Please sit based on interest!

The replication crisis and you

Language & input-output relationships through observations

Alessandro+Edmund

Studying children's cognitive development through laboratory-based measures

Environment * Initial state interaction

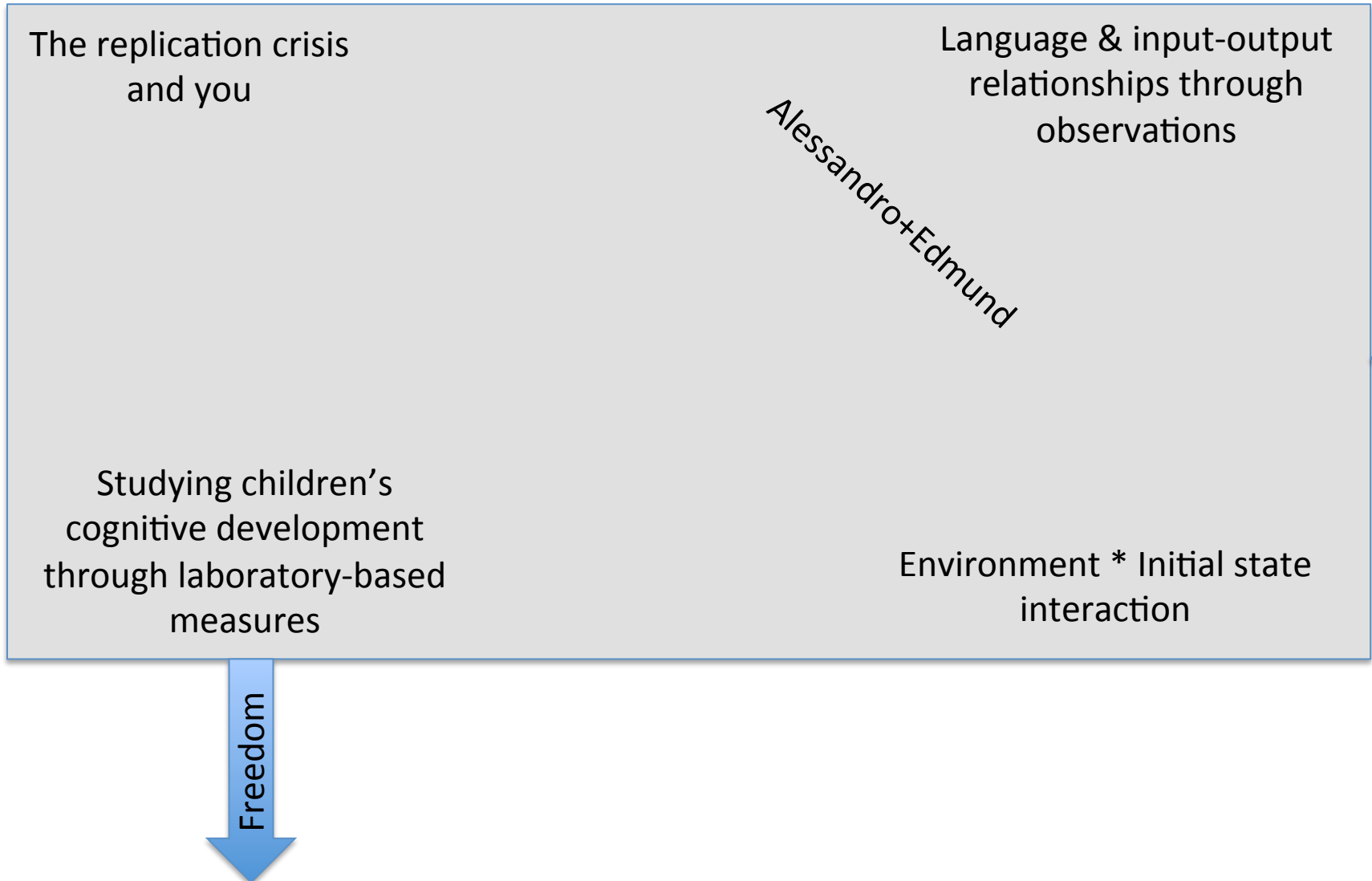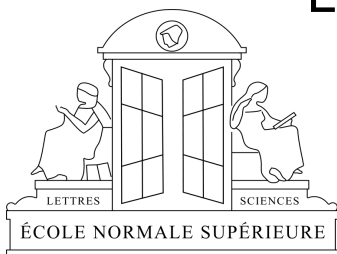Freedom

New technologies for the study of child cognition:
The case of language

Alex Cristia

alecristia@gmail.com

Centre National de la Recherche Scientifique

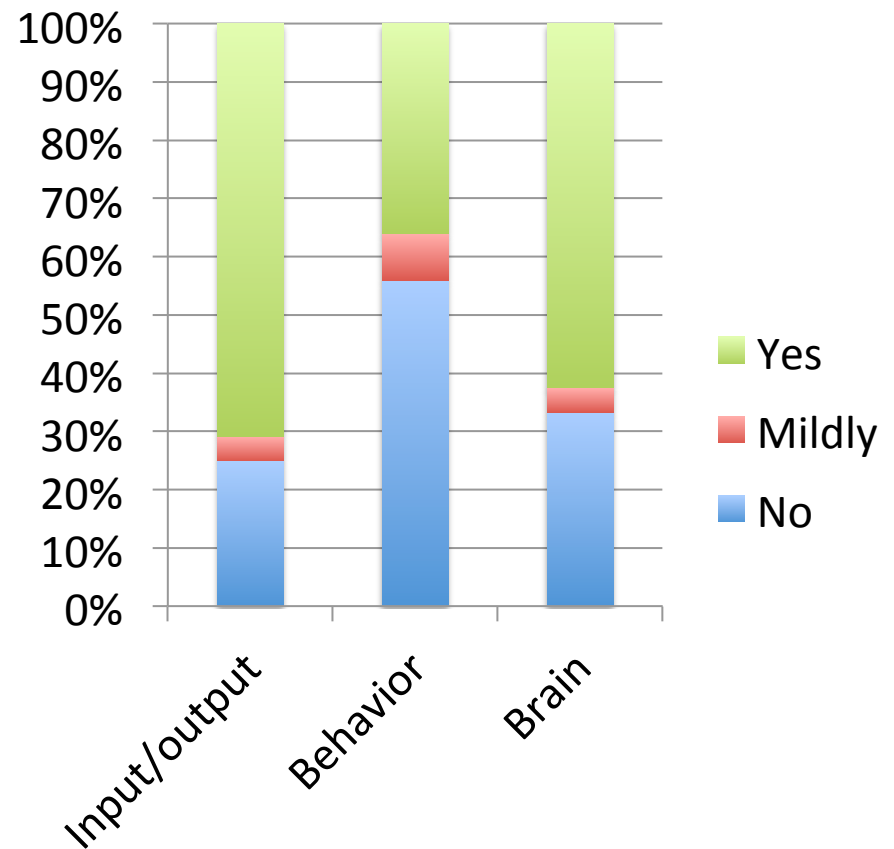Laboratoire de Sciences Cognitives et Psycholinguistique

Yesterday's feedback: Group-based description

Years of research experience

0						
1	1	1	1	1		
2	2					
3	3	3	3	3	3	3.5
4	4	4				
5	5					
6	6					
8						
9						

Interests

... hides individual differences

Years of research experience

0						
1	1	1	1	1		
2	2					
3	3	3	3	3	3	3.5
4	4	4				
5	5					
6	6					
8						
9						

Interests
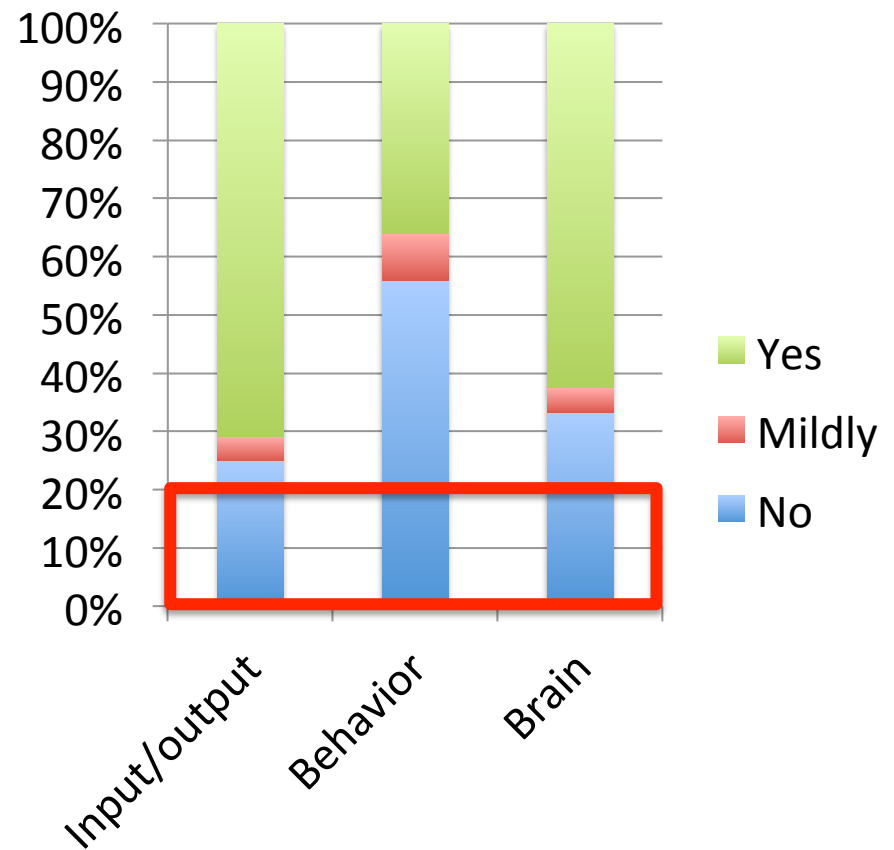
Points to clear up

- "Relationship robber & input to language not clear"
- "more about research and less about the methodology in the field"
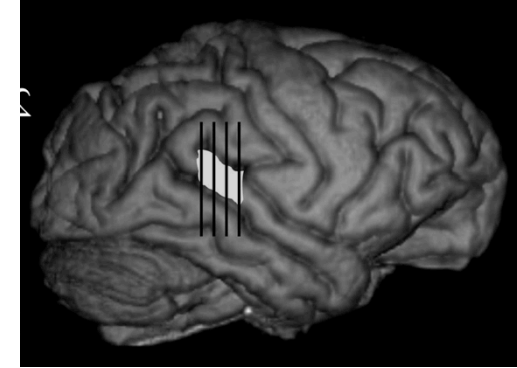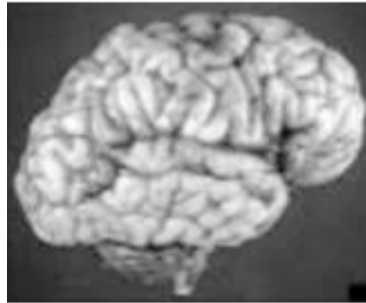- "I was glad to find out that I should seriously reconsider the way I pick houses or girlfriends for what matters"
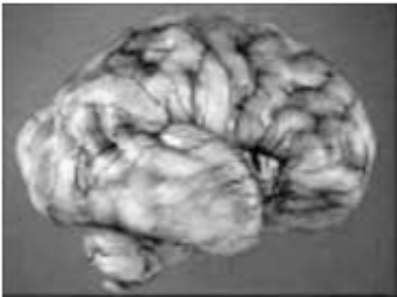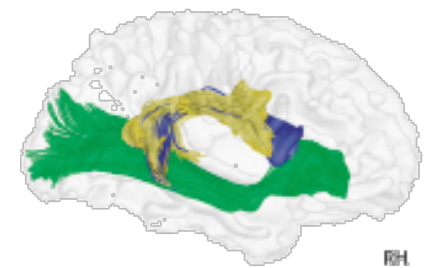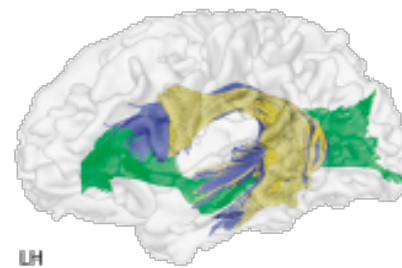
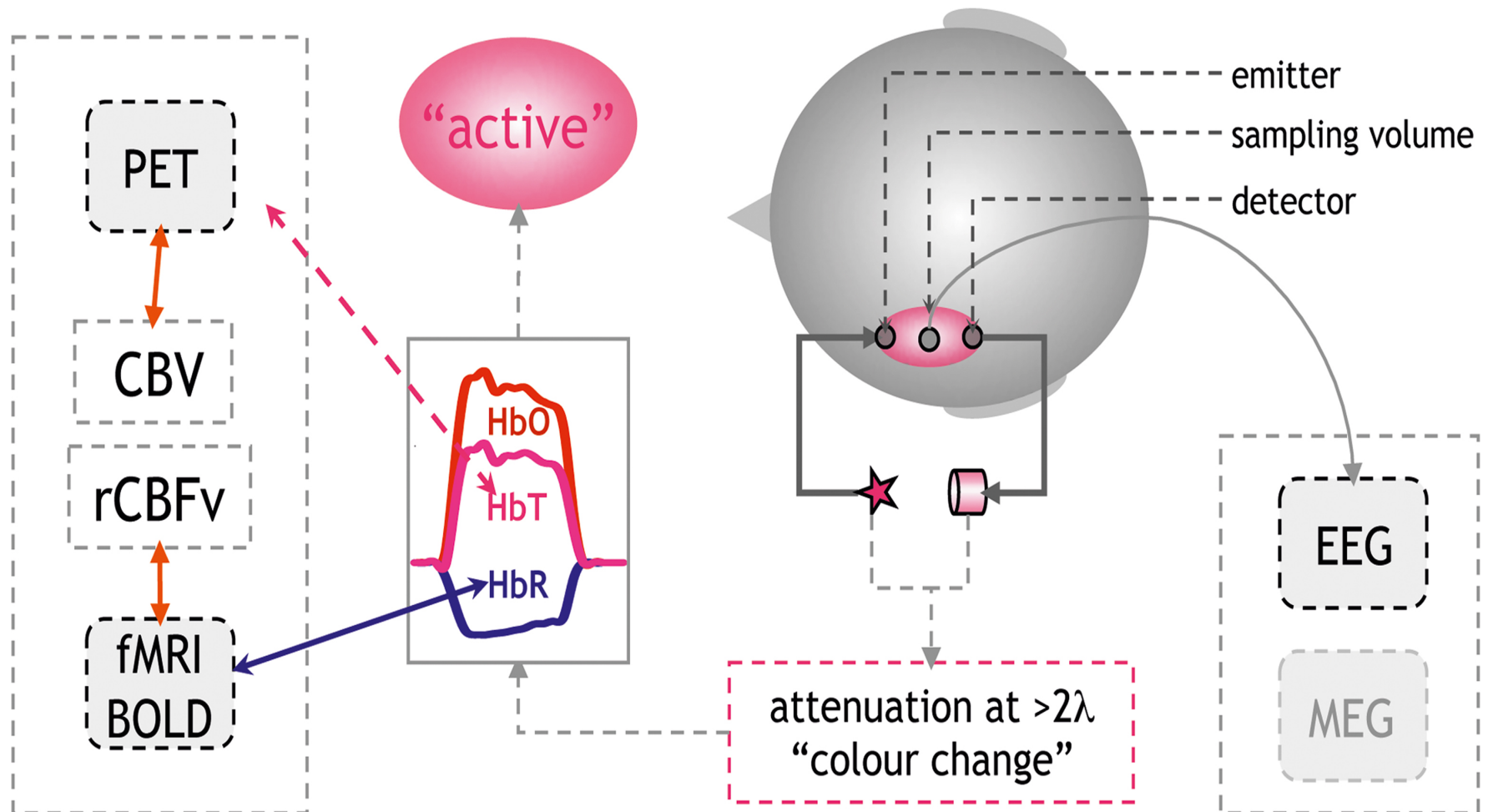# Basic brain structure

minus 3 months   0-1 months   adult   adult chimpanzee (reconstruction)

AF/SLF Temporal-IFG

AF/SLF Temporal-preCG

IFG-Temporal (via extreme fiber capsule system)

-3,0-1 Gervain et al. 2011 Dev Cog Neurosci; adult National Geographic; chimp Hopkins et al. 2008 Neuroimage bottom Perani et al. 2011 PNAS

Local activation, neurons firing, and neurovascular consequences

PET

CBV

rCBFv

fMRI BOLD

"active"

HbO

HbT

HbR

emitter

sampling volume

detector

EEG

MEG

attenuation at >2λ "colour change"
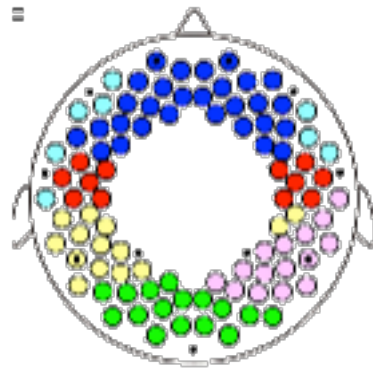
Obrig et al. 2010 *Frontiers*

Hemodynamic responses & resting state connectivity
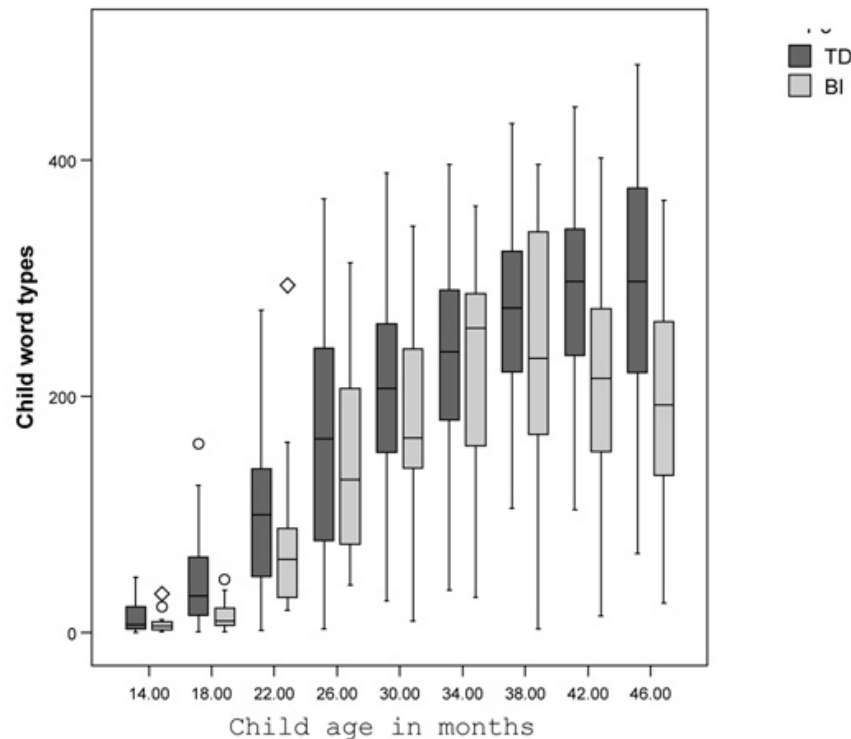
Taga et al 2011 Phil Trans Roy Soc A (3 months)
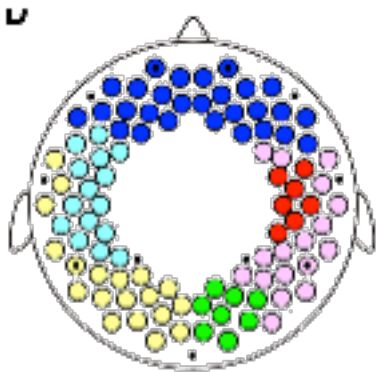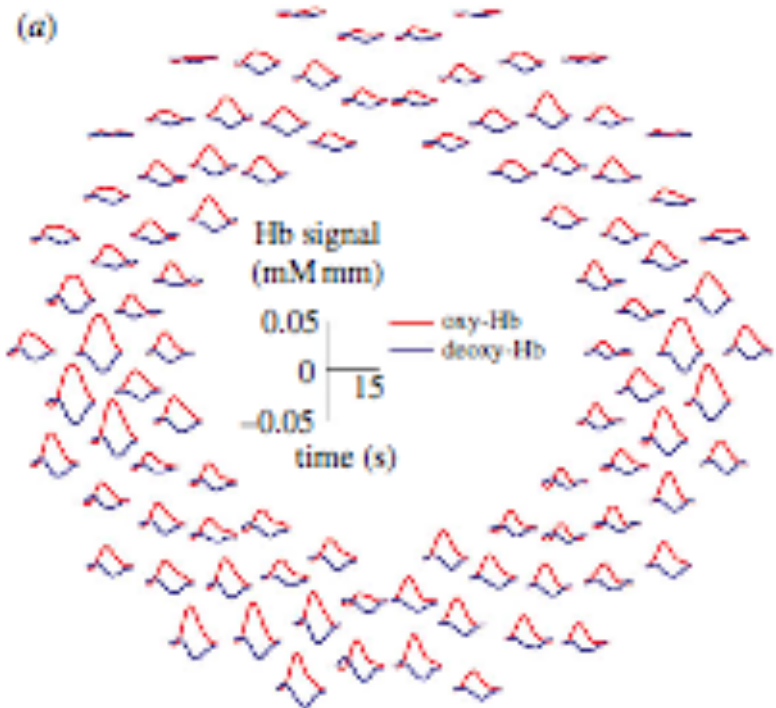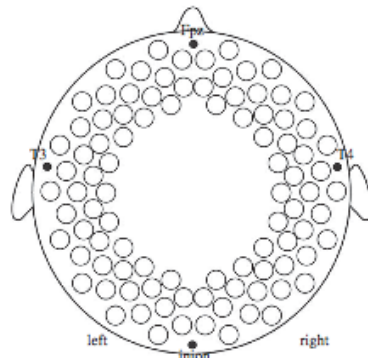
0 months   3 months
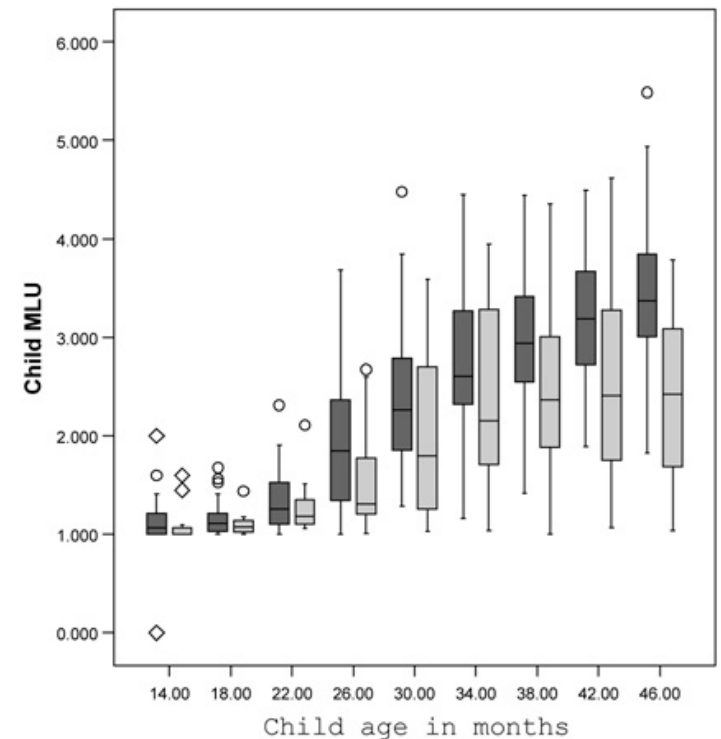
Homae et al. 2010 J Neurosci

Resilience of language despite insult to neural bases

Panel A. Word Types

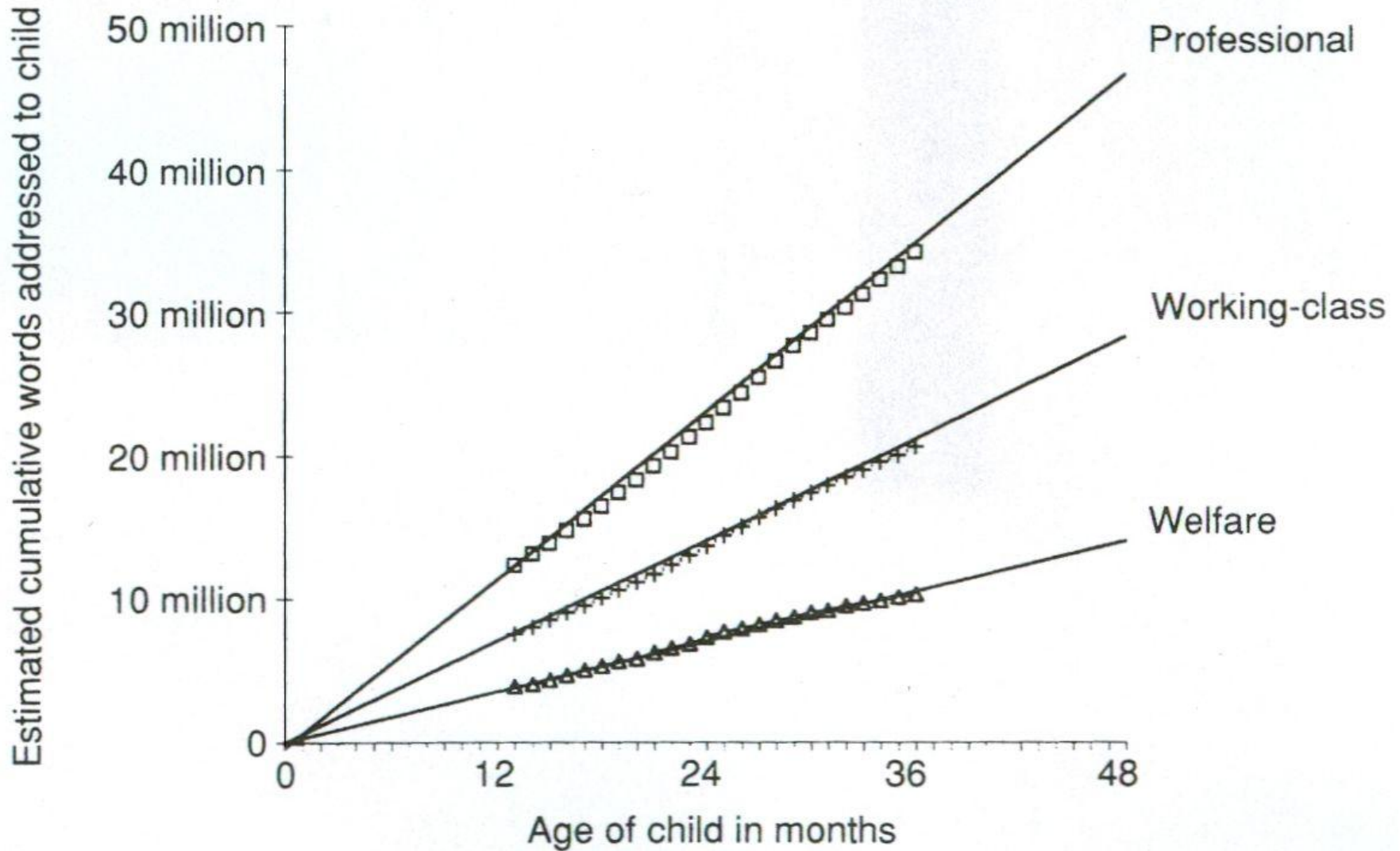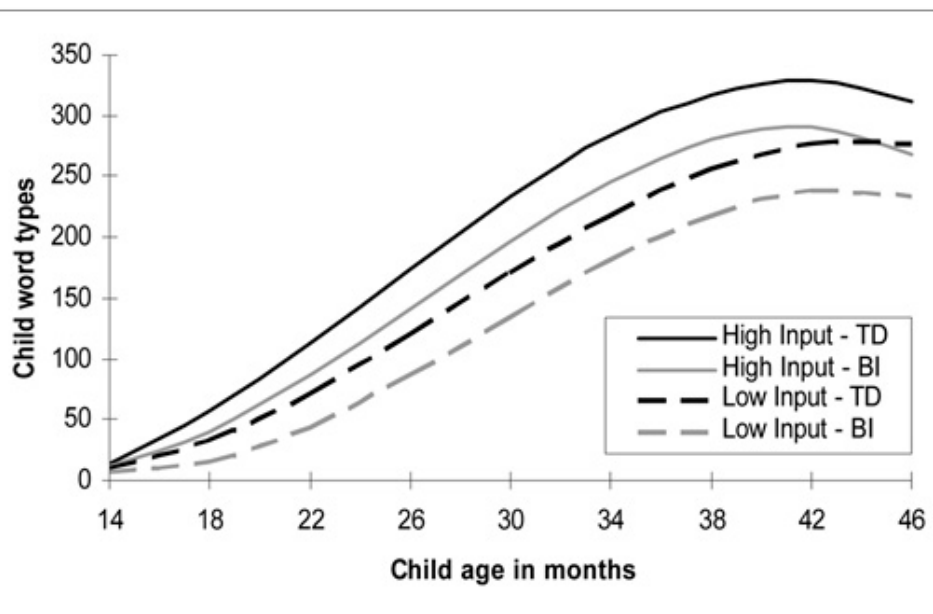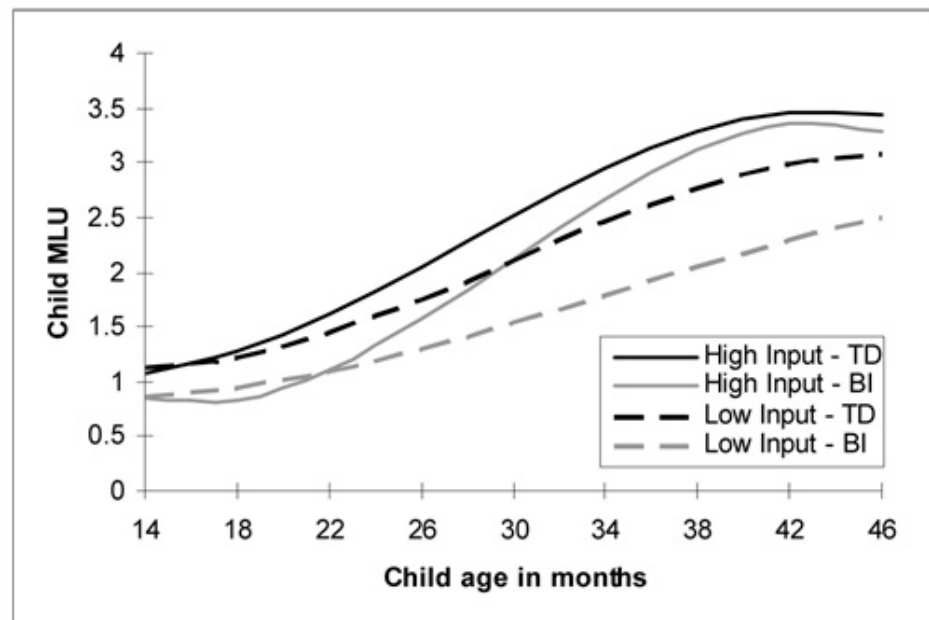Panel B. MLU

Rowe et al. 2009 Dev Psy

Figure 19. Cumulative number of words addresses to the child in 13 professional (squares), 23 working-class (plus signs), and 6 welfare families (triangles) extrapolated from birth to 12 months of age and from 37 to 48 months of age. From Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children.* Baltimore, MD: Brookes.

Neural bases x input

Panel A. Word Types
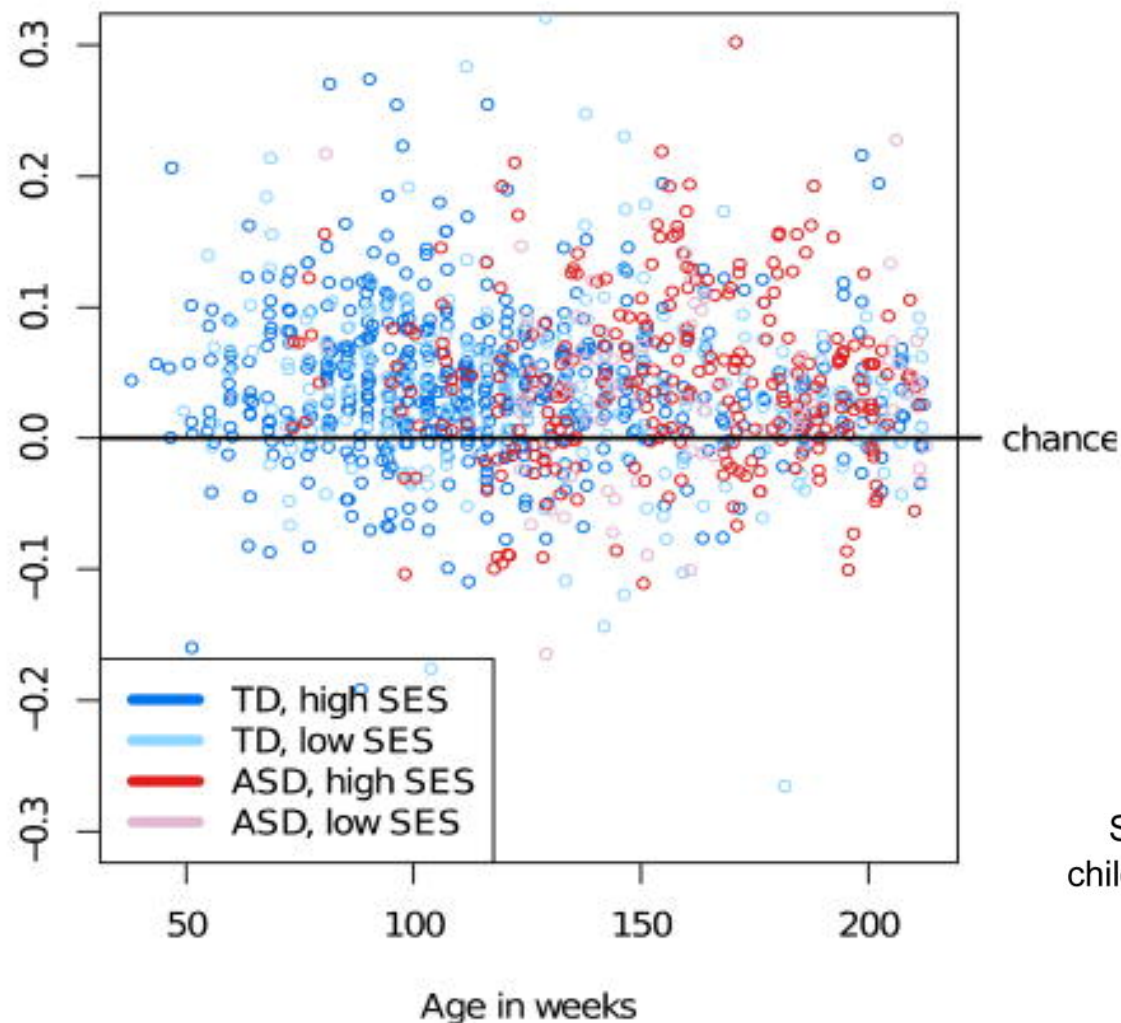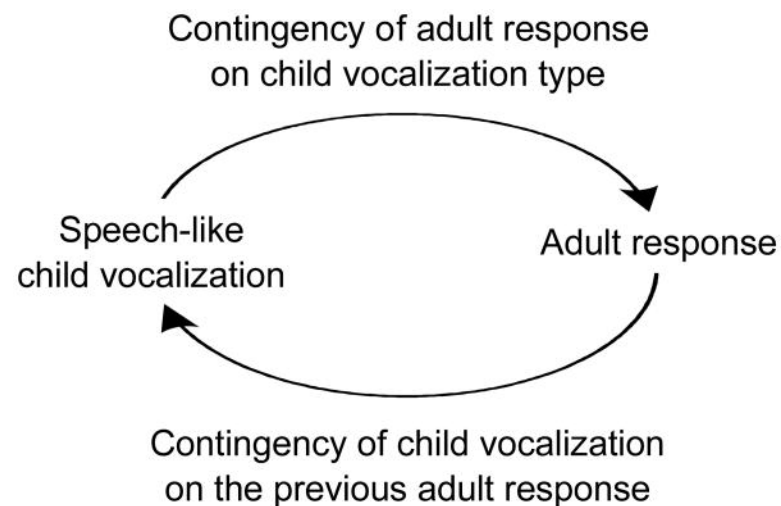
Panel B. MLU

Rowe et al. 2009 Dev Psy

A positive feedback loop?

Warlaumont et al. 2014 *Psyc Sci*

Previous results may be just WEIRD*

*Western Educated Industrialized Rich Democratic
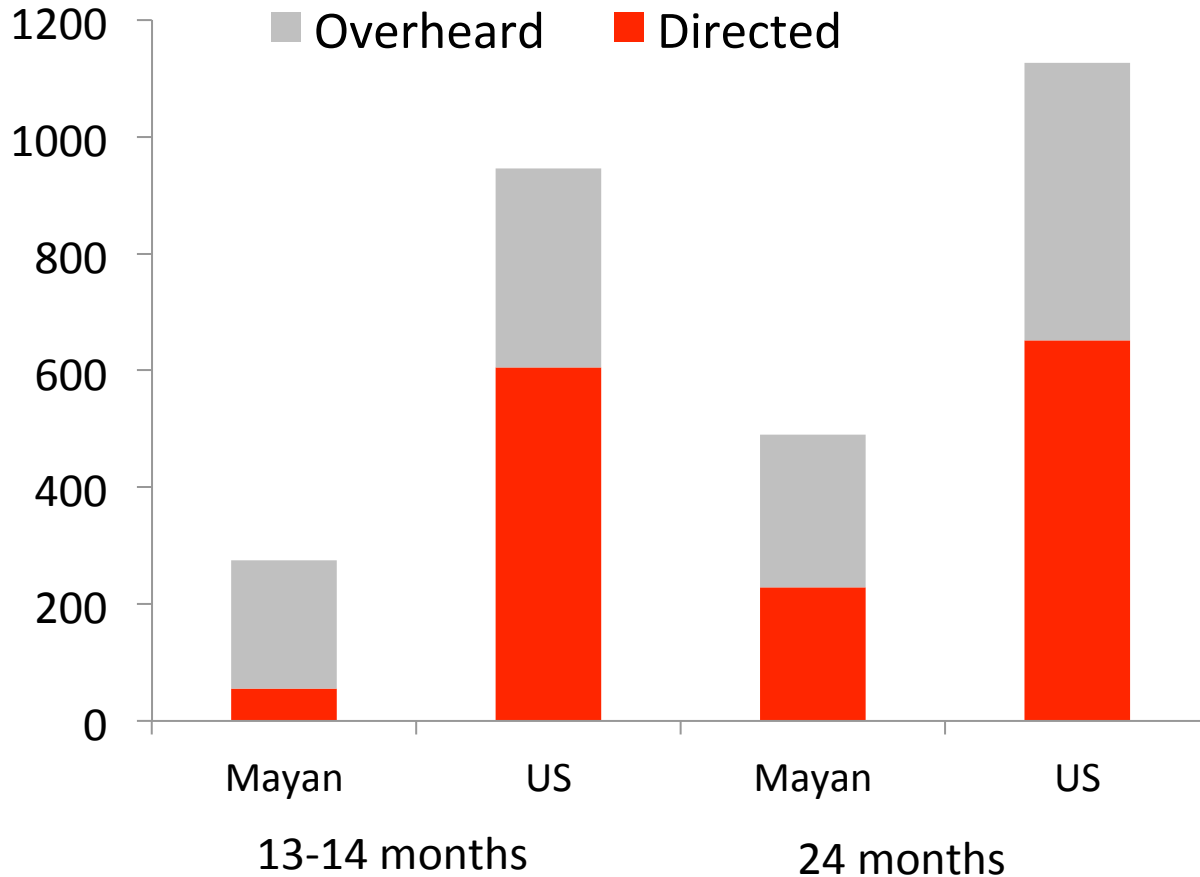
Shneidman and Goldin-Meadow 2012 *Dev Sci*

Language use among the Tsimane

- forager-farmers (pop'n ~15,000).
- Instantaneous scan sampling (2003/2005, 6 villages) → 43,903 direct obs.
- Data coders (and participants) blind to study objectives.

With Jonathan Stieglitz

Amount of speech directed to young Tsimane children
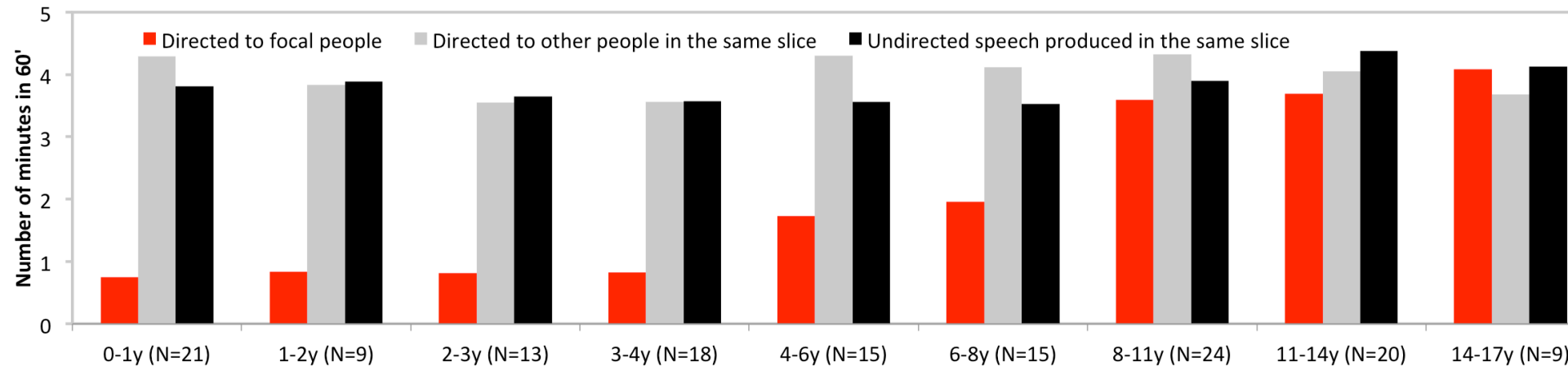
Cristia et al. in prep

Input-output relationships among the Tsimane
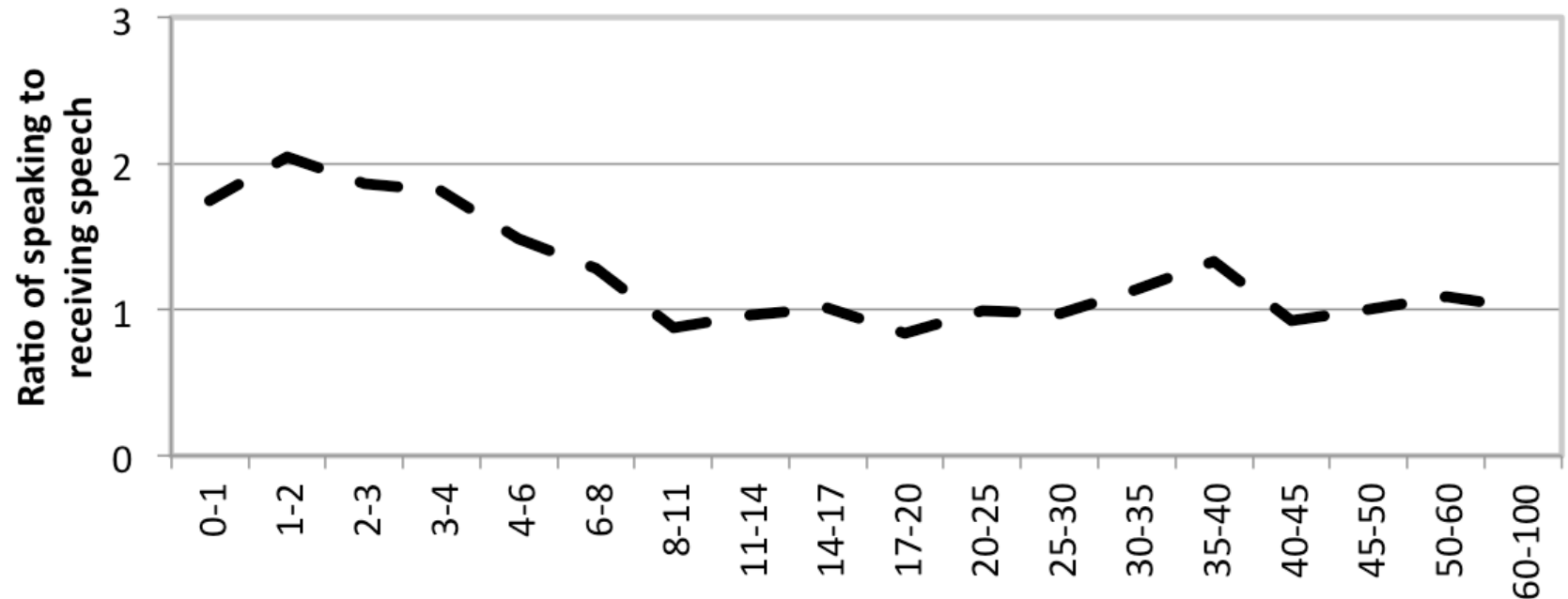
Cristia et al. in prep

Cultural variation greater than social variation

Cumulative words spoken to child by age 3 (in millions)

Please sit based on interest!

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Freedom
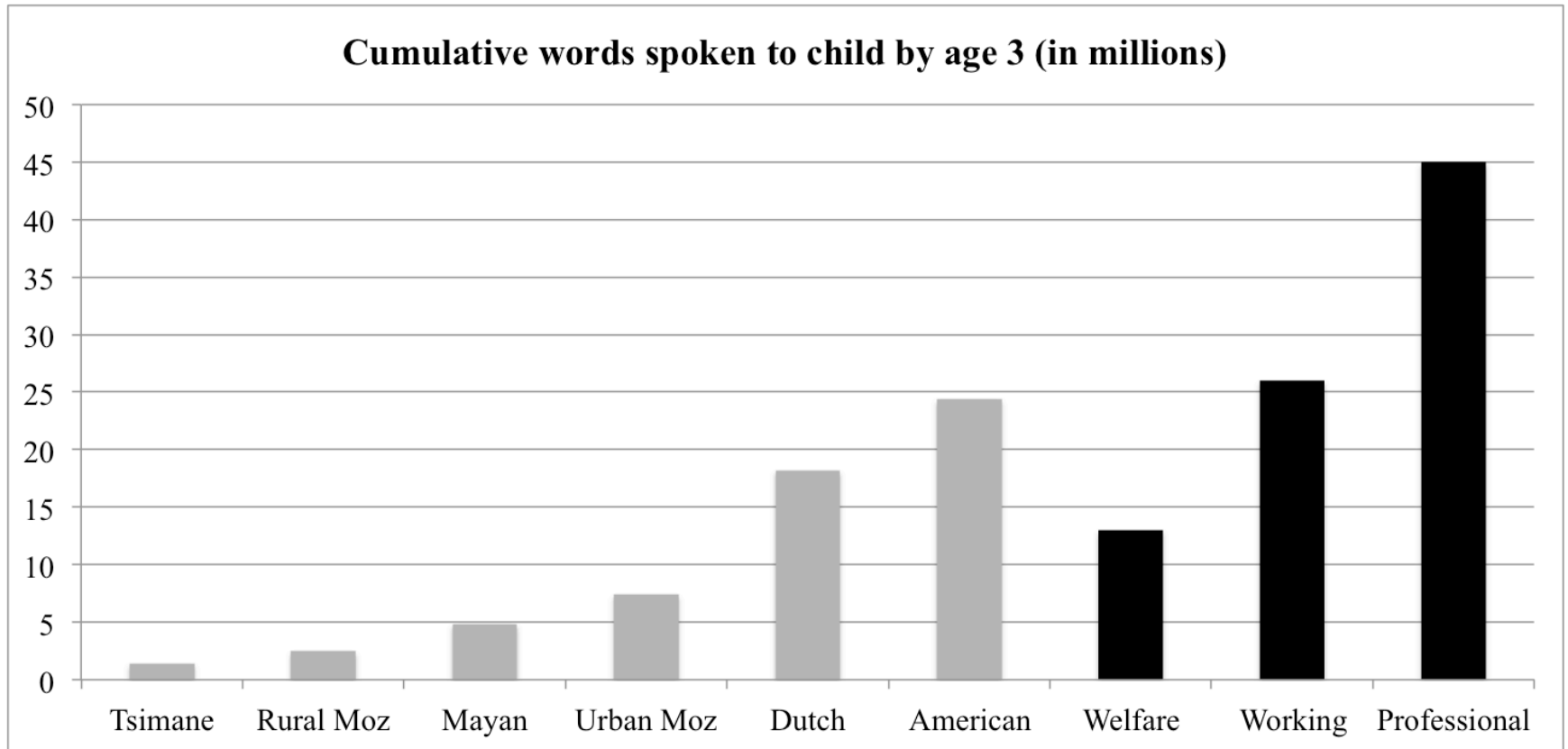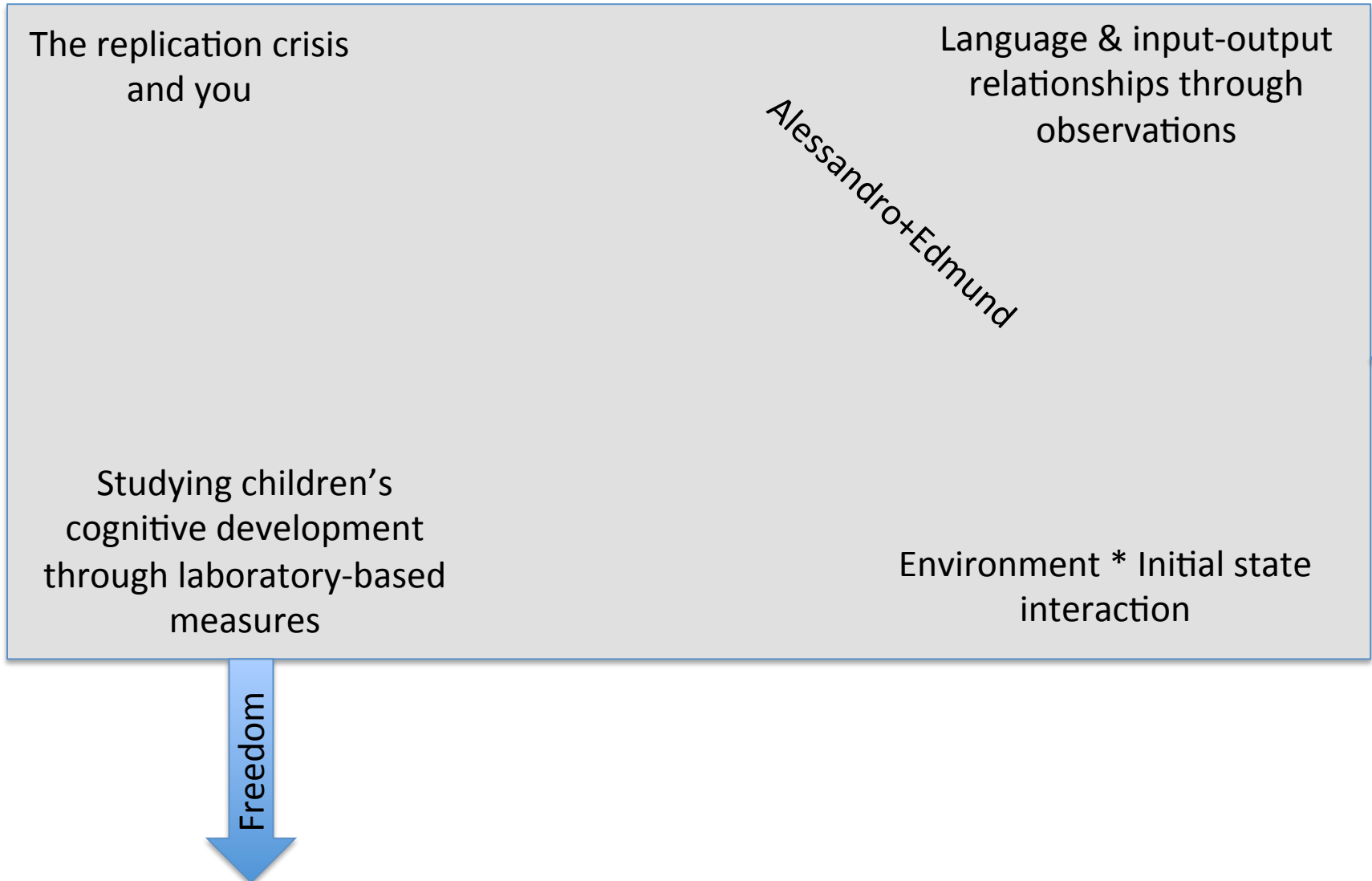
Schedule next 25 minutes

- Open your secret statement, whose false/true value your group should establish
- Read & discuss any ambiguities regarding interpretation of the statement (3 minutes)
- Discuss arguments for it (8 minutes)
- Discuss arguments against it (8 minutes)
- Find one question for the audience and/or future work to address (4 minutes)
- Name a presenter & organize points to be hit (2 minutes)

Please sit based on interest!

The replication crisis and you: Results that are not statistically significant are not theoretically informative

Alessandro+Edmund Knowlton et al. 1992 on amnesics learning an artificial grammar & Heinz & Idsardi (2013) Cognitive Science

Language & input-output relationships through observations: Conclusions regarding children with traumatic brain injuries cannot be generalized to the population because their brain and behavior is different

Studying children's cognitive development through laboratory-based measures: Quantity of speech reflects mainly cultural customs regarding how much or how little one should talk

Environment * Initial state interaction: Laboratory experiments only provide "best case scenario" ideas about children's true abilities and do not generalize to actual language acquisition

Freedom

Thank you!