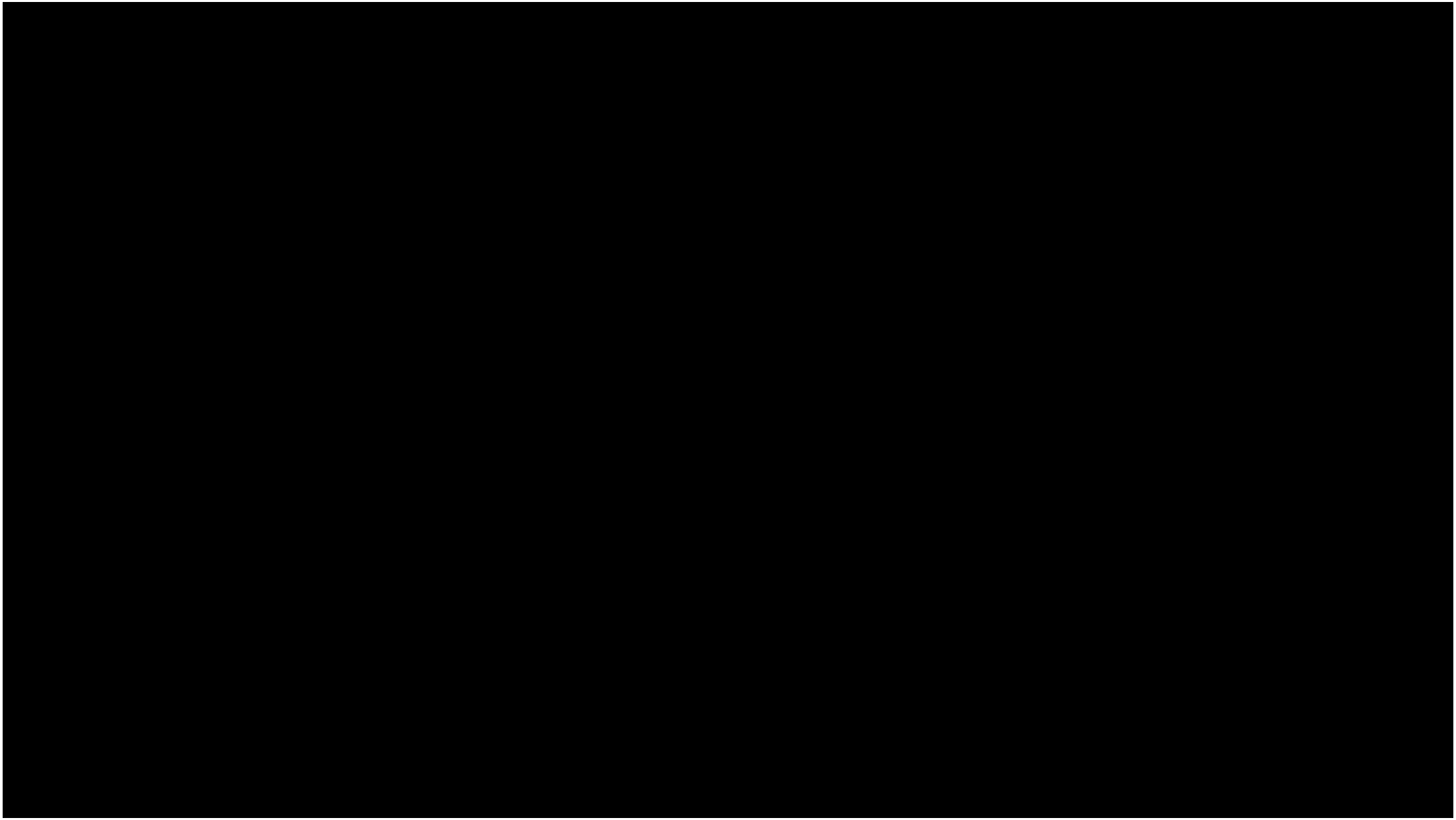




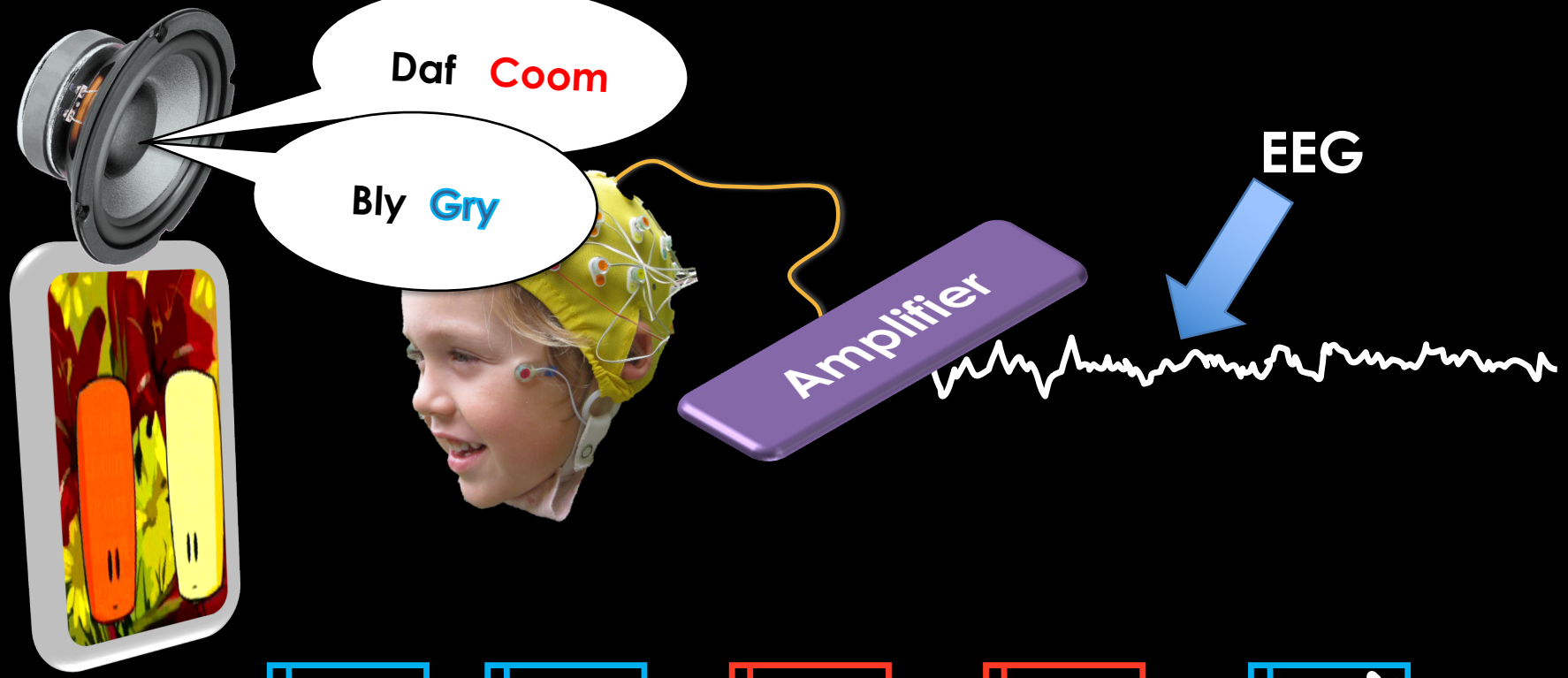


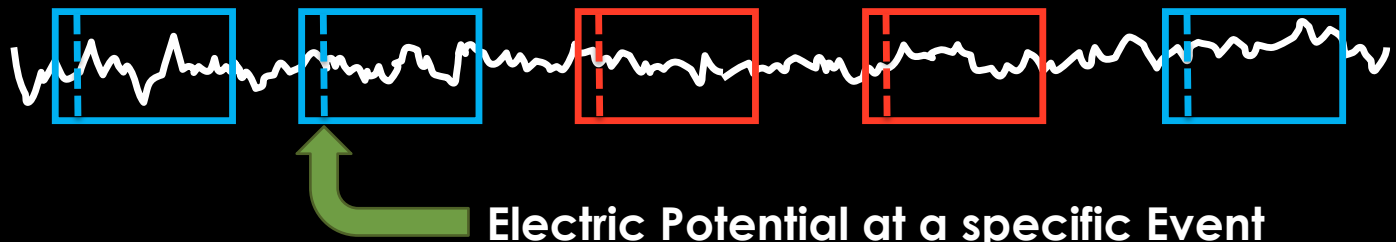
20% of children bilingual

Cobo-Lewis, Pearson, Eilers, & Umbel, 2002; DeThorne & Channel, 2007; Fernancez, Pearson, Umbel, Oller, et al., 1992; Hart & Risley, 1995; Pan, Rowe, Singer, & Snow, 2005; Schwartz & Stiefel, 2006

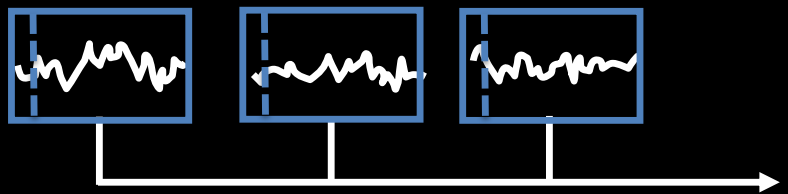


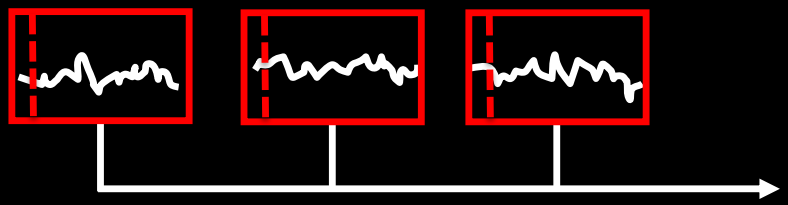
ERP: Event Related Potential



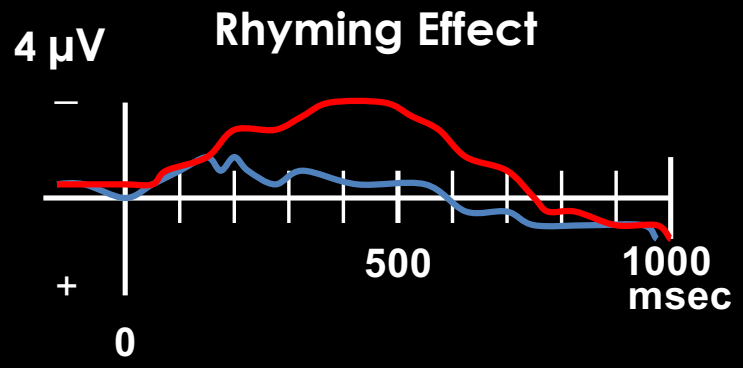


Average of brain activity at the presentation of
Rhyming pseudowords

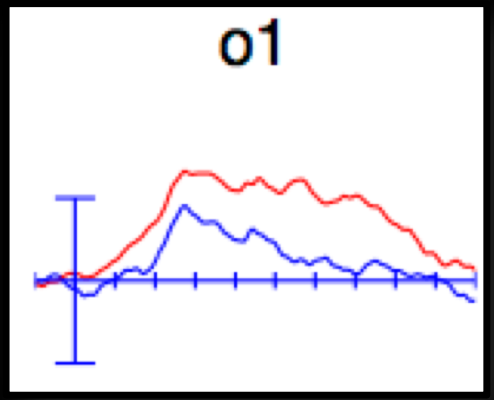




Nonrhyming pseudowords



Rhyming in 3-5-year olds' L1

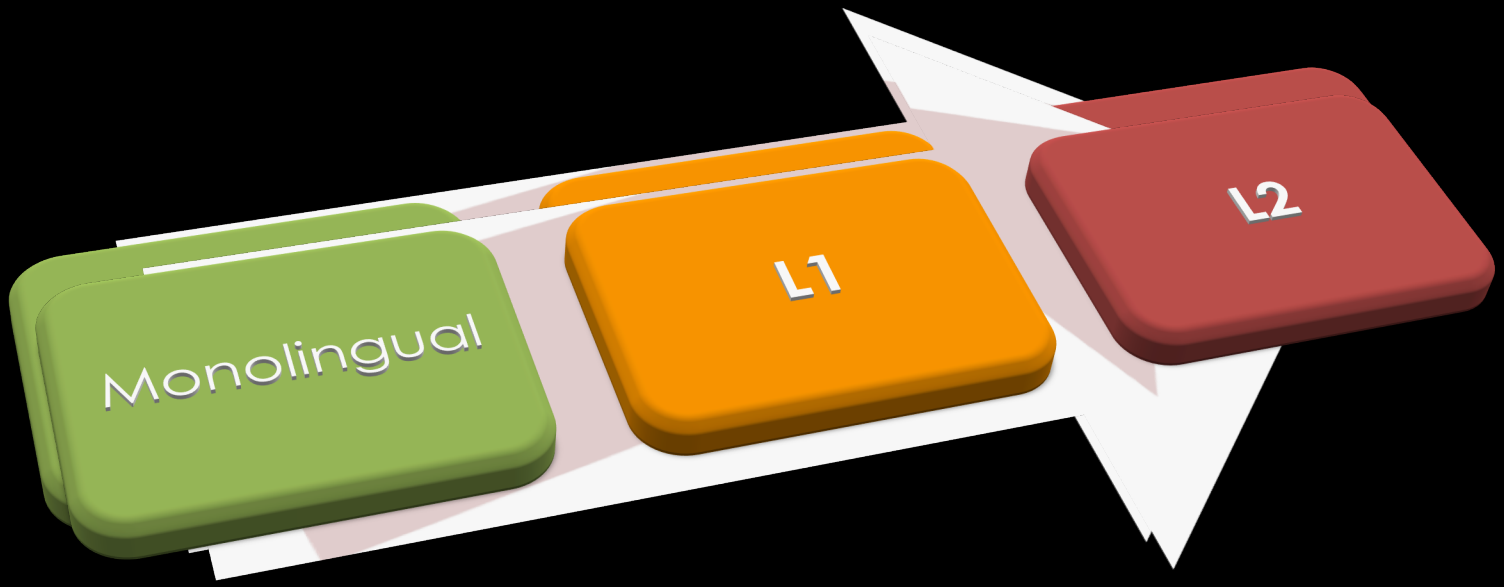


Phonology

Non rhyme
Rhyme

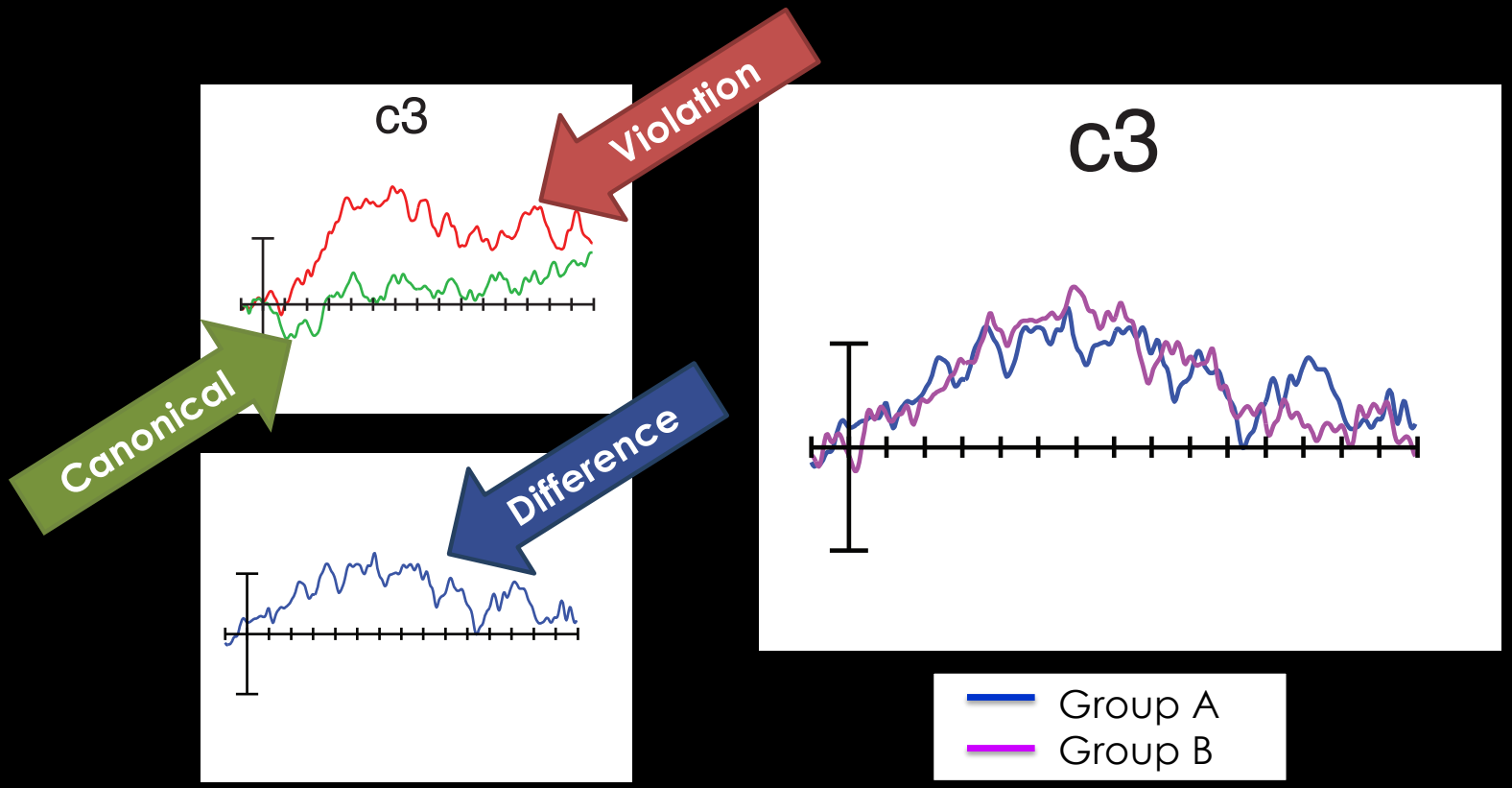
Andersson, Sanders, Karns, & Coch, 2018; Coch, Grossi, Coffey-Corina, Holcomb, & Neville, 2002; Coch, Grossi, Skendzel, & Neville, 2005; Praamstra, Meyer, & Levelt, 1994; Rugg, 1984

Semantic ERP effects (N400)



Ardal, Donald, Meuter, Muldrew, et al, 1990; Holcomb, Coffey, & Neville, 1992; Weber-Fox & Neville, 1996

Difference waves



Previous ERP-studies of syntax

Adult Monolinguals

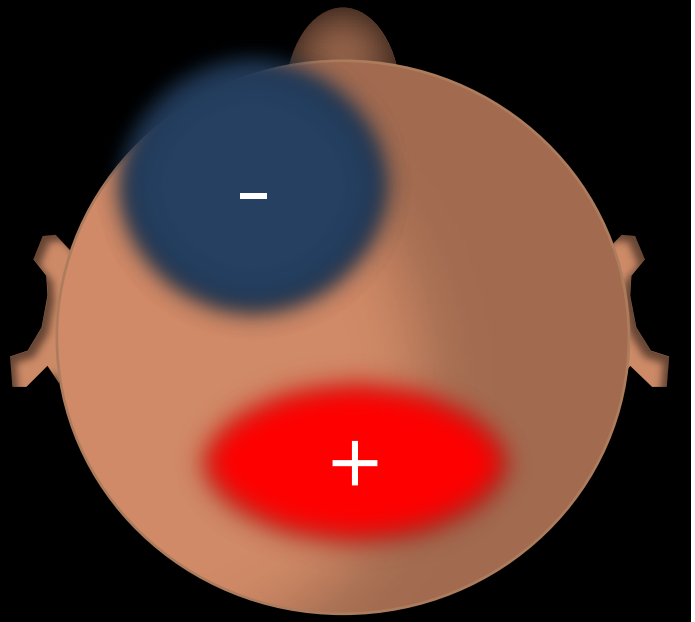
- LAN more focal with proficiency
- P600 more widely distributed with proficiency

Adult Bilinguals

- LAN altered in onset and distribution with AoA
- P600 altered in onset

Monolingual Children

- LAN in 3-year olds but not in 2-year olds
- P600 already in 2-year olds



Pakulak & Neville, 2010; Weber-Fox & Neville, 1996; Oberecker, Friedrich, & Friederici, 2005; Oberecker & Friedericie, 2006; Hahne, Eckstein, & Friederici, 2004

What have we learnt from studying children's brains while they process language?

- Groups that differ in AoA and SES process language differently but mainly in relation to language proficiency
- Largest differences between monolinguals and bilinguals were found in phonological processing



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Helen Neville
University of Oregon



Lisa Sanders
University of
Massachusetts



Courtney Stevens
Willamette University



Christina Karns
University of Oregon



Jessica Fanning
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Eric Pakulak
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Maria Morey
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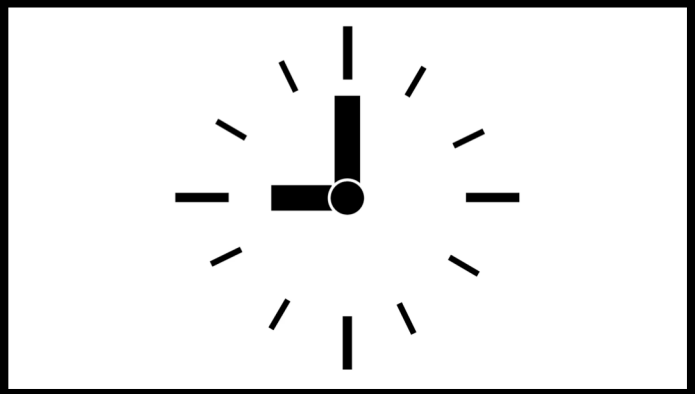



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